Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.442. Principles of Transportation Systems (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) In Principles of Transportation Systems, students will gain knowledge and skills in the safe application, design, production, and assessment of products, services, and systems. This knowledge includes the history, laws and regulations, and common practices used in the transportation industry. Students should apply knowledge and skills in the application, design, and production of technology as it relates to the transportation industries. This course allows students to reinforce, apply, and transfer their academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities related to transportation systems	(i) identify career development opportunities related to transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities related to transportation systems	(ii) identify entrepreneurship opportunities related to transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify careers in transportation systems	(i) identify careers in transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(i) apply competencies related to resources within transportation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(ii) apply competencies related to information within transportation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(iii) apply competencies related to interpersonal skills within transportation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(iv) apply competencies related to problem solving within transportation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(v) apply competencies related to critical thinking within transportation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(vi) apply competencies related to systems of operation within transportation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(i) demonstrate knowledge of personal health
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(ii) demonstrate knowledge of occupational health

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(iii) demonstrate knowledge of personal safety
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(iv) demonstrate knowledge of occupational safety
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(i) explore career goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(ii) explore career objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(iii) explore career strategies as part of a plan for future career opportunities
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(i) plan industry-based occupational experiences

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(ii) propose industry-based occupational experiences
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(iii) conduct industry-based occupational experiences
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(iv) evaluate industry-based occupational experiences
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(B) apply proper record-keeping skills as they relate to industry-based occupational experiences	(i) apply proper record-keeping skills as they relate to industry-based occupational experiences

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(C) use a customized record-keeping system for the individual industry-based occupational experiences	(i) use a customized record-keeping system for the individual industry-based occupational experiences
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(D) discuss youth leadership opportunities to create a well-rounded industry-based occupational experience	(i) discuss youth leadership opportunities to create a well-rounded industry-based occupational experience
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(E) develop a work plan and budget	(i) develop a work plan
(2) The student develops leadership experience as it relates to transportation systems. The student is expected to:	(E) develop a work plan and budget	(ii) develop a budget

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student explores concepts related to cultural diversity. The student is expected to:	(A) identify significant similarities and differences in international culture	(i) identify significant similarities in international culture
(3) The student explores concepts related to cultural diversity. The student is expected to:	(A) identify significant similarities and differences in international culture	(ii) identify significant differences in international culture
(3) The student explores concepts related to cultural diversity. The student is expected to:	(B) explain the variety of world markets	(i) explain the variety of world markets
(3) The student explores concepts related to cultural diversity. The student is expected to:	(C) describe marketing factors and practices that impact other cultures	(i) describe marketing factors that impact other cultures
(3) The student explores concepts related to cultural diversity. The student is expected to:	(C) describe marketing factors and practices that impact other cultures	(ii) describe marketing practices that impact other cultures

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the historical, current, and future significance of the transportation industries. The student is expected to:	(A) define terms associated with the transportation industries	(i) define terms associated with the transportation industries
(4) The student understands the historical, current, and future significance of the transportation industries. The student is expected to:	(B) identify the scope and effect on society of the transportation industries	(i) identify the scope of the transportation industries
(4) The student understands the historical, current, and future significance of the transportation industries. The student is expected to:	(B) identify the scope and effect on society of the transportation industries	(ii) identify the effect on society of the transportation industries
(4) The student understands the historical, current, and future significance of the transportation industries. The student is expected to:	(C) identify significant historical and current developments in the transportation industries	(i) identify significant historical developments in the transportation industries
(4) The student understands the historical, current, and future significance of the transportation industries. The student is expected to:	(C) identify significant historical and current developments in the transportation industries	(ii) identify significant current developments in the transportation industries

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the historical, current, and future significance of the transportation industries. The student is expected to:	(D) identify potential future development for transportation industry systems	(i) identify potential future development for transportation industry systems
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(A) describe common business management principles	(i) describe common business management principles
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(B) identify opportunities for leadership development and personal growth	(i) identify opportunities for leadership development
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(B) identify opportunities for leadership development and personal growth	(ii) identify opportunities for personal growth
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(C) demonstrate democratic principles in conducting effective meetings	(i) demonstrate democratic principles in conducting effective meetings

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(D) describe team dynamics	(i) describe team dynamics
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(E) describe the development of organizational vision, mission, and goals through the strategic planning process	(i) describe the development of organizational vision through the strategic planning process
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(E) describe the development of organizational vision, mission, and goals through the strategic planning process	(ii) describe the development of organizational mission through the strategic planning process
(5) The student analyzes the structure of transportation organizations. The student is expected to:	(E) describe the development of organizational vision, mission, and goals through the strategic planning process	(iii) describe the development of organizational goals through the strategic planning process
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(A) identify reasons for world trade and globalization	(i) identify reasons for world trade

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(A) identify reasons for world trade and globalization	(ii) identify reasons for globalization
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(B) identify the political impact of transportation	(i) identify the political impact of transportation
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws and evaluate their impact on transportation	(i) review regulations
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws and evaluate their impact on transportation	(ii) review major laws

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws and evaluate their impact on transportation	(iii) evaluate [regulations' and major laws'] impact on transportation
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(D) read appropriate written material to stay abreast of current issues impacting transportation	(i) read appropriate written material to stay abreast of current issues impacting transportation
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(E) collect public opinion and data in order to make informed decisions	(i) collect public opinion in order to make informed decisions
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(E) collect public opinion and data in order to make informed decisions	(ii) collect data in order to make informed decisions

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(F) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues related to transportation	(i) use critical-thinking skills to identify alternatives
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(F) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues related to transportation	(ii) use critical-thinking skills to organize alternatives
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(F) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues related to transportation	(iii) use critical-thinking skills to evaluate public policy issues related to transportation
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(i) evaluate performance of contractors

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(ii) evaluate performance of service providers
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(iii) evaluate contract compliance of contractors
(6) The student explains the transportation industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(iv) evaluate contract compliance of service providers
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) examine workplace ethical and legal responsibilities	(i) examine workplace ethical responsibilities
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) examine workplace ethical and legal responsibilities	(ii) examine workplace legal responsibilities

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) define the uses of proper etiquette	(i) define the uses of proper etiquette
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify appropriate personal appearance and health habits	(i) identify appropriate personal appearance
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify appropriate personal appearance and health habits	(ii) identify appropriate health habits
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(i) practice written communication skills in formal situations
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(ii) practice oral communication skills in formal situations

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(iii) practice written communication skills in informal situations
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(iv) practice oral communication skills in informal situations
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(E) practice effective listening skills in formal and informal situations	(i) practice effective listening skills in formal situations
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(E) practice effective listening skills in formal and informal situations	(ii) practice effective listening skills in informal situations
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(F) read and comprehend materials common to the transportation industry	(i) read and comprehend materials common to the transportation industry

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(G) employ writing and preparation skills using technical information	(i) employ writing skills using technical information
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(G) employ writing and preparation skills using technical information	(ii) employ preparation skills using technical information
(7) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(H) demonstrate speaking skills	(i) demonstrate speaking skills
(8) The student applies appropriate research methods for transportation systems. The student is expected to:	(A) define major fields of research and development	(ii) define major fields of research and development
(8) The student applies appropriate research methods for transportation systems. The student is expected to:	(B) identify and apply scientific methods of research in transportation industries	(i) identify scientific methods of research in transportation industries

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies appropriate research methods for transportation systems. The student is expected to:	(B) identify and apply scientific methods of research in transportation industries	(ii) apply scientific methods of research in transportation industries
(8) The student applies appropriate research methods for transportation systems. The student is expected to:	(C) use a variety of resources for research and development	(i) use a variety of resources for research and development
(8) The student applies appropriate research methods for transportation systems. The student is expected to:	(D) describe the scientific methods of research	(i) describe the scientific methods of research
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(A) discuss project proposals	(i) discuss project proposals

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(B) maintain records appropriate to transportation system industries	(i) maintain records appropriate to transportation system industries
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(i) collect data
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(ii) organize data in graphs
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(iii) organize data in tables

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(iv) organize data in charts
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(v) organize data in plots
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(i) analyze data from graphs
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(ii) analyze data from tables

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(iii) analyze data from charts
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(iv) analyze data from plots
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(v) interpret data from graphs
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(vi) interpret data from tables

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(vii) interpret data from charts
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records related to transportation. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(viii) interpret data from plots
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(A) use management software, email applications, and Internet applications	(i) use management software
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(A) use management software, email applications, and Internet applications	(ii) use email applications

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(A) use management software, email applications, and Internet applications	(iii) use Internet applications
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(i) use word-processing software
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(ii) use database software
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(iii) use spreadsheet software

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(iv) use presentation software
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(C) examine collaborative, groupware, and virtual meeting software	(i) examine collaborative software
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(C) examine collaborative, groupware, and virtual meeting software	(ii) examine groupware software
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(C) examine collaborative, groupware, and virtual meeting software	(iii) examine virtual meeting software

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(D) discuss Geographic Information Systems, Global Positioning Systems, and other computer-based equipment in transportation systems	(i) discuss Geographic Information Systems
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(D) discuss Geographic Information Systems, Global Positioning Systems, and other computer-based equipment in transportation systems	(ii) discuss Global Positioning Systems
(10) The student uses information technology tools specific to transportation industries to access, manage, integrate, and create information. The student is expected to:	(D) discuss Geographic Information Systems, Global Positioning Systems, and other computer-based equipment in transportation systems	(iii) discuss other computer-based equipment in transportation systems
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(A) discuss safe work practices and emergency procedures	(i) discuss safe work practices

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(A) discuss safe work practices and emergency procedures	(ii) discuss emergency procedures
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in transportation environments	(i) identify rules designed to promote safety in transportation environments
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in transportation environments	(ii) identify rules designed to promote health in transportation environments
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in transportation environments	(iii) identify laws designed to promote safety in transportation environments

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in transportation environments	(iv) identify laws designed to promote health in transportation environments
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(C) demonstrate first aid and cardiopulmonary resuscitation procedures	(i) demonstrate first aid procedures
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(C) demonstrate first aid and cardiopulmonary resuscitation procedures	(ii) demonstrate cardiopulmonary resuscitation procedures
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(D) demonstrate proper use of safety equipment	(i) demonstrate proper use of safety equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student discusses methods to reduce workplace hazards in order to promote a safe working environment. The student is expected to:	(E) evaluate worksite safety areas and/or plans	(i) evaluate worksite safety areas and/or plans
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(A) discuss rules pertaining to obtaining a commercial driver license (CDL)	(i) discuss rules pertaining to obtaining a commercial driver license (CDL)
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(B) explain the different types of CDLs	(i) explain the different types of CDLs
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(C) discuss the various endorsements available for a CDL	(i) discuss the various endorsements available for a CDL

Knowledge and Skill Statement	Student Expectation	Breakout
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(D) discuss the requirements for each endorsement	(i) discuss the requirements for each endorsement
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(E) identify material handling and storage equipment and forklifts, including electric- and fuel-powered forklifts	(i) identify material handling equipment, including electric-powered forklifts
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(E) identify material handling and storage equipment and forklifts, including electric- and fuel-powered forklifts	(ii) identify material handling equipment, including fuel-powered forklifts
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(E) identify material handling and storage equipment and forklifts, including electric- and fuel-powered forklifts	(iii) identify material storage equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(F) identify types of transportation that supply warehouses and distribution centers	(i) identify types of transportation that supply warehouses
(12) The student examines Texas Department of Public Safety regulations as related to the transportation industry. The student is expected to:	(F) identify types of transportation that supply warehouses and distribution centers	(ii) identify types of transportation that supply distribution centers

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.443. Principles of Distribution and Logistics (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) In Principles of Distribution and Logistics, students will gain knowledge and skills in the safe application, design, production, and assessment of products, services, and systems. This knowledge includes the history, laws and regulations, and common practices used in the logistics of warehousing and transportation systems. Students should apply knowledge and skills in the application, design, and production of technology as it relates to distribution and logistics industries. This course allows students to reinforce, apply, and transfer their academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(A) identify career development and entrpreneuership opportunities in distribution and logistics	(i) identify career development opportunities in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(A) identify career development and entrpreneuership opportunities in distribution and logistics	(ii) identify entrpreneuership opportunities in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(B) identify careers in distribution and logistics systems	(i) identify careers in distribution and logistics systems
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(i) apply competencies related to resources in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(ii) apply competencies related to information in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(iii) apply competencies related to interpersonal skills in distribution and logistics

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(iv) apply competencies related to problem solving in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(v) apply competencies related to critical thinking in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(vi) apply competencies related to systems of operation in distribution and logistics
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(D) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(i) demonstrate knowledge of personal health
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(ii) demonstrate knowledge of occupational health
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(iii) demonstrate knowledge of personal safety

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(iv) demonstrate knowledge of occupational safety
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(i) explore career goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(ii) explore objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability as required by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(iii) explore strategies as part of a plan for future career opportunities
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(i) plan industry-based occupational experiences
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(ii) propose industry-based occupational experiences
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(iii) conduct industry-based occupational experiences
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(A) plan, propose, conduct, and evaluate industry-based occupational experiences	(iv) evaluate industry-based occupational experiences

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(B) apply proper record-keeping skills as they relate to industry-based occupational experiences	(i) apply proper record-keeping skills as they relate to industry-based occupational experiences
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(C) use a customized record-keeping system for the individual industry-based occupational experiences	(i) use a customized record-keeping system for the individual industry-based occupational experiences
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(D) discuss youth leadership opportunities to create a well-rounded industry-based occupational experience	(i) discuss youth leadership opportunities to create a well-rounded industry-based occupational experience
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(E) develop a work plan and budget	(i) develop a work plan
(2) The student develops leadership experience as it relates to distribution and logistics systems. The student is expected to:	(E) develop a work plan and budget	(ii) develop a budget
(3) The student explores concepts related to cultural diversity. The student is expected to:	(A) identify significant similarities and differences in international culture	(i) identify significant similarities in international culture
(3) The student explores concepts related to cultural diversity. The student is expected to:	(A) identify significant similarities and differences in international culture	(ii) identify significant differences in international culture
(3) The student explores concepts related to cultural diversity. The student is expected to:	(B) explain the variety of world markets	(i) explain the variety of world markets

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student explores concepts related to cultural diversity. The student is expected to:	(C) describe marketing factors and practices that impact other cultures	(i) describe marketing factors that impact other cultures
(3) The student explores concepts related to cultural diversity. The student is expected to:	(C) describe marketing factors and practices that impact other cultures	(ii) describe marketing practices that impact other cultures
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(A) define terms associated with the distribution and logistics industries	(i) define terms associated with the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(B) identify the scope and effect upon society of the distribution and logistics industries	(i) identify the scope of the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(B) identify the scope and effect upon society of the distribution and logistics industries	(ii) identify the effect upon society of the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(C) identify significant historical and current developments in the distribution and logistics industries	(i) identify significant historical developments in the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(C) identify significant historical and current developments in the distribution and logistics industries	(ii) identify significant current developments in the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(D) identify potential future scenarios for the distribution and logistics industry systems	(i) identify potential future scenarios for the distribution and logistics industry systems

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(E) describe how emerging technologies and globalization impact the distribution and logistics industries	(i) describe how emerging technologies impact the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(E) describe how emerging technologies and globalization impact the distribution and logistics industries	(ii) describe how emerging globalization impact the distribution and logistics industries
(4) The student understands the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(F) compare and contrast issues affecting the distribution and logistics industries such as international trade, employment, safety, and environmental issues	(i) compare and contrast issues affecting the distribution and logistics industries
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(A) describe common business management principles	(i) describe common business management principles
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(B) identify opportunities for leadership development and personal growth	(i) identify opportunities for leadership development
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(B) identify opportunities for leadership development and personal growth	(ii) identify opportunities for personal growth
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(C) demonstrate democratic principles in conducting effective meetings	(i) demonstrate democratic principles in conducting effective meetings
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(D) describe team dynamics	(i) describe team dynamics

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(E) describe the development of organizational vision, mission, and goals through the strategic planning process	(i) describe the development of organizational vision through the strategic planning process
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(E) describe the development of organizational vision, mission, and goals through the strategic planning process	(ii) describe the development of orginizational mission through the strategic planning process
(5) The student analyzes the structure of distribution and logistics organizations. The student is expected to:	(E) describe the development of organizational vision, mission, and goals through the strategic planning process	(iii) describe the development of organizational goals through the strategic planning process
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(A) identify reasons for world trade and globalization	(i) identify reasons for world trade
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(A) identify reasons for world trade and globalization	(ii) identify reasons for globalization
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(B) identify the political impact of distribution and logistics	(i) identify the political impact of distribution and logistics
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws to evaluate their impact on distribution and logistics	(i) review regulations to evaluate their impact on distribution and logistics

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws to evaluate their impact on distribution and logistics	(ii) review major laws to evaluate their impact on distribution and logistics
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(D) read appropriate written material to stay abreast of current issues impacting distribution and logistics	(i) read appropriate written material to stay abreast of current issues impacting distribution and logistics
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(E) collect public opinion and data in order to make informed decisions	(i) collect public opinion in order to make informed decisions
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(E) collect public opinion and data in order to make informed decisions	(ii) collect data in order to make informed decisions
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(F) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues related to distribution and logistics	(i) use critical-thinking skills to identify alternatives related to distribution and logistics
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(F) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues related to distribution and logistics	(ii) use critical-thinking skills to organize alternatives related to distribution and logistics
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(F) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues related to distribution and logistics	(iii) use critical-thinking skills to evaluate public policy issues related to distribution and logistics

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(i) evaluate performance of contractors
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(ii) evaluate performance of service providers
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(iii) evaluate contract compliance of contractors
(6) The student explains the distribution and logistics industries at the local, state, national, and international levels. The student is expected to:	(G) evaluate performance and contract compliance of contractors and service providers	(iv) evaluate contract compliance of service providers
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) examine workplace ethical and legal responsibilities	(i) examine workplace ethical responsibilities
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) examine workplace ethical and legal responsibilities	(ii) examine workplace legal responsibilities
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) define the uses of proper etiquette	(i) define the uses of proper etiquette
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) identify appropriate personal appearance and health habits	(i) identify appropriate personal appearance

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) identify appropriate personal appearance and health habits	(ii) identify appropriate health habits
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(i) practice written communication skills in formal situations
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(ii) practice written communication skills in informal situations
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(iii) practice oral communication skills in formal situations
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills in formal and informal situations	(iv) practice oral communication skills in informal situations
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) practice effective listening skills in formal and informal situations	(i) practice effective listening skills in formal situations
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) practice effective listening skills in formal and informal situations	(ii) practice effective listening skills in informal situations
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) employ writing and preparation skills using technical information	(i) employ writing skills using technical information
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) employ writing and preparation skills using technical information	(ii) employ preparation skills using technical information

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student demonstrates appropriate personal and communication skills. The student is expected to:	(G) demonstrate speaking skills	(i) demonstrate speaking skills
(8) The student applies appropriate research methods for distribution and logistics systems. The student is expected to:	(A) define major fields of research and development	(i) define major fields of research and development
(8) The student applies appropriate research methods for distribution and logistics systems. The student is expected to:	(B) identify and apply scientific methods of research in distribution and logistics industries	(i) identify scientific methods of research in distribution and logistics industries
(8) The student applies appropriate research methods for distribution and logistics systems. The student is expected to:	(B) identify and apply scientific methods of research in distribution and logistics industries	(ii) apply scientific methods of research in distribution and logistics industries
(8) The student applies appropriate research methods for distribution and logistics systems. The student is expected to:	(C) use a variety of resources for research and development	(i) use a variety of resources for research and development
(8) The student applies appropriate research methods for distribution and logistics systems. The student is expected to:	(D) describe the scientific methods of research	(i) describe the scientific methods of research
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(A) discuss project proposals	(i) discuss project proposals

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(B) maintain records appropriate to distribution and logistics system industries	(i) maintain records appropriate to distribution and logistics system industries
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(i) collect data
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(ii) organize data in graphs
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(iii) organize data in tables
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(iv) organize data in charts
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(v) organize data in plots
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(i) analyze data from graphs

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(ii) analyze data from tables
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(iii) analyze data from charts
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(iv) analyze data from plots
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(v) interpret data from graphs
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(vi) interpret data from tables
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(vii) interpret data from charts
(9) The student applies problem-solving, mathematical, and organizational skills in order to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(viii) interpret data from plots

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(A) use management software, email applications, and Internet applications	(i) use management software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(A) use management software, email applications, and Internet applications	(ii) use email applications
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(A) use management software, email applications, and Internet applications	(iii) use Internet applications
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(i) use word-processing software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(ii) use database software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(iii) use spreadsheet software

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(iv) use presentation software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(C) examine collaborative, groupware, and virtual meeting software	(i) examine collaborative software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(C) examine collaborative, groupware, and virtual meeting software	(ii) examine groupware software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(C) examine collaborative, groupware, and virtual meeting software	(iii) examine virtual meeting software
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(D) discuss Geographic Information Systems and Global Positioning Systems	(i) discuss Geographic Information Systems
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(D) discuss Geographic Information Systems and Global Positioning Systems	(ii) discuss Global Positioning Systems

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student uses information technology tools specific to distribution and logistics industries to access, manage, integrate, and create information. The student is expected to:	(E) discuss other computer-based equipment in distribution and logistics systems	(i) discuss other computer-based equipment in distribution and logistics systems
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(A) discuss safe work practices and emergency procedures	(i) discuss safe work practices
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(A) discuss safe work practices and emergency procedures	(ii) discuss emergency procedures
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in the distribution and logistics environments	(i) identify rules designed to promote safety in the distribution and logistics environments
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in the distribution and logistics environments	(ii) identify rules designed to promote health in the distribution and logistics environments
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in the distribution and logistics environments	(iii) identify laws designed to promote safety in the distribution and logistics environments
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(B) identify rules and laws designed to promote safety and health in the distribution and logistics environments	(iv) identify laws designed to promote health in the distribution and logistics environments

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(C) demonstrate first aid and cardiopulmonary resuscitation procedures	(i) demonstrate first aid procedures
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(C) demonstrate first aid and cardiopulmonary resuscitation procedures	(ii) demonstrate cardiopulmonary resuscitation procedures
(11) The student discusses methods to reduce sources of workplace hazards in order to promote a safe working environment. The student is expected to:	(D) demonstrate proper use of safety equipment	(i) demonstrate proper use of safety equipment
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(A) discuss handling practices for goods and materials	(i) discuss handling practices for goods
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(A) discuss handling practices for goods and materials	(ii) discuss handling practices for materials
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(B) explain size, weight, and shape requirements for packaging	(i) explain size requirements for packaging
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(B) explain size, weight, and shape requirements for packaging	(ii) explain weight requirements for packaging

Knowledge and Skill Statement	Student Expectation	Breakout
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(B) explain size, weight, and shape requirements for packaging	(iii) explain shape requirements for packaging
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(C) discuss material handling, storage, and shipping methods	(i) discuss material handling methods
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(C) discuss material handling, storage, and shipping methods	(ii) discuss storage methods
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(C) discuss material handling, storage, and shipping methods	(iii) discuss shipping methods
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(D) analyze visual design and appearance requirements for packages	(i) analyze visual design and appearance requirements for packages
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(E) discuss layout plans for processing packages	(i) discuss layout plans for processing packages
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(F) identify material handling and storage equipment	(i) identify material handling

Knowledge and Skill Statement	Student Expectation	Breakout
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(F) identify material handling and storage equipment	(ii) identify storage equipment
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(G) identify types of warehouses and distribution centers	(i) identify types of warehouses
(12) The student examines material handling in warehouses and distribution centers. The student is expected to:	(G) identify types of warehouses and distribution centers	(ii) identify types of distribution centers

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.444. Introduction to Transportation Technology (One-Half Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9 and 10. Students shall be awarded one-half credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation, infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Introduction to Transportation Technology includes knowledge of the major automotive systems and the principles of diagnosing and servicing these systems. Transportation Technology includes applicable safety and environmental rules and regulations. In Transportation Technology, students will gain knowledge and skills in the repair, maintenance, and diagnosis of transportation systems. This study will allow students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the importance of workplace safety and environmental responsibilities and the use of personal protective equipment in transportation services	(i) demonstrate the importance of workplace safety in transportation services
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the importance of workplace safety and environmental responsibilities and the use of personal protective equipment in transportation services	(ii) demonstrate the importance of environmental responsibilities in transportation services
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the importance of workplace safety and environmental responsibilities and the use of personal protective equipment in transportation services	(iii) demonstrate the use of personal protective equipment in transportation services
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of transportation technology	(i) identify employment opportunities, including entrepreneurship opportunities for the field of transportation technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of transportation technology	(ii) identify certification requirements for the field of transportation technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of group participation related to career preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) discuss workplace ethics in a variety of workplace scenarios	(i) discuss workplace ethics in a variety of workplace scenarios
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(B) demonstrate effective written communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective written communication skills with individuals from various cultures

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(i) demonstrate mathematical skills in performing addition using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(ii) demonstrate mathematical skills in performing addition using U.S. customary system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(iii) demonstrate mathematical skills in performing subtraction using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(iv) demonstrate mathematical skills in performing subtraction the U.S. customary system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(v) demonstrate mathematical skills in performing multiplication using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(vi) demonstrate mathematical skills in performing multiplication the U.S. customary system

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(vii) demonstrate mathematical skills in performing division the metric customary system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(viii) demonstrate mathematical skills in performing division using the U.S. customary system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(ix) demonstrate mathematical skills in performing measurements using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using the metric and U.S. customary systems	(x) demonstrate mathematical skills in performing measurements using the U.S. customary system
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(A) locate, read, and interpret transportation repair and service information	(i) locate transportation repair information
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(A) locate, read, and interpret transportation repair and service information	(ii) read transportation repair information

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(A) locate, read, and interpret transportation repair and service information	(iii) interpret transportation repair information
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(A) locate, read, and interpret transportation repair and service information	(i) locate transportation service information
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(A) locate, read, and interpret transportation repair and service information	(ii) read transportation service information
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(A) locate, read, and interpret transportation repair and service information	(iii) interpret transportation service information
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(B) describe the basic and emerging transportation technologies	(i) describe the basic transportation technologies
(3) The student understands the technical knowledge and skills of basic transportation systems. The student is expected to:	(B) describe the basic and emerging transportation technologies	(ii) describe emerging transportation technologies
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(A) demonstrate awareness of the proper way to safely use hand and power tools and equipment commonly employed in the industry	(i) demonstrate awareness of the proper way to safely use hand tools commonly employed in the industry

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(A) demonstrate awareness of the proper way to safely use hand and power tools and equipment commonly employed in the industry	(ii) demonstrate awareness of the proper way to safely use power tools commonly employed in the industry
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(A) demonstrate awareness of the proper way to safely use hand and power tools and equipment commonly employed in the industry	(iii) demonstrate awareness of the proper way to safely use equipment commonly employed in the industry
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(B) Identify diagnostic tools and equipment	(i) Identify diagnostic tools
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(B) Identify diagnostic tools and equipment	(ii) Identify diagnostic equipment
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(C) identify hand and shop tools and describe their proper usage	(i) identify hand tools
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(C) identify hand and shop tools and describe their proper usage	(ii) identify shop tools
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in transportation technology. The student is expected to:	(C) identify hand and shop tools and describe their proper usage	(iii) describe [hand and shop tools'] proper usage

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.445. Small Engine Technology I (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Small Engine Technology I includes knowledge of the function and maintenance of the systems and components of all types of small engines such as outdoor power equipment, motorcycles, generators, and irrigation engines. This course is designed to provide training for employment in the small engine technology industry. Instruction includes the repair and service of cooling, air, fuel, lubricating, electrical, ignition, and mechanical systems. In addition, the student will receive instruction in safety, academic, and leadership skills as well as career opportunities.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in the small engine technology industry	(i) identify career development opportunities in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in the small engine technology industry	(ii) identify entrepreneurship opportunities in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify careers in the small engine technology industry	(i) identify careers in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(i) apply competencies related to resources in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(ii) apply competencies related to information in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(iii) apply competencies related to interpersonal skills in the small engine technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(iv) apply competencies related to problem solving in the small engine technoogy industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(v) apply competencies related to critical thinking in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(vi) apply competencies related to systems of operation in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(i) demonstrate skills related to personal health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(ii) demonstrate knowledge related to personal health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(iii) demonstrate skills related to occupational health in the workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(iv) demonstrate knowledge related to occupational health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(v) demonstrate skills related to personal safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(vi) demonstrate knowledge related to personal safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(vii) demonstrate skills related to occupational safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge related to personal and occupational health and safety in the workplace	(viii) demonstrate knowledge related to occupational safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responisibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop personal objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop personal strategies as part of a plan for future career opportunities

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop personal goals as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop personal objectives as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop personal strategies as part of a plan for future educational opportunities
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and demonstrate ethical and legal responsibilities for appropriate workplace conduct	(i) describe ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and demonstrate ethical and legal responsibilities for appropriate workplace conduct	(ii) describe legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and demonstrate ethical and legal responsibilities for appropriate workplace conduct	(iii) demonstrate ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and demonstrate ethical and legal responsibilities for appropriate workplace conduct	(iv) demonstrate legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(i) demonstrate proper etiquette

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(ii) demonstrate proper behavior
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) demonstrate appropriate personal appearance and hygiene	(i) demonstrate appropriate personal appearance
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) demonstrate appropriate personal appearance and hygiene	(ii) demonstrate appropriate personal hygiene
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills and employ effective listening skills	(i) practice written communication skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills and employ effective listening skills	(ii) practice oral communication skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills and employ effective listening skills	(iii) employ effective listening skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) employ technical writing and preparation skills	(i) employ technical writing skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) employ technical writing and preparation skills	(ii) employ technical preparation skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations	(i) demonstrate effective speaking skills through prepared oral presentations

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations	(ii) demonstrate effective speaking skills through extemporaneous oral presentations
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(A) describe emerging technologies and their impact on the small engine technology industry	(i) describe emerging technologies
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(A) describe emerging technologies and their impact on the small engine technology industry	(ii) describe [emerging technologies'] impact on the small engine technology industry
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) identify issues affecting the small engine technology industry related to employment, safety, and environmental issues	(i) identify issues affecting the small engine technology industry related to employment issues
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) identify issues affecting the small engine technology industry related to employment, safety, and environmental issues	(ii) identify issues affecting the small engine technology industry related to safety issues
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) identify issues affecting the small engine technology industry related to employment, safety, and environmental issues	(iii) identify issues affecting the small engine technology industry related to environmental issues
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) discuss regulations and laws and their impact on the small engine technology industry	(i) discuss regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) discuss regulations and laws and their impact on the small engine technology industry	(ii) discuss laws
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) discuss regulations and laws and their impact on the small engine technology industry	(iii) discuss [regulations'] impact on the small engine technology industry
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) discuss regulations and laws and their impact on the small engine technology industry	(iv) discuss [laws'] impact on the small engine technology industry
(3) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(D) read appropriate written material to stay abreast of current issues impacting the small engine technology industry	(i) read appropriate written material to stay abreast of current issues impacting the small engine technology industry
(4) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(i) participate in the planning of leadership development activities
(4) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(ii) participate in the development of leadership development activities
(4) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(iii) participate in the planning of skill development activities

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(iv) participate in the development of skill development activities
(4) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(B) use resources available through an organization such as a career and technical student organization to develop employability skills	(i) use resources available through an organization to develop employability skills
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly	(i) perform preventative maintenance schedule plans to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly	(ii) perform preventative maintenance schedule plans to keep tools operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly	(iii) perform preventative maintenance schedule plans to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly	(iv) perform preventative maintenance schedule systems to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly	(v) perform preventative maintenance schedule systems to keep tools operating safely and properly

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) perform preventative maintenance schedule plans and systems to keep facility, tools, and equipment operating safely and properly	(vi) perform preventative maintenance schedule systems to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(B) use the preventative maintenance schedule of the facility, tools, and equipment to determine repair or replacement needs	(i) use the preventative maintenance schedule of the facility to determine repair or replacement needs
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(B) use the preventative maintenance schedule of the facility, tools, and equipment to determine repair or replacement needs	(ii) use the preventative maintenance schedule of the tools to detemine repair or replacement needs
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(B) use the preventative maintenance schedule of the facility, tools, and equipment to determine repair or replacement needs	(iii) use the preventative maintenance schedule of the equipment to determine repair or replacement needs
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(C) complete repair orders and paperwork related to the small engine technology industry to properly document work needed or completed	(i) complete repair orders
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(C) complete repair orders and paperwork related to the small engine technology industry to properly document work needed or completed	(ii) complete paperwork related to the small engine technology industry to properly document work needed or completed
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(D) estimate parts and labor costs on repair orders for small engine repair	(i) estimate parts costs on repair orders for small engine repair

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(D) estimate parts and labor costs on repair orders for small engine repair	(ii) estimate labor costs on repair orders for small engine repair
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(E) locate, read, and interpret service repair information such as small engine schematics, charts, and service-repair manuals and bulletins	(i) locate service repair information
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(E) locate, read, and interpret service repair information such as small engine schematics, charts, and service-repair manuals and bulletins	(ii) read service repair information
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(E) locate, read, and interpret service repair information such as small engine schematics, charts, and service-repair manuals and bulletins	(iii) interpret service repair information
(6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(A) develop project proposals	(i) develop project proposals
(6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(B) develop and maintain records appropriate to the small engine technology industry	(i) develop records appropriate to the small engine technology industry
(6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(B) develop and maintain records appropriate to the small engine technology industry	(ii) maintain records appropriate to the small engine technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) describe mathematical formulas used to perform engine calculations such as calculating cylinder volume, engine displacement, combustion chamber volume, compressed head gasket volume, piston and deck height, piston dish volume, dome volume, cylinder volume, compression ratio, and horsepower	(i) describe mathematical formulas used to perform engine calculations
(6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) describe mathematical formulas used to perform electrical calculations such as calculating electrical resistance, current, and voltage in engines	(i) describe mathematical formulas used to perform electrical calculations
(6) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(E) apply Ohm's law to small engine electrical circuits using a digital multimeter	(i) apply Ohm's law to small engine electrical circuits using a digital multimeter
(7) The student uses information technology resources specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(A) use personal management software such as email and Internet applications and word-processing, database, spreadsheet, presentation, collaborative, groupware, and virtual meeting software	(i) use personal management software
(7) The student uses information technology resources specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(B) discuss Geographic Information Systems and Global Positioning Systems applications	(i) discuss Geographic Information Systems applications
(7) The student uses information technology resources specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(B) discuss Geographic Information Systems and Global Positioning Systems applications	(ii) discuss Global Positioning Systems applications

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student uses information technology resources specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(C) use computer-based equipment	(i) use computer-based equipment
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(A) identify the use and application of small engines and their components	(i) identify the use of small engines
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(A) identify the use and application of small engines and their components	(ii) identify the application of small engines
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(A) identify the use and application of small engines and their components	(iii) identify [small engines'] components
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(B) identify the components of electrical-electronic systems	(i) identify the components of electrocal-electronic systems
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(C) demonstrate awareness of engine designs, components, and applications	(i) demonstrate awareness of engine designs
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(C) demonstrate awareness of engine designs, components, and applications	(ii) demonstrate awareness of engine components

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(C) demonstrate awareness of engine designs, components, and applications	(iii) demonstrate awareness of engine applications
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(D) identify and use engine measuring tools and test equipment	(i) identify engine meausring tools
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(D) identify and use engine measuring tools and test equipment	(ii) identify engine test equipment
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(D) identify and use engine measuring tools and test equipment	(iii) use engine measuring tools
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(D) identify and use engine measuring tools and test equipment	(iv) use engine test equipment
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(E) use tools used in the operation, maintenance, and repair of small engines	(i) use tools used in the operation of small engines
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(E) use tools used in the operation, maintenance, and repair of small engines	(ii) use tools used in the maintenance of small engines

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(E) use tools used in the operation, maintenance, and repair of small engines	(iii) use tools in the repair of small engines
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(F) compare and contrast the characteristics of two- and four-cycle engines	(i) compare and contrast the characteristics of two- and four-cycle engines
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(G) identify and discuss the functions of the major small engine components	(i) identify the functions of the major small engine components
(8) The student demonstrates an understanding of technical knowledge and skills of small engine technology. The student is expected to:	(G) identify and discuss the functions of the major small engine components	(ii) discuss the functions of the major small engine components
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(A) troubleshoot and repair small engines	(i) troubleshoot small engines
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(A) troubleshoot and repair small engines	(ii) repair small engines
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(B) assess the proper fuel mixtures and analyze the efficiency of various fuels used in small engines	(i) assess the proper fuel mixtures used in small engines

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(B) assess the proper fuel mixtures and analyze the efficiency of various fuels used in small engines	(ii) analyze the efficiency of various fuels used in small engines
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) distinguish between valve arrangement positions and analyze valve timing with respect to crankshaft rotation	(i) distinguish between valve arrangement positions
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) distinguish between valve arrangement positions and analyze valve timing with respect to crankshaft rotation	(ii) analyze valve timing with respect to crankshaft rotation
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(i) perform preventative maintenance
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(ii) service engine lubrication systems and associated fluids and filters
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(iii) service cooling systems and associated fluids and filters
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(iv) service starting systems and associated fluids and filters

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(v) service fuel systems and associated fluids and filters
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(vi) service ignition systems and associated fluids and filters
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(i) perform routine installations on small engines using testing tools
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(ii) perform routine inspections on small engines using testing tools
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(iii) perform routine adjustments on small engines using testing tools
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(iv) perform routine maintenance on small engines using testing tools
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(v) perform routine installations on small engines equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(vi) perform routine inspections on small engines using equipment
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(vii) perform routine adjustments on small engines using equipment
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform routine installations, inspections, adjustments, and maintenance on small engines using testing tools and equipment	(viii) perform routine maintenance on small engines using equipment
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) demonstrate knowledge of electrical testing tools and equipment commonly used in small engine maintenance	(i) demonstrate knowledge of electrical testing tools commonly used in small engine maintenance
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) demonstrate knowledge of electrical testing tools and equipment commonly used in small engine maintenance	(ii) demonstrate knowledge of equipment commonly used in small engine maintenance
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) perform measurements using precision instruments	(i) perform measurements using precision instruments
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(H) inspect and measure small engine parts for wear tolerances	(i) inspect small engine parts for wear tolerances

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(H) inspect and measure small engine parts for wear tolerances	(ii) measure small engine parts for wear tolerances
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) explain the relationship between an electric current and magnetic fields in ignition, charging, and starting systems	(i) explain the relationship between an electric current and magnetic fields in ignition systems
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) explain the relationship between an electric current and magnetic fields in ignition, charging, and starting systems	(ii) explain the relationship between an electric current and magnetic fields in charging systems
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) explain the relationship between an electric current and magnetic fields in ignition, charging, and starting systems	(iii) explain the relationship between an electric current and magnetic fields in starting systems
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) analyze the effects of heating and cooling on small engines	(i) analyze the effects of heating on small engines
(9) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) analyze the effects of heating and cooling on small engines	(ii) analyze the effects of cooling on small engines

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.446. Small Engine Technology II (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 10-12. Prerequisite: Small Engine Technology. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Small Engine Technology II includes advanced knowledge of the function, diagnosis, and service of the systems and components of all types of small engines such as outdoor power equipment, motorcycles, generators, and irrigation engines. This course is designed to provide hands-on and practical application for employment in the small engine technology industry. Instruction includes the repair and service of cooling, air, fuel, lubricating, electrical, ignition, and mechanical systems and small engine overhauls. In addition, students will receive instruction in safety, academic, and leadership skills as well as career opportunities.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in the small engine technology industry	(i) identify career development opportunities in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in the small engine technology industry	(ii) identify entrepreneurship opportunities in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify careers in the small engine technology industry	(i) identify careers in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(i) apply competencies related to resources in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(ii) apply competencies related to information in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(iii) apply competencies related to interpersonal skills in the small engine technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(iv) apply competencies related to problem solving in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(v) apply competencies related to critical thinking in the small engine technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the small engine technology industry	(vi) apply competencies related to systems of operation in the small engine technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(i) demonstrate skills of personal health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(ii) demonstrate skills of occupational health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(iii) demonstrate skills of personal safety in the workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(iv) demonstrate skills of occupational health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(v) demonstrate knowledge of personal health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(vi) demonstrate knowledge of occupational health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(vii) demonstrate knowledge of personal safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate skills and knowledge of personal and occupational health and safety in the workplace	(viii) demonstrate knowledge of occupational safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discus response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop personal objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop personal strategies as part of a plan for future career opportunities

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop personal goals as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop personal objectives as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop personal strategies as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(I) prepare a resume	(i) prepare a resume
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(J) demonstrate job interview skills	(i) demonstrate job interview skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(i) describe ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(ii) demonstrate ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(iii) apply ethical responsibilities for appropriate workplace conduct

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(iv) describe legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(v) demonstrate legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(vi) apply legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(i) demonstrate proper etiquette
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(ii) demonstrate proper behavior
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) demonstrate appropriate personal appearance and hygiene	(i) demonstrate appropriate personal appearance
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) demonstrate appropriate personal appearance and hygiene	(ii) demonstrate appropriate personal hygiene
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) demonstrate effective written and oral communication skills and employ effective listening skills	(i) demonstrate effective written communication skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) demonstrate effective written and oral communication skills and employ effective listening skills	(ii) demonstrate effective oral communication skills

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) demonstrate effective written and oral communication skills and employ effective listening skills	(iii) employ effective listening skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) demonstrate advanced technical writing and preparation skills	(i) demonstrate advanced technical writing skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) demonstrate advanced technical writing and preparation skills	(ii) demonstrate technical preparation skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations	(i) demonstrate effective speaking skills through prepared oral presentations
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations	(ii) demonstrate effective speaking skills through extemporaneous oral presentations
(3) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(i) participate in the planning of leadership development activities
(3) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(ii) participate in the development of leadership development activities
(3) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(iii) participate in the planning of skills development activities

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(A) participate in the planning and development of leadership and skill development activities such as conducting effective meetings, team building activities, and strategic planning	(iv) participate in the development of skills development activities
(3) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(B) use resources available through an organizations such as a career and technical student organizations to develop employability skills	(i) use resources available through an organization to develop employability skills
(3) The student participates in opportunities for leadership development and personal growth. The student is expected to:	(C) record individual progress to document achievements	(i) record individual progress to document achievements
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(A) describe emerging technologies and their impact on the small engine technology industry	(i) describe emerging technologies
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(A) describe emerging technologies and their impact on the small engine technology industry	(ii) describe [emerging technologies'] impact on the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) compare and contrast issues affecting the small engine technology industry related to employment, safety, environmental , and regulatory issues	(i) compare and contrast issues affecting the small engine technology industry related to employement
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) compare and contrast issues affecting the small engine technology industry related to employment, safety, environmental , and regulatory issues	(ii) compare and contrast issues affecting the small engine technology industry related to safety

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) compare and contrast issues affecting the small engine technology industry related to employment, safety, environmental , and regulatory issues	(iii) compare and contrast issues affecting the small engine technology industry related to environmental issues
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(B) compare and contrast issues affecting the small engine technology industry related to employment, safety, environmental , and regulatory issues	(iv) compare and contrast issues affecting the small engine technology industry related to regulatory issues
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(i) describe local market conditions that impact the application of the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(ii) describe local market conditions that impact the need of the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(iii) describe the local market practices that impact the application of the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(iv) describe the local market practices that impact the need of the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(v) describe the global market conditions that impact the application of the small engine technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(vi) describe the global market conditions that impact the need of the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(vii) describe the global market practices that impact the application of the small engine technology industry
(4) The student describes the historical, current, and future significance of the small engine technology industry. The student is expected to:	(C) describe local and global market conditions and practices that impact the application and need of the small engine technology industry	(viii) describe the global market practices that impact the need of the small engine technology industry
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(i) develop preventative maintenance plans to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(ii) develop preventative maintenance plans to keep tools operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(iii) develop preventative maintenance plans to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(iv) develop preventative maintenance systems to keep facility operating safely and properly

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(v) develop preventative maintenance systems to keep tools operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(vi) develop preventative maintenance systems to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(vii) evaluate preventative maintenance plans to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(viii) evaluate preventative maintenance plans to keep tools operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(ix) evaluate preventative maintenance plans to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(x) evaluate preventative maintenance systems to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xi) evaluate preventative maintenance systems to keep tools operating safely and properly

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xii) evaluate preventative maintenance systems to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xiii) perform preventative maintenance plans to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xiv) perform preventative maintenance plans to keep tools operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xv) perform preventative maintenance plans to keep equipment operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xvi) perform preventative maintenance systems to keep facility operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xvii) perform preventative maintenance systems to keep tools operating safely and properly
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(A) develop, evaluate, and perform preventative maintenance plans and systems to keep facility, tools, and equipment operating safely and properly	(xviii) perform preventative maintenance systems to keep equipment operating safely and properly

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(B) complete repair orders and paperwork related to the small engine technology industry to properly document work needed or completed such as ensuring proper customer communication and authorization	(i) complete repair orders
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(B) complete repair orders and paperwork related to the small engine technology industry to properly document work needed or completed such as ensuring proper customer communication and authorization	(ii) complete paperwork related to the small engine technology industry to properly document work needed or completed
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(C) estimate parts and labor costs on repair orders for small engine repair	(i) estimate parts costs on repair orders for small engine repair
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(C) estimate parts and labor costs on repair orders for small engine repair	(ii) estimate labor costs on repair orders for small engine repair
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(D) describe common business management principles such as technician productivity, shop efficiency, and profit margins	(i) describe common business management principles
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(E) locate, read, and interpret service repair information such as small engine schematics, charts, and technical bulletins	(i) locate service repair information
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(E) locate, read, and interpret service repair information such as small engine schematics, charts, and technical bulletins	(ii) read service repair information

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student identifies the skills used to maintain and operate a small engine maintenance facility. The student is expected to:	(E) locate, read, and interpret service repair information such as small engine schematics, charts, and technical bulletins	(iii) interpret service repair information
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(A) use a variety of resources to research, trouble shoot, and diagnosis concerns and failures	(i) use a variety of resources to research concerns
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(A) use a variety of resources to research, trouble shoot, and diagnosis concerns and failures	(ii) use a variety of resources to troubleshoot concerns
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(A) use a variety of resources to research, trouble shoot, and diagnosis concerns and failures	(iii) use a variety of resources to diagnose concerns
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(A) use a variety of resources to research, trouble shoot, and diagnosis concerns and failures	(iv) use a variety of resources to research failures
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(A) use a variety of resources to research, trouble shoot, and diagnosis concerns and failures	(v) use a variety of resources to troubleshoot failures
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(A) use a variety of resources to research, trouble shoot, and diagnosis concerns and failures	(vi) use a variety of resources to diagnose failures

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies appropriate research methods to small engine technology topics. The student is expected to:	(B) describe the application of the scientific method of research to small engine technology such as identifying a problem, establishing a procedure, performing direct and indirect observation, collecting and interpreting data, and drawing conclusions by verifying the complaint, determining the related symptoms, analyzing the symptoms, isolating the trouble, correcting the trouble, and checking for proper operation	(i) describe the application of the scientific method of research to small engine technology
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(A) develop project proposals	(i) develop project proposals
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(B) develop and maintain records appropriate to the small engine technology industry	(i) develop records appropriate to the small engine technology industry
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(B) develop and maintain records appropriate to the small engine technology industry	(ii) maintain records appropriate to the small engine technology industry
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, and charts	(i) collect data
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, and charts	(ii) organize date in graphs

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, and charts	(iii) organize data in tables
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, and charts	(iv) organize data in charts
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, and charts	(i) analyze data from graphs
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, and charts	(ii) analyze data from tables
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, and charts	(iii) analyze data from charts
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, and charts	(iv) interpret data from graphs
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, and charts	(v) intrepret data from tables

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, and charts	(vi) interpret data from charts
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(E) use mathematical formulas to perform engine calculations such as calculating cylinder volume, engine performance and enhancement, engine displacement, combustion chamber volume, compressed head gasket volume, piston and deck height, piston dish volume, dome volume, cylinder volume, compression ratio, and horsepower	(i) use mathematical formulas to perform engine calculations
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) use mathematical formulas to perform electrical calculations such as calculating and measuring electrical resistance, current, and voltage in engines	(i) use mathematical formulas to perform electrical calculations
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(G) apply Ohm's law to small engine electrical circuits using a digital multimeter	(i) apply Ohm's law to small engine electrical circuits using a digital multimeter
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(H) apply electrical principles to diagnose and repair small engine components such as generators, electric motors, power supplies, electronic amplifiers, relays, and circuits	(i) apply electrical principles to diagnose small engine components
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(H) apply electrical principles to diagnose and repair small engine components such as generators, electric motors, power supplies, electronic amplifiers, relays, and circuits	(ii) apply electrical principles to repair small engine components

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student uses information technology tools specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(A) use personal management software such as email and Internet applications and word-processing, database, spreadsheet, presentation, collaborative, groupware, and virtual meeting software	(i) use personal management software
(8) The student uses information technology tools specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(B) discuss Geographic Information Systems and Global Positioning Systems applications	(i) discuss Geographic Information Systems applications
(8) The student uses information technology tools specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(B) discuss Geographic Information Systems and Global Positioning Systems applications	(ii) discuss Global Positioning Systems applications
(8) The student uses information technology tools specific to the small engine technology industry to access, manage, integrate, and create information. The student is expected to:	(C) use other computer-based equipment	(i) use other computer-based equipment
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(A) demonstrate the use and application of small engines and components	(i) demonstrate the use of small engines
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(A) demonstrate the use and application of small engines and components	(ii) demonstrate the use of [small engine] components

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(A) demonstrate the use and application of small engines and components	(iii) demonstrate the application of small engines
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(A) demonstrate the use and application of small engines and components	(iv) demonstrate the application of [small engine] components
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(B) demonstrate the components of electrical-electronic systems	(i) demonstrate the components of electrical-electronic systems
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(C) demonstrate knowledge of engine designs, components, and applications	(i) demonstrate knowledge of engine designs
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(C) demonstrate knowledge of engine designs, components, and applications	(ii) demonstrate knowledge of engine components
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(C) demonstrate knowledge of engine designs, components, and applications	(iii) demonstrate knowledge of engine applications
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(D) demonstrate the correct use of engine measuring tools and test equipment	(i) demonstrate the correct use of engine measuring tools

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student demonstrates advanced technical knowledge and skills of small engine technology. The student is expected to:	(D) demonstrate the correct use of engine measuring tools and test equipment	(ii) demonstrate the correct use of engine test equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(A) troubleshoot and repair small engines	(i) troubleshoot small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(A) troubleshoot and repair small engines	(ii) repair small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(B) perform preventative maintenance on small engines	(i) perform preventative maintenance on small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) assess the proper fuel mixtures and analyze the efficiency of various fuels used in small engines	(i) assess the proper fuel mixtures of various fuels used in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) assess the proper fuel mixtures and analyze the efficiency of various fuels used in small engines	(ii) analyze the efficiency of various fuels used in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) distinguish between valve arrangement positions and analyze valve timing with respect to crankshaft rotation	(i) distinguish between valve arrangement positions

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) distinguish between valve arrangement positions and analyze valve timing with respect to crankshaft rotation	(ii) analyze valve timing with respect to crankshaft rotation
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(i) perform preventative maintenance
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(ii) service engine lubrication systems and associated fluids and filters
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(iii) service cooling systems and associated fluids and filters
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(iv) service starting systems and associated fluids and filters
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(v) service fuel systems and associated fluids and filters
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) perform preventative maintenance and service engine lubrication, cooling, starting, fuel, and ignition systems and associated fluids and filters	(vi) service ignition systems and associated fluids and filters

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(i) perform routine installations on small engine testing tools
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(ii) perform routine inspections on small engine testing tools
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(iii) perform routine adjustments on small engine testing tools
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(iv) perform routine maintenance on small engine testing tools
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(v) perform routine installations on small engine equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(vi) perform routine inspections on small engine equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(vii) perform routine adjustments on small engine equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) perform routine installations, inspections, adjustments, and maintenance on small engine testing tools and equipment	(viii) perform routine maintenance on small engine equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) demonstrate knowledge of electrical testing tools and equipment commonly used in small engine maintenance such as digital multimeters	(i) demonstrate knowledge of electrical testing tools commonly used in small engine maintenance
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) demonstrate knowledge of electrical testing tools and equipment commonly used in small engine maintenance such as digital multimeters	(ii) demonstrate knowledge of electrical equipment commonly used in small engine maintenance
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(H) perform measurements using precision instruments such as micrometers, dial indicators, and Vernier calipers	(i) perform measurements using precision instruments
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) inspect and measure small engine parts for wear tolerances and compare to specifications	(i) inspect small engine parts for wear tolerances
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) inspect and measure small engine parts for wear tolerances and compare to specifications	(ii) measure small engine parts for wear tolerances
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) inspect and measure small engine parts for wear tolerances and compare to specifications	(iii) compare to specifications

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) demonstrate the relationship between an electric current and magnetic fields in ignition, starting, and charging systems with the use of test equipment	(i) demonstrate the relationship between an electric current and magnetic fields in ignition systems with the use of test equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) demonstrate the relationship between an electric current and magnetic fields in ignition, starting, and charging systems with the use of test equipment	(ii) demonstrate the relationship between an electric current and magnetic fields in starting systems with the use of test equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) demonstrate the relationship between an electric current and magnetic fields in ignition, starting, and charging systems with the use of test equipment	(iii) demonstrate the relationship between an electric current and magnetic fields in charging systems with the use of test equipment
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(K) analyze the effects of heating and cooling on small engines	(i) analyze the effects of heating on small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(K) analyze the effects of heating and cooling on small engines	(ii) analyze the effects of cooling on small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(L) explain the thermophysical properties of fluids commonly used in small engine systems	(i) explain the thermophysical properties of fluids commonly used in small engine systems
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(M) explain the laws of thermodynamics	(i) explain the laws of thermodynamics

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) explain torque, horsepower, and heat energy transfer in small engines	(i) explain torque in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) explain torque, horsepower, and heat energy transfer in small engines	(ii) explain horsepower in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) explain torque, horsepower, and heat energy transfer in small engines	(iii) explain heat transfer in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(O) calculate speed and acceleration in small engines	(i) calculate speed in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(O) calculate speed and acceleration in small engines	(ii) calculate acceleration in small engines
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(P) compare and contrast efficiency of various engine sizes and types	(i) compare and contrast efficiency of various engine sizes
(10) The student demonstrates advanced technical knowledge and skills in simulated or actual work situations. The student is expected to:	(P) compare and contrast efficiency of various engine sizes and types	(ii) compare and contrast efficiency of various engine types

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.447. Automotive Basics (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Automotive Basics includes knowledge of the basic automotive systems and the theory and principles of the components that make up each system and how to service these systems. Automotive Basics includes applicable safety and environmental rules and regulations. In Automotive Basics, students will gain knowledge and skills in the repair, maintenance, and servicing of vehicle systems. This study allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses, other personal protective equipment (PPE), and safety data sheets (SDS)	(i) demonstrate knowledge of the technical knowledge related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses, other personal protective equipment (PPE), and safety data sheets (SDS)	(ii) demonstrate knowledge of the technical skills related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses, other personal protective equipment (PPE), and safety data sheets (SDS)	(iii) demonstrate knowledge of the technical knowledge related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses, other personal protective equipment (PPE), and safety data sheets (SDS)	(iv) demonstrate knowledge of the technical skills related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology	(i) identify career opportunities, including entrepreneurship opportunities, for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology	(ii) identify employment opportunities, including entrepreneurship opportunities, for the field of automotive technology

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology	(iii) identify career opportunities, including internships for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology	(iv) identify employment opportunities, including internships for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology	(v) identify career opportunities, including industry-recognized certification requirements for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology	(vi) identify employment opportunities, including industry-recognized certification requirements for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(ii) demonstrate the principles of team concept related to citizenship

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iv) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(v) demonstrate the principles of team concept related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(vi) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(i) apply competencies related to resources in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(ii) apply competencies related to information in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(iii) apply competencies related to interpersonal skills in the automotive technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(iv) apply competencies related to problem solving in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(v) apply competencies related to critical thinking in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(vi) apply competencies related to systems of operation in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop strategies as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop personal goals as part of a plan for future educational opportunities

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop objectives as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop strategies as part of a plan for future educational opportunities
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(i) describe ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(ii) demonstrate ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(iii) apply ethical responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(iv) describe legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(v) demonstrate legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct	(vi) apply legal responsibilities for appropriate workplace conduct
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(i) demonstrate proper etiquette

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(ii) demonstrate proper behavior
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) demonstrate appropriate personal appearance and hygiene	(i) demonstrate appropriate personal appearance
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) demonstrate appropriate personal appearance and hygiene	(ii) demonstrate appropriate personal hygiene
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) demonstrate effective written and oral communication skills and employ effective listening skills	(i) demonstrate effective written communication skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) demonstrate effective written and oral communication skills and employ effective listening skills	(ii) demonstrate effective oral communication skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) demonstrate effective written and oral communication skills and employ effective listening skills	(iii) employ effective listening skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) demonstrate advanced technical writing and preparation skills	(i) demonstrate advanced technical writing skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) demonstrate advanced technical writing and preparation skills	(ii) demonstrate advanced technical preparation skills
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations	(i) demonstrate effective speaking skills through prepared oral presentations

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations	(ii) demonstrate effective speaking skills through extemporaneous oral presentations
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair	(i) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair	(ii) demonstrate effective written communication skills, including documenting on a repair order root cause of the failure
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair	(iii) demonstrate effective written communication skills, including documenting on a repair order corrective action to complete the repair
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(i) demonstrate mathematical skills in performing addition using decimals in the metric system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(ii) demonstrate mathematical skills in performing subtraction using decimals in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(iii) demonstrate mathematical skills in performing multiplication using decimals in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(iv) demonstrate mathematical skills in division using decimals in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(v) demonstrate mathematical skills in performing measurements using decimals in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(vi) demonstrate mathematical skills in performing addition using decimals in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(vii) demonstrate mathematical skills in performing subtraction using decimals in the U.S. standard system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(viii) demonstrate mathematical skills in performing multiplication using decimals in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(ix) demonstrate mathematical skills in performing division using decimals in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(x) demonstrate mathematical skills in performing measurements using decimals in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xi) demonstrate mathematical skills in performing addition using fractions in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xii) demonstrate mathematical skills in performing subtraction using fractions in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xiii) demonstrate mathematical skills in performing multiplication using fractions in the metric system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xiv) demonstrate mathematical skills in division using fractions in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xv) demonstrate mathematical skills in performing measurements using fractions in the metric system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xvi) demonstrate mathematical skills in performing addition using fractions in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xvii) demonstrate mathematical skills in performing subtraction using fractions in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xviii) demonstrate mathematical skills in performing multiplication using fractions in the U.S. standard system as appropriate
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xix) demonstrate mathematical skills in performing division using fractions in the U.S. standard system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xx) demonstrate mathematical skills in performing measurements using fractions in the U.S. standard system as appropriate
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(A) describe the eight major vehicle systems	(i) describe the eight major vehicle systems
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(B) locate, read, and interpret vehicle maintenance and service information	(i) locate vehicle maintenance information
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(B) locate, read, and interpret vehicle maintenance and service information	(ii) read vehicle maintenance information
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(B) locate, read, and interpret vehicle maintenance and service information	(iii) interpret vehicle maintenance information
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(B) locate, read, and interpret vehicle maintenance and service information	(iv) locate vehicle service information
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(B) locate, read, and interpret vehicle maintenance and service information	(v) read vehicle service information

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(B) locate, read, and interpret vehicle maintenance and service information	(vi) interpret vehicle service information
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(C) describe the basic and emerging vehicle power systems	(i) describe the basic vehicle power systems
(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:	(C) describe the basic and emerging vehicle power systems	(ii) describe the emerging vehicle power systems
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(i) demonstrate the proper way to safely use hand tools commonly employed in the maintenance of vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(ii) demonstrate the proper way to safely use power tools commonly employed in the maintenance of vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(iii) demonstrate the proper way to safely use equipment commonly employed in the maintenance vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(iv) demonstrate the proper way to safely use hand tools commonly employed in the repair of vehicles

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(v) demonstrate the proper way to safely use power tools commonly employed in the repair of vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(vi) demonstrate the proper way to safely use equipment commonly employed in the repair of vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(i) discuss the proper handling of environmentally hazardous materials used in servicing vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(ii) discuss the proper disposal of environmentally hazardous materials used in servicing vehicles
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(C) identify diagnostic tools and equipment	(i) identify diagnostic tools
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(C) identify diagnostic tools and equipment	(ii) identify diagnostic equipment
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(D) identify hand and shop tools and describe their proper usage	(i) identify hand tools

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(D) identify hand and shop tools and describe their proper usage	(ii) identify shop tools
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(D) identify hand and shop tools and describe their proper usage	(iii) describe [hand tools'] proper usage
(5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:	(D) identify hand and shop tools and describe their proper usage	(iv) describe [shop tools'] proper usage
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(A) demonstrate the procedures for ordering and locating parts	(i) demonstrate the procedures for ordering parts
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(A) demonstrate the procedures for ordering and locating parts	(ii) demonstrate the procedures for locating parts
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(B) demonstrate an understanding of the operation theory of internal combustion engines	(i) demonstrate an understanding of the operation theory of internal combustion engines
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) identify brake system components, including drum, disc, power assist, and anti-lock braking system (ABS)	(i) identify brake system components, including drum

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) identify brake system components, including drum, disc, power assist, and anti-lock braking system (ABS)	(ii) identify brake system components, including disc
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) identify brake system components, including drum, disc, power assist, and anti-lock braking system (ABS)	(iii) identify brake system components, including power assist
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(C) identify brake system components, including drum, disc, power assist, and anti-lock braking system (ABS)	(iv) identify brake system components, including anti-lock braking system (ABS)
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(D) demonstrate an understanding of basic concepts related to hydraulic brakes systems, including Pascal's Theory of Hydraulics	(i) demonstrate an understanding of basic concepts related to hydraulic brakes systems, including Pascal's Theory of Hydraulics
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of basic concepts related to electrical and electronic systems such as Ohm's law, voltage drop, resistance, amperage, voltage, and wiring diagram symbols	(i) demonstrate an understanding of basic concepts related to electrical systems
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of basic concepts related to electrical and electronic systems such as Ohm's law, voltage drop, resistance, amperage, voltage, and wiring diagram symbols	(ii) demonstrate an understanding of basic concepts related to electronic systems
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) identify air-conditioning, heating, and accessory system components	(i) identify air-conditioning system components

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) identify air-conditioning, heating, and accessory system components	(ii) identify heating system components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(F) identify air-conditioning, heating, and accessory system components	(iii) identify accessory system components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(i) inspect chassis components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(ii) inspect chassis systems
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(iii) inspect power train components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(iv) inspect power train systems
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(v) identify chassis components

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(vi) identify chassis systems
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(vii) identify power train components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(G) inspect and identify chassis and power train components and systems	(viii) identify power train systems
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(H) identify cooling and lubrication system components	(i) identify cooling system components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(H) identify cooling and lubrication system components	(ii) identify lubrication system components
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) identify steering and suspension components, including power steering	(i) identify steering components, including power steering
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(I) identify steering and suspension components, including power steering	(ii) identify suspension components, including power steering

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating	(i) identify tire sidewall data information
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(J) identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating	(ii) interpret tire sidewall data information
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(K) compare the preventative maintenance schedules for a variety of vehicles based on their use	(i) compare the preventative maintenance schedules for a variety of vehicles based on their use
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(L) perform a preventative maintenance inspection	(i) perform a preventative maintenance inspection
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(M) explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures	(i) explain a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures according to manufacturer recommended procedures
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(M) explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures	(ii) perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures according to manufacturer recommended procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(i) perform regular audits to maintain compliance with safety regulations
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(ii) perform regular audits to maintain compliance with health regulations
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iii) perform regular audits to maintain compliance with environmental regulations
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iv) perform regular inspections to maintain compliance with safety regulations
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(v) perform regular inspections to maintain compliance with health regulations
(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:	(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(vi) perform regular inspections to maintain compliance with environmental regulations

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.449. Automotive Technology I: Maintenance and Light Repair (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Recommended prerequisite: Automotive Basics. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Automotive Technology I : Maintenance and Light Repair includes knowledge of the major automotive systems and the principles of diagnosing and servicing these systems. This course includes applicable safety and environmental rules and regulations. In Automotive Technology I : Maintenance and Light Repair, students will gain knowledge and skills in the repair, maintenance, and diagnosis of vehicle systems. This study will allow students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(i) demonstrate knowledge of the technical knowledge related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(ii) demonstrate knowledge of the technical knowledge related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(iii) demonstrate knowledge of the technical skills related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(vi) demonstrate knowledge of the technical skills related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology	(i) identify career opportunities, including entrepreneurship opportunities for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology	(ii) identify career opportunities, including internships for the field of automotive technology

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology	(iii) identify employment opportunities, including entrepreneurship opportunities for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology	(iv) identify employment opportunities, including internships for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify career and employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology	(v) industry-recognized certification requirements for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(ii) demonstrate the principles of team concept related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iv) demonstrate the principles of group participation related to career preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(v) demonstrate the principles of team concept related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(vi) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(i) apply competencies related to resources in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(ii) apply competencies related to information in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(iii) apply competencies related to interpersonal skills in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(iv) apply competencies related to problem solving in the automotive technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(v) apply competencies related to critical thinking in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(vi) apply competencies related to systems of operation in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop strategies as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop personal goals as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop objectives as part of a plan for future educational opportunities

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop strategies as part of a plan for future educational opportunities
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair	(i) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair	(ii) demonstrate effective written communication skills, including documenting on a repair order the root cause of the failure
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair	(iii) demonstrate effective written communication skills, including documenting on a repair order corrective action to complete the repair
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(i) demonstrate mathematical skills in performing addition using decimals in the metric system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(ii) demonstrate mathematical skills in performing subtraction using decimals in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(iii) demonstrate mathematical skills in performing multiplication using decimals in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(iv) demonstrate mathematical skills in division using decimals in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(v) demonstrate mathematical skills in performing measurements using decimals in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(vi) demonstrate mathematical skills in performing addition using decimals in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(vii) demonstrate mathematical skills in performing subtraction using decimals in the U.S. standard system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(viii) demonstrate mathematical skills in performing multiplication using decimals in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(ix) demonstrate mathematical skills in performing division using decimals in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(x) demonstrate mathematical skills in performing measurements using decimals in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xi) demonstrate mathematical skills in performing addition using fractions in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xii) demonstrate mathematical skills in performing subtraction using fractions in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xiii) demonstrate mathematical skills in performing multiplication using fractions in the metric system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xiv) demonstrate mathematical skills in division using fractions in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xv) demonstrate mathematical skills in performing measurements using fractions in the metric system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xvi) demonstrate mathematical skills in performing addition using fractions in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xvii) demonstrate mathematical skills in performing subtraction using fractions in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xviii) demonstrate mathematical skills in performing multiplication using fractions in the U.S. standard system as appropriate
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xix) demonstrate mathematical skills in performing division using fractions in the U.S. standard system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xx) demonstrate mathematical skills in performing measurements using fractions in the U.S. standard system as appropriate
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(A) locate the manufacturer recommended preventative maintenance schedule	(i) locate the manufacturer recommended preventative maintenance schedule
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(i) perform a preventative maintenance inspection of vehicle systems, including engine systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(ii) perform a preventative maintenance inspection of vehicle systems, including fuel systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(iii) perform a preventative maintenance inspection of vehicle systems, including lubrication systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(iv) perform a preventative maintenance inspection of vehicle systems, including cooling systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(v) perform a preventative maintenance inspection of vehicle systems, including electrical systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(vi) perform a preventative maintenance inspection of vehicle systems, including suspension systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(vii) perform a preventative maintenance inspection of vehicle systems, including drive train systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	(viii) perform a preventative maintenance inspection of vehicle systems, including air-conditioning systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(C) describe the function of the automotive chassis components , including braking, steering, transmission, drive train, and suspension systems	(i) describe the function of the automotive chassis components , including braking systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(C) describe the function of the automotive chassis components , including braking, steering, transmission, drive train, and suspension systems	(ii) describe the function of the automotive chassis components , including steering systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(C) describe the function of the automotive chassis components , including braking, steering, transmission, drive train, and suspension systems	(iii) describe the function of the automotive chassis components , including transmission systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(C) describe the function of the automotive chassis components , including braking, steering, transmission, drive train, and suspension systems	(iv) describe the function of the automotive chassis components , including drive train systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(C) describe the function of the automotive chassis components , including braking, steering, transmission, drive train, and suspension systems	(v) describe the function of the automotive chassis components , including suspension systems
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and technical bulletins	(i) locate service repair information
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and technical bulletins	(ii) read service repair information
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and technical bulletins	(iii) interpret service repair information
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(E) use published specifications to diagnose component wear and determine necessary repairs	(i) use published specifications to diagnose component wear

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(E) use published specifications to diagnose component wear and determine necessary repairs	(ii) use published specifications to determine necessary repairs
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(F) identify the appropriate oil viscosity and capacity	(i) identify the appropriate oil viscosity
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(F) identify the appropriate oil viscosity and capacity	(ii) identify the appropriate capacity
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(G) verify operation of the instrument panel engine warning indicators	(i) verify operation of the instrument panel engine warning indicators
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(H) inspect engine assembly and document findings of fuel, oil, coolant, and other leaks	(i) inspect engine assembly
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(H) inspect engine assembly and document findings of fuel, oil, coolant, and other leaks	(ii) document findings of fuel leaks
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(H) inspect engine assembly and document findings of fuel, oil, coolant, and other leaks	(iii) document findings of oil leaks

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(H) inspect engine assembly and document findings of fuel, oil, coolant, and other leaks	(iv) document findings of coolant leaks
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(H) inspect engine assembly and document findings of fuel, oil, coolant, and other leaks	(v) document findings of other leaks
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(i) perform common fastener repair, including removing broken bolt
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(ii) perform thread repair, including removing broken bolt
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(iii) perform common fastener repair, including restoring internal threads
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(iv) perform thread repair, including restoring internal threads

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(v) perform common fastener, repair including restoring external threads
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(vi) perform thread repair, including restoring external threads
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(vii) perform common fastenerrepair, including repairing internal threads with thread insert
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(viii) perform thread repair, including repairing internal threads with thread insert
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(i) inspect drive belts
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(ii) inspect tensioners

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(iii) inspect pulleys
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(iv) replace drive belts
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(v) replace tensioners
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(vi) replace pulleys
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(vii) adjust drive belts
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(viii) adjust tensioners
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(J) inspect, replace, and adjust drive belts, tensioners, and pulleys	(xiv) adjust pulleys

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(K) perform engine oil and filter change	(i) perform engine oil change
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(K) perform engine oil and filter change	(ii) perform filter change
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(L) explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures	(i) explain a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(L) explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures	(ii) explain a "jump-start" of a vehicle using a booster battery or an auxiliary power supply according to manufacturer recommended procedures
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	(L) explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures	(iii) perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(i) demonstrate the proper use of hand tools commonly employed in the maintenance of vehicles

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(ii) demonstrate the proper use of hand tools commonly employed in the repair of vehicles
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(iii) demonstrate the proper use of power tools commonly employed in the maintenance of vehicles
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(iv) demonstrate the proper use of power tools commonly employed in the repair of vehicles
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(v) demonstrate the proper use of equipment commonly employed in the maintenance of vehicles
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(vi) demonstrate the proper use of equipment commonly employed in the repair of vehicles
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(i) discuss the proper handling of environmentally hazardous materials used in servicing vehicles

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(ii) discuss the proper disposal of environmentally hazardous materials used in servicing vehicles
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(A) explains Pascal's Theory of Hydraulics as it relates to the brake system	(i) explains Pascal's Theory of Hydraulics as it relates to the brake system
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(i) inspect brake system components, including master cylinder for external leaks
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(ii) inspect brake system components, including master cylinder for proper operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(iii) inspect brake system components, including brake lines for external leaks
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(iv) inspect brake system components, including brake lines for proper operation

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(v) inspect brake system components, including wheel cylinders for external leaks
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(vi) inspect brake system components, including wheel cylinders for proper operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(vii) inspect brake system components, including calipers for external leaks
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(viii) inspect brake system components, including calipers for proper operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(ix) inspect brake system components, including flexible hoses for external leaks
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(x) inspect brake system components, including flexible hoses for proper operation

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(xi) inspect brake system components, including flexible fittings for external leaks
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	(xii) inspect brake system components, including flexible fittings for proper operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(C) inspect, measure, and refinish brake drum diameter to manufacturer specifications	(i) inspect brake drum diameter
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(C) inspect, measure, and refinish brake drum diameter to manufacturer specifications	(ii) measure brake drum diameter
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(C) inspect, measure, and refinish brake drum diameter to manufacturer specifications	(iii) refinish brake drum diameter to manufacturer specifications
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(i) remove brake shoes
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(ii) clean brake shoes

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(iii) inspect brake shoes
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(iv) remove springs
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(v) clean springs
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(vi) inspect springs
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(vii) remove pins
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(viii) clean pins
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(ix) inspect pins

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(x) remove clips
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xi) clean clips
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xii) inspect clips
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xiii) remove levers
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xiv) clean levers
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xv) inspect levers
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xvi) remove adjusters/self-adjusters

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xvii) clean adjusters/self-adjusters
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xviii) inspect adjusters/self-adjusters
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xix) remove other related brake hardware
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xx) clean other related brake hardware
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xxi) inspect other related brake hardware
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xxii) remove backing support plates
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xxiii) clean backing support plates

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	(xxiv) inspect backing support plates
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	(i) lubricate brake shoes
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	(ii) reassemble brake shoes
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	(iii) pre-adjust brake shoes
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	(iv) lubricate parking brake
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	(v) reassemble parking brake
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	(vi) pre-adjust parking brake

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(i) remove pads
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(ii) inspect [pads] for damage or wear
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(iii) clean pads
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(iv) lubricate pads
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(v) reassemble pads
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(vi) remove retaining hardware

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(vii) inspect [retaining hardware] for damage or wear
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(viii) clean retaining hardware
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(ix) lubricate retaining hardware
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(x) reassemble retaining hardware
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xi) remove caliper assembly
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xii) inspect [caliper assembly] for damage or wear

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xiii) clean caliper assembly
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xiv) lubricate caliper assembly
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xv) reassemble caliper assembly
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xvi) remove mounting components
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xvii) inspect [mounting components] for damage or wear
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xix) clean mounting components

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xx) lubricate mounting components
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	(xxi) reassemble mounting components
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(G) refinish a rotor on and off a vehicle and measure final rotor thickness with manufacturer specifications	(i) refinish a rotor on a vehicle with manufacturer specifications
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(G) refinish a rotor on and off a vehicle and measure final rotor thickness with manufacturer specifications	(ii) refinish a rotor off a vehicle with manufacturer specifications
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(G) refinish a rotor on and off a vehicle and measure final rotor thickness with manufacturer specifications	(iii) measure final rotor thickness with manufacturer specifications
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(H) retract and re-adjust caliper piston on an integral parking brake system	(i) retract caliper piston on an integral parking brake system
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(H) retract and re-adjust caliper piston on an integral parking brake system	(ii) re-adjust caliper piston on an integral parking brake system

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(I) check brake pedal travel with, and without, engine running to verify proper power booster operation	(i) check brake pedal travel with engine running to verify proper power booster operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(I) check brake pedal travel with, and without, engine running to verify proper power booster operation	(ii) check brake pedal travel without engine running to verify proper power booster operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(J) check brake pedal travel with, and without, engine running to verify proper power booster operation	(i) check brake pedal travel with engine running to verify proper power booster operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(J) check brake pedal travel with, and without, engine running to verify proper power booster operation	(ii) check brake pedal travel without engine running to verify proper power booster operation
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(K) check vacuum supply from a manifold or auxiliary pump to vacuum-type brake power booster	(i) check vacuum supply from a manifold or auxiliary pump to vacuum-type brake power booster
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(L) describe the operation of a regenerative braking system	(i) describe the operation of a regenerative braking system
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity as defined by Ohm's Law	(i) demonstrate knowledge of electrical/electronic series circuits using principles of electricity as defined by Ohm's Law

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity as defined by Ohm's Law	(ii) demonstrate knowledge of parallel circuits using principles of electricity as defined by Ohm's Law
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity as defined by Ohm's Law	(iii) demonstrate knowledge of series-parallel circuits using principles of electricity as defined by Ohm's Law
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(B) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop, current flow, resistance, and ground circuits	(i) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(B) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop, current flow, resistance, and ground circuits	(ii) demonstrate proper use of a digital multimeter (DMM) when measuring voltage drop
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(B) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop, current flow, resistance, and ground circuits	(iii) demonstrate proper use of a digital multimeter (DMM) when measuring current flow
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(B) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop, current flow, resistance, and ground circuits	(iv) demonstrate proper use of a digital multimeter (DMM) when measuring resistance
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(B) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop, current flow, resistance, and ground circuits	(v) demonstrate proper use of a digital multimeter (DMM) when measuring ground circuits

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(C) use wiring diagrams to trace electrical/electronic circuits	(i) use wiring diagrams to trace electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(i) demonstrate knowledge of the causes [of] shorts in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(ii) demonstrate knowledge of the causes [of] grounds in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(iii) demonstrate knowledge of the causes [of] opens in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(iv) demonstrate knowledge of the causes [of] resistance problems in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(v) demonstrate knowledge of the effects from shorts in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(vi) demonstrate knowledge of the effects from grounds in electrical/electronic circuits

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(vii) demonstrate knowledge of the effects from opens in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	(ix) demonstrate knowledge of the effects from resistance problems in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(E) confirm proper battery capacity for vehicle application and perform battery capacity test	(i) confirm proper battery capacity for vehicle application
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(E) confirm proper battery capacity for vehicle application and perform battery capacity test	(ii) perform battery capacity test
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(F) perform battery state-of-charge test	(i) perform battery state-of-charge test
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(i) inspect the battery

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(ii) clean the battery
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(iii) fill battery cells
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(iv) check battery cables
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(v) check battery connectors
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(vi) check battery clamps
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	(vii) check battery hold-downs
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test	(i) perform starter current draw test

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(i) inspect fusible links
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(ii) test fusible links
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(iii) inspect circuit breakers
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(iv) test circuit breakers
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(v) inspect fuses
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(vi) test fuses
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(vii) inspect relays

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) inspect and test fusible links, circuit breakers, fuses, and relays	(viii) test relays
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) perform charging system output test	(i) perform charging system output test
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(i) inspect generator/alternator drive belts
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(ii) adjust generator/alternator drive belts
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(iii) replace generator/alternator drive belts
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(iv) check pulleys for wear
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(v) check pulleys for belt alignment

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(vi) check tensioners for wear
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	(vii) check tensioners for belt alignment
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(L) verify operation of instrument panel gauges and warning/indicator lights, and reset maintenance indicators	(i) verify operation of instrument panel gauges
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(L) verify operation of instrument panel gauges and warning/indicator lights, and reset maintenance indicators	(ii) verify warning/indicator lights
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(L) verify operation of instrument panel gauges and warning/indicator lights, and reset maintenance indicators	(iii) reset maintenance indicators
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(i) inspect interior lamps
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(ii) inspect exterior lamps, including headlights

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(iii) inspect exterior lamps, including auxiliary light
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(iv) inspect interior sockets
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(v) inspect exterior lamps sockets, including headlights
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(vi) inspect exterior sockets, including auxiliary light
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(vii) replace [lamps] as needed
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	(viii) replace [sockets] as needed
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(N) verify windshield wiper and washer operation and replace wiper blades as needed	(i) verify windshield wiper operation

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(N) verify windshield wiper and washer operation and replace wiper blades as needed	(ii) verify windshield washer operation
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(N) verify windshield wiper and washer operation and replace wiper blades as needed	(iii) replace wiper blades as needed
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(A) identify refrigerant type and the safety and environmental concerns related to handling and storage	(i) identify refrigerant type
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(A) identify refrigerant type and the safety and environmental concerns related to handling and storage	(ii) identify the safety concerns related to handling
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(A) identify refrigerant type and the safety and environmental concerns related to handling and storage	(iii) identify environmental concerns related to handling
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(A) identify refrigerant type and the safety and environmental concerns related to handling and storage	(iv) identify the safety concerns related to storage

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(A) identify refrigerant type and the safety and environmental concerns related to handling and storage	(v) identify environmental concerns related to storage
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(B) inspect engine cooling and heater systems hoses	(i) inspect engine cooling system hoses
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(B) inspect engine cooling and heater systems hoses	(ii) inspect heater systems hoses
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(C) inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets	(i) inspect A/C-heater ducts
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(C) inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets	(ii) inspect A/C-heater doors
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(C) inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets	(iii) inspect A/C-heater hoses

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(C) inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets	(iv) inspect A/C-heater cabin filters
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(C) inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets	(v) inspect A/C-heater outlets
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(D) inspect A/C condenser for airflow restrictions	(i) inspect A/C condenser for airflow restrictions
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(E) identify hybrid vehicle A/C system electrical circuits and the service/safety precautions	(i) identify hybrid vehicle A/C system electrical circuits
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	(E) identify hybrid vehicle A/C system electrical circuits and the service/safety precautions	(ii) identify hybrid vehicle service/safety precautions
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(A) identify the different fluid types used in both an automatic and manual transmission/transaxle	(i) identify the different fluid types used in an automatic transmission/transaxle

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(A) identify the different fluid types used in both an automatic and manual transmission/transaxle	(ii) identify the different fluid types used in [a] manual transmission/transaxle
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(B) identify the fluid types and capacity required by application using service information	(i) identify the fluid types required by application using service information
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(B) identify the fluid types and capacity required by application using service information	(ii) identify the capacity required by application using service information
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(C) check fluid level in a transmission or a transaxle equipped with a dip-stick	(i) check fluid level in a transmission or a transaxle equipped with a dip-stick
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(D) check fluid level in a transmission or a transaxle not equipped with a dip-stick	(i) check fluid level in a transmission or a transaxle not equipped with a dip-stick
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(E) check fluid condition and inspect for leaks	(i) check fluid condition

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(E) check fluid condition and inspect for leaks	(ii) inspect for leaks
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(F) drain and replace fluid and filter or filters in an automatic transmission/transaxle	(i) drain fluid in an automatic transmission/transaxle
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(F) drain and replace fluid and filter or filters in an automatic transmission/transaxle	(ii) replace fluid in an automatic transmission/transaxle
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(F) drain and replace fluid and filter or filters in an automatic transmission/transaxle	(iii) replace filter or filters in an automatic transmission/transaxle
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(G) drain and replace fluid in an manual transmission/transaxle	(i) drain fluid in a manual transmission/transaxle
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(G) drain and replace fluid in an manual transmission/transaxle	(ii) replace fluid in an manual transmission/transaxle

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	(H) inspect power train mounts	(i) inspect power train mounts
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	(i) inspect the electrical/electronic components on an on board diagnostics (OBD) controlled engine
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	(ii) inspect the electrical/electronic sensors on an on board diagnostics (OBD) controlled engine
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	(iii) inspect the electrical/electronic circuits on an on board diagnostics (OBD) controlled engine
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	(iv) explain the electrical/electronic components on an on board diagnostics (OBD) controlled engine
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	(v) explain the electrical/electronic sensors on an on board diagnostics (OBD) controlled engine
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	(vi) explain the electrical/electronic circuits on an on board diagnostics (OBD) controlled engine

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(B) perform engine absolute manifold pressure tests such as vacuum or boost	(i) perform engine absolute manifold pressure tests
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(C) verify engine operating temperature	(i) verify engine operating temperature
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(D) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(i) remove spark plugs
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(D) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(ii) replace spark plugs
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(D) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(iii) inspect secondary ignition components for wear
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(D) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(iv) inspect secondary ignition components for damage
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(E) describe the importance of operating all OBD II monitors for repair verification	(i) describe the importance of operating all OBD II monitors for repair verification

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(i) retrieve diagnostic trouble codes when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(ii) retrieve OBD II monitor status when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(iii) retrieve freeze frame data when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(iv) retrieve freeze frame clear codes when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(v) record diagnostic trouble codes when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(vi) record OBD II monitor status when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(vii) record freeze frame data when applicable

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	(viii) record freeze frame clear codes when applicable
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) inspect, service, or replace air filters, filter housings, and intake duct work	(i) inspect, service, or replace air filters
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) inspect, service, or replace air filters, filter housings, and intake duct work	(ii) inspect, service, or replace filter housings
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) inspect, service, or replace air filters, filter housings, and intake duct work	(iii) inspect, service, or replace intake duct work
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(H) replace fuel filter or filters	(i) replace fuel filter or filters
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(i) inspect integrity of the exhaust manifolds
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(ii) inspect integrity of the exhaust pipes

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(iii) inspect integrity of the mufflers
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(iv) inspect integrity of the catalytic converters
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(v) inspect integrity of the resonators
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(vi) inspect integrity of the tail pipes
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	(vii) inspect integrity of the heat shields
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	(i) inspect positive crankcase ventilation (PCV) system
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	(ii) test positive crankcase ventilation (PCV) system

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	(iii) service positive crankcase ventilation (PCV) system
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	(iv) inspect [positive crankcase ventilation (PCV) system] components
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	(v) test [positive crankcase ventilation (PCV) system] components
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	(vi) service [positive crankcase ventilation (PCV) system] components
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(A) identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating	(i) identify tire sidewall data information
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(A) identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating	(ii) interpret tire sidewall data information

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(B) demonstrate tire tread depth measuring procedures using industry standards such as common tread depth gauges	(i) demonstrate tire tread depth measuring procedures using industry standards
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(C) demonstrate tire and wheel balance such as static and dynamic balance, and proper wheel weight selection	(i) demonstrate tire balance
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(C) demonstrate tire and wheel balance such as static and dynamic balance, and proper wheel weight selection	(ii) demonstrate wheel balance
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(D) demonstrate tire and wheel measurements such as radial and lateral run-out in tire and wheel assembly	(i) demonstrate tire measurements
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(D) demonstrate tire and wheel measurements such as radial and lateral run-out in tire and wheel assembly	(ii) demonstrate wheel measurements
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(E) inspect steering linkage components and mounts such as inner and outer tie-rod ends, pitman arm, idler arm, inner rack and pinion ends, rack and pinion mounts, upper and lower ball joints, power steering pump, and hoses for leaks	(i) inspect steering linkage components

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(E) inspect steering linkage components and mounts such as inner and outer tie-rod ends, pitman arm, idler arm, inner rack and pinion ends, rack and pinion mounts, upper and lower ball joints, power steering pump, and hoses for leaks	(ii) inspect steering linkage mounts
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	(i) remove wheel bearings
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	(ii) clean wheel bearings
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	(iii) inspect wheel bearings
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	(iv) repack wheel bearings
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	(v) properly install wheel seals
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	(vi) adjust wheel bearing pre-load

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(i) inspect shock absorbers for leakage using jounce tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(ii) inspect shock absorbers for leakage using rebound tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(iii) inspect shock absorbers for performance using jounce tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(iv) inspect shock absorbers for performance using rebound tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(v) inspect McPherson struts for leakage using jounce tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(vi) inspect McPherson struts for leakage using rebound tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(vii) inspect McPherson struts for performance using jounce tests

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(G) inspect shock absorbers and McPherson struts for leakage and performance using jounce and rebound tests	(viii) inspect McPherson struts performance using rebound tests
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(H) demonstrate wheel stud replacement and installation of wheel and tire assembly with proper torqueing procedure	(i) demonstrate wheel stud replacement
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(H) demonstrate wheel stud replacement and installation of wheel and tire assembly with proper torqueing procedure	(ii) demonstrate installation of wheel assembly with proper torqueing procedure
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(H) demonstrate wheel stud replacement and installation of wheel and tire assembly with proper torqueing procedure	(iii) demonstrate installation of tire assembly with proper torqueing procedure
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(I) identify and test the Tire Pressure Monitoring Systems (TPMS), both the direct and indirect, for proper operation	(i) identify the [direct] Tire Pressure Monitoring Systems (TPMS)
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(I) identify and test the Tire Pressure Monitoring Systems (TPMS), both the direct and indirect, for proper operation	(ii) identify [indirect] he Tire Pressure Monitoring Systems (TPMS)
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(I) identify and test the Tire Pressure Monitoring Systems (TPMS), both the direct and indirect, for proper operation	(iii) test the [direct] Tire Pressure Monitoring Systems (TPMS) for proper operation

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(I) identify and test the Tire Pressure Monitoring Systems (TPMS), both the direct and indirect, for proper operation	(iv) test the [indirect] Tire Pressure Monitoring Systems (TPMS) for proper operation
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(J) dismount and mount a tire on a wheel and reinstall the assembly, including torqueing the lug nuts	(i) dismount a tire
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(J) dismount and mount a tire on a wheel and reinstall the assembly, including torqueing the lug nuts	(ii) mount a tire on a wheel
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(J) dismount and mount a tire on a wheel and reinstall the assembly, including torqueing the lug nuts	(iii) reinstall the assembly, including torqueing the lug nuts
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	(K) rotate tires according to manufacturer recommendations	(i) rotate tires according to manufacturer recommendations

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.450. Automotive Technology II: Automotive Service (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12. Prerequisite: Automotive Technology I: Maintenance and Light Repair. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Automotive Technology II : Automotive Service includes knowledge of the major automotive systems and the principles of diagnosing and servicing these systems. Automotive Technology II : Automotive Service includes applicable safety and environmental rules and regulations. In this course, students will gain knowledge and skills in the repair, maintenance, and diagnosis of vehicle systems. This study will allow students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings. The focus of this course is to teach safety, tool identification, proper tool use, and employability.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(i) demonstrate knowledge of the technical knowledge related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(ii) demonstrate knowledge of the technical skills related to health and safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities and internships , and industry-recognized certification requirements for the field of automotive technology	(i) identify employment opportunities, including entrepreneurship opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities and internships , and industry-recognized certification requirements for the field of automotive technology	(ii) identify employment opportunities, including internships
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities and internships , and industry-recognized certification requirements for the field of automotive technology	(iii) identify employment opportunities, including industry-recognized certification requirements for the field of automotive technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(ii) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iii) demonstrate the principles of team concept related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iv) demonstrate the principles of team concept related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(v) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(vi) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(i) apply competencies related to resources in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(ii) apply competencies related to information in the automotive technology industry

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(iii) apply competencies related to interpersonal skills in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(iv) apply competencies related to problem solving in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(v) apply competencies related to critical thinking in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	(vi) apply competencies related to systems of operation in the automotive technology industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop personal goals as part of a plan for future educational oppurtunities

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop objectives as part of a plan for future career oppurtunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop objectives as part of a plan for future educational oppurtunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop strategies as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop strategies as part of a plan for future educational oppurtunities
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(A) demonstrate effective written communication skills throughout the course, including documenting on a repair order customer concern/compliant, root cause of the failure, and corrective action to complete the repair	(i) demonstrate effective written communication skills throughout the course, including documenting on a repair order customer concern/compliant
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(A) demonstrate effective written communication skills throughout the course, including documenting on a repair order customer concern/compliant, root cause of the failure, and corrective action to complete the repair	(ii) demonstrate effective written communication skills throughout the course, including documenting on a repair order root cause of the failure
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(A) demonstrate effective written communication skills throughout the course, including documenting on a repair order customer concern/compliant, root cause of the failure, and corrective action to complete the repair	(iii) demonstrate effective written communication skills throughout the course, including on a repair order corrective action to complete the repair

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(B) estimate the cost of parts and labor operations on repair orders throughout the course, including the flat rate system	(i) estimate the cost of parts on repair orders throughout the course
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(B) estimate the cost of parts and labor operations on repair orders throughout the course, including the flat rate system	(ii) estimate the cost of labor operations on repair orders throughout the course, including the flat rate system
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(i) demonstrate mathematical skills in performing addition using decimals in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(ii) demonstrate mathematical skills in performing subtraction using decimals in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(iii) demonstrate mathematical skills in performing mutliplication using decimals in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(iv) demonstrate mathematical skills in performing division using decimals in the metric system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(v) demonstrate mathematical skills in performing measurements using decimals in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(vii) demonstrate mathematical skills in performing addition using fractions in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(viii) demonstrate mathematical skills in performing subtraction using fractions in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(ix) demonstrate mathematical skills in performing mutliplication using fractions in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(x) demonstrate mathematical skills in performing division using fractions in the metric system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xi) demonstrate mathematical skills in performing measurements using fractions in the metric system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xii) demonstrate mathematical skills in performing addition using decimals in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xiii) demonstrate mathematical skills in performing subtraction using decimals in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xiv) demonstrate mathematical skills in performing mutliplication using decimals in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xv) demonstrate mathematical skills in performing division using decimals in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xvi) demonstrate mathematical skills in performing measurements using decimals in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xvii) demonstrate mathematical skills in performing addition using fractions in the U.S. standard system as appropriate

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xviii) demonstrate mathematical skills in performing subtraction using fractions in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xix) demonstrate mathematical skills in performing mutliplication using fractions in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xx) demonstrate mathematical skills in performing division using fractions in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate	(xxi) demonstrate mathematical skills in performing measurements using fractions in the U.S. standard system as appropriate
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(D) research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	(i) research applicable vehicle information
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(D) research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	(ii) research applicable service information

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(D) research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	(ii) research vehicle service history
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(D) research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	(iii) research service precautions
(2) The student relates core academic skills to the requirements of automotive technology. The student is expected to:	(D) research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins	(iv) research technical service bulletins
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(A) diagnose the major components of powered vehicles	(i) diagnose the major components of powered vehicles
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(B) diagnose automotive chassis and driveline components	(i) diagnose automotive chassis components
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(B) diagnose automotive chassis and driveline components	(ii) diagnose driveline components

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(i) locate documents
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(ii) read documents
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(iii) interpret documents
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(D) locate the manufacturer recommended preventative maintenance schedule	(i) locate the manufacturer recommended preventative maintenance schedule
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(E) perform a preventative maintenance inspection	(i) perform a preventative maintenance inspection
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(F) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(i) perform common fastener repair, including removing broken bolt

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(F) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(ii) perform common thread repair, including restoring internal threads
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(F) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(iii) perform common thread repair, including restoring external threads
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(F) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	(iv) perform common thread repair, including repairing internal threads with thread insert
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(G) perform precision measurements and use published specifications to diagnose component wear and determine necessary repairs	(i) perform precision measurements
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(G) perform precision measurements and use published specifications to diagnose component wear and determine necessary repairs	(ii) perform precision measurements
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(G) perform precision measurements and use published specifications to diagnose component wear and determine necessary repairs	(iii) use published specifications to diagnose component wear

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(G) perform precision measurements and use published specifications to diagnose component wear and determine necessary repairs	(iv) use published specifications to determine necessary repairs
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(H) employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions	(i) employ critical-thinking skills to diagnose vehicle malfunctions
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(H) employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions	(ii) employ critical-thinking skills to solve problems
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(H) employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions	(iii) employ critical-thinking skills to make decisions
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(H) employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions	(iv) employ structured problem-solving skills to diagnose vehicle malfunctions
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(H) employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions	(v) employ structured problem-solving skills to solve problems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates the technical knowledge and skills that form the core of knowledge of automotive service. The student is expected to:	(H) employ critical-thinking skills and structured problem-solving skills to diagnose vehicle malfunctions, solve problems, and make decisions	(vi) employ structured problem-solving skills to make decisions
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(i) demonstrate the proper use of hand tools commonly employed in the maintenance of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(ii) demonstrate the proper use of power tools commonly employed in the maintenance of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(iii) demonstrate the proper use of equipment commonly employed in the maintenance of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(iv) demonstrate the safe use of hand tools commonly employed in the maintenance of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(v) demonstrate the safe use of power tools commonly employed in the maintenance of vehicles

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(vi) demonstrate the safe use of equipment commonly employed in the maintenance of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(vii) demonstrate the proper use of hand tools commonly employed in the repair of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(viii) demonstrate the proper use of power tools commonly employed in the repair of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(ix) demonstrate the proper use of equipment commonly employed in the repair of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(x) demonstrate the safe use of hand tools commonly employed in the repair of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(xi) demonstrate the safe use of power tools commonly employed in the repair of vehicles

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(A) demonstrate the proper and safe use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	(xii) demonstrate the safe use of equipment commonly employed in the repair of vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(B) discuss and demonstrate the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(i) discuss the proper handling of environmentally hazardous materials used in servicing vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(B) discuss and demonstrate the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(ii) discuss the proper disposal of environmentally hazardous materials used in servicing vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(B) discuss and demonstrate the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(iii) demonstrate the proper handling of environmentally hazardous materials used in servicing vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(B) discuss and demonstrate the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	(iv) demonstrate the proper disposal of environmentally hazardous materials used in servicing vehicles
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(C) demonstrate proper use of diagnostic tools and equipment	(i) demonstrate proper use of diagnostic tools

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(C) demonstrate proper use of diagnostic tools and equipment	(ii) demonstrate proper use of diagnostic equipment
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair bulletins	(i) locate service repair information
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair bulletins	(ii) read service repair information
(4) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	(D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair bulletins	(iii) interpret service repair information
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(A) inspect and replace power steering hoses and fittings	(i) inspect power steering hoses
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(A) inspect and replace power steering hoses and fittings	(ii) replace power steering hoses

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(A) inspect and replace power steering hoses and fittings	(iii) inspect power steering fittings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(A) inspect and replace power steering hoses and fittings	(iv) replace power steering fittings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(i) remove wheel bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(ii) clean wheel bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(iii) inspect wheel bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(iv) repack wheel bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(v) install wheel bearings

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(vi) replace seals
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(vii) install hubs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(B) remove, clean, inspect, repack, and install wheel bearings; replace seals; install hubs; and adjust bearings	(viii) adjust bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(C) replace wheel bearing and race	(i) replace wheel bearing
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(C) replace wheel bearing and race	(ii) replace wheel race
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(D) disable and enable supplemental restraint system (SRS)	(i) disable supplemental restraint system (SRS)
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(D) disable and enable supplemental restraint system (SRS)	(ii) enable supplemental restraint system (SRS)

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(i) inspect shock absorbers
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(ii) remove shock absorbers
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(iii) replace shock absorbers
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(iv) inspect struts
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(v) remove struts
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(vi) replace struts
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(vii) inspect mounts

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(E) inspect, remove, and replace shock absorbers and struts and inspect mounts and bushings	(viii) inspect bushings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(F) dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system (TPMS)	(i) dismount tire on wheel equipped with tire pressure monitoring system (TPMS)
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(F) dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system (TPMS)	(ii) inspect tire on wheel equipped with tire pressure monitoring system (TPMS)
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(F) dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system (TPMS)	(iii) remount tire on wheel equipped with tire pressure monitoring system (TPMS)
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(i) inspect rear suspension system lateral links/arms
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(ii) inspect trailing arms
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(iii) inspect leaf springs

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(iv) inspect spring insulators
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(v) inspect shackles
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(vi) inspect brackets
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(vii) inspect center pins
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(G) inspect rear suspension system lateral links/arms, trailing arms, leaf springs, spring insulators, shackles, brackets, center pins, and mounting bolts	(viii) inspect mounting bolts
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(H) inspect tire condition and wear patterns, check for correct size and application based on load and speed rating, and adjust air pressure	(i) inspect tire condition patterns

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(H) inspect tire condition and wear patterns, check for correct size and application based on load and speed rating, and adjust air pressure	(ii) inspect tire wear patterns
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(H) inspect tire condition and wear patterns, check for correct size and application based on load and speed rating, and adjust air pressure	(iii) check for correct size based on load and speed rating
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(H) inspect tire condition and wear patterns, check for correct size and application based on load and speed rating, and adjust air pressure	(iv) check for correct application based on load and speed rating
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(H) inspect tire condition and wear patterns, check for correct size and application based on load and speed rating, and adjust air pressure	(v) adjust air pressure
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(I) perform pre-alignment inspection and measure vehicle ride height	(i) perform pre-alignment inspection
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(I) perform pre-alignment inspection and measure vehicle ride height	(ii) measure vehicle ride height
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(J) inspect tire and wheel assembly for air loss	(i) inspect tire for air loss

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(J) inspect tire and wheel assembly for air loss	(ii) inspect wheel assembly for air loss
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(K) identify and test indirect and direct TPMSs and operation of the instrument panel lamps	(i) identify indirect TPMSs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(K) identify and test indirect and direct TPMSs and operation of the instrument panel lamps	(ii) test indirect TPMSs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(K) identify and test indirect and direct TPMSs and operation of the instrument panel lamps	(iii) identify direct TPMSs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(K) identify and test indirect and direct TPMSs and operation of the instrument panel lamps	(iv) test direct TPMSs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(K) identify and test indirect and direct TPMSs and operation of the instrument panel lamps	(v) identify operation of the instrument panel lamps
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(K) identify and test indirect and direct TPMSs and operation of the instrument panel lamps	(vi) test operation of the instrument panel lamps

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(L) demonstrate knowledge of steps required to remove and replace sensors in a TPMS	(i) demonstrate knowledge of steps required to remove sensors in a TPMS
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(L) demonstrate knowledge of steps required to remove and replace sensors in a TPMS	(ii) demonstrate knowledge of steps required to replace sensors in a TPMS
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(i) inspect front wheel drive (FWD) bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(ii) remove front wheel drive (FWD) bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(iii) replace front wheel drive (FWD) bearings
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(iv) inspect hubs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(v) remove hubs

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(vi) replace hubs
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(vii) inspect seals
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(viii) remove seals
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(ix) replace seals
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(x) inspect shafts
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xi) remove shafts
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xii) replace shafts

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xiii) inspect boots
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xiv) remove boots
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xv) replace boots
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xvi) inspect universal/constant velocity (CV) joints
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xvii) remove universal/constant velocity (CV) joints
(5) The student applies the technical knowledge and skills related to suspension in simulated or actual work situations. The student is expected to:	(M) inspect, remove, and replace front wheel drive (FWD) bearings, hubs, seals, shafts, boots, and universal/constant velocity (CV) joints	(xviii) replace universal/constant velocity (CV) joints
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits	(i) demonstrate knowledge of the causes [of] shorts in electrical/electronic circuits

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits	(ii) demonstrate knowledge of the causes [of] opens in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits	(iii) demonstrate knowledge of the causes [of] resistance in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits	(iv) demonstrate knowledge of the effects from shorts in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits	(v) demonstrate knowledge of the effects from opens in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(A) demonstrate knowledge of the causes and effects from shorts, opens, and resistance in electrical/electronic circuits	(vi) demonstrate knowledge of the effects from resistance in electrical/electronic circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(B) measure key-off battery drain/parasitic draw	(i) measure key-off battery drain/parasitic draw

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(C) perform solder repair of electrical wiring	(i) perform solder repair of electrical wiring
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) replace electrical connectors and terminal ends	(i) replace electrical connectors
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(D) replace electrical connectors and terminal ends	(ii) replace terminal ends
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(E) demonstrate the ability to maintain or restore electronic memory functions	(i) demonstrate the ability to maintain or restore electronic memory functions
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(F) perform slow and fast battery charges according to manufacturer recommendations	(i) perform slow battery charges according to manufacturer recommendations
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(F) perform slow and fast battery charges according to manufacturer recommendations	(ii) perform fast battery charges according to manufacturer recommendations

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting a vehicle battery	(i) identify electronic modules that require re-initialization or code entry after reconnecting a vehicle battery
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting a vehicle battery	(ii) identify security systems that require re-initialization or code entry after reconnecting a vehicle battery
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting a vehicle battery	(iii) identify radios that require re-initialization or code entry after reconnecting a vehicle battery
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(G) identify electronic modules, security systems, radios, and other accessories that require re-initialization or code entry after reconnecting a vehicle battery	(iv) identify accessories that require re-initialization or code entry after reconnecting a vehicle battery
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids	(i) perform starter current draw test
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids	(ii) perform starter circuit voltage drop tests

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids	(iii) inspect starter relays
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids	(iv) test starter relays
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids	(v) inspect solenoids
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(H) perform starter current draw test and starter circuit voltage drop tests and inspect and test starter relays and solenoids	(vi) test solenoids
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) remove and install starter in a vehicle	(i) remove starter in a vehicle
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(I) remove and install starter in a vehicle	(ii) install starter in a vehicle

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) inspect and test switches, connectors, and wires of starter control circuits	(i) inspect switches of starter control circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) inspect and test switches, connectors, and wires of starter control circuits	(ii) inspect connectors of starter control circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) inspect and test switches, connectors, and wires of starter control circuits	(iii) inspect wires of starter control circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) inspect and test switches, connectors, and wires of starter control circuits	(iv) test switches of starter control circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) inspect and test switches, connectors, and wires of starter control circuits	(v) test connectors of starter control circuits
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(J) inspect and test switches, connectors, and wires of starter control circuits	(vi) test wires of starter control circuits

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(K) perform charging system output test	(i) perform charging system output test
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(L) remove, inspect, and re-install alternator	(i) remove alternator
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(L) remove, inspect, and re-install alternator	(ii) inspect alternator
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(L) remove, inspect, and re-install alternator	(iii) re-install alternator
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) identify system voltage and safety precautions associated with high-intensity discharge headlights	(i) identify system voltage associated with high-intensity discharge headlights
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(M) identify system voltage and safety precautions associated with high-intensity discharge headlights	(ii) identify safety precautions associated with high-intensity discharge headlights

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(N) disable and enable airbag system for vehicle service and verify indicator lamp operation	(i) disable airbag system for vehicle service
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(N) disable and enable airbag system for vehicle service and verify indicator lamp operation	(i) enable airbag system for vehicle service
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(N) disable and enable airbag system for vehicle service and verify indicator lamp operation	(ii) verify indicator lamp operation
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(O) remove and reinstall a door panel	(i) remove a door panel
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(O) remove and reinstall a door panel	(ii) reinstall a door panel
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(P) describe the operation of keyless entry and remote-start systems	(i) describe the operation of keyless entry systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	(P) describe the operation of keyless entry and remote-start systems	(ii) describe the operation of remote-start systems
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(A) describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS)	(i) describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS)
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) measure brake pedal height, reserve distance, travel, and free play	(i) measure brake pedal height
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) measure brake pedal height, reserve distance, travel, and free play	(ii) measure brake pedal reserve distance
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) measure brake pedal height, reserve distance, travel, and free play	(iii) measure brake pedal travel
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(B) measure brake pedal height, reserve distance, travel, and free play	(iv) measure brake pedal free play
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(C) identify components of brake warning light system	(i) identify components of brake warning light system

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) bleed and flush brake system	(i) bleed brake system
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(D) bleed and flush brake system	(ii) flush brake system
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) identify and check the operation of brake stop light system	(i) identify the operation of brake stop light system
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(E) identify and check the operation of brake stop light system	(ii) check the operation of brake stop light system
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) identify traction control and vehicle stability control system components	(i) identify traction control system components
(7) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	(F) identify traction control and vehicle stability control system components	(ii) identify vehicle stability control system components
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(A) describe the importance of operating all on board diagnostics II (OBDII) monitors for repair verification	(i) describe the importance of operating all on board diagnostics II (OBDII) monitors for repair verification

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(B) perform cylinder power balance test	(i) perform cylinder power balance test
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(C) perform cylinder cranking and running compression tests	(i) perform cylinder cranking tests
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(C) perform cylinder cranking and running compression tests	(ii) perform running compression tests
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(D) perform cylinder leakage test	(i) perform cylinder leakage test
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(E) verify engine operating temperature	(i) verify engine operating temperature
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(i) remove spark plugs

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(ii) replace spark plugs
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(iii) inspect secondary ignition components for wear
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(F) remove and replace spark plugs and inspect secondary ignition components for wear and damage	(iv) inspect secondary ignition components for damage
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable	(i) retrieve diagnostic trouble codes
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable	(ii) record diagnostic trouble codes
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable	(iii) retrieve OBD II monitor status

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable	(iv) record OBD II monitor status
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable	(v) freeze frame data
(8) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	(G) retrieve and record diagnostic trouble codes and OBD II monitor status, freeze frame data, and clear trouble codes when applicable	(vi) clear trouble codes when applicable
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(A) install engine covers using gaskets, seals, and sealers as required	(i) install engine covers using gaskets as required
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(A) install engine covers using gaskets, seals, and sealers as required	(ii) install engine covers using seals as required
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(A) install engine covers using gaskets, seals, and sealers as required	(iii) install engine covers using sealers as required
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(B) remove and replace timing belt and verify correct camshaft timing	(i) remove timing belt

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(B) remove and replace timing belt and verify correct camshaft timing	(ii) replace timing belt
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(B) remove and replace timing belt and verify correct camshaft timing	(iii) verify correct camshaft timing
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(i) perform cooling system pressure tests to identify leaks
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(ii) perform cooling system dye tests to identify leaks
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(iii) check coolant condition
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(iv) check coolant level

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(v) inspect radiator
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(vi) inspect pressure cap
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(vii) inspect coolant recovery tank
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(viii) inspect heater core
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(ix) test radiator
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(x) test pressure cap

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(xi) test coolant recovery tank
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(C) perform cooling system pressure and dye tests to identify leaks, check coolant condition and level, and inspect and test radiator, pressure cap, coolant recovery tank, and heater core	(xii) test heater core
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(D) remove, inspect, and replace thermostat and gasket or seal	(i) remove thermostat
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(D) remove, inspect, and replace thermostat and gasket or seal	(ii) inspect thermostat
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(D) remove, inspect, and replace thermostat and gasket or seal	(iii) replace thermostat
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(D) remove, inspect, and replace thermostat and gasket or seal	(iv) remove gasket or seal
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(D) remove, inspect, and replace thermostat and gasket or seal	(v) inspect gasket or seal

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills related to engines in simulated or actual work situations. The student is expected to:	(D) remove, inspect, and replace thermostat and gasket or seal	(vi) replace gasket or seal
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(A) identify, locate, and replace cabin air filters	(i) identify cabin air filters
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(A) identify, locate, and replace cabin air filters	(ii) locate cabin air filters
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(A) identify, locate, and replace cabin air filters	(iii) replace cabin air filters
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(B) inspect air conditioning (A/C) condenser for airflow restrictions	(i) inspect air conditioning (A/C) condenser for airflow restrictions
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(C) identify the source of A/C system odors	(i) identify the source of A/C system odors

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(D) identify hybrid vehicle A/C system electrical circuits and safety precautions	(i) identify hybrid vehicle A/C system electrical circuits
(10) The student applies the technical knowledge and skills related to heating ventilation and air conditioning (HVAC) in simulated or actual work situations. The student is expected to:	(D) identify hybrid vehicle A/C system electrical circuits and safety precautions	(ii) identify hybrid vehicle A/C system safety precautions

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.451. Advanced Transportation Systems Laboratory (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12 as a corequisite course for students participating in a coherent sequence of career and technical education courses in the Transportation, Distribution, and Logistics Career Cluster. This course provides an enhancement opportunity for students to develop the additional skills necessary to pursue industry certification. Recommended prerequisite: a minimum of one credit from the courses in the Transportation, Distribution, and Logistics Career Cluster. Corequisites: Automotive Technology II: Automotive Services, Diesel Equipment Technology II, Collision Repair, Paint and Refinishing, Aircraft Airframe Technology, or Aircraft Powerplant Technology. This course must be taken concurrently with a corequisite course and may not be taken as a stand-alone course. Districts are encouraged to offer this lab in a consecutive block with the corequisite course to allow students sufficient time to master the content of both courses. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Advanced Transportation Systems Laboratory provides the opportunity to extend knowledge of the major transportation systems and the principles of diagnosing and servicing these systems. Topics in this course may include alternative fuels such as hybrid, bio diesel, hydrogen, compressed natural gas (CNG), liquidized natural gas (LNG), propane, and solar; total electric vehicles and power trains; advanced transportation systems such as collision avoidance, telematics, vehicle stability control, navigation, vehicle-to-vehicle communications; and other technologies. This study will allow students to have an increased understanding of science, technology, engineering, and mathematics in all aspects of these systems. This will reinforce, apply, and transfer academic knowledge and skills to a variety of relevant activities, problems, and settings.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(i) demonstrate knowledge of the technical knowledge related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(ii) demonstrate knowledge of the technical skills related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(iii) demonstrate knowledge of the technical knowledge related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	(iv) demonstrate knowledge of the technical skills related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities and internships, and industry-recognized certification requirements in the transportation field of study	(i) identify employment opportunities, including entrepreneurship opportunities in the transportation field of study
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities and internships, and industry-recognized certification requirements in the transportation field of study	(ii) identify employment opportunities, including internships in the transportation field of study

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities and internships, and industry-recognized certification requirements in the transportation field of study	(iii) identify industry-recognized certification requirements in the transportation field of study
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(iv) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(v) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(vi) demonstrate the principles of team concept related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(vii) demonstrate the principles of team concept related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(viii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	(ix) demonstrate the principles of leadership related to career preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the transportation industry	(i) apply competencies related to resources in the transportation industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the transportation industry	(ii) apply competencies related to information in the transportation industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the transportation industry	(iii) apply competencies related to interpersonal skills in the transportation industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the transportation industry	(iv) apply competencies related to problem solving in the transportation industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the transportation industry	(v) apply competencies related to critical thinking in the transportation industry
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the transportation industry	(vi) apply competencies related to systems of operation in the transportation industry

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop strategies as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop personal goals as part of a plan for educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop objectives as part of a plan for educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop strategies as part of a plan for educational opportunities
(2) The student demonstrates an understanding of the technical knowledge and skills that form the core of knowledge of transportation services. The student is expected to:	(A) extend knowledge of new and emerging transportation technologies related to the corequisite course and its industry such as hybrid, avionics, unmanned aerial systems, collision avoidance, and light duty diesel systems	(i) extend knowledge of new transportation technologies related to the corequisite course and its industry

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates an understanding of the technical knowledge and skills that form the core of knowledge of transportation services. The student is expected to:	(A) extend knowledge of new and emerging transportation technologies related to the corequisite course and its industry such as hybrid, avionics, unmanned aerial systems, collision avoidance, and light duty diesel systems	(ii) extend knowledge of emerging transportation technologies related to the corequisite course and its industry
(2) The student demonstrates an understanding of the technical knowledge and skills that form the core of knowledge of transportation services. The student is expected to:	(B) demonstrate advanced technical skills related to the corequisite course and its industry	(i) demonstrate advanced technical skills related to the corequisite course and its industry
(2) The student demonstrates an understanding of the technical knowledge and skills that form the core of knowledge of transportation services. The student is expected to:	(C) demonstrate an understanding of the use of advanced tools and equipment	(i) demonstrate an understanding of the use of advanced tools
(2) The student demonstrates an understanding of the technical knowledge and skills that form the core of knowledge of transportation services. The student is expected to:	(C) demonstrate an understanding of the use of advanced tools and equipment	(ii) demonstrate an understanding of the use of advanced equipment
(2) The student demonstrates an understanding of the technical knowledge and skills that form the core of knowledge of transportation services. The student is expected to:	(D) demonstrate an understanding of research and development in the transportation industry of the corequisite course	(i) demonstrate an understanding of research and development in the transportation industry of the corequisite course
(3) The student develops an elevated aptitude for the essential knowledge and skills listed for the corequisite course. The student is expected to:	(A) demonstrate deeper understanding of the corequisite course	(i) demonstrate deeper understanding of the corequisite course

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student develops an elevated aptitude for the essential knowledge and skills listed for the corequisite course. The student is expected to:	(B) develop hands-on skills at an industry-accepted standard	(i) develop hands-on skills at an industry-accepted standard
(3) The student develops an elevated aptitude for the essential knowledge and skills listed for the corequisite course. The student is expected to:	(C) exhibit progress toward achieving industry-recognized documentation of specific expertise in a transportation field or skill	(i) exhibit progress toward achieving industry-recognized documentation of specific expertise in a transportation field or skill

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.452. Introduction to Aircraft Technology (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Introduction to Aircraft Technology is designed to teach the theory of operation of aircraft airframes, powerplants, and associated maintenance and repair practices. Maintenance and repair practices include knowledge of the function, diagnosis, and service of general curriculum subjects, airframe structures, airframe systems and components, powerplant theory and maintenance, and powerplant systems and components of aircraft. Industry recognized professional licensures, certifications, and registrations are available for students who meet the requirements set forth by the accrediting organization.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of aircraft maintenance and repair	(i) identify employment opportunities, including entrepreneurship opportunities for the field of aircraft maintenance and repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of aircraft maintenance and repair	(ii) identify certification requirements for the field of aircraft maintenance and repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the principles of group leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of group leadership related to career preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate employers' expectations and appropriate work habits	(i) demonstrate employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate employers' expectations and appropriate work habits	(ii) demonstrate appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information, systems, and technology	(i) discuss the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information, systems, and technology	(ii) discuss the competencies related to information
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information, systems, and technology	(iii) discuss the competencies related to systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information, systems, and technology	(iv) discuss the competencies related to technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(i) demonstrate awareness of the technical knowledge related to human factors in health in the workplace, as specified by appropriate governmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(ii) demonstrate awareness of the technical skills related to human factors in health in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(iii) demonstrate awareness of the technical knowledge related to human factors in safety in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(iv) demonstrate awareness of the technical skills related to human factors in safety in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(v) demonstrate awareness of the technical knowledge related to human factors in health in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(vi) demonstrate awareness of the technical skills related to human factors in health in the workplace, as specified by an understanding of personal responsibility in this area

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(vii) demonstrate awareness of the technical knowledge related to human factors in safety in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(viii) demonstrate awareness of the technical skills related to human factors in safety in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(i) demonstrate awareness of the technical knowledge related to human factors in a successful workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(ii) demonstrate awareness of the skills related to human factors in a successful workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(iii) demonstrate awareness of the attitudes related to human factors in successful workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(iv) demonstrate awareness of the technical knowledge related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(v) demonstrate awareness of the skills related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(vi) demonstrate awareness of the attitudes related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(vii) demonstrate awareness of the role of the employee in creating that success, including personal responsibility
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) apply reasoning skills to a variety of simulated workplace situations in order to make ethical decisions	(i) apply reasoning skills to a variety of simulated workplace situations in order to make ethical decisions

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(ii) demonstrate effective written communication skills with individuals from various cultures
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(B) identify requirements of work orders and related paperwork for repairs	(i) identify requirements of work orders for repairs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(B) identify requirements of work orders and related paperwork for repairs	(ii) identify related paperwork for repairs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(i) locate documents, including schematics

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(ii) locate documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(iii) locate documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(iv) locate documents, including drawings

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(v) locate documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(vi) locate documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(vii) locate documents, including service-repair manuals and service bulletins

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(viii) locate documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(ix) locate documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(x) locate documents, including airworthiness directives

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xi) locate documents, including federal aviation regulations and advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xii) read documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xiii) read documents, including charts

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xiv) read documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xv) read documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xvii) read documents, including blueprints

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xviii) read documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xviii) read documents, including service-repair manuals and service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xix) read documents, including type certificate data sheets

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xx) read documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxi) read documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxii) read documents, including federal aviation regulations and advisory information

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxiii) understand the function of documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxiv) understand the function of documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxv) understand the function of documents, including graphs

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxvi) understand the function of documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxvii) understand the function of documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxviii) understand the function of documents, including wiring diagrams

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxix) understand the function of documents, including service-repair manuals and service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxx) understand the function of documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxi) understand the function of documents, including supplemental type certificates

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxii) understand the function of documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxiii) understand the function of documents, including federal aviation regulations and advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxiv) interpret documents, including schematics

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxv) interpret documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxvi) interpret documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxvii) interpret documents, including drawings

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxviii) interpret documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxix) interpret documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxl) interpret documents, including service-repair manuals and service bulletins

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xli) interpret documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlii) interpret documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xliii) interpret documents, including airworthiness directives

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xliv) interpret documents, including federal aviation regulations and advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) demonstrate an understanding of metric and U.S. customary standard measurement systems	(i) demonstrate an understanding of the metric measurement system
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) demonstrate an understanding of metric and U.S. customary standard measurement systems	(ii) demonstrate an understanding of the U.S. customary standard measurement system
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers, and use specifications to diagnose component wear and determine if the component is within tolerance of the specifications	(i) perform precision measurements, including the use of engineering scales
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers, and use specifications to diagnose component wear and determine if the component is within tolerance of the specifications	(ii) perform precision measurements, including the use of dial calipers

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers, and use specifications to diagnose component wear and determine if the component is within tolerance of the specifications	(iii) perform precision measurements, including the use of Vernier micrometers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers, and use specifications to diagnose component wear and determine if the component is within tolerance of the specifications	(iv) use specifications to diagnose component wear
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers, and use specifications to diagnose component wear and determine if the component is within tolerance of the specifications	(v) use specifications to determine if the component is within tolerance of the specifications
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) develop critical-thinking skills and problem-solving skills to solve problems and make decisions	(i) develop critical-thinking skills to solve problems
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) develop critical-thinking skills and problem-solving skills to solve problems and make decisions	(ii) develop critical-thinking skills to make decisions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) develop critical-thinking skills and problem-solving skills to solve problems and make decisions	(iii) develop problem-solving skills to solve problems

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) develop critical-thinking skills and problem-solving skills to solve problems and make decisions	(iv) develop problem-solving skills to make decisions
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge of aviation regulations prescribed by the Code of Federal Regulations, Title 14, Volumes I-III, that govern mechanic privileges and the construction, maintenance, and service of aircraft	(i) demonstrate knowledge of aviation regulations prescribed by the Code of Federal Regulations, Title 14, Volumes I-III, that govern mechanic privileges and the construction, maintenance, and service of aircraft
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(i) apply the principles of simple machines
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(ii) apply the principals of basic aerodynamics
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(iii) apply the principals of aircraft structures
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(iv) apply the principals of the theory of flight
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(v) understand the principles of simple machines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(vi) understand the principles of basic aerodynamics
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(vii) understand the principles of aircraft structures
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, basic aerodynamics, aircraft structures, and theory of flight	(viii) understand the principles of the theory of flight
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(i) demonstrate knowledge of aircraft categories as used with respect to the certification of airmen, including airplane
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(ii) demonstrate knowledge of aircraft categories as used with respect to the certification of airmen, including rotorcraft
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(iii) demonstrate knowledge of aircraft categories as used with respect to the certification of airmen, including glider

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(iv) demonstrate knowledge of aircraft categories as used with respect to the certification of airmen, including lighter-than-air
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(v) demonstrate knowledge of aircraft categories as used with respect to the ratings of airmen, including airplane
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(vi) demonstrate knowledge of aircraft categories as used with respect to the ratings of airmen, including rotorcraft
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(vii) demonstrate knowledge of aircraft categories as used with respect to the ratings of airmen, including glider
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(viii) demonstrate knowledge of aircraft categories as used with respect to the ratings of airmen, including lighter-than-air

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(ix) demonstrate knowledge of aircraft categories as used with respect to the privileges of airmen, including airplane
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(x) demonstrate knowledge of aircraft categories as used with respect to the privileges of airmen, including rotorcraft
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(xi) demonstrate knowledge of aircraft categories as used with respect to the privileges of airmen, including glider
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(xii) demonstrate knowledge of aircraft categories as used with respect to the privileges of airmen, including lighter-than-air
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(xiii) demonstrate knowledge of aircraft categories as used with respect to the limitations of airmen, including airplane

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(xiv) demonstrate knowledge of aircraft categories as used with respect to the limitations of airmen, including rotorcraft
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(xv) demonstrate knowledge of aircraft categories as used with respect to the limitations of airmen, including glider
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(C) demonstrate knowledge of aircraft categories as used with respect to the certification, ratings, privileges, and limitations of airmen, including airplane, rotorcraft, glider, and lighter-than-air	(xvi) demonstrate knowledge of aircraft categories as used with respect to the limitiations of airmen, including lighter-than-air
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(i) demonstrate knowledge of airframe construction, including wood structures
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(ii) demonstrate knowledge of airframe construction, including metal tublar structures

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(iii) demonstrate knowledge of airframe construction, including fabric coverings
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(iv) demonstrate knowledge of airframe construction, including sheet metal
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(v) demonstrate knowledge of airframe construction, including composite structures
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(vi) demonstrate knowledge of basic repair methods, including wood structures
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(vii) demonstrate knowledge of basic repair methods
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(D) demonstrate knowledge of airframe construction and basic repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(viii) demonstrate knowledge of basic repair techniques

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(i) demonstrate knowledge of airframe systems, including landing gear
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(ii) demonstrate knowledge of airframe systems, including hydraulic power
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(iii) demonstrate knowledge of airframe systems, including cabin atmosphere control systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(iv) demonstrate knowledge of airframe systems, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(v) demonstrate knowledge of airframe components, including landing gear

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(vi) demonstrate knowledge of airframe components, including hydraulic power
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(vii) demonstrate knowledge of airframe components, including cabin atmosphere control systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(viii) demonstrate knowledge of airframe components, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(ix) demonstrate knowledge of airframe functions, including landing gear
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(x) demonstrate knowledge of airframe functions, including hydraulic power

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(xi) demonstrate knowledge of airframe functions, including cabin atmosphere control systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(xii) demonstrate knowledge of airframe functions, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(xiii) demonstrate knowledge of airframe basic operating principles, including landing gear
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(xiv) demonstrate knowledge of airframe basic operating principles, including hydraulic power
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(xv) demonstrate knowledge of airframe basic operating principles, including cabin atmosphere control systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of airframe systems and components, their functions, and basic operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, and electrical systems	(xvi) demonstrate knowledge of airframe basic operating principles, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(i) demonstrate knowledge of aircraft reciprocating engines
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(ii) demonstrate knowledge of aircraft turbine engines
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(iii) demonstrate knowledge of [reciprocating engines'] operating theory
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(iii) demonstrate knowledge of [turbine engines'] operating theory
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(iv) demonstrate knowledge of [reciprocating engines'] functions
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(v) demonstrate knowledge of [turbine engines'] functions

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(vi) demonstrate knowledge of [reciprocating engines'] basic repair methods
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(vii) demonstrate knowledge of [turbine engines'] basic repair methods
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(viii) demonstrate knowledge of [reciprocating engines'] basic repair techniques
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(F) demonstrate knowledge of aircraft reciprocating and turbine engines, their operating theory, functions, and basic repair methods and techniques	(ix) demonstrate knowledge of [turbine engines'] basic repair techniques
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(i) demonstrate knowledge of powerplant systems, including engine instruments
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(ii) demonstrate knowledge of powerplant systems, including electrical systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(iii) demonstrate knowledge of powerplant systems, including lubrication systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(iv) demonstrate knowledge of powerplant systems, including ignition and starting systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(v) demonstrate knowledge of powerplant systems, including cooling systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(vi) demonstrate knowledge of powerplant systems, including exhaust systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(vii) demonstrate knowledge of powerplant systems, including propellers
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(viii) demonstrate knowledge of powerplant components, including engine instruments
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(ix) demonstrate knowledge of powerplant components, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(x) demonstrate knowledge of powerplant components, including lubrication systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xi) demonstrate knowledge of powerplant components, including ignition and starting systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xii) demonstrate knowledge of powerplant components, including cooling systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xiii) demonstrate knowledge of powerplant components, including exhaust systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xiv) demonstrate knowledge of powerplant components, including propellers

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xv) demonstrate knowledge of [powerplant sustems'] functions, including engine instruments
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xvi) demonstrate knowledge of [powerplant sustems'] functions, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xvii) demonstrate knowledge of [powerplant sustems'] functions, including lubrication systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xviii) demonstrate knowledge of [powerplant sustems'] functions, including ignition and starting systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xix) demonstrate knowledge of [powerplant sustems'] functions, including cooling systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xx) demonstrate knowledge of [powerplant sustems'] functions, including exhaust systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxi) demonstrate knowledge of [powerplant sustems'] functions, including propellers
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxii) demonstrate knowledge of [powerplant sustems'] basic operating principles, including engine instruments

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxiii) demonstrate knowledge of [powerplant sustems'] basic operating principles, including electrical systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxiv) demonstrate knowledge of [powerplant sustems'] basic operating principles, including lubrication systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxv) demonstrate knowledge of [powerplant sustems'] basic operating principles, including ignition and starting systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxvi) demonstrate knowledge of [powerplant sustems'] basic operating principles, including cooling systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxvii) demonstrate knowledge of [powerplant sustems'] basic operating principles, including exhaust systems
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(G) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, electrical systems, lubrication systems, ignition and starting systems, cooling systems, exhaust systems, and propellers	(xxviii) demonstrate knowledge of [powerplant sustems'] basic operating principles, including propellers
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(i) demonstrate knowledge of aircraft common terminology
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(ii) demonstrate knowledge of aircraft standard practices required to complete maintenance
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(iii) demonstrate knowledge of aircraft standard practices required to complete modifications
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(iv) demonstrate knowledge of aircraft standard practices required to complete repairs

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(I) discuss the completion of logbooks and computer applications to maintain required aircraft documents	(i) discuss the completion of logbooks to maintain required aircraft documents
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(I) discuss the completion of logbooks and computer applications to maintain required aircraft documents	(ii) discuss the completion of computer applications to maintain required aircraft documents
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(i) demonstrate an understanding of the regular audits to maintain compliance with airworthiness regulations
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(ii) demonstrate an understanding of the regular audits to maintain compliance with safety regulations
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(iii) demonstrate an understanding of the regular audits to maintain compliance with health regulations
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(iv) demonstrate an understanding of the regular audits to maintain compliance with environmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(v) demonstrate an understanding of the regular inspections to maintain compliance with airworthiness regulations
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(vi) demonstrate an understanding of the regular inspections to maintain compliance with safety regulations
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(vii) demonstrate an understanding of the regular inspections to maintain compliance with health regulations
(3) The student understands the technical knowledge and skills for aircraft maintenance and repair. The student is expected to:	(J) demonstrate an understanding of the regular audits and inspections to maintain compliance with airworthiness, safety, health, and environmental regulations	(viii) demonstrate an understanding of the regular inspections to maintain compliance with environmental regulations
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge and basic skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(i) demonstrate knowledge in safely using hand tools commonly employed in the maintenance and repair of aircraft
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge and basic skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(ii) demonstrate basic skills in safely using hand tools commonly employed in the maintenance and repair of aircraft

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge and basic skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(iii) demonstrate knowledge in safely using power tools commonly employed in the maintenance and repair of aircraft
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge and basic skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(iv) demonstrate basic skills in safely using power tools commonly employed in the maintenance and repair of aircraft
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge and basic skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(v) demonstrate knowledge in safely using equipment commonly employed in the maintenance and repair of aircraft
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge and basic skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(vi) demonstrate basic skills in safely using equipment commonly employed in the maintenance and repair of aircraft
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(B) demonstrate knowledge of the proper handling and disposal of environmentally hazardous materials used in servicing aircraft	(i) demonstrate knowledge of the proper handling of environmentally hazardous materials used in servicing aircraft
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(B) demonstrate knowledge of the proper handling and disposal of environmentally hazardous materials used in servicing aircraft	(ii) demonstrate knowledge of the proper disposal of environmentally hazardous materials used in servicing aircraft

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(i) research the impact of new aircraft technologies
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(ii) understand the impact of new aircraft technologies
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(iii) research the impact of emerging aircraft technologies
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(iv) understand the impact of emerging aircraft technologies
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(i) identify the need for preventative maintenance procedures
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(ii) understand the need for preventative maintenance procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iii) identify the need for preventative maintenance procedures
(4) The student understands the function and application of the tools, equipment, technologies, and preventative maintenance used in aircraft maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iv) understand the need for preventative maintenance practices
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(A) start and ground operate an aircraft or simulated aircraft using a high fidelity flight simulator with a physical yoke and pedal device	(i) start an aircraft or simulated aircraft using a high fidelity flight simulator with a physical yoke and pedal device
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(A) start and ground operate an aircraft or simulated aircraft using a high fidelity flight simulator with a physical yoke and pedal device	(ii) ground operate an aircraft or simulated aircraft using a high fidelity flight simulator with a physical yoke and pedal device
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(B) research and locate appropriate documentation to perform a function in a written work order and complete the required logbook entry	(i) research appropriate documentation to perform a function in a written work order
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(B) research and locate appropriate documentation to perform a function in a written work order and complete the required logbook entry	(ii) locate appropriate documentation to perform a function in a written work order

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(B) research and locate appropriate documentation to perform a function in a written work order and complete the required logbook entry	(iii) complete the required logbook entry
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(i) draw top views of various aircraft categories, including airplane
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(ii) draw top views of various aircraft categories, including rotorcraft
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(iii) draw top views of various aircraft categories, including glider
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(iv) draw top views of various aircraft categories, including lighter-than-air

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(v) draw side views of various aircraft categories, including airplane
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(vi) draw side views of various aircraft categories, including rotorcraft
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(vii) draw side views of various aircraft categories, including glider
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(viii) draw side views of various aircraft categories, including lighter-than-air
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(ix) draw front views of various aircraft categories, including airplane
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(x) draw front views of various aircraft categories, including rotorcraft

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(xi) draw front views of various aircraft categories, including glider
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(C) draw top, side, and front views of various aircraft categories, including airplane, rotorcraft, glider, and lighter-than-air	(xii) draw front views of various aircraft categories, including lighter-than-air
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(D) perform basic airframe and engine inspections	(i) perform basic airframe inspections
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(D) perform basic airframe and engine inspections	(ii) perform basic engine inspections
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(E) construct an engine troubleshooting chart showing simple defects and resulting effects on engine performance	(i) construct an engine troubleshooting chart showing simple defects on engine performance
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(E) construct an engine troubleshooting chart showing simple defects and resulting effects on engine performance	(ii) construct an engine troubleshooting chart showing resulting effects on engine performance

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(F) discuss preventative maintenance plans and systems to keep aircraft systems in operation	(i) discuss preventative maintenance plans to keep aircraft systems in operation
(5) The student applies the technical knowledge and skills of the trade to simulated situations. The student is expected to:	(F) discuss preventative maintenance plans and systems to keep aircraft systems in operation	(ii) discuss preventative maintenance systems to keep aircraft systems in operation
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(i) describe ethical responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(ii) describe legal responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(iii) apply ethical responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(iv) apply legal responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(i) demonstrate proper etiquette
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) demonstrate proper etiquette and behavior	(ii) demonstrate proper behavior

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify benefits of personal appearance and health habits	(i) identify benefits of personal appearance
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify benefits of personal appearance and health habits	(ii) identify benefits of health habits
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills	(i) practice written communication skills
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills	(ii) practice oral communication skills
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(E) employ effective listening skills	(i) employ effective listening skills
(7) The student demonstrates knowledge of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(A) demonstrate knowledge of proper record-keeping skills as related to industry-based occupational experiences	(i) demonstrate knowledge of proper record-keeping skills as related to industry-based occupational experiences
(7) The student demonstrates knowledge of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(B) participate in youth leadership opportunities to create a well-rounded occupational experience	(i) participate in youth leadership opportunities to create a well-rounded occupational experience
(7) The student demonstrates knowledge of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(C) produce a program of activities for a career and technical student organization or other leadership opportunity	(i) produce a program of activities for a career and technical student organization or other leadership opportunity

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student demonstrates knowledge of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(D) develop a work plan and budget	(i) develop a work plan
(7) The student demonstrates knowledge of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(D) develop a work plan and budget	(ii) develop a work budget

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.453. Aircraft Airframe Technology (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 10-12. Prerequisite: Introduction to Aircraft Technology. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Aircraft Airframe Technology is designed to teach the theory of operation of aircraft airframes and associated maintenance and repair practices. Airframe maintenance and repair practices include knowledge of the function, diagnosis, and service of airframe structures, systems, and components of aircraft.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of aircraft maintenance and repair	(i) identify employment opportunities, including entrepreneurship opportunities for the field of aircraft maintenance and repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of aircraft maintenance and repair	(ii) identify certification requirements for the field of aircraft maintenance and repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of leadership related to career preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) evaluate employers' expectations and appropriate work habits	(i) evaluate employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) evaluate employers' expectations and appropriate work habits	(ii) evaluate appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information systems, and technology	(i) discuss the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information systems, and technology	(ii) discuss the competencies related to information systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information systems, and technology	(iii) discuss the competencies related to technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(i) demonstrate awareness of the technical knowledge related to human factors in health in the workplace, as specified by appropriate governmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(ii) demonstrate awareness of the technical knowledge related to human factors in health in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(iii) demonstrate awareness of the technical knowledge related to human factors in safety in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(iv) demonstrate awareness of the technical knowledge related to human factors in safety in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(v) demonstrate awareness of the technical skills related to human factors in health in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(vi) demonstrate awareness of the technical skills related to human factors in health in the workplace, as specified by an understanding of personal responsibility in this area

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(vii) demonstrate awareness of the technical skills related to human factors in safety in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate awareness of the technical knowledge and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(viii) demonstrate awareness of the technical skills related to human factors in safety in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(i) demonstrate awareness of the technical knowledge related to human factors in a successful workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(ii) demonstrate awareness of the technical skills related to human factors in a successful workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(iii) demonstrate awareness of the attitudes related to human factors in a successful workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(iv) demonstrate awareness of the technical knowledge related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(v) demonstrate awareness of the technical skills related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(vi) demonstrate awareness of the attitudes related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace and the role of the employee in creating that success, including personal responsibility	(vii) demonstrate awareness of the role of the employee in creating success [in a workplace], including personal responsibility
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) apply reasoning skills to a variety of simulated workplace situations in order to make ethical decisions	(i) apply reasoning skills to a variety of simulated workplace situations in order to make ethical decisions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(ii) demonstrate effective written communication skills with individuals from various cultures
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(B) identify requirements of work orders and related paperwork for repairs	(i) identify requirements of work orders for repairs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(B) identify requirements of work orders and related paperwork for repairs	(ii) identify related paperwork for repairs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) develop an understanding of how to estimate parts and labor costs on airframe repair orders	(i) develop an understanding of how to estimate parts costs on airframe repair orders
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) develop an understanding of how to estimate parts and labor costs on airframe repair orders	(ii) develop an understanding of how to estimate labor costs on airframe repair orders
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(i) locate documents, including schematics

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(ii) locate documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(iii) locate documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(iv) locate documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(v) locate documents, including blueprints

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(vi) locate documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(vii) locate documents, including service-repair manuals and service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(viii) locate documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(ix) locate documents, including supplemental type certificates

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(x) locate documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xi) locate documents, including federal aviation regulations and advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xii) read documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xiii) read documents, including charts

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xiv) read documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xv) read documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xvi) read documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xvii) read documents, including wiring diagrams

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xviii) read documents, including service-repair manuals and service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xix) read documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xx) read documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxi) read documents, including airworthiness directives

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxii) read documents, including federal aviation regulations and advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxiii) understand the function of documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxiv) understand the function of documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxv) understand the function of documents, including graphs

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxvi) understand the function of documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxvii) understand the function of documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxviii) understand the function of documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxix) understand the function of documents, including service-repair manuals and service bulletins

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxx) understand the function of documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxi) understand the function of documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxii) understand the function of documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxiii) understand the function of documents, including federal aviation regulations and advisory information

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxiv) interpret documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxv) interpret documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxvi) interpret documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxvii) interpret documents, including drawings

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxviii) interpret documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxix) interpret documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xl) interpret documents, including service-repair manuals and service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xli) interpret documents, including type certificate data sheets

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlii) interpret documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xliii) interpret documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xliv) interpret documents, including federal aviation regulations and advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) demonstrate an understanding of metric and U.S. customary standard measurement systems	(i) demonstrate an understanding of [the] metric measurement system
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) demonstrate an understanding of metric and U.S. customary standard measurement systems	(ii) demonstrate an understanding of [the] U.S. customary standard measurement system

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers	(i) perform precision measurements, including the use of engineering scales
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers	(ii) perform precision measurements, including the use of dial calipers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers	(iii) perform precision measurements, including the use of Vernier micrometers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose airframe system malfunctions, solve problems, and make decisions	(i) employ critical-thinking skills to diagnose airframe system malfunctions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose airframe system malfunctions, solve problems, and make decisions	(ii) employ critical-thinking skills to solve problems
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose airframe system malfunctions, solve problems, and make decisions	(iii) employ critical-thinking skills to make decisions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose airframe system malfunctions, solve problems, and make decisions	(iv) employ structured problem-solving skills to diagnose airframe system malfunctions

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose airframe system malfunctions, solve problems, and make decisions	(v) employ structured problem-solving skills to solve problems
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose airframe system malfunctions, solve problems, and make decisions	(vi) employ structured problem-solving skills to make decisions
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(A) demonstrate knowledge of aviation regulations prescribed by the Code of Federal Regulations, Title 14, Volumes I-III, that govern mechanic privileges, the construction, maintenance, and service of aircraft, and 100-hour and annual inspections	(i) demonstrate knowledge of aviation regulations prescribed by the Code of Federal Regulations, Title 14, Volumes I-III, that govern mechanic privileges, the construction, maintenance, and service of aircraft, and 100-hour and annual inspections
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(B) demonstrate knowledge of aircraft categories as used with respect to the certification of aircraft based upon intended use or operating limitations such as transport, normal, utility, acrobatic, limited, restricted, and provisional	(i) demonstrate knowledge of aircraft categories as used with respect to the certification of aircraft based upon intended use or operating limitations
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(C) apply the principles of basic aerodynamics, theory of flight, and the function of primary and secondary flight controls	(i) apply the principles of basic aerodynamics
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(C) apply the principles of basic aerodynamics, theory of flight, and the function of primary and secondary flight controls	(ii) apply the principles of theory of flight

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(C) apply the principles of basic aerodynamics, theory of flight, and the function of primary and secondary flight controls	(iii) apply the principles of the function of primary flight controls
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(C) apply the principles of basic aerodynamics, theory of flight, and the function of primary and secondary flight controls	(iv) apply the principles of the function of secondary flight controls
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(D) demonstrate knowledge of aircraft weight and balance and how repairs, alterations, and loading can adversely affect safe operation of an aircraft	(i) demonstrate knowledge of aircraft weight
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(D) demonstrate knowledge of aircraft weight and balance and how repairs, alterations, and loading can adversely affect safe operation of an aircraft	(ii) demonstrate knowledge of aircraft balance
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(D) demonstrate knowledge of aircraft weight and balance and how repairs, alterations, and loading can adversely affect safe operation of an aircraft	(iii) demonstrate knowledge of how repairs can adversely affect safe operation of an aircraft
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(D) demonstrate knowledge of aircraft weight and balance and how repairs, alterations, and loading can adversely affect safe operation of an aircraft	(iv) demonstrate knowledge of how alterations can adversely affect safe operation of an aircraft
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(D) demonstrate knowledge of aircraft weight and balance and how repairs, alterations, and loading can adversely affect safe operation of an aircraft	(v) demonstrate knowledge of how loading can adversely affect safe operation of an aircraft

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(E) demonstrate knowledge of aircraft finishes and corrosion prevention and removal processes	(i) demonstrate knowledge of aircraft finishes
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(E) demonstrate knowledge of aircraft finishes and corrosion prevention and removal processes	(ii) demonstrate knowledge of corrosion prevention processes
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(E) demonstrate knowledge of aircraft finishes and corrosion prevention and removal processes	(iii) demonstrate knowledge of corrosion removal processes
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(i) demonstrate knowledge of airframe construction, including wood structures
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(ii) demonstrate knowledge of airframe construction, including metal tubular structures
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(iii) demonstrate knowledge of airframe construction, including fabric coverings
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(iv) demonstrate knowledge of airframe construction, including sheet metal

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(v) demonstrate knowledge of airframe construction, including composite structures
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(vi) demonstrate knowledge of detailed repair methods
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(F) demonstrate knowledge of airframe construction and detailed repair methods and techniques, including wood structures, metal tubular structures, fabric coverings, sheet metal, and composite structures	(vii) demonstrate knowledge of detailed repair techniques
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(G) demonstrate knowledge of aircraft assembly and rigging procedures such as structure alignment checks, balancing flight control surfaces, removing and installing flight control surfaces, and jacking aircraft	(i) demonstrate knowledge of aircraft assembly
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(G) demonstrate knowledge of aircraft assembly and rigging procedures such as structure alignment checks, balancing flight control surfaces, removing and installing flight control surfaces, and jacking aircraft	(ii) demonstrate knowledge of aircraft rigging procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(i) demonstrate knowledge of airframe systems, including landing gear
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(ii) demonstrate knowledge of airframe systems, including hydraulic power
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(iii) demonstrate knowledge of airframe systems, including cabin atmosphere control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(iv) demonstrate knowledge of airframe systems, including aircraft instrument systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(v) demonstrate knowledge of airframe systems, including aircraft navigation systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(vi) demonstrate knowledge of airframe systems, including aircraft electronic communication systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(vii) demonstrate knowledge of airframe systems, including ice control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(viii) demonstrate knowledge of airframe systems, including rain control systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(ix) demonstrate knowledge of airframe systems, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(x) demonstrate knowledge of airframe systems, including electrical systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xi) demonstrate knowledge of airframe components, including landing gear
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xii) demonstrate knowledge of airframe components, including hydraulic power

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xiii) demonstrate knowledge of airframe components, including cabin atmosphere control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xiv) demonstrate knowledge of airframe components, including aircraft instrument systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xv) demonstrate knowledge of airframe components, including aircraft navigation systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xvi) demonstrate knowledge of airframe components, including aircraft electronic communication systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xvii) demonstrate knowledge of airframe components, including ice control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xviii) demonstrate knowledge of airframe components, including rain control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xix) demonstrate knowledge of airframe components, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xx) demonstrate knowledge of airframe components, including electrical systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxi) demonstrate knowledge of [airframe systems'] functions, including landing gear
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxii) demonstrate knowledge of [airframe systems'] functions, including hydraulic powe
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxiii) demonstrate knowledge of [airframe systems'] functions, including cabin atmosphere control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxiv) demonstrate knowledge of [airframe systems'] functions, including aircraft instrument systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxv) demonstrate knowledge of [airframe systems'] functions, including aircraft navigation systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxvi) demonstrate knowledge of [airframe systems'] functions, including aircraft electronic communication systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxvii) demonstrate knowledge of [airframe systems'] functions, including ice control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxviii) demonstrate knowledge of [airframe systems'] functions, including rain control systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxix) demonstrate knowledge of [airframe systems'] functions, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxx) demonstrate knowledge of [airframe systems'] functions, including electrical systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxi) demonstrate knowledge of [airframe systems'] detailed operating principles, including landing gear
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxii) demonstrate knowledge of [airframe systems'] detailed operating principles, including hydraulic power

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxiii) demonstrate knowledge of [airframe systems'] detailed operating principles, including cabin atmosphere control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxiv) demonstrate knowledge of [airframe systems'] detailed operating principles, including aircraft instrument systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxv) demonstrate knowledge of [airframe systems'] detailed operating principles, including aircraft navigation systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxvi) demonstrate knowledge of [airframe systems'] detailed operating principles, including aircraft electronic communication systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxvii) demonstrate knowledge of [airframe systems'] detailed operating principles, including ice control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxviii) demonstrate knowledge of [airframe systems'] detailed operating principles, including rain control systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xxxix) demonstrate knowledge of [airframe systems'] detailed operating principles, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(H) demonstrate knowledge of airframe systems and components, their functions, and detailed operating principles, including landing gear, hydraulic power, cabin atmosphere control systems, aircraft instrument systems, aircraft navigation and electronic communication systems, ice and rain control systems, fire protection systems, and electrical systems	(xl) demonstrate knowledge of [airframe systems'] detailed operating principles, including electrical systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(I) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(i) demonstrate knowledge of aircraft common terminology
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(I) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(ii) demonstrate knowledge of aircraft standard practices required to complete maintenance
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(I) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(iii) demonstrate knowledge of aircraft standard practices required to complete modifications
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(I) demonstrate knowledge of aircraft common terminology and standard practices required to complete maintenance, modifications, and repairs	(iv) demonstrate knowledge of aircraft standard practices required to complete repairs
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(J) discuss the completion of logbooks and computer applications to maintain required aircraft documents	(i) discuss the completion of logbooks to maintain required aircraft documents
(3) The student knows the technical knowledge and skills of aircraft services. The student is expected to:	(J) discuss the completion of logbooks and computer applications to maintain required aircraft documents	(ii) discuss the completion of computer applications to maintain required aircraft documents
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(i) demonstrate knowledge in safely using hand tools commonly employed in the maintenance and repair of aircraft

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(ii) demonstrate knowledge in safely using power tools commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(iii) demonstrate knowledge in safely using equipment commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(iv) demonstrate a high degree of skills in safely using hand tools commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(v) demonstrate a high degree of skills in safely using power tools commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(vi) demonstrate a high degree of skills in safely using equipment commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(B) demonstrate knowledge of the proper handling and disposal of environmentally hazardous materials used in servicing aircraft	(i) demonstrate knowledge of the proper handling of environmentally hazardous materials used in servicing aircraft

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(B) demonstrate knowledge of the proper handling and disposal of environmentally hazardous materials used in servicing aircraft	(ii) demonstrate knowledge of the proper disposal of environmentally hazardous materials used in servicing aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(i) research the impact of new aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(ii) research the impact of emerging aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(iii) understand the impact of new aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(iv) understand the impact of emerging aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(i) identify the need for preventative maintenance procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(ii) identify the need for preventative maintenance practices
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iii) understand the need for preventative maintenance procedures
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iv) understand the need for preventative maintenance practices
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(A) accurately calculate aircraft weight and balance	(i) accurately calculate aircraft weight
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(A) accurately calculate aircraft weight and balance	(ii) accurately calculate aircraft balance
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(B) accurately determine airframe component wear by using precision measuring and published specifications to determine if a given component is within wear tolerance and research necessary repairs	(i) accurately determine airframe component wear by using precision measuring

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(B) accurately determine airframe component wear by using precision measuring and published specifications to determine if a given component is within wear tolerance and research necessary repairs	(ii) accurately determine airframe component wear by using published specifications to determine if a given component is within wear tolerance
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(B) accurately determine airframe component wear by using precision measuring and published specifications to determine if a given component is within wear tolerance and research necessary repairs	(iii) research necessary repairs
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(C) build and fly a paper airplane with simple flight control surfaces that will predictably complete an objective	(i) build a paper airplane with simple flight control surfaces that will predictably complete an objective
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(C) build and fly a paper airplane with simple flight control surfaces that will predictably complete an objective	(ii) fly a paper airplane with simple flight control surfaces that will predictably complete an objective
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(D) research proper repair methods for a simulated repair and write a work order that calls out specific maintenance references and estimates cost of repairs	(i) research proper repair methods for a simulated repair
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(D) research proper repair methods for a simulated repair and write a work order that calls out specific maintenance references and estimates cost of repairs	(ii) write a work order that calls out specific maintenance references
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(D) research proper repair methods for a simulated repair and write a work order that calls out specific maintenance references and estimates cost of repairs	(iii) write a work order that estimates cost of repairs

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(E) create an appropriate inspection checklist for a given airframe based on regulated mandatory inspection points for an annual inspection and perform the inspection	(i) create an appropriate inspection checklist for a given airframe based on regulated mandatory inspection points for an annual inspection
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(E) create an appropriate inspection checklist for a given airframe based on regulated mandatory inspection points for an annual inspection and perform the inspection	(ii) perform the inspection
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(F) fabricate an example or simulated example of an airframe construction and repair method such as wood structures, metal tubular structures, fabric coverings, sheet metal, or composite structures	(i) fabricate an example or simulated example of an airframe construction method
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(F) fabricate an example or simulated example of an airframe construction and repair method such as wood structures, metal tubular structures, fabric coverings, sheet metal, or composite structures	(ii) fabricate an example or simulated example of an airframe repair method
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(G) describe the detailed function and operation of an airframe system using drawings and written descriptions	(i) describe the detailed function of an airframe system using drawings and written descriptions
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(G) describe the detailed function and operation of an airframe system using drawings and written descriptions	(ii) describe the detailed operation of an airframe system using drawings and written descriptions
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(H) construct an airframe system troubleshooting chart showing possible defects and resulting effects on system performance	(i) construct an airframe system troubleshooting chart showing possible defects

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(H) construct an airframe system troubleshooting chart showing possible defects and resulting effects on system performance	(ii) construct an airframe system troubleshooting chart showing resulting effects on system performance
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) apply the essential knowledge and skills in aircraft maintenance and repair to work-based learning experiences such as cooperative education, job shadowing, mentoring, and apprenticeship training	(i) apply the essential knowledge and skills in aircraft maintenance and repair to work-based learning experiences
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(J) indicate and select proper products used in preventative maintenance for a given aircraft from appropriate maintenance publications	(i) indicate proper products used in preventative maintenance for a given aircraft
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(J) indicate and select proper products used in preventative maintenance for a given aircraft from appropriate maintenance publications	(ii) select proper products used in preventative maintenance for a given aircraft from appropriate maintenance publications
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(K) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(i) perform regular audits to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(K) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(ii) perform regular audits to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(K) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iii) perform regular audits to maintain compliance with environmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(K) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iv) perform regular inspections to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(K) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(v) perform regular inspections to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(K) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(vi) perform regular inspections to maintain compliance with environmental regulations
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(i) describe ethical responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(ii) describe legal responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(iii) apply ethical responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(iv) apply legal responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) demonstrate the uses of proper etiquette and behavior	(i) demonstrate the uses of proper etiquette

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) demonstrate the uses of proper etiquette and behavior	(ii) demonstrate the uses of proper behavior
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify benefits of personal appearance and health habits	(i) identify benefits of personal appearance
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify benefits of personal appearance and health habits	(ii) identify benefits of personal health habits
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills	(i) practice written communication skills
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills	(ii) practice oral communication skills
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(E) employ effective listening skills	(i) employ effective listening skills
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(A) apply proper record-keeping skills as related to industry-based occupational experiences	(i) apply proper record-keeping skills as related to industry-based occupational experiences
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(B) participate in youth leadership opportunities to create a well-rounded occupational experience	(i) participate in youth leadership opportunities to create a well-rounded occupational experience

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(C) produce a program of activities for a career and technical student organization or other leadership opportunity	(i) produce a program of activities for a career and technical student organization or other leadership opportunity
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(D) develop a work plan and budget	(i) develop a work plan
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(D) develop a work plan and budget	(ii) develop a budget

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.454. Aircraft Powerplant Technology (Two Credits), Adopted 2015.**
(a) General Requirements. This course is recommended for students in Grades 11 and 12. Prerequisite: Introduction to Aircraft Technology. Students shall be awarded two credits for successful completion of this course.	
(b) Introduction.	
(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. (2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance. (3) Aircraft Powerplant Technology is designed to teach the theory of operation of aircraft powerplants and associated maintenance and repair practices. Powerplant maintenance and repair practices include knowledge of the theory, function, diagnosis, and service of powerplant, systems, and components of aircraft. Industry-recognized professional licensures, certifications, and registrations are available for students who meet the requirements set forth by the accrediting organization. (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations. (5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.	

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) discuss employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of aircraft maintenance and repair	(i) discuss employment opportunities, including entrepreneurship opportunities, for the field of aircraft maintenance and repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) discuss employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of aircraft maintenance and repair	(ii) discuss certification requirements for the field of aircraft maintenance and repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of leadership related to career preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) evaluate employers' expectations and appropriate work habits	(i) evaluate employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) evaluate employers' expectations and appropriate work habits	(ii) evaluate appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information systems, and technology	(i) discuss the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information systems, and technology	(ii) discuss the competencies related to information systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss the competencies related to resources, information systems, and technology	(iii) discuss the competencies related to technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(i) demonstrate knowledge of the technology related to human factors in health in the workplace, as specified by appropriate governmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(ii) demonstrate knowledge of the skills related to human factors in health in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(iii) demonstrate knowledge of the technology related to human factors in safety in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(iv) demonstrate knowledge of the skills related to human factors in safety in the workplace, as specified by appropriate governmental regulations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(v) demonstrate knowledge of the technology related to human factors in health in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(vi) demonstrate knowledge of the skills related to human factors in health in the workplace, as specified by an understanding of personal responsibility in this area

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(vii) demonstrate knowledge of the technology related to human factors in safety in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of the technology and skills related to human factors in health and safety in the workplace, as specified by appropriate governmental regulations and an understanding of personal responsibility in this area	(viii) demonstrate knowledge of the skills related to human factors in safety in the workplace, as specified by an understanding of personal responsibility in this area
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(i) demonstrate awareness of the technical knowledge related to human factors in a successful workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(ii) demonstrate awareness of the skills related to human factors in a successful workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(iii) demonstrate awareness of the attitudes related to human factors in a successful workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(iv) demonstrate awareness of the technical knowledge related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(v) demonstrate awareness of the skills related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(vi) demonstrate awareness of the attitudes related to human factors in a profitable workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate awareness of the technical knowledge, skills, and attitudes related to human factors in a successful and profitable workplace, and the role of the employee in creating that success, including personal responsibility	(vii) demonstrate awareness of the role of the employee in creating that success,including personal responsibility
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) apply reasoning to a variety of workplace situations in order to make ethical decisions	(i) apply reasoning to a variety of workplace situations in order to make ethical decisions

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures, including fellow workers, management, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures, including fellow workers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures, including fellow workers, management, and customers	(ii) demonstrate effective oral communication skills with individuals from various cultures, including management
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures, including fellow workers, management, and customers	(iii) demonstrate effective oral communication skills with individuals from various cultures, including customers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures, including fellow workers, management, and customers	(iv) demonstrate effective written communication skills with individuals from various cultures, including fellow workers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures, including fellow workers, management, and customers	(v) demonstrate effective written communication skills with individuals from various cultures, including management
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures, including fellow workers, management, and customers	(vi) demonstrate effective written communication skills with individuals from various cultures, including customers

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(B) follow work orders and related paperwork	(i) follow work orders
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(B) follow work orders and related paperwork	(ii) follow related paperwork
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) develop an understanding of how to estimate parts and labor costs on powerplant repair orders	(i) develop an understanding of how to estimate parts costs on powerplant repair orders
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(C) develop an understanding of how to estimate parts and labor costs on powerplant repair orders	(ii) develop an understanding of how to estimate labor costs on powerplant repair orders
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(i) locate documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(ii) locate documents, including charts

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(iii) locate documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(iv) locate documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(v) locate documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(vi) locate documents, including wiring diagrams

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(vii) locate documents, including service-repair manuals
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(viii) locate documents, including service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(ix) locate documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(x) locate documents, including supplemental type certificates

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xi) locate documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xii) locate documents, including federal aviation regulations
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xiii) locate documents, including advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xiv) read documents, including schematics

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xv) read documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xvi) read documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xvii) read documents, including drawings
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xviii) read documents, including blueprints

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xix) read documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xx) read documents, including service-repair manuals
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxi) read documents, including service bulletins
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxii) read documents, including type certificate data sheets

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxiii) read documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxiv) read documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxv) read documents, including federal aviation regulations
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxvi) read documents, including advisory information

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxvii) understand the function of documents, including schematics
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxviii) understand the function of documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxix) understand the function of documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxx) understand the function of documents, including drawings

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxi) understand the function of documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxii) understand the function of documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxiii) understand the function of documents, including service-repair manuals
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxiv) understand the function of documents, including service bulletins

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxv) understand the function of documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxvi) understand the function of documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxvii) understand the function of documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxviii) understand the function of documents, including federal aviation regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xxxix) understand the function of documents, including advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xl) interpret documents, including charts
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xli) interpret documents, including graphs
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlii) interpret documents, including drawings

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xliii) interpret documents, including blueprints
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xliv) interpret documents, including wiring diagrams
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlv) interpret documents, including service-repair manuals
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlvi) interpret documents, including service bulletins

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlvii) interpret documents, including type certificate data sheets
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlviii) interpret documents, including supplemental type certificates
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(xlix) interpret documents, including airworthiness directives
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(l) interpret documents, including federal aviation regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(D) locate, read, understand the function of, and interpret documents, including schematics, charts, graphs, drawings, blueprints, wiring diagrams, service-repair manuals and service bulletins, type certificate data sheets, supplemental type certificates, airworthiness directives, and federal aviation regulations and advisory information	(Ii) interpret documents, including advisory information
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) demonstrate an understanding of metric and U.S. customary standard measurement systems	(i) demonstrate an understanding of [the] metric measurement system
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(E) demonstrate an understanding of metric and U.S. customary standard measurement systems	(ii) demonstrate an understanding of [the] U.S. customary standard measurement system
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers	(i) perform precision measurements, including the use of engineering scales
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers	(ii) perform precision measurements, including the use of dial calipers
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(F) perform precision measurements, including the use of engineering scales, dial calipers, and Vernier micrometers	(iii) perform precision measurements, including the use of Vernier micrometers

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose powerplant system malfunctions, solve problems, and make decisions	(i) employ critical-thinking skills to diagnose powerplant system malfunctions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose powerplant system malfunctions, solve problems, and make decisions	(ii) employ critical-thinking skills to solve problems
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose powerplant system malfunctions, solve problems, and make decisions	(iii) employ critical-thinking skills to make decisions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose powerplant system malfunctions, solve problems, and make decisions	(iv) employ structured problem-solving skills to diagnose powerplant system malfunctions
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose powerplant system malfunctions, solve problems, and make decisions	(v) employ structured problem-solving skills to solve problems
(2) The student relates academic skills to the requirements of aircraft maintenance and repair. The student is expected to:	(G) employ critical-thinking skills and structured problem-solving skills to diagnose powerplant system malfunctions, solve problems, and make decisions	(vi) employ structured problem-solving skills to make decisions
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(A) demonstrate knowledge of aviation regulations prescribed by the Code of Federal Regulations, Title 14, Volumes I-III, that govern mechanic privileges, the construction, maintenance, and service of aircraft, and 100-hour and annual inspections	(i) demonstrate knowledge of aviation regulations prescribed by the Code of Federal Regulations, Title 14, Volumes I-III, that govern mechanic privileges, the construction, maintenance, and service of aircraft, and 100-hour and annual inspections

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(i) apply the principles of simple machines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(ii) apply the principles of fluid dynamics
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(iii) apply the principles of heat dynamics, including Boyle's Law
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(iv) apply the principles of heat dynamics, including Charles' Law
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(v) understand the principles of simple machines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(vi) understand the principles of fluid dynamics
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(vii) understand the principles of heat dynamics, including Boyle's Law

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(B) apply and understand the principles of simple machines, fluid dynamics, and heat dynamics, including Boyle's Law and Charles' Law	(viii) understand the principles of heat dynamics, including Charles' Law
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(i) demonstrate understanding of aircraft reciprocating engines, including the operating theory for two-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(ii) demonstrate understanding of aircraft reciprocating engines, including cylinder configurations for two-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(iii) demonstrate understanding of aircraft reciprocating engines, including functions for two-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(iv) demonstrate understanding of aircraft reciprocating engines, including service methods for two-cycle engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(v) demonstrate understanding of aircraft reciprocating engines, including repair methods for two-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(vi) demonstrate understanding of aircraft reciprocating engines, including service techniques for two-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(vii) demonstrate understanding of aircraft reciprocating engines, including repair techniques for two-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(viii) demonstrate understanding of aircraft reciprocating engines, including the operating theory for four-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(ix) demonstrate understanding of aircraft reciprocating engines, including cylinder configurations for four-cycle engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(x) demonstrate understanding of aircraft reciprocating engines, including functions for four-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xi) demonstrate understanding of aircraft reciprocating engines, including service methods for four-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xii) demonstrate understanding of aircraft reciprocating engines, including repair methods for four-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xiii) demonstrate understanding of aircraft reciprocating engines, including service techniques for four-cycle engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xiv) demonstrate understanding of aircraft reciprocating engines, including repair techniques for four-cycle engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xv) demonstrate understanding of aircraft reciprocating engines, including the operating theory for diesel engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xvi) demonstrate understanding of aircraft reciprocating engines, including cylinder configurations for diesel engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xvii) demonstrate understanding of aircraft reciprocating engines, including functions for diesel engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xviii) demonstrate understanding of aircraft reciprocating engines, including service methods for diesel engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xix) demonstrate understanding of aircraft reciprocating engines, including repair methods for diesel engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xx) demonstrate understanding of aircraft reciprocating engines, including service techniques for diesel engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(C) demonstrate understanding of aircraft reciprocating engines, including the operating theory, cylinder configurations, functions, and service and repair methods and techniques for two-cycle, four-cycle, and diesel engines	(xxi) demonstrate understanding of aircraft reciprocating engines, including repair techniques for diesel engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(i) demonstrate understanding of aircraft turbine engines, including the operating theory for turbojet engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(ii) demonstrate understanding of aircraft turbine engines, including the mechanical arrangements for turbojet engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(iii) demonstrate understanding of aircraft turbine engines, including the functions for turbojet engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(iv) demonstrate understanding of aircraft turbine engines, including the service methods for turbojet engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(v) demonstrate understanding of aircraft turbine engines, including the repair methods for turbojet engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(vi) demonstrate understanding of aircraft turbine engines, including the service techniques for turbojet engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(vii) demonstrate understanding of aircraft turbine engines, including the repair techniques for turbojet engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(viii) demonstrate understanding of aircraft turbine engines, including the operating theory for turbofan engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(ix) demonstrate understanding of aircraft turbine engines, including the mechanical arrangements for turbofan engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(x) demonstrate understanding of aircraft turbine engines, including the functions for turbofan engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xi) demonstrate understanding of aircraft turbine engines, including the service methods for turbofan engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xii) demonstrate understanding of aircraft turbine engines, including the repair methods for turbofan engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xiii) demonstrate understanding of aircraft turbine engines, including the service techniques for turbofan engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xiv) demonstrate understanding of aircraft turbine engines, including the repair techniques for turbofan engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xv) demonstrate understanding of aircraft turbine engines, including the operating theory for turboprop engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xvi) demonstrate understanding of aircraft turbine engines, including the mechanical arrangements for turboprop engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xvii) demonstrate understanding of aircraft turbine engines, including the functions for turboprop engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xviii) demonstrate understanding of aircraft turbine engines, including the service methods for turboprop engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xix) demonstrate understanding of aircraft turbine engines, including the repair methods for turboprop engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xx) demonstrate understanding of aircraft turbine engines, including the service techniques for turboprop engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxi) demonstrate understanding of aircraft turbine engines, including the repair techniques for turboprop engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxii) demonstrate understanding of aircraft turbine engines, including the operating theory for turboshaft engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxiii) demonstrate understanding of aircraft turbine engines, including the mechanical arrangements for turboshaft engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxiv) demonstrate understanding of aircraft turbine engines, including the functions for turboshaft engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxv) demonstrate understanding of aircraft turbine engines, including the service methods for turboshaft engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxvi) demonstrate understanding of aircraft turbine engines, including the repair methods for turboshaft engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxvii) demonstrate understanding of aircraft turbine engines, including the service techniques for turboshaft engines
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(D) demonstrate understanding of aircraft turbine engines, including the operating theory, mechanical arrangements, functions, and service and repair methods and techniques for turbojet, turbofan, turboprop, and turboshaft engines	(xxviii) demonstrate understanding of aircraft turbine engines, including the repair techniques for turboshaft engines

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(i) demonstrate knowledge of powerplant systems, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(ii) demonstrate knowledge of powerplant systems, including electrical systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(iii) demonstrate knowledge of powerplant systems, including lubrication systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(iv) demonstrate knowledge of powerplant systems, including ignition systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(v) demonstrate knowledge of powerplant systems, including starting systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(vi) demonstrate knowledge of powerplant systems, including fuel metering systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(vii) demonstrate knowledge of powerplant systems, including fuel delivery systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(viii) demonstrate knowledge of powerplant systems, including inductions systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(ix) demonstrate knowledge of powerplant systems, including cooling systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(x) demonstrate knowledge of powerplant systems, including exhaust systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xi) demonstrate knowledge of powerplant components, including engine instruments
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xii) demonstrate knowledge of powerplant components, including propellers

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xiii) demonstrate knowledge of [powerplant systems'] functions, including engine instruments
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xiv) demonstrate knowledge of [powerplan systems'] functions, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xv) demonstrate knowledge of [powerplan systems'] functions, including electrical systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xvi) demonstrate knowledge of [powerplan systems'] functions, including lubrication systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xvii) demonstrate knowledge of [powerplan systems'] functions, including ignition systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xviii) demonstrate knowledge of [powerplan systems'] functions, including starting systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xix) demonstrate knowledge of [powerplan systems'] functions, including fuel metering systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xx) demonstrate knowledge of [powerplan systems'] functions, including fuel delivery systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxi) demonstrate knowledge of [powerplan systems'] functions, including inductions systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxii) demonstrate knowledge of [powerplan systems'] functions, including cooling systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxiii) demonstrate knowledge of [powerplan systems'] functions, including exhaust systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxiv) demonstrate knowledge of [powerplan systems'] functions, including propellers

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxv) demonstrate knowledge of [powerplant systems'] basic operating principles, including engine instruments
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxvi) demonstrate knowledge of [powerplant systems'] basic operating principles, including fire protection systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxvii) demonstrate knowledge of [powerplant systems'] basic operating principles, including electrical systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxviii) demonstrate knowledge of [powerplant systems'] basic operating principles, including lubrication systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxix) demonstrate knowledge of [powerplant systems'] basic operating principles, including ignition systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxx) demonstrate knowledge of [powerplant systems'] basic operating principles, including starting systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxxi) demonstrate knowledge of [powerplant systems'] basic operating principles, including fuel metering systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxxii) demonstrate knowledge of [powerplant systems'] basic operating principles, including fuel delivery systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxxiii) demonstrate knowledge of [powerplant systems'] basic operating principles, including inductions systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxxiv) demonstrate knowledge of [powerplant systems'] basic operating principles, including cooling systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxxv) demonstrate knowledge of [powerplant systems'] basic operating principles, including exhaust systems
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(E) demonstrate knowledge of powerplant systems and components, their functions, and basic operating principles, including engine instruments, fire protection systems, electrical systems, lubrication systems, ignition and starting systems, fuel metering systems, fuel delivery systems, inductions systems, cooling systems, exhaust systems, and propellers	(xxxvi) demonstrate knowledge of [powerplant systems'] basic operating principles, including propellers

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(F) review the necessary steps to perform a reciprocating engine overhaul following industry best practices	(i) review the necessary steps to perform a reciprocating engine overhaul following industry best practices
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(i) identify appropriate nondestructive testing methods for component inspections, including dye penetrant inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(ii) identify appropriate nondestructive testing methods for component inspections, including eddy current inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(iii) identify appropriate nondestructive testing methods for component inspections, including ultrasonic inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(iv) identify appropriate nondestructive testing methods for component inspections, including magnetic particle inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(v) select appropriate nondestructive testing methods for component inspections, including dye penetrant inspections

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(vi) select appropriate nondestructive testing methods for component inspections, including eddy current inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(vii) select appropriate nondestructive testing methods for component inspections, including ultrasonic inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(G) identify and select appropriate nondestructive testing methods for component inspections, including dye penetrant, eddy current, ultrasonic, and magnetic particle inspections	(viii) select appropriate nondestructive testing methods for component inspections, including magnetic particle inspections
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(i) demonstrate knowledge of aircraft common terminology required to complete maintenance
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(ii) demonstrate knowledge of aircraft common terminology required to complete modifications
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(iii) demonstrate knowledge of aircraft common terminology required to complete repairs

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(iv) demonstrate knowledge of aircraft standard practices required to complete maintenance
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(v) demonstrate knowledge of aircraft standard practices required to complete modifications
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(vi) demonstrate knowledge of aircraft standard practices required to complete repairs
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(vii) demonstrate knowledge of tools required to complete maintenance
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(viii) demonstrate knowledge of tools required to complete modifications
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(H) demonstrate knowledge of aircraft common terminology and standard practices and the tools required to complete maintenance, modifications, and repairs	(ix) demonstrate knowledge of tools required to complete repairs

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(I) discuss the completion of logbooks and computer applications to maintain required aircraft documents	(i) discuss the completion of logbooks to maintain required aircraft documents
(3) The student knows the technical knowledge and skills of aircraft maintenance and repair. The student is expected to:	(I) discuss the completion of logbooks and computer applications to maintain required aircraft documents	(ii) discuss the completion of computer applications to maintain required aircraft documents
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(i) demonstrate knowledge in safely using hand tools commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(ii) demonstrate knowledge in safely using power tools commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(iii) demonstrate knowledge in safely using equipment commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(iv) demonstrate a high degree of skills in safely using hand tools commonly employed in the maintenance and repair of aircraft

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(v) demonstrate a high degree of skills in safely using power tools commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(A) demonstrate knowledge and a high degree of skills in safely using hand and power tools and equipment commonly employed in the maintenance and repair of aircraft	(vi) demonstrate a high degree of skills in safely using equipment commonly employed in the maintenance and repair of aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(B) demonstrate knowledge of the proper handling and disposal of environmentally hazardous materials used in maintaining and servicing aircraft	(i) demonstrate knowledge of the proper handling of environmentally hazardous materials used in maintaining and servicing aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(B) demonstrate knowledge of the proper handling and disposal of environmentally hazardous materials used in maintaining and servicing aircraft	(ii) demonstrate knowledge of the proper disposal of environmentally hazardous materials used in maintaining and servicing aircraft
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(i) research the impact of new aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(ii) research the impact of emerging aircraft technologies

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(iii) understand the impact of new aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(C) research and understand the impact of new and emerging aircraft technologies	(iv) understand the impact of emerging aircraft technologies
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(i) identify the need for preventative maintenance procedures
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iii) understand the need for preventative maintenance procedures
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iii) identify the need for preventative maintenance practices
(4) The student knows the function and application of the tools, equipment, technologies, and preventative maintenance used in airframe maintenance and repair. The student is expected to:	(D) identify and understand the need for preventative maintenance procedures and practices	(iv) understand the need for preventative maintenance practices

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(A) determine powerplant component wear accurately by using precision measuring and published specifications to determine if a given component is within wear tolerance and research necessary repairs	(i) determine powerplant component wear accurately by using precision measuring to determine if a given component is within wear tolerance
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(A) determine powerplant component wear accurately by using precision measuring and published specifications to determine if a given component is within wear tolerance and research necessary repairs	(ii) determine powerplant component wear accurately by using published specifications to determine if a given component is within wear tolerance
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(A) determine powerplant component wear accurately by using precision measuring and published specifications to determine if a given component is within wear tolerance and research necessary repairs	(iii) research necessary repairs [to a powerplant component]
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(B) research proper repair methods for a simulated repair and write a work order that calls out specific maintenance references and estimates cost of repairs	(i) research proper repair methods for a simulated repair
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(B) research proper repair methods for a simulated repair and write a work order that calls out specific maintenance references and estimates cost of repairs	(ii) write a work order that calls out specific maintenance references
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(B) research proper repair methods for a simulated repair and write a work order that calls out specific maintenance references and estimates cost of repairs	(iii) write a work order that estimates cost of repairs

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(C) create an appropriate inspection checklist for a given powerplant based on regulated mandatory inspection points for an annual inspection and perform the inspection	(i) create an appropriate inspection checklist for a given powerplant based on regulated mandatory inspection points for an annual inspection
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(C) create an appropriate inspection checklist for a given powerplant based on regulated mandatory inspection points for an annual inspection and perform the inspection	(ii) perform the inspection
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(D) describe the detailed function and operation of a reciprocating and a turbine aircraft powerplant using drawings and written descriptions	(i) describe the detailed function of a reciprocating aircraft powerplant using drawings and written descriptions
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(D) describe the detailed function and operation of a reciprocating and a turbine aircraft powerplant using drawings and written descriptions	(ii) describe the detailed function of a turbine aircraft powerplant using drawings and written descriptions
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(E) describe the detailed function and operation of a reciprocating or turbine aircraft powerplant system or component using drawings and written descriptions	(i) describe the detailed function of a reciprocating or turbine aircraft powerplant system or component using drawings and written descriptions
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(E) describe the detailed function and operation of a reciprocating or turbine aircraft powerplant system or component using drawings and written descriptions	(ii) describe the detailed operation of a reciprocating or turbine aircraft powerplant system or component using drawings and written descriptions
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(F) construct a detailed engine troubleshooting chart showing possible defects and resulting effects on engine performance of a reciprocating or turbine aircraft powerplant	(i) construct a detailed engine troubleshooting chart showing possible defects

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(F) construct a detailed engine troubleshooting chart showing possible defects and resulting effects on engine performance of a reciprocating or turbine aircraft powerplant	(ii) construct a detailed engine troubleshooting chart showing possible resulting effects on engine performance of a reciprocating or turbine aircraft powerplant
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(G) apply aircraft maintenance and repair essential knowledge and skills to learning experiences such as job shadowing, mentoring, apprenticeship training, and career preparation	(i) apply aircraft maintenance and repair essential knowledge and skills to learning experiences
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(H) indicate and select proper products used in preventative maintenance for a given powerplant from appropriate maintenance publications	(i) indicate proper products used in preventative maintenance for a given powerplant
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(H) indicate and select proper products used in preventative maintenance for a given powerplant from appropriate maintenance publications	(ii) select proper products used in preventative maintenance for a given powerplant from appropriate maintenance publications
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(i) perform regular audits to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(ii) perform regular audits to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iii) perform regular audits to maintain compliance with environmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iv) perform regular inspections to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(v) perform regular inspections to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of the trade to simulated and actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(vi) perform regular inspections to maintain compliance with environmental regulations
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(i) describe ethical responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(ii) apply ethical responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(iii) describe legal responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(A) describe and apply ethical and legal responsibilities appropriate to the workplace	(iv) apply legal responsibilities appropriate to the workplace
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) demonstrate the uses of proper etiquette and behavior	(i) demonstrate the uses of proper etiquette

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(B) demonstrate the uses of proper etiquette and behavior	(ii) demonstrate the uses of proper behavior
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify benefits of personal appearance and health habits	(i) identify benefits of personal appearance
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(C) identify benefits of personal appearance and health habits	(ii) identify benefits of health habits
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills	(i) practice written communication skills
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(D) practice written and oral communication skills	(ii) practice oral communication skills
(6) The student demonstrates appropriate interpersonal and communication skills. The student is expected to:	(E) employ effective listening skills	(i) employ effective listening skills
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(A) apply proper record-keeping skills as related to industry-based occupational experiences	(i) apply proper record-keeping skills as related to industry-based occupational experiences
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(B) participate in youth leadership opportunities to create a well-rounded occupational experience	(i) participate in youth leadership opportunities to create a well-rounded occupational experience

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(C) produce a program of activities for a career and technical student organization or other leadership opportunity	(i) produce a program of activities for a career and technical student organization or other leadership opportunity
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(D) develop a work plan and budget	(i) develop a work plan
(7) The student learns the value of and how to develop an occupational experience program as it relates to the aircraft industry. The student is expected to:	(D) develop a work plan and budget	(ii) develop a budget

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.455. Basic Collision Repair and Refinishing (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Basic Collision Repair and Refinishing includes knowledge of the processes, technologies, and materials used in the reconstruction of vehicles. This course is designed to teach the concepts and theory of systems related to automotive collision repair and refinishing.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive collision and refinishing and understand the use of personal protective equipment	(i) demonstrate awareness of workplace safety in automotive collision [repair] and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive collision and refinishing and understand the use of personal protective equipment	(ii) demonstrate awareness of environmental responsibilities in automotive collision [repair] and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive collision and refinishing and understand the use of personal protective equipment	(iii) understand the use of personal protective equipment
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the fields of collision repair and refinishing	(i) identify employment opportunities, including entrepreneurship opportunities, for the fields of collision repair and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the fields of collision repair and refinishing	(ii) identify certification requirements for the fields of collision repair and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) review the principles of group participation and leadership related to citizenship and career preparation	(i) review the principles of group participation related to citizenship

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) review the principles of group participation and leadership related to citizenship and career preparation	(ii) review the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) review the principles of group participation and leadership related to citizenship and career preparation	(iii) review the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) review the principles of group participation and leadership related to citizenship and career preparation	(iv) review the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(i) review the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(ii) review the competencies related to information systems

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(iii) review the competencies related to technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) apply reasoning skills to a variety of workplace situations in order to make ethical decisions	(i) apply reasoning skills to a variety of workplace situations in order to make ethical decisions
(2) The student relates core academic skills to the requirements of collision repair and refinishing technology. The student is expected to:	(A) apply effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(i) apply effective oral communication skills with individuals from various cultures
(2) The student relates core academic skills to the requirements of collision repair and refinishing technology. The student is expected to:	(A) apply effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(ii) apply effective written communication skills with individuals from various cultures
(2) The student relates core academic skills to the requirements of collision repair and refinishing technology. The student is expected to:	(B) use technical writing skills to complete collision repair and refinishing orders and related paperwork	(i) use technical writing skills to complete collision repair and refinishing orders
(2) The student relates core academic skills to the requirements of collision repair and refinishing technology. The student is expected to:	(B) use technical writing skills to complete collision repair and refinishing orders and related paperwork	(ii) use technical writing skills to complete related paperwork
(2) The student relates core academic skills to the requirements of collision repair and refinishing technology. The student is expected to:	(C) locate and read documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(i) locate documents

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of collision repair and refinishing technology. The student is expected to:	(C) locate and read documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(ii) read documents
(3) The student understands the technical knowledge and skills of basic collision repair and refinishing systems. The student is expected to:	(A) demonstrate an understanding of basic types of repair procedures used in the auto collision industry	(i) demonstrate an understanding of basic types of repair procedures used in the auto collision industry
(3) The student understands the technical knowledge and skills of basic collision repair and refinishing systems. The student is expected to:	(B) demonstrate an understanding of basic preparation, application, and refinishing with various paint products	(i) demonstrate an understanding of basic preparation with various paint products
(3) The student understands the technical knowledge and skills of basic collision repair and refinishing systems. The student is expected to:	(B) demonstrate an understanding of basic preparation, application, and refinishing with various paint products	(ii) demonstrate an understanding of basic application with various paint products
(3) The student understands the technical knowledge and skills of basic collision repair and refinishing systems. The student is expected to:	(B) demonstrate an understanding of basic preparation, application, and refinishing with various paint products	(iii) demonstrate an understanding of basic refinishing with various paint products
(3) The student understands the technical knowledge and skills of basic collision repair and refinishing systems. The student is expected to:	(C) estimate parts and labor costs on collision repair and refinishing orders	(i) estimate parts costs on collision repair and refinishing orders
(3) The student understands the technical knowledge and skills of basic collision repair and refinishing systems. The student is expected to:	(C) estimate parts and labor costs on collision repair and refinishing orders	(ii) estimate labor costs on collision repair and refinishing orders

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(A) identify hand and power tools and equipment commonly used in collision repair and refinishing	(i) identify hand tools commonly used in collision repair and refinishing
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(A) identify hand and power tools and equipment commonly used in collision repair and refinishing	(ii) identify power tools commonly used in collision repair and refinishing
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(A) identify hand and power tools and equipment commonly used in collision repair and refinishing	(v) identify equipment commonly used in collision repair and refinishing
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(B) identify proper welding and cutting techniques and processes used in collision repair	(i) identify proper welding techniques used in collision repair
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(B) identify proper welding and cutting techniques and processes used in collision repair	(ii) identify proper cutting techniques used in collision repair
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(B) identify proper welding and cutting techniques and processes used in collision repair	(iii) identify proper welding processes used in collision repair

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(B) identify proper welding and cutting techniques and processes used in collision repair	(iv) identify proper cutting processes used in collision repair
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(C) identify environmentally hazardous materials and appropriate handling methods used in collision repair and refinishing technologies	(i) identify environmentally hazardous materials used in collision repair and refinishing technologies
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(C) identify environmentally hazardous materials and appropriate handling methods used in collision repair and refinishing technologies	(ii) identify appropriate handling methods [for environmentally hazardous materials] used in collision repair and refinshing technologies
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(D) demonstrate awareness of new and emerging collision repair and refinishing technologies	(i) demonstrate awareness of new collision repair and refinishing technologies
(4) The student knows the basic function and application of tools, equipment, technologies, and materials used in collision repair and refinishing services. The student is expected to:	(D) demonstrate awareness of new and emerging collision repair and refinishing technologies	(ii) demonstrate awareness of emerging collision repair and refinishing technologies
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(A) demonstrate the safe use of various hand and power tools and equipment commonly used in collision repair and refinishing	(i) demonstrate the safe use of various hand tools commonly used in collision repair and refinishing

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(A) demonstrate the safe use of various hand and power tools and equipment commonly used in collision repair and refinishing	(ii) demonstrate the safe use of various power tools commonly used in collision repair and refinishing
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(A) demonstrate the safe use of various hand and power tools and equipment commonly used in collision repair and refinishing	(iii) demonstrate the safe use of equipment commonly used in collision repair and refinishing
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(B) identify types of vehicle construction materials and associated repair methods	(i) identify types of vehicle construction materials
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(B) identify types of vehicle construction materials and associated repair methods	(ii) identify associated repair methods
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(C) remove paint from the damaged area of a body panel	(i) remove paint from the damaged area of a body panel
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(D) identify and repair surface irregularities on a damaged body panel	(i) identify surface irregularities on a damaged body panel
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(D) identify and repair surface irregularities on a damaged body panel	(ii) repair surface irregularities on a damaged body panel

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(E) demonstrate hammer and dolly techniques for dent repair	(i) demonstrate hammer and dolly techniques for dent repair
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(F) prepare damaged area using water-based and solvent-based cleaners	(i) prepare damaged area using water-based cleaners
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(F) prepare damaged area using water-based and solvent-based cleaners	(ii) prepare damaged area using solvent-based cleaners
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(G) identify, prepare, and apply body filler	(i) identify body filler
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(G) identify, prepare, and apply body filler	(ii) prepare body filler
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(G) identify, prepare, and apply body filler	(iii) apply body filler
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(H) rough sand body filler to contour panel and finish sand for the application of primer	(i) rough sand body filler to contour panel

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(H) rough sand body filler to contour panel and finish sand for the application of primer	(ii) finish sand for the application of primer
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(I) demonstrate the proper preparation, application, and refinishing of various paint products	(i) demonstrate the proper preparation of various paint products
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(I) demonstrate the proper preparation, application, and refinishing of various paint products	(ii) demonstrate the proper application of various paint products
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(I) demonstrate the proper preparation, application, and refinishing of various paint products	(iii) demonstrate the proper refinishing of various paint products
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(J) apply finish using appropriate spray techniques such as gun arc, angle, distance, travel speed, and spray pattern overlap for the finish being applied	(i) apply finish using appropriate spray techniques for the finish being applied
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(K) apply basecoat and clear coat for overall refinishing	(i) apply basecoat for overall refinishing
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(K) apply basecoat and clear coat for overall refinishing	(ii) apply clear coat for overall refinishing

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(L) sand, buff, and polish fresh or existing finish to remove defects as required	(i) sand fresh or existing finish to remove defects as required
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(L) sand, buff, and polish fresh or existing finish to remove defects as required	(ii) buff fresh or existing finish to remove defects as required
(5) The student reviews the technical knowledge and skills of collision repair and refinishing. The student is expected to:	(L) sand, buff, and polish fresh or existing finish to remove defects as required	(iii) polish fresh or existing finish to remove defects as required

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.456. Collision Repair (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: Basic Collision Repair and Refinishing. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Collision Repair includes knowledge of the processes, technologies, and materials used in the reconstruction of vehicles. This course is designed to teach the concepts and theory of systems related to automotive collision repair and refinishing.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate an understanding of workplace safety and environmental responsibilities regarding automotive collision repair and understand the use of personal protective equipment	(i) demonstrate an understanding of workplace safety regarding automotive collision repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate an understanding of workplace safety and environmental responsibilities regarding automotive collision repair and understand the use of personal protective equipment	(ii) demonstrate an understanding of environmental responsibilities regarding automotive collision repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate an understanding of workplace safety and environmental responsibilities regarding automotive collision repair and understand the use of personal protective equipment	(iii) understand the use of personal protective equipment
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the fields of collision repair	(i) identify employment opportunities, including entrepreneurship opportunities, for the fields of collision repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the fields of collision repair	(ii) identify certification requirements for the fields of collision repair
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(i) review the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(ii) review the competencies related to information systems

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(iii) review the competencies related to technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) apply reasoning skills to a variety of workplace situations in order to make ethical decisions	(i) apply reasoning skills to a variety of workplace situations in order to make ethical decisions
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(A) apply effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(i) apply effective oral communication skills with individuals from various cultures
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(A) apply effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(ii) apply effective written communication skills with individuals from various cultures
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(B) use technical writing skills to complete collision repair orders and related paperwork	(i) use technical writing skills to complete collision repair orders
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(B) use technical writing skills to complete collision repair orders and related paperwork	(ii) use technical writing skills to complete related paperwork
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(C) locate, read, and interpret documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(i) locate documents

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(C) locate, read, and interpret documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(ii) read documents
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(C) locate, read, and interpret documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(iii) interpret documents
(2) The student relates core academic skills to the requirements of collision repair. The student is expected to:	(D) apply mathematical skills to the estimating process such as establishing charges and totals, profit margins, technician productivity, and shop efficiency	(i) apply mathematical skills to the estimating process
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(A) demonstrate an understanding of basic types of repair procedures for the different types of vehicle body construction used in the auto collision industry	(i) demonstrate an understanding of basic types of repair procedures for the different types of vehicle body construction used in the auto collision industry
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(B) demonstrate an understanding of pre-repair and repair inspection of non-damaged components	(i) demonstrate an understanding of pre-repair inspection of non-damaged components
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(B) demonstrate an understanding of pre-repair and repair inspection of non-damaged components	(ii) demonstrate an understanding of repair inspection of non-damaged components
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(C) demonstrate the proper preparation, application, and refinishing of various paint products	(i) demonstrate the proper preparation of various paint products
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(C) demonstrate the proper preparation, application, and refinishing of various paint products	(ii) demonstrate the proper application of various paint products

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(C) demonstrate the proper preparation, application, and refinishing of various paint products	(iii) demonstrate the proper refinishing of various paint products
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(D) estimate parts and labor costs of collision repair	(i) estimate parts costs of collision repair
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(D) estimate parts and labor costs of collision repair	(ii) estimate labor costs of collision repair
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(E) perform precision measurements to diagnose vehicle body shape and frame alignment angles	(i) perform precision measurements to diagnose vehicle body shape angles
(3) The student understands the technical knowledge and skills of collision repair. The student is expected to:	(E) perform precision measurements to diagnose vehicle body shape and frame alignment angles	(ii) perform precision measurements to diagnose frame alignment angles
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(A) use hand and power tools and equipment commonly employed in collision repair, according to industry safety standards	(i) use hand tools commonly employed in collision repair, according to industry safety standards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(A) use hand and power tools and equipment commonly employed in collision repair, according to industry safety standards	(ii) use power tools commonly employed in collision repair, according to industry safety standards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(A) use hand and power tools and equipment commonly employed in collision repair, according to industry safety standards	(iii) use equipment commonly employed in collision repair, according to industry safety standards

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(B) identify proper welding and cutting techniques and processes in collision repair	(i) identify proper welding techniques in collision repair
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(B) identify proper welding and cutting techniques and processes in collision repair	(ii) identify proper cutting techniques in collision repair
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(B) identify proper welding and cutting techniques and processes in collision repair	(iii) identify proper welding processes in collision repair
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(B) identify proper welding and cutting techniques and processes in collision repair	(iv) identify proper cutting processes in collision repair
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(C) properly handle and dispose of environmentally hazardous materials used in collision repair and refinishing technologies	(i) properly handle environmentally hazardous materials used in collision repair and refinishing technologies
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(C) properly handle and dispose of environmentally hazardous materials used in collision repair and refinishing technologies	(ii) properly dispose of environmentally hazardous materials used in collision repair and refinishing technologies
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(D) demonstrate knowledge of new and emerging collision repair	(i) demonstrate knowledge of new collision repair [technologies]

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in collision repair. The student is expected to:	(D) demonstrate knowledge of new and emerging collision repair	(ii) demonstrate knowledge of emerging collision repair [technologies]
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(i) perform regular audits to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(ii) perform regular audits to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iii) perform regular audits to maintain compliance with environmental regulations
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iv) perform regular inspections to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(v) perform regular inspections to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(vi) perform regular inspections to maintain compliance with environmental regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(B) identify types of vehicle construction materials and associated repair methods	(i) identify types of vehicle construction materials
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(B) identify types of vehicle construction materials and associated repair methods	(ii) identify associated repair methods
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(C) identify methods of collision energy management and types of damage	(i) identify methods of collision energy management
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(C) identify methods of collision energy management and types of damage	(ii) identify types of damage
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(D) determine vehicle damage and prepare an estimate of the repair costs	(i) determine vehicle damage
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(D) determine vehicle damage and prepare an estimate of the repair costs	(ii) prepare an estimate of the repair costs
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(E) determine body panel damage and identify the associated repair methods, including inspection, disassembly, and repair or replacement of components	(i) determine body panel damage

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(E) determine body panel damage and identify the associated repair methods, including inspection, disassembly, and repair or replacement of components	(ii) identify the associated repair methods, including inspection, of components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(E) determine body panel damage and identify the associated repair methods, including inspection, disassembly, and repair or replacement of components	(iii) identify the associated repair methods, including disassembly, of components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(E) determine body panel damage and identify the associated repair methods, including inspection, disassembly, and repair or replacement of components	(iv) identify the associated repair methods, including repair or replacement of components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(F) inspect, remove, replace, and align various body components such as hoods, hinges, latches, and bumper covers	(i) inspect various body components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(F) inspect, remove, replace, and align various body components such as hoods, hinges, latches, and bumper covers	(ii) remove various body components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(F) inspect, remove, replace, and align various body components such as hoods, hinges, latches, and bumper covers	(iii) replace various body components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(F) inspect, remove, replace, and align various body components such as hoods, hinges, latches, and bumper covers	(iv) align various body components

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(G) identify types of vehicle finishes and associated refinish techniques	(i) identify types of vehicle finishes
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(G) identify types of vehicle finishes and associated refinish techniques	(ii) identify associated refinish techniques [for types of vehicle finishes]
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(i) inspect bolted panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(ii) remove bolted panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(iii) replace bolted panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(iv) inspect bonded panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(v) remove bonded panels or panel assemblies

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(vi) replace bonded panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(vii) inspect welded panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(viii) remove welded panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(H) inspect, remove, and replace bolted, bonded, and welded panels or panel assemblies	(ix) replace welded panels or panel assemblies
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(I) identify vehicle occupant restraint systems and associated repair methods	(i) identify vehicle occupant restraint systems
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(I) identify vehicle occupant restraint systems and associated repair methods	(ii) identify associated repair methods
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(J) identify vehicle body components and assess for repair or replacement	(i) identify vehicle body components

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(J) identify vehicle body components and assess for repair or replacement	(ii) assess [vehicle body components] for repair or replacement
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(K) demonstrate the welding and cutting processes used in vehicle collision repair	(i) demonstrate the welding processes used in vehicle collision repair
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(K) demonstrate the welding and cutting processes used in vehicle collision repair	(ii) demonstrate the cutting processes used in vehicle collision repair
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(L) remove, install, and adjust vehicle mechanical systems and electrical components	(i) remove vehicle mechanical systems
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(L) remove, install, and adjust vehicle mechanical systems and electrical components	(ii) install vehicle mechanical systems
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(L) remove, install, and adjust vehicle mechanical systems and electrical components	(iii) adjust vehicle mechanical systems a
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(L) remove, install, and adjust vehicle mechanical systems and electrical components	(iv) remove vehicle electrical components

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(L) remove, install, and adjust vehicle mechanical systems and electrical components	(v) install vehicle electrical components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(L) remove, install, and adjust vehicle mechanical systems and electrical components	(vi) adjust vehicle electrical components
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(M) identify and determine the cause of paint and refinishing defects	(i) identify the cause of paint defects
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(M) identify and determine the cause of paint and refinishing defects	(ii) identify the cause of refinishing defects
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(M) identify and determine the cause of paint and refinishing defects	(iii) determine the cause of paint defects
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(M) identify and determine the cause of paint and refinishing defects	(iv) determine the cause of refinishing defects
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(N) discuss interior and exterior trim repair	(i) discuss interior trim repair

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(N) discuss interior and exterior trim repair	(ii) discuss exterior trim repair
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(O) discuss corrosion protection, including sealers, adhesives, and under-coatings	(i) discuss corrosion protection, including sealers
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(O) discuss corrosion protection, including sealers, adhesives, and under-coatings	(ii) discuss corrosion protection, including adhesives
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(O) discuss corrosion protection, including sealers, adhesives, and under-coatings	(iii) discuss corrosion protection, including under-coatings
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(P) prepare damaged area using water-based and solvent-based cleaners	(i) prepare damaged area using water-based cleaners
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(P) prepare damaged area using water-based and solvent-based cleaners	(ii) prepare damaged area using solvent-based cleaners
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(Q) demonstrate vehicle detailing	(i) demonstrate vehicle detailing

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(R) restore sound deadeners and foam materials	(i) restore sound deadeners
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(R) restore sound deadeners and foam materials	(ii) restore foam materials
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(S) diagnose and repair water leaks, dust leaks, and wind noise	(i) diagnose water leaks
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(S) diagnose and repair water leaks, dust leaks, and wind noise	(ii) diagnose dust leaks
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(S) diagnose and repair water leaks, dust leaks, and wind noise	(iii) diagnose wind noise
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(S) diagnose and repair water leaks, dust leaks, and wind noise	(iv) repair water leaks
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(S) diagnose and repair water leaks, dust leaks, and wind noise	(v) repair dust leaks

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of collision repair and refinishing to simulated or actual work situations. The student is expected to:	(S) diagnose and repair water leaks, dust leaks, and wind noise	(vi) repair wind noise
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(A) remove paint from damaged area of a body panel	(i) remove paint from damaged area of a body panel
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(B) identify and repair surface irregularities on a damaged body panel	(i) identify surface irregularities on a damaged body panel
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(B) identify and repair surface irregularities on a damaged body panel	(ii) repair surface irregularities on a damaged body panel
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(C) demonstrate hammer and dolly techniques for dent repair	(i) demonstrate hammer and dolly techniques for dent repair
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(D) heat shrink stretched panel areas to proper contour	(i) heat shrink stretched panel areas to proper contour
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(E) cold shrink stretched panel areas to proper contour	(i) cold shrink stretched panel areas to proper contour

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(F) identify, prepare, and apply body filler	(i) identify body filler
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(F) identify, prepare, and apply body filler	(ii) prepare body filler
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(F) identify, prepare, and apply body filler	(iii) apply body filler
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(G) rough sand body filler to contour panel and finish sand for the application of primer	(i) rough sand body filler to contour panel
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(G) rough sand body filler to contour panel and finish sand for the application of primer	(ii) finish sand for the application of primer
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(H) determine the proper metal finishing techniques for aluminum	(i) determine the proper metal finishing techniques for aluminum
(6) The student applies the technical knowledge and skills of metal finishing and body filling to simulated or actual work situations. The student is expected to:	(I) determine the proper application of body filler to aluminum	(i) determine the proper application of body filler to aluminum

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(A) inspect, adjust, repair, or replace window systems such as regulators, run channels, glass, power mechanisms, and related controls	(i) inspect, adjust, repair, or replace window systems
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(B) inspect, adjust, remove, repair, or reinstall body sealing systems such as weather stripping	(i) inspect, adjust, remove, repair, or reinstall body sealing systems
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(C) inspect, adjust, repair, or replace regulators, run channels, glass, power mechanisms, and related controls for roof panel options such as sun roofs and convertible tops	(i) inspect, adjust, repair, or replace regulators for roof panel options
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(C) inspect, adjust, repair, or replace regulators, run channels, glass, power mechanisms, and related controls for roof panel options such as sun roofs and convertible tops	(ii) inspect, adjust, repair, or replace run channels for roof panel options
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(C) inspect, adjust, repair, or replace regulators, run channels, glass, power mechanisms, and related controls for roof panel options such as sun roofs and convertible tops	(iii) inspect, adjust, repair, or replace glass for roof panel options
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(C) inspect, adjust, repair, or replace regulators, run channels, glass, power mechanisms, and related controls for roof panel options such as sun roofs and convertible tops	(iv) inspect, adjust, repair, or replace power mechanisms for roof panel options

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(C) inspect, adjust, repair, or replace regulators, run channels, glass, power mechanisms, and related controls for roof panel options such as sun roofs and convertible tops	(v) inspect, adjust, repair, or replace related controls for roof panel options
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(i) inspect convertible tops
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(ii) remove convertible tops
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(iii) reinstall convertible tops
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(iv) align convertible tops
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(v) inspect mechanisms [related to convertible tops]
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(vi) remove mechanisms [related to convertible tops]

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(vii) reinstall mechanisms [related to convertible tops]
(7) The student applies the technical knowledge and skills of moveable glass and hardware to simulated or actual work situations. The student is expected to:	(D) inspect, remove, reinstall, and align convertible tops and related mechanisms	(viii) align mechanisms [related to convertible tops]
(8) The student applies the technical knowledge and skills of plastics and adhesives to simulated or actual work situations. The student is expected to:	(A) identify the types of plastics used in automotive applications	(i) identify the types of plastics used in automotive applications
(8) The student applies the technical knowledge and skills of plastics and adhesives to simulated or actual work situations. The student is expected to:	(B) clean and prepare the surface of plastic parts	(i) clean the surface of plastic parts
(8) The student applies the technical knowledge and skills of plastics and adhesives to simulated or actual work situations. The student is expected to:	(B) clean and prepare the surface of plastic parts	(ii) prepare the surface of plastic parts
(8) The student applies the technical knowledge and skills of plastics and adhesives to simulated or actual work situations. The student is expected to:	(C) repair rigid, semi-rigid, or flexible plastic panels	(i) repair rigid, semi-rigid, or flexible plastic panels
(8) The student applies the technical knowledge and skills of plastics and adhesives to simulated or actual work situations. The student is expected to:	(D) remove or repair damaged areas from rigid exterior composite panels	(i) remove or repair damaged areas from rigid exterior composite panels

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of plastics and adhesives to simulated or actual work situations. The student is expected to:	(E) replace bonded rigid exterior composite body panels, including straightening or aligning panel supports	(i) replace bonded rigid exterior composite body panels, including straightening or aligning panel supports
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(A) prepare vehicle for inspection by providing access to damaged areas	(i) prepare vehicle for inspection by providing access to damaged areas
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(B) analyze damage to determine appropriate methods for overall repairs	(i) analyze damage to determine appropriate methods for overall repairs
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(C) perform visual inspection of structural components and members	(i) perform visual inspection of structural components
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(C) perform visual inspection of structural components and members	(ii) perform visual inspection of structural members
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(D) identify structural damage using measuring tools and equipment	(i) identify structural damage using measuring tools
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(D) identify structural damage using measuring tools and equipment	(ii) identify structural damage using measuring equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(E) perform visual inspection of non-structural components and members	(i) perform visual inspection of non-structural components
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(E) perform visual inspection of non-structural components and members	(ii) perform visual inspection of non-structural members
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(F) determine parts, components, material type(s), and procedures necessary for a proper repair	(i) determine parts necessary for a proper repair
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(F) determine parts, components, material type(s), and procedures necessary for a proper repair	(ii) determine components necessary for a proper repair
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(F) determine parts, components, material type(s), and procedures necessary for a proper repair	(iii) determine material type(s) necessary for a proper repair
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(F) determine parts, components, material type(s), and procedures necessary for a proper repair	(iv) determine procedures necessary for a proper repair
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(G) identify type and condition of finish and determine if refinishing is required	(i) identify type of finish

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(G) identify type and condition of finish and determine if refinishing is required	(ii) identify condition of finish
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(G) identify type and condition of finish and determine if refinishing is required	(iii) determine if refinishing is required
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(H) identify suspension, electrical, and mechanical component physical damage	(i) identify suspension component physical damage
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(H) identify suspension, electrical, and mechanical component physical damage	(ii) identify electrical component physical damage
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(H) identify suspension, electrical, and mechanical component physical damage	(iii) identify mechanical component physical damage
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(I) identify safety systems physical damage	(i) identify safety systems physical damage
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(J) identify interior component damage	(i) identify interior component damage

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(K) identify damage to add-on accessories and modifications	(i) identify damage to add-on accessories
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(K) identify damage to add-on accessories and modifications	(ii) identify damage to add-on modifications
(9) The student applies the technical knowledge and skills of damage analysis to simulated or actual work situations. The student is expected to:	(L) identify single/one-time use components	(i) identify single/one-time use components
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(A) locate and record customer/vehicle owner information	(i) locate customer/vehicle owner information
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(A) locate and record customer/vehicle owner information	(ii) record customer/vehicle owner information
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(i) locate vehicle identification number (VIN) information, including nation of origin
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(ii) locate vehicle identification number (VIN) information, including make

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(iii) locate vehicle identification number (VIN) information, including model
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(iv) locate vehicle identification number (VIN) information, including restraint system
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(v) locate vehicle identification number (VIN) information, including body type
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(vi) locate vehicle identification number (VIN) information, including production date
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(vii) locate vehicle identification number (VIN) information, including engine type
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(viii) locate vehicle identification number (VIN) information, including assembly plant

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(ix) record vehicle identification number (VIN) information, including nation of origin
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(x) record vehicle identification number (VIN) information, including make
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(xi) record vehicle identification number (VIN) information, including model
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(xii) record vehicle identification number (VIN) information, including restraint system
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(xiii) record vehicle identification number (VIN) information, including body type
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(xiv) record vehicle identification number (VIN) information, including production date

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(xv) record vehicle identification number (VIN) information, including engine type
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(B) locate and record vehicle identification number (VIN) information, including nation of origin, make, model, restraint system, body type, production date, engine type, and assembly plant	(xvi) record vehicle identification number (VIN) information, including assembly plant
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(i) identify vehicle options, including trim level
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(ii) identify vehicle options, including paint code
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(iii) identify vehicle options, including accessories
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(iv) identify vehicle options, including modifications
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(v) record vehicle options, including trim level

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(vi) record vehicle options, including paint code
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(vii) record vehicle options, including accessories
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(C) identify and record vehicle options, including trim level, paint code, accessories, and modifications	(viii) record vehicle options, including modifications
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(D) identify the safety systems	(i) identify the safety systems
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(E) apply appropriate estimating and parts terminology	(i) apply appropriate estimating terminology
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(E) apply appropriate estimating and parts terminology	(ii) apply appropriate parts terminology
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(F) determine and apply appropriate estimating sequence	(i) determine appropriate estimating sequence

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(F) determine and apply appropriate estimating sequence	(ii) apply appropriate estimating sequence
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(G) utilize estimating guide procedure pages	(i) utilize estimating guide procedure pages
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(H) estimate labor time for operations	(i) estimate labor time for operations
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(I) select appropriate labor rates for each operation such as structural, non-structural, mechanical, and refinish	(i) select appropriate labor rates for each operation
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(J) select price replacement parts such as original equipment manufacturer (OEM), alternative/optional OEM, aftermarket, recycled/used, remanufactured, rebuilt, and reconditioned parts	(i) select price replacement parts
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(K) determine labor time, prices, charges, allowances, or fees for non-included operations and miscellaneous items	(i) determine labor time, prices, charges, allowances, or fees for non-included operations
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(K) determine labor time, prices, charges, allowances, or fees for non-included operations and miscellaneous items	(ii) determine labor time, prices, charges, allowances, or fees for miscellaneous items

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(L) determine additional material and charges such as environmental, administrative, shop, and disposal fees	(i) determine additional material
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(L) determine additional material and charges such as environmental, administrative, shop, and disposal fees	(ii) determine additional charges
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(M) determine refinishing material and charges	(i) determine refinishing material
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(M) determine refinishing material and charges	(ii) determine refinishing charges
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(N) review computer-assisted and manually written estimates and verify that the information is correct	(i) review computer-assisted estimates
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(N) review computer-assisted and manually written estimates and verify that the information is correct	(ii) review manually written estimates
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(N) review computer-assisted and manually written estimates and verify that the information is correct	(iii) verify that the information is correct

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(O) identify labor time and material charges for restoring corrosion protection	(i) identify labor time charges for restoring corrosion protection
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(O) identify labor time and material charges for restoring corrosion protection	(ii) identify material charges for restoring corrosion protection
(10) The student applies the technical knowledge and skills of estimating in simulated or actual work situations. The student is expected to:	(P) determine the approximate vehicle retail value compared to the repair cost	(i) determine the approximate vehicle retail value compared to the repair cost

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.457. Paint and Refinishing (Three Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: Basic Collision Repair and Refinishing or Collision Repair. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Paint and Refinishing includes knowledge of the processes, technologies, and materials used in the reconstruction of vehicles. This course is designed to teach the concepts and theory of systems related to automotive paint and refinishing.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive paint and refinishing and understand the use of personal protective equipment	(i) demonstrate awareness of workplace safety in automotive paint and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive paint and refinishing and understand the use of personal protective equipment	(ii) demonstrate awareness of environmental responsibilities in automotive paint and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate awareness of workplace safety and environmental responsibilities in automotive paint and refinishing and understand the use of personal protective equipment	(iii) understand the use of personal protective equipment
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of automotive paint and refinishing	(i) identify employment opportunities, including entrepreneurship opportunities, for the field of automotive paint and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of automotive paint and refinishing	(ii) identify certification requirements for the field of automotive paint and refinishing
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship preparation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of leadership related to citizenship preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the principles of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify employers' expectations and appropriate work habits	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(i) review the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(ii) review the competencies related to information systems

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) review the competencies related to resources, information systems, and technology	(iii) review the competencies related to technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) apply reasoning skills to a variety of workplace situations in order to make ethical decisions	(i) apply reasoning skills to a variety of workplace situations in order to make ethical decisions
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(A) demonstrate effective oral and written communication skills with individuals from various cultures such as fellow workers, management, and customers	(ii) demonstrate effective written communication skills with individuals from various cultures
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(B) use technical writing skills to complete paint and refinishing orders and related paperwork	(i) use technical writing skills to complete paint and refinishing orders
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(B) use technical writing skills to complete paint and refinishing orders and related paperwork	(ii) use technical writing skills to complete [paint and refinishing] related paperwork
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(C) locate, read, and interpret documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(i) locate documents

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(C) locate, read, and interpret documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(ii) read documents
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(C) locate, read, and interpret documents such as service and repair information, technical bulletins, specifications, schematics, and parts catalogs	(iii) interpret documents
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(D) demonstrate competencies required to use and interpret service repair bulletins	(i) demonstrate competencies required to use service repair bulletins
(2) The student relates core academic skills to the requirements of paint and refinishing. The student is expected to:	(D) demonstrate competencies required to use and interpret service repair bulletins	(ii) demonstrate competencies required to interpret service repair bulletins
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(A) demonstrate the basic types of refinishing procedures for the different types of vehicle body construction used in the auto refinishing industry	(i) demonstrate the basic types of refinishing procedures for the different types of vehicle body construction used in the auto refinishing industry
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(i) demonstrate the proper preparation with various paint products
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(ii) demonstrate the proper preparation with various paint decals

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(iii) demonstrate the proper preparation with various paint adhesives
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(iv) demonstrate the proper application with various paint products
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(v) demonstrate the proper application with various paint decals
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(vi) demonstrate the proper application with various paint adhesives
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(vii) demonstrate the proper refinishing with various paint products
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(viii) demonstrate the proper refinishing with various decals
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(B) demonstrate the proper preparation, application, and refinishing with various paint products, decals, and adhesives	(ix) demonstrate the proper refinishing with various adhesives

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(C) estimate parts and labor costs on paint and refinishing orders	(i) estimate parts costs on paint and refinishing orders
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(C) estimate parts and labor costs on paint and refinishing orders	(ii) estimate labor costs on paint and refinishing orders
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(D) perform precision measurements of paint and materials	(i) perform precision measurements of paint
(3) The student understands the technical knowledge and skills of paint and refinishing systems. The student is expected to:	(D) perform precision measurements of paint and materials	(ii) perform precision measurements of materials
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(A) identify safety and personal health hazards according to Occupational Safety and Health Association (OSHA) guidelines and the "Right to Know Law"	(i) identify safety hazards according to Occupational Safety and Health Association (OSHA) guidelines
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(A) identify safety and personal health hazards according to Occupational Safety and Health Association (OSHA) guidelines and the "Right to Know Law"	(ii) identify safety hazards according to the "Right to Know Law"
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(A) identify safety and personal health hazards according to Occupational Safety and Health Association (OSHA) guidelines and the "Right to Know Law"	(iii) identify personal health hazards according to Occupational Safety and Health Association (OSHA) guidelines

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(A) identify safety and personal health hazards according to Occupational Safety and Health Association (OSHA) guidelines and the "Right to Know Law"	(iv) identify personal health hazards according to the "Right to Know Law"
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(i) inspect spray environment to ensure compliance with federal regulations
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(ii) inspect spray environment to ensure compliance with state regulations
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(iii) inspect spray environment to ensure compliance with local regulations
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(iv) inspect spray equipment to ensure compliance with federal regulations
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(v) inspect spray equipment to ensure compliance with state regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(vi) inspect spray equipment to ensure compliance with local regulations
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(vii) inspect spray environment for safety hazards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(viii) inspect spray environment for cleanliness hazards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(ix) inspect spray equipment for safety hazards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(B) inspect spray environment and equipment to ensure compliance with federal, state, and local regulations and for safety and cleanliness hazards	(x) inspect spray equipment for cleanliness hazards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(i) select, in accordance with OSHA Regulation 1910.134, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(ii) use, in accordance with OSHA Regulation 1910.134, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(iii) inspect, in accordance with OSHA Regulation 1910.134, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(iv) ensure fit and operation, in accordance with OSHA Regulation 1910.134, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(v) perform maintenance, in accordance with OSHA Regulation 1910.134, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(vi) select, in accordance with applicable state regulation, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(vii) use, in accordance with applicable state regulation, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(viii) inspect, in accordance with applicable state regulation, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(ix) ensure fit and operation, in accordance with applicable state regulation, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(x) perform maintenance, applicable state regulation, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(xi) select, in accordance with applicable local regulation, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(xii) use, in accordance with applicable local regulation, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(xiii) inspect, in accordance with applicable local regulation, a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(xiv) ensure fit and operation, in accordance with applicable local regulation, of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(C) select, use, inspect, ensure fit and operation, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator	(xv) perform maintenance in accordance with applicable local regulation of a National Institute of Occupational of Safety and Health (NIOSH) approved air purifying respirator
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(i) select, in accordance with OSHA Regulation 1910.134, a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(ii) use, in accordance with OSHA Regulation 1910.134, a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(iii) perform maintenance in accordance with OSHA Regulation 1910.134 on a NIOSH approved fresh air make-up respirator system

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(iv) select, in accordance with applicable state regulation, a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(v) use, in accordance with applicable state regulation, a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(vi) perform maintenance, in accordance with applicable state regulation,on a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(vii) select, in accordance with applicable local regulation, a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(viii) use, in accordance with applicable local regulation, a NIOSH approved fresh air make-up respirator system
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(D) select, use, and perform maintenance in accordance with OSHA Regulation 1910.134 and applicable state and local regulation for a NIOSH approved fresh air make-up respirator system	(ix) perform maintenance, in accordance with applicable local regulation, on a NIOSH approved fresh air make-up respirator system

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(E) select and use the proper personal safety equipment such as gloves, suits, hoods, and eye and ear protection	(i) select the proper personal safety equipment
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(E) select and use the proper personal safety equipment such as gloves, suits, hoods, and eye and ear protection	(ii) use the proper personal safety equipment
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(F) use hand and power tools and equipment commonly employed in paint and refinishing technologies, according to industry safety standards	(i) use hand tools commonly employed in paint and refinishing technologies, according to industry safety standards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(F) use hand and power tools and equipment commonly employed in paint and refinishing technologies, according to industry safety standards	(ii) use power tools commonly employed in paint and refinishing technologies, according to industry safety standards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(F) use hand and power tools and equipment commonly employed in paint and refinishing technologies, according to industry safety standards	(iii) use equipment commonly employed in paint and refinishing technologies, according to industry safety standards
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(G) properly handle and dispose of environmentally hazardous materials used in paint and refinishing technologies	(i) properly handle environmentally hazardous materials used in paint and refinishing technologies

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(G) properly handle and dispose of environmentally hazardous materials used in paint and refinishing technologies	(ii) properly dispose of environmentally hazardous materials used in paint and refinishing technologies
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(H) demonstrate knowledge of new and emerging paint and refinishing technologies	(i) demonstrate knowledge of new paint and refinishing technologies
(4) The student knows the function and application of tools, equipment, technologies, and materials used in paint and refinishing services. The student is expected to:	(H) demonstrate knowledge of new and emerging paint and refinishing technologies	(ii) demonstrate knowledge of emerging paint and refinishing technologies
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(i) perform regular audits to maintain compliance with safety regulations
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(ii) perform regular audits to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iii) perform regular audits to maintain compliance with environmental regulations
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(iv) perform regular inspections to maintain compliance with safety regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(v) perform regular inspections to maintain compliance with health regulations
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(A) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations	(vi) perform regular inspections to maintain compliance with environmental regulations
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(B) inspect types of vehicle construction materials and associated refinishing methods	(i) inspect types of vehicle construction materials
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(B) inspect types of vehicle construction materials and associated refinishing methods	(ii) inspect types of associated refinishing methods
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(C) identify different types of vehicle finishes and associated refinish techniques	(i) identify different types of vehicle finishes
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(C) identify different types of vehicle finishes and associated refinish techniques	(ii) identify associated refinish techniques
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(D) inspect, identify, and determine the cause of paint and refinishing defects	(i) inspect the cause of paint and refinishing defects

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(D) inspect, identify, and determine the cause of paint and refinishing defects	(ii) identify the cause of paint and refinishing defects
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(D) inspect, identify, and determine the cause of paint and refinishing defects	(iii) determine the cause of paint and refinishing defects
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(E) discuss corrosion protection	(i) discuss corrosion protection
(5) The student applies the technical knowledge and skills of paint and refinishing to simulated or actual work situations. The student is expected to:	(F) demonstrate vehicle detailing	(i) demonstrate vehicle detailing
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(i) inspect type of finish
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(ii) inspect surface condition
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(iii) inspect film thickness

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(iv) identify type of finish
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(v) identify surface condition
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(vi) identify film thickness
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(vii) develop a plan for refinishing
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(A) inspect and identify type of finish, surface condition, and film thickness and develop and document a plan for refinishing	(viii) document a plan for refinishing
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(B) featheredge areas to be refinished	(i) featheredge areas to be refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(C) apply suitable metal treatment or primer	(i) apply suitable metal treatment or primer

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(D) mask and protect other areas that will not be refinished	(i) mask other areas that will not be refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(D) mask and protect other areas that will not be refinished	(ii) protect other areas that will not be refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(E) mix primer, primer-surfacer, or primer-sealer	(i) mix primer, primer-surfacer, or primer-sealer
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(F) identify a complimentary color or shade of undercoat to improve coverage	(i) identify a complimentary color or shade of undercoat to improve coverage
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(G) apply primer onto surface of repaired area	(i) apply primer onto surface of repaired area
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(H) remove dust from area to be refinished, including cracks or moldings of adjacent areas	(i) remove dust from area to be refinished, including cracks or moldings of adjacent areas
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(I) clean area to be refinished using a final cleaning solution	(i) clean area to be refinished using a final cleaning solution

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(J) remove, with a tack rag, any dust or lint particles from the area to be refinished	(i) remove, with a tack rag, any dust or lint particles from the area to be refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(K) apply suitable sealer to the area being refinished	(i) apply suitable sealer to the area being refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(L) apply stone chip resistant coating	(i) apply stone chip resistant coating
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(M) identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished and determine the materials needed and preparation and refinishing procedures	(i) identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(M) identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished and determine the materials needed and preparation and refinishing procedures	(ii) determine the materials needed
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(M) identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished and determine the materials needed and preparation and refinishing procedures	(iii) determine preparation procedures
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(M) identify the types of rigid, semi-rigid, or flexible plastic parts to be refinished and determine the materials needed and preparation and refinishing procedures	(iv) determine refinishing procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(N) identify metal parts to be refinished and determine the materials needed and preparation and refinishing procedures	(i) identify metal parts to be refinished
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(N) identify metal parts to be refinished and determine the materials needed and preparation and refinishing procedures	(ii) determine the materials needed
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(N) identify metal parts to be refinished and determine the materials needed and preparation and refinishing procedures	(iii) determine preparation procedures
(6) The student applies the technical knowledge and skills of surface preparation to simulated or actual work situations. The student is expected to:	(N) identify metal parts to be refinished and determine the materials needed and preparation and refinishing procedures	(iv) determine refinishing procedures
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(i) inspect spray guns
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(ii) clean spray guns
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(iii) determine condition of spray guns

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(iv) inspect spray environment
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(v) clean spray environment
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(vi) determine condition of spray environment
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(vii) inspect related equipment
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(viii) clean related equipment
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(A) inspect, clean, and determine condition of spray guns, spray environment, and related equipment such as air hoses, regulators, air lines, and air source	(ix) determine condition of related equipment
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(B) select spray gun setup, including fluid needle, nozzle, and cap, for product being applied	(i) select spray gun setup, including fluid needle, for product being applied

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(B) select spray gun setup, including fluid needle, nozzle, and cap, for product being applied	(ii) select spray gun setup, including nozzle, for product being applied
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(B) select spray gun setup, including fluid needle, nozzle, and cap, for product being applied	(iii) select spray gun setup, including cap, for product being applied
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(C) test and adjust spray gun using fluid, air, and pattern control valves	(i) test spray gun
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(C) test and adjust spray gun using fluid, air, and pattern control valves	(ii) adjust spray gun using fluid control valves
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(C) test and adjust spray gun using fluid, air, and pattern control valves	(iii) adjust spray gun using air control valves
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(C) test and adjust spray gun using fluid, air, and pattern control valves	(iv) adjust spray gun using pattern control valves
(7) The student applies the technical knowledge and skills of spray gun and related components to simulated or actual work situations. The student is expected to:	(D) demonstrate an understanding of the operation of pressure spray equipment	(i) demonstrate an understanding of the operation of pressure spray equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(A) identify color code by manufacturer vehicle information label	(i) identify color code by manufacturer vehicle information label
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials	(i) measure refinish materials
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials	(ii) shake refinish materials
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials	(iii) stir refinish materials
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials	(iv) reduce refinish materials
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials	(v) catalyze/activate refinish materials

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(B) measure, shake, stir, reduce, catalyze/activate, and strain refinish materials	(vi) strain refinish materials
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(C) apply finish using appropriate spray techniques, including gun arc, angle, distance, travel speed, and spray pattern overlap, for the finish being applied	(i) apply finish using appropriate spray techniques, including gun arc, for the finish being applied
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(C) apply finish using appropriate spray techniques, including gun arc, angle, distance, travel speed, and spray pattern overlap, for the finish being applied	(ii) apply finish using appropriate spray techniques, including angle, for the finish being applied
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(C) apply finish using appropriate spray techniques, including gun arc, angle, distance, travel speed, and spray pattern overlap, for the finish being applied	(iii) apply finish using appropriate spray techniques, including distance, for the finish being applied
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(C) apply finish using appropriate spray techniques, including gun arc, angle, distance, travel speed, and spray pattern overlap, for the finish being applied	(iv) apply finish using appropriate spray techniques, including travel speed, for the finish being applied
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(C) apply finish using appropriate spray techniques, including gun arc, angle, distance, travel speed, and spray pattern overlap, for the finish being applied	(v) apply finish using appropriate spray techniques, including spray pattern overlap, for the finish being applied

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(D) apply selected product on test or let-down panel and check for color match	(i) apply selected product on test or let-down panel
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(D) apply selected product on test or let-down panel and check for color match	(ii) check for color match
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(E) apply single stage topcoat	(i) apply single stage topcoat
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(F) apply basecoat and clearcoat for panel blending and panel refinishing	(i) apply basecoat for panel blending
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(F) apply basecoat and clearcoat for panel blending and panel refinishing	(ii) apply basecoat for panel refinishing
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(F) apply basecoat and clearcoat for panel blending and panel refinishing	(iii) apply clearcoat for panel blending

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(F) apply basecoat and clearcoat for panel blending and panel refinishing	(iv) apply clearcoat for panel refinishing
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(G) apply basecoat and clearcoat for overall refinishing	(i) apply basecoat for overall refinishing
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(G) apply basecoat and clearcoat for overall refinishing	(ii) apply clearcoat for overall refinishing
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(H) remove nibs or imperfections from basecoat	(i) remove nibs or imperfections from basecoat
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(I) refinish rigid or semi-rigid plastic parts	(i) refinish rigid or semi-rigid plastic parts
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(J) refinish flexible plastic parts	(i) refinish flexible plastic parts

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(K) apply multi-stage coats for panel blending and overall refinishing	(i) apply multi-stage coats for panel blending
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(K) apply multi-stage coats for panel blending and overall refinishing	(ii) apply multi-stage coats for overall refinishing
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(L) identify and mix paint using a formula	(i) identify paint using a formula
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(L) identify and mix paint using a formula	(ii) mix paint using a formula
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(M) identify poor hiding colors and determine necessary action	(i) identify poor hiding colors
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(M) identify poor hiding colors and determine necessary action	(ii) determine necessary action

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(N) tint color using formula to achieve a blendable match	(i) tint color using formula to achieve a blendable match
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(O) identify alternative color formula to achieve a blendable match	(i) identify alternative color formula to achieve a blendable match
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(P) identify the materials, equipment, and preparation differences between petroleum and waterborne technologies	(i) identify the materials for petroleum technologies
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(P) identify the materials, equipment, and preparation differences between petroleum and waterborne technologies	(ii) identify the materials for waterborne technologies
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(P) identify the materials, equipment, and preparation differences between petroleum and waterborne technologies	(iii) identify the equipment for petroleum technologies
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(P) identify the materials, equipment, and preparation differences between petroleum and waterborne technologies	(iv) identify the equipment for waterborne technologies

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student applies the technical knowledge and skills of paint mixing, matching, and applying techniques to simulated or actual work situations. The student is expected to:	(P) identify the materials, equipment, and preparation differences between petroleum and waterborne technologies	(v) identify preparation differences between petroleum and waterborne technologies
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(A) apply decals, transfers, tapes, woodgrains, and pinstripes such as painted and taped	(i) apply decals
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(A) apply decals, transfers, tapes, woodgrains, and pinstripes such as painted and taped	(ii) apply transfers
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(A) apply decals, transfers, tapes, woodgrains, and pinstripes such as painted and taped	(iii) apply tapes
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(A) apply decals, transfers, tapes, woodgrains, and pinstripes such as painted and taped	(iv) apply woodgrains
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(A) apply decals, transfers, tapes, woodgrains, and pinstripes such as painted and taped	(v) apply pinstripes
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(B) sand, buff, and polish fresh or existing finish to remove defects as required	(i) sand fresh or existing finish to remove defects as required

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(B) sand, buff, and polish fresh or existing finish to remove defects as required	(ii) buff fresh or existing finish to remove defects as required
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(B) sand, buff, and polish fresh or existing finish to remove defects as required	(iii) polish fresh or existing finish to remove defects as required
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(C) clean vehicle interior, exterior, and glass	(i) clean vehicle interior
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(C) clean vehicle interior, exterior, and glass	(ii) clean vehicle exterior
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(C) clean vehicle interior, exterior, and glass	(iii) clean vehicle glass
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(D) clean body openings such as door jambs and edges	(i) clean body openings
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(E) remove overspray	(i) remove overspray

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student applies the technical knowledge and skills of final detailing to simulated or actual work situations. The student is expected to:	(F) complete quality control using a checklist	(i) complete quality control using a checklist

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.458. Diesel Equipment Technology (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 9-12. Students shall be awarded two credits for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Diesel Equipment Technology includes knowledge of the function and maintenance of diesel systems. Rapid advances in diesel technology have created new career opportunities and demands in the transportation industry. This course provides the knowledge, skills, and technologies required for employment in transportation systems.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of diesel technology	(i) identify employment opportunities, including entrepreneurship opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of diesel technology	(ii) identify certification requirements for the field of diesel technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(i) participate in group activities related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(ii) participate in group activities related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(iii) participate in leadership activities related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(iv) participate in leadership activities related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify employers' expectations and appropriate work habits	(i) identify employers' expectations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify employers' expectations and appropriate work habits	(i) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify the competencies related to resources, information systems, and technology as it pertains to diesel equipment technology	(i) identify the competencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify the competencies related to resources, information systems, and technology as it pertains to diesel equipment technology	(ii) identify the competencies related to information systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) identify the competencies related to resources, information systems, and technology as it pertains to diesel equipment technology	(iii) identify the competencies related to technology as it pertains to diesel equipment technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(i) demonstrate knowledge related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(ii) demonstrate knowledge related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(iii) demonstrate skills related to health in the workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(iv) demonstrate skills related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate workplace ethics in a variety of workplace scenarios	(i) demonstrate workplace ethics in a variety of workplace scenarios
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(B) demonstrate effective written communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective written communication skills with individuals from various cultures
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(i) demonstrate mathematical skills using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(ii) demonstrate precision measurements using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(iii) demonstrate mathematical skills using the U.S. standard system

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(iv) demonstrate precision measurements using the U.S. standard system
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(A) describe the function of the major components of diesel powered vehicles such as engines, fuel injection systems, lubrication, cooling, electrical, air-conditioning systems, air induction, exhaust, and emissions	(i) describe the function of the major components of diesel powered vehicles
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(B) describe the function of the chassis components such as braking, steering, transmission, drivetrain, suspension systems, pneumatics, and hydraulics	(i) describe the function of the chassis components
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(i) locate documents
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(ii) read documents
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(C) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(iii) interpret documents

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(D) demonstrate precision measurement procedures to diagnose component wear, compare measurements to published specifications, and determine necessary repairs	(i) demonstrate precision measurement procedures to diagnose component wear
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(D) demonstrate precision measurement procedures to diagnose component wear, compare measurements to published specifications, and determine necessary repairs	(ii) compare measurements to published specifications
(3) The student demonstrates technical knowledge and skills of diesel equipment technology. The student is expected to:	(D) demonstrate precision measurement procedures to diagnose component wear, compare measurements to published specifications, and determine necessary repairs	(iii) determine necessary repairs
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(A) describe and demonstrate the safe use of hand and power tools and equipment commonly used in the diesel equipment field	(i) describe the safe use of hand tools commonly used in the diesel equipment field
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(A) describe and demonstrate the safe use of hand and power tools and equipment commonly used in the diesel equipment field	(ii) describe the safe use of power tools commonly used in the diesel equipment field
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(A) describe and demonstrate the safe use of hand and power tools and equipment commonly used in the diesel equipment field	(iii) describe the safe use of equipment commonly used in the diesel equipment field

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(A) describe and demonstrate the safe use of hand and power tools and equipment commonly used in the diesel equipment field	(iv) demonstrate the safe use of hand tools commonly used in the diesel equipment field
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(A) describe and demonstrate the safe use of hand and power tools and equipment commonly used in the diesel equipment field	(v) demonstrate the safe use of power tools commonly used in the diesel equipment field
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(A) describe and demonstrate the safe use of hand and power tools and equipment commonly used in the diesel equipment field	(vi) demonstrate the safe use of equipment commonly used in the diesel equipment field
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(B) discuss the proper handling and disposal of environmentally hazardous materials generated in the service of diesel equipment	(i) discuss the proper handling of environmentally hazardous materials generated in the service of diesel equipment
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(B) discuss the proper handling and disposal of environmentally hazardous materials generated in the service of diesel equipment	(ii) discuss the proper disposal of environmentally hazardous materials generated in the service of diesel equipment
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(C) describe new and emerging diesel technologies	(i) describe new diesel technologies
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(C) describe new and emerging diesel technologies	(ii) describe emerging diesel technologies

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(D) identify and perform the use of diagnostic tools and equipment	(i) identify the use of diagnostic tools
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(D) identify and perform the use of diagnostic tools and equipment	(ii) identify the use of diagnostic equipment
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(D) identify and perform the use of diagnostic tools and equipment	(iii) perform the use of diagnostic tools
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(D) identify and perform the use of diagnostic tools and equipment	(iv) perform the use of diagnostic equipment
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(E) describe hydraulic/pneumatic properties, controls, and safety	(i) describe hydraulic/pneumatic properties
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(E) describe hydraulic/pneumatic properties, controls, and safety	(ii) describe hydraulic/pneumatic controls
(4) The student learns the functions and applications of the tools, equipment, technologies, and materials used in diesel equipment service. The student is expected to:	(E) describe hydraulic/pneumatic properties, controls, and safety	(iii) describe hydraulic/pneumatic safety

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(A) describe the parts management procedures such as ordering, stocking, and locating parts	(i) describe the parts management procedures
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for removal, inspection, and replacement of engine components	(i) demonstrate procedures for removal of engine components
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for removal, inspection, and replacement of engine components	(ii) demonstrate procedures for inspection of engine components
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for removal, inspection, and replacement of engine components	(iii) demonstrate procedures for replacement of engine components
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(C) describe procedures for inspection and maintenance of ancillary systems such as braking, steering, suspension , and hydraulic/pneumatic systems	(i) describe procedures for inspection of ancillary systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(C) describe procedures for inspection and maintenance of ancillary systems such as braking, steering, suspension , and hydraulic/pneumatic systems	(ii) describe procedures for maintenance of ancillary systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(i) demonstrate the concepts of electrical circuit testing, including Ohm's law, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(ii) demonstrate the concepts of electrical circuit testing, including voltage drop, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(iii) demonstrate the concepts of electrical circuit testing, including resistance, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(iv) demonstrate the concepts of electrical circuit testing, including amperage, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(v) demonstrate the concepts of electrical circuit testing, including voltage, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(vi) apply the concepts of electrical circuit testing, including Ohm's law, as related to batteries and charging and starting systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(vii) apply the concepts of electrical circuit testing, including voltage drop, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(viii) apply the concepts of electrical circuit testing, including resistance, as related to batteries and charging and starting systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(ix) apply the concepts of electrical circuit testing, including amperage, as related to batteries and charging and starting systems , as related to batteries
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) demonstrate and apply the concepts of electrical circuit testing, including Ohm's law, voltage drop, resistance, amperage, and voltage, as related to batteries and charging and starting systems	(x) apply the concepts of electrical circuit testing, including voltage, as related to batteries and charging and starting systems , as related to batteries
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate and apply the concepts of wiring diagrams and related symbols and series and parallel circuits	(i) demonstrate the concepts of wiring diagrams and related symbols
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate and apply the concepts of wiring diagrams and related symbols and series and parallel circuits	(ii) demonstrate the concepts of series circuits

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate and apply the concepts of wiring diagrams and related symbols and series and parallel circuits	(iii) demonstrate the concepts of parallel circuits
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) discuss the proper procedures to inspect and maintain auxillary systems such as air-conditioning, heating, and accessory systems	(i) discuss the proper procedures to inspect auxillary systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) discuss the proper procedures to inspect and maintain auxillary systems such as air-conditioning, heating, and accessory systems	(ii) discuss the proper procedures to maintain auxillary systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(i) demonstrate the procedures to inspect chassis systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(ii) demonstrate the procedures to inspect power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(iii) demonstrate the procedures to maintain chassis systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(iv) demonstrate the procedures to maintain power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(v) apply the procedures to inspect chassis systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(vi) apply the procedures to inspect power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(vii) apply the procedures to maintain chassis systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) demonstrate and apply the procedures to inspect and maintain chassis and power train systems	(viii) apply the procedures maintain power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(i) demonstrate the procedures to inspect cooling systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(ii) demonstrate the procedures to inspect lubrication systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(iii) demonstrate the procedures to maintain cooling systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(iv) demonstrate the procedures maintain lubrication systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(v) apply the procedures to inspect cooling systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(vi) apply the procedures to inspect lubrication systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(vii) apply the procedures maintain cooling systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) demonstrate and apply the procedures to inspect and maintain cooling and lubrication systems	(viii) apply the procedures maintain lubrication systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(I) demonstrate an understanding of the process to perform regular audits and inspections to maintain compliance with appropriate regulations in areas such as safety, health, emissions, and environmental protection	(i) demonstrate an understanding of the process to perform regular audits to maintain compliance with appropriate regulations
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(I) demonstrate an understanding of the process to perform regular audits and inspections to maintain compliance with appropriate regulations in areas such as safety, health, emissions, and environmental protection	(ii) demonstrate an understanding of the process to perform regular inspections to maintain compliance with appropriate regulations

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.459. Diesel Equipment Technology II (Two Credits), Adopted 2015.**
(a) General Requirements. This course is recommended for students in Grades 10-12. Prerequisite: Diesel Equipment Technology I. Students shall be awarded two credits for successful completion of this course.	
(b) Introduction.	
(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions. (2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance. (3) Diesel Equipment Technology II includes knowledge of the function, diagnosis, and service of diesel equipment systems. Rapid advances in diesel technology have created new career opportunities and demands in the transportation industry. This course provides the advanced knowledge, skills, and technologies required for employment in transportation systems. (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations. (5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.	

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of diesel technology	(i) identify employment opportunities, including entrepreneurship opportunities, for the field of diesel technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify employment opportunities, including entrepreneurship opportunities, and certification requirements for the field of diesel technology	(ii) identify certification requirements for the field of diesel technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(i) participate in group activities related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(ii) participate in group activities related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(iii) participate in leadership activities related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in group and leadership activities related to citizenship and career preparation	(iv) participate in leadership activities related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify employers' expectations and appropriate work habits	(i) identify employers' expectations

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify employers' expectations and appropriate work habits	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply the competencies related to resources, information systems, and technology as it pertains to diesel equipment technology	(i) apply the compentencies related to resources
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply the competencies related to resources, information systems, and technology as it pertains to diesel equipment technology	(ii) apply the competencies related to information systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply the competencies related to resources, information systems, and technology as it pertains to diesel equipment technology	(iii) apply the competencies related to technology as it pertains to diesel equipment technology
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(i) demonstrate knowledge related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(ii) demonstrate skills related to health in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(iii) demonstrate knowledge related to safety in the workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge and skills related to health and safety in the workplace	(iv) demonstrate skills related to safety in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) demonstrate workplace ethics in a variety of workplace scenarios	(i) demonstrate workplace ethics in a variety of workplace scenarios
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective oral communication skills with individuals from various cultures
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(B) demonstrate effective written communication skills with individuals from various cultures such as fellow students, coworkers, and customers	(i) demonstrate effective written communication skills with individuals from various cultures
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(i) demonstrate mathematical skills using the metric system
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(ii) demonstrate mathematical skills using the U.S. standard systems
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(iii) demonstrate precision measurements using the metric system

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates academic skills related to the requirements of transportation technology. The student is expected to:	(C) demonstrate mathematical skills and precision measurements using the metric and U.S. standard systems	(iv) demonstrate precision measurements using the U.S. standard systems
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(A) describe the function of the major components of diesel powered vehicles and equipment such as engines; fuel injection systems; lubrication, cooling, electrical, and air-conditioning systems; and air induction, exhaust, and emissions systems	(i) describe the function of the major components of diesel powered vehicles
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(A) describe the function of the major components of diesel powered vehicles and equipment such as engines; fuel injection systems; lubrication, cooling, electrical, and air-conditioning systems; and air induction, exhaust, and emissions systems	(ii) describe the function of the major components of diesel powered equipment
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(B) perform system diagnostics and failure analyses	(i) perform system diagnostics
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(B) perform system diagnostics and failure analyses	(ii) perform system failure analyses
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(C) describe the function of the chassis components such as braking, steering, transmission, drivetrain, suspension systems, pneumatics, and hydraulics	(i) describe the function of the chassis components

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(D) diagnose, repair, and replace auxiliary equipment such as power take offs, hydraulic components, and pneumatic components	(i) diagnose auxilary equipment
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(D) diagnose, repair, and replace auxiliary equipment such as power take offs, hydraulic components, and pneumatic components	(ii) repair auxilary equipment
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(D) diagnose, repair, and replace auxiliary equipment such as power take offs, hydraulic components, and pneumatic components	(iii) replace auxiliary equipment
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(E) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(i) locate documents
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(E) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(ii) read documents
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(E) locate, read, and interpret documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair information and technical bulletins	(iii) interpret documents
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(F) perform precision measurements and use published specifications to diagnose component wear and determine necessary repair or replacement	(i) perform precision measurements

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(F) perform precision measurements and use published specifications to diagnose component wear and determine necessary repair or replacement	(ii) use published specifications to diagnose component wear
(3) The student demonstrates technical knowledge and skills of diesel equipment service and repair. The student is expected to:	(F) perform precision measurements and use published specifications to diagnose component wear and determine necessary repair or replacement	(iii) use published specifications to determine necessary repair or replacement
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(A) demonstrate safe use of hand and power tools and equipment commonly employed in diesel equipment technology	(i) demonstrate safe use of hand tools commonly employed in diesel equipment technology
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(A) demonstrate safe use of hand and power tools and equipment commonly employed in diesel equipment technology	(ii) demonstrate safe use of power tools commonly employed in diesel equipment technology
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(A) demonstrate safe use of hand and power tools and equipment commonly employed in diesel equipment technology	(iii) demonstrate safe use of equipment commonly employed in diesel equipment technology
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(B) demonstrate the proper handling and disposal of environmentally hazardous materials generated in the servicing of diesel equipment	(i) demonstrate the proper handling of environmentally hazardous materials generated in the servicing of diesel equipment

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(B) demonstrate the proper handling and disposal of environmentally hazardous materials generated in the servicing of diesel equipment	(ii) demonstrate the proper disposal of environmentally hazardous materials generated in the servicing of diesel equipment
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(C) describe emerging diesel technologies	(i) describe emerging diesel technologies
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(D) perform the proper use of diagnostic tools and equipment	(i) perform the proper use of diagnostic tools
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(D) perform the proper use of diagnostic tools and equipment	(ii) perform the proper use of diagnostic equipment
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(E) demonstrate knowledge of hydraulic/pneumatic properties, controls, and safety	(i) demonstrate knowledge of hydraulic/pneumatic properties
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(E) demonstrate knowledge of hydraulic/pneumatic properties, controls, and safety	(ii) demonstrate knowledge of hydraulic/pneumatic controls

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates the application of the tools, equipment, technologies, and materials used in diesel equipment diagnosis, service , and repair . The student is expected to:	(E) demonstrate knowledge of hydraulic/pneumatic properties, controls, and safety	(iii) demonstrate knowledge of hydraulic/pneumatic safety
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(A) demonstrate parts inventory management such as ordering parts, stocking parts, and locating parts	(i) demonstrate parts inventory management
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for the diagnosis, removal, repair, and replacement of engine components such as cylinder heads, engine blocks, timing components, crankshafts, intake and exhaust systems, and ancillary and auxiliary systems	(i) demonstrate procedures for the diagnosis of engine components
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for the diagnosis, removal, repair, and replacement of engine components such as cylinder heads, engine blocks, timing components, crankshafts, intake and exhaust systems, and ancillary and auxiliary systems	(ii) demonstrate procedures for the repair of engine components
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for the diagnosis, repair, and replacement of engine components such as cylinder heads, engine blocks, timing components, crankshafts, intake and exhaust systems, and ancillary and auxiliary systems	(iii) demonstrate procedures for the repair of engine components

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(B) demonstrate procedures for the diagnosis, repair, and replacement of engine components such as cylinder heads, engine blocks, timing components, crankshafts, intake and exhaust systems, and ancillary and auxiliary systems	(iv) demonstrate procedures for the replacement of engine components
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(C) diagnose, service, and repair diesel equipment systems such as braking, steering, suspension , pneumatic , and hydraulic systems	(i) diagnose diesel equipment systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(C) diagnose, service, and repair diesel equipment systems such as braking, steering, suspension , pneumatic , and hydraulic systems	(ii) service diesel equipment systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(C) diagnose, service, and repair diesel equipment systems such as braking, steering, suspension , pneumatic , and hydraulic systems	(iii) repair diesel equipment systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) diagnose and repair electrical and electronic systems such as starting, charging, lighting, computer controls, and on board diagnostics systems and components such as modules, solenoids, sensors, actuators, relays, and switches	(i) diagnose electrical systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) diagnose and repair electrical and electronic systems such as starting, charging, lighting, computer controls, and on board diagnostics systems and components such as modules, solenoids, sensors, actuators, relays, and switches	(ii) diagnose electronic systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) diagnose and repair electrical and electronic systems such as starting, charging, lighting, computer controls, and on board diagnostics systems and components such as modules, solenoids, sensors, actuators, relays, and switches	(iii) repair electrical systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(D) diagnose and repair electrical and electronic systems such as starting, charging, lighting, computer controls, and on board diagnostics systems and components such as modules, solenoids, sensors, actuators, relays, and switches	(iv) repair electronic systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(i) demonstrate an understanding of the diagnosis of air conditioning systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(ii) demonstrate an understanding of the service of air conditioning systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(iii) demonstrate an understanding of the repair of air conditioning systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(iv) demonstrate an understanding of the diagnosis of heating systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(v) demonstrate an understanding of the service of heating systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(vi) demonstrate an understanding of the repair of heating systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(vii) demonstrate an understanding of the diagnosis of accessory systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(viii) demonstrate an understanding of the service of accessory systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(E) demonstrate an understanding of the diagnosis, service, and repair of air-conditioning, heating, and accessory systems	(ix) demonstrate an understanding of the repair of accessory systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) diagnose, service, and repair chassis and power train systems	(i) diagnose chassis systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) diagnose, service, and repair chassis and power train systems	(ii) service chassis systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) diagnose, service, and repair chassis and power train systems	(iii) repair chassis systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) diagnose, service, and repair chassis and power train systems	(iv) diagnose power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) diagnose, service, and repair chassis and power train systems	(v) service power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(F) diagnose, service, and repair chassis and power train systems	(vi) repair power train systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) service and repair cooling and lubrication systems such as water pumps, oil pumps, radiators, and oil coolers	(i) service cooling systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) service and repair cooling and lubrication systems such as water pumps, oil pumps, radiators, and oil coolers	(ii) repair cooling systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) service and repair cooling and lubrication systems such as water pumps, oil pumps, radiators, and oil coolers	(iii) service lubrication systems

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(G) service and repair cooling and lubrication systems such as water pumps, oil pumps, radiators, and oil coolers	(iv) repair lubrication systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(H) use appropriate diagnostic equipment on various diesel equipment systems	(i) use appropriate diagnostic equipment on various diesel equipment systems
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with appropriate regulations in areas such as emissions, safety, health, and environmental protection	(i) perform regular audits to maintain compliance with appropriate regulations
(5) The student applies the technical knowledge and skills of diesel equipment technology to simulated or actual work situations. The student is expected to:	(I) perform regular audits and inspections to maintain compliance with appropriate regulations in areas such as emissions, safety, health, and environmental protection	(ii) perform regular inspections to maintain compliance with appropriate regulations

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.460. Energy and Power of Transportation Systems (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: Principles of Transportation Systems. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Energy and Power of Transportation Systems will prepare students to meet the expectations of employers in this industry and to interact and relate to others. Students will learn the technologies used to provide products and services in a timely manner. The businesses and industries of the Transportation, Distribution, and Logistics Career Cluster are rapidly expanding to provide new career and career advancement opportunities. Performance requirements will include academic and technical skills. Students will need to understand the interaction between various vehicle systems, including engines, transmissions, brakes, fuel, cooling, and electrical. Students will also need to understand the logistics used to move goods and services to consumers, as well as the components of transportation infrastructure.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(i) demonstrate the principles of group participation related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(ii) demonstrate the principles of leadership related to citizenship
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iii) demonstrate the pinciples of group participation related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) demonstrate the principles of group participation and leadership related to citizenship and career preparation	(iv) demonstrate the principles of leadership related to career preparation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employers' expectations and appropriate work habits	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify employers' expectations and appropriate work habits	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify career development, employment, and entrepreneurship opportunities and certification requirements for the field of energy and power of transportation systems	(i) identify career development opportunities for the field of energy and power of transportations systems

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify career development, employment, and entrepreneurship opportunities and certification requirements for the field of energy and power of transportation systems	(ii) identify employment opportunities for the field of energy and power of transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify career development, employment, and entrepreneurship opportunities and certification requirements for the field of energy and power of transportation systems	(iii) identify entrepreneurship opportunities for the field of energy and power of transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) identify career development, employment, and entrepreneurship opportunities and certification requirements for the field of energy and power of transportation systems	(iv) identify certification requirements for the field of energy and power of transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss certification requirements to meet state academic standards and qualifications for employment in selected fields of study	(i) discuss certification requirements to meet state academic standards for employment in selected fields of study
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) discuss certification requirements to meet state academic standards and qualifications for employment in selected fields of study	(ii) discuss certification requirements to meet qualifications for employment in selected fields of study
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) apply ethical reasoning to a variety of workplace scenarios in order to make ethical decisions	(i) apply ethical reasoning to a variety of workplace scenarios in order to make ethical decisions
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) identify opportunities for leadership development and personal growth	(i) identify opportunities for leadership development

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) identify opportunities for leadership development and personal growth	(ii) identify opportunities for personal growth
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) describe and apply team dynamics principles in a project setting	(i) describe team dynamics principles in a project setting
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) describe and apply team dynamics principles in a project setting	(ii) apply team dynamics principles in a project setting
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) demonstrate effective oral and written communication skills with individuals from various cultures	(i) demonstrate effective oral communication skills with individuals from various cultures
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) demonstrate effective oral and written communication skills with individuals from various cultures	(ii) demonstrate effective written communication skills with individuals from various cultures
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(A) discuss the safe use of hand and power tools and equipment commonly used in the maintenance and repair of engines	(i) discuss the safe use of hand tools commonly used in the maintenance of engines
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(A) discuss the safe use of hand and power tools and equipment commonly used in the maintenance and repair of engines	(ii) discuss the safe use of hand tools commonly used in the repair of engines

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(A) discuss the safe use of hand and power tools and equipment commonly used in the maintenance and repair of engines	(iii) discuss the safe use of power tools commonly used in the maintenance of engines
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(A) discuss the safe use of hand and power tools and equipment commonly used in the maintenance and repair of engines	(iv) discuss the safe use of power tools commonly used in the repair of engines
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(A) discuss the safe use of hand and power tools and equipment commonly used in the maintenance and repair of engines	(v) discuss the safe use of equipment commonly used in the maintenance of engines
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(A) discuss the safe use of hand and power tools and equipment commonly used in the maintenance and repair of engines	(vi) discuss the safe use of equipment commonly used in the repair of engines
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(B) discuss the use of audits and inspections to maintain compliance with safety, health, and environmental regulations	(i) discuss the use of audits to maintain compliance with safety regulations
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(B) discuss the use of audits and inspections to maintain compliance with safety, health, and environmental regulations	(ii) discuss the use of audits to maintain compliance with health regulations

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(B) discuss the use of audits and inspections to maintain compliance with safety, health, and environmental regulations	(iii) discuss the use of audits to maintain compliance with environmental regulations
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(B) discuss the use of audits and inspections to maintain compliance with safety, health, and environmental regulations	(iv) discuss the use of inspections to maintain compliance with safety regulations
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(B) discuss the use of audits and inspections to maintain compliance with safety, health, and environmental regulations	(v) discuss the use of inspections to maintain compliance with health regulations
(2) The student knows the functions and applications of the tools, equipment, technologies, and materials used in the field of energy and power of transportation systems. The student is expected to:	(B) discuss the use of audits and inspections to maintain compliance with safety, health, and environmental regulations	(vi) discuss the use of inspections to maintain compliance with environmental regulations
(3) The student applies technical knowledge and skills to simulated situations. The student is expected to:	(A) identify the major components in a vehicular system	(i) identify the major components in a vehicular system
(3) The student applies technical knowledge and skills to simulated situations. The student is expected to:	(B) identify necessary maintenance and service of vehicle systems	(i) identify necessary maintenance of vehicle systems
(3) The student applies technical knowledge and skills to simulated situations. The student is expected to:	(B) identify necessary maintenance and service of vehicle systems	(ii) identify necessary service of vehicle systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student applies technical knowledge and skills to simulated situations. The student is expected to:	(C) discuss preventative maintenance plans and systems to keep vehicular systems in operation	(i) discuss preventative maintenance plans to keep vehicular systems in operation
(3) The student applies technical knowledge and skills to simulated situations. The student is expected to:	(C) discuss preventative maintenance plans and systems to keep vehicular systems in operation	(ii) discuss preventative maintenance systems to keep vehicular systems in operation
(4) The student describes the historical, current, and future significance of the energy and power of transportation systems. The student is expected to:	(A) identify the scope and effect upon society of the energy and power of transportation systems	(i) identify the scope and effect upon society of the energy and power of transportation systems
(4) The student describes the historical, current, and future significance of the energy and power of transportation systems. The student is expected to:	(B) identify potential future scenarios for the energy and power of transportation systems	(i) identify potential future scenarios for the energy and power of transportation systems
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(A) demonstrate communication skills related to working with customers, technicians, and others	(i) demonstrate communication skills related to working with customers
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(A) demonstrate communication skills related to working with customers, technicians, and others	(ii) demonstrate communication skills related to working with technicians
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(A) demonstrate communication skills related to working with customers, technicians, and others	(iii) demonstrate communication skills related to working with others
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(B) prepare documentation such as quotes, invoices, bills of lading, work orders, and other reports	(i) prepare documentation

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(C) read and interpret appropriate documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins	(i) read appropriate documents
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(C) read and interpret appropriate documents such as schematics, charts, diagrams, graphs, parts catalogs, and service-repair manuals and bulletins	(ii) interpret appropriate documents
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(D) perform precision measurements and use industry specifications to diagnose component shape and alignment issues and determine necessary repair	(i) perform precision measurements to diagnose component shape issues
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(D) perform precision measurements and use industry specifications to diagnose component shape and alignment issues and determine necessary repair	(ii) perform precision measurements to diagnose component alignment issues
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(D) perform precision measurements and use industry specifications to diagnose component shape and alignment issues and determine necessary repair	(iii) perform precision measurements to determine necessary repair
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(D) perform precision measurements and use industry specifications to diagnose component shape and alignment issues and determine necessary repair	(iv) use industry specifications to diagnose component shape issues
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(D) perform precision measurements and use industry specifications to diagnose component shape and alignment issues and determine necessary repair	(v) use industry specifications to diagnose component alignment issues

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(D) perform precision measurements and use industry specifications to diagnose component shape and alignment issues and determine necessary repair	(vi) use industry specifications to determine necessary repair
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(E) use critical-thinking skills to diagnose vehicular system malfunctions, solve problems, and make decisions	(i) use critical-thinking skills to diagnose vehicular system malfunctions
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(E) use critical-thinking skills to diagnose vehicular system malfunctions, solve problems, and make decisions	(ii) use critical-thinking skills to solve problems
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(E) use critical-thinking skills to diagnose vehicular system malfunctions, solve problems, and make decisions	(iii) use critical-thinking skills to make decisions
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(F) demonstrate knowledge of regulations that govern the construction, maintenance, and service of energy and power of transportation systems	(i) demonstrate knowledge of regulations that govern the construction of energy and power of transportation systems
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(F) demonstrate knowledge of regulations that govern the construction, maintenance, and service of energy and power of transportation systems	(ii) demonstrate knowledge of regulations that govern the maintenance of energy and power of transportation systems
(5) The student uses academic skills to document the requirements of energy and power of transportation systems. The student is expected to:	(F) demonstrate knowledge of regulations that govern the construction, maintenance, and service of energy and power of transportation systems	(iii) demonstrate knowledge of regulations that govern the service of energy and power of transportation systems

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.461. Management of Transportation Systems (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 10-12. Recommended prerequisite: Principles of Transportation Systems. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) In Management of Transportation Systems, students will gain knowledge and skills in material handling and distribution and proper application, design, and production of technology as it relates to the transportation industries. This course includes the safe operation of tractor-trailers, forklifts, and related heavy equipment. This course will allow students to reinforce, apply, and transfer their academic knowledge and skills to management of transportation systems and associated careers.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) adhere to policies and procedures	(i) adhere to policies
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) adhere to policies and procedures	(i) adhere to procedures
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work behaviors and attitudes, including punctuality, time management, initiative, and cooperation	(ii) demonstrate positive work behaviors and attitudes, including punctuality
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work behaviors and attitudes, including punctuality, time management, initiative, and cooperation	(iii) demonstrate positive work behaviors and attitudes, including time management
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work behaviors and attitudes, including punctuality, time management, initiative, and cooperation	(iii) demonstrate positive work behaviors and attitudes, including initiative
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work behaviors and attitudes, including punctuality, time management, initiative, and cooperation	(iv) demonstrate positive work behaviors and attitudes, including cooperation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) accept constructive criticism	(i) accept constructive criticism

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply ethical reasoning to a variety of situations in order to make ethical decisions	(i) apply ethical reasoning to a variety of situations in order to make ethical decisions
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(i) complete tasks with the highest standards to ensure quality products
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(ii) complete tasks with the highest standards to ensure quality services
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) model professional appearance, including dress, grooming, and personal protective equipment as appropriate	(i) model professional appearance, including dress
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) model professional appearance, including dress, grooming, and personal protective equipment as appropriate	(ii) model professional appearance, including grooming
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) model professional appearance, including dress, grooming, and personal protective equipment as appropriate	(iii) model professional appearance, including personal protective equipment as appropriate
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments	(i) comply with safety rules and regulations to maintain safe working conditions

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments	(ii) comply with safety rules and regulations to maintain safe working environments
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments	(iii) comply with safety rules and regulations to maintain healthy working conditions
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments	(iv) comply with safety rules and regulations to maintain healthy working environments
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(A) explain the history and development of the U.S. transportation systems such as railroads, highways, airports, water systems, and intermodal vans	(i) explain the history of the U.S. transportation systems
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(A) explain the history and development of the U.S. transportation systems such as railroads, highways, airports, water systems, and intermodal vans	(ii) explain the development of the U.S. transportation systems
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(B) examine logistics systems used for the transportation of products and services	(i) examine logistics systems used for the transportation of products
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(B) examine logistics systems used for the transportation of products and services	(ii) examine logistics systems used for the transportation of services
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(C) define practices and terms commonly used in international sales contracts as published by the International Chamber of Commerce	(i) define practices commonly used in international sales contracts as published by the International Chamber of Commerce

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(C) define practices and terms commonly used in international sales contracts as published by the International Chamber of Commerce	(ii) define terms commonly used in international sales contracts as published by the International Chamber of Commerce
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(D) summarize laws and regulations concerning interstate and international trade	(i) summarize laws concerning interstate trade
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(D) summarize laws and regulations concerning interstate and international trade	(ii) summarize laws concerning international trade
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(D) summarize laws and regulations concerning interstate and international trade	(iii) summarize regulations concerning interstate trade
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(D) summarize laws and regulations concerning interstate and international trade	(iv) summarize regulations concerning international trade
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(E) explain the role of homeland security in interstate and international trade	(i) explain the role of homeland security in interstate trade
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(E) explain the role of homeland security in interstate and international trade	(ii) explain the role of homeland security in international trade
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(F) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy issues, security, and culture	(i) evaluate risk factors

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(F) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy issues, security, and culture	(ii) evaluate social trends
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(F) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy issues, security, and culture	(iii) evaluate economic trends
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(i) evaluate documentation for interstate transportation
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(ii) evaluate documentation for interstate logistics
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(iii) evaluate documentation for international transportation
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(iv) evaluate documentation for international logistics
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(v) evaluate other requirements for interstate transportation
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(vi) evaluate other requirements for interstate logistics
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(vii) evaluate other requirements for international transportation

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(G) evaluate documentation and other requirements for interstate and international transportation and logistics	(viii) evaluate other requirements for international logistics
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(H) describe transportation issues such as internal processing, product and supply storage, forecasting, scheduling, cost analysis, documentation confirmation, packing lists, materials safety data sheets, product seals, packaging types, packaging labels, and routing issues	(i) describe transportation issues
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(I) identify employer's expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employer's expectations
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(I) identify employer's expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(I) identify employer's expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(I) identify employer's expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibitilities
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(I) identify employer's expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(J) demonstrate computer skills related to transportation and materials handling	(i) demonstrate computer skills related to transportation
(2) The student demonstrates an understanding of the transportation systems. The student is expected to:	(J) demonstrate computer skills related to transportation and materials handling	(ii) demonstrate computer skills related to materials handling
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(A) discuss U.S. Department of Transportation regulations, including procedures or policies, material designations, packaging requirements, and operational rules	(i) discuss U.S. Department of Transportation regulations, including procedures or policies
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(A) discuss U.S. Department of Transportation regulations, including procedures or policies, material designations, packaging requirements, and operational rules	(ii) discuss U.S. Department of Transportation regulations, including material designations
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(A) discuss U.S. Department of Transportation regulations, including procedures or policies, material designations, packaging requirements, and operational rules	(iii) discuss U.S. Department of Transportation regulations, including packaging requirements
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(A) discuss U.S. Department of Transportation regulations, including procedures or policies, material designations, packaging requirements, and operational rules	(iv) discuss U.S. Department of Transportation regulations, including operational rules

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(i) explain U.S. Department of Transportation compliance requirements concerning hazardous materials
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(ii) explain U.S. Department of Transportation compliance requirements concerning hazardous waste operations
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(iii) explain U.S. Department of Transportation compliance requirements concerning medical surveillance
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(iv) explain U.S. Department of Transportation compliance requirements concerning personnel training

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(v) explain U.S. Department of Transportation compliance requirements concerning adequate ventilation
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(vi) explain U.S. Department of Transportation compliance requirements concerning confined space hazards
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(vii) explain U.S. Department of Transportation compliance requirements concerning emergency preparedness
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(viii) explain U.S. Department of Transportation compliance requirements concerning emergency response

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(ix) explain Environmental Protection Agency compliance requirements concerning hazardous materials
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(x) explain Environmental Protection Agency compliance requirements concerning hazardous waste operations
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xi) explain Environmental Protection Agency compliance requirements concerning medical surveillance
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xii) explain Environmental Protection Agency compliance requirements concerning personnel training

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xiii) explain Environmental Protection Agency compliance requirements concerning adequate ventilation
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xiv) explain Environmental Protection Agency compliance requirements concerning confined space hazards
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xv) explain Environmental Protection Agency compliance requirements concerning emergency preparedness
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xvi) explain Environmental Protection Agency compliance requirements concerning emergency response

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xvii) explain Occupational Safety and Health Administration compliance requirements concerning hazardous materials
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xviii) explain Occupational Safety and Health Administration compliance requirements concerning hazardous waste operations
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xix) explain Occupational Safety and Health Administration compliance requirements concerning medical surveillance
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xx) explain Occupational Safety and Health Administration compliance requirements concerning personnel training

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xxi) explain Occupational Safety and Health Administration compliance requirements concerning adequate ventilation
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xxii) explain Occupational Safety and Health Administration compliance requirements concerning confined space hazards
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xxiii) explain Occupational Safety and Health Administration compliance requirements concerning emergency preparedness
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response	(xxiv) explain Occupational Safety and Health Administration compliance requirements concerning emergency response

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(C) examine personal protective equipment	(i) examine personal protective equipment
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(i) compare specifications for accident prevention signs
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(ii) compare specifications for accident prevention tags
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(iii) compare specifications for retention of U.S. Department of Transportation markings
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(iv) compare specifications for placards for toxic materials

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(vi) compare specifications for placards for hazardous materials
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(vii) compare specifications for labels for toxic materials
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials	(viii) compare specifications for labels for hazardous materials
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(i) research handling requirements for liquid fuels
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(ii) research handling requirements for liquid petroleum gas

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(iii) research handling requirements for carbon monoxide
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(iv) research handling requirements for toxic substances
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(v) research handling requirements for hazardous substances
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(vi) research storage requirements for liquid fuels
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(vii) research storage requirements for liquid petroleum gas

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(viii) research storage requirements for carbon monoxide
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(ix) research storage requirements for toxic substances
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances	(x) research storage requirements for hazardous substances
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards	(i) examine emergency action plans
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards	(ii) examine employee training requirements

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards	(iii) examine evacuation procedure requirements
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards	(iv) examine facility safety standards
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards	(v) examine equipment safety standards
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(G) explain fire prevention resources, including portable fire extinguishers, fire management systems, employee alarm systems, and hazard communication	(i) explain fire prevention resources, including portable fire extinguishers
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(G) explain fire prevention resources, including portable fire extinguishers, fire management systems, employee alarm systems, and hazard communication	(ii) explain fire prevention resources, including fire management systems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(G) explain fire prevention resources, including portable fire extinguishers, fire management systems, employee alarm systems, and hazard communication	(iii) explain fire prevention resources, including employee alarm systems
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(G) explain fire prevention resources, including portable fire extinguishers, fire management systems, employee alarm systems, and hazard communication	(iv) explain fire prevention resources, including hazard communication
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(H) examine fire prevention plans and documentation	(i) examine fire prevention plans
(3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:	(H) examine fire prevention plans and documentation	(ii) examine fire prevention documentation
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(A) read and interpret control systems	(i) read control systems
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(A) read and interpret control systems	(ii) interpret control systems

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(B) perform vehicle inspections and maintenance such as checking vehicle systems and components, diagnosing potential problems, and developing malfunction reports and maintenance schedules and reports	(i) perform vehicle inspections
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(B) perform vehicle inspections and maintenance such as checking vehicle systems and components, diagnosing potential problems, and developing malfunction reports and maintenance schedules and reports	(ii) perform vehicle maintenance
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(C) perform visual search and inspection of a tractor-trailer	(i) perform visual search of a tractor-trailer
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(C) perform visual search and inspection of a tractor-trailer	(ii) perform visual inspection of a tractor-trailer
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(D) demonstrate operation of tractor-trailer controls such as shifting, backing, docking, coupling and uncoupling, and adjusting vehicle speed and conduct break-down procedures	(i) demonstrate operation of tractor-trailer controls
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(D) demonstrate operation of tractor-trailer controls such as shifting, backing, docking, coupling and uncoupling, and adjusting vehicle speed and conduct break-down procedures	(ii) conduct break-down procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(E) explain the management and adjustment of vehicle speed and space relations	(i) explain the management of vehicle speed
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(E) explain the management and adjustment of vehicle speed and space relations	(ii) explain the management of vehicle space relations
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(E) explain the management and adjustment of vehicle speed and space relations	(iii) explain the adjustment of vehicle speed
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(E) explain the management and adjustment of vehicle speed and space relations	(iv) explain the adjustment of vehicle space relations
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(F) identify potential driving hazards and environmental conditions	(i) identify potential driving hazards
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(F) identify potential driving hazards and environmental conditions	(ii) identify environmental conditions
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(G) examine emergency maneuvers, procedures, and accident reports	(i) examine emergency maneuvers

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(G) examine emergency maneuvers, procedures, and accident reports	(ii) examine emergency procedures
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(G) examine emergency maneuvers, procedures, and accident reports	(iii) examine accident reports
(4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:	(H) discuss appropriate decision-making procedures for planning trips	(i) discuss appropriate decision-making procedures for planning trips
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(i) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(ii) explain Occupational Safety and Health Administration forklift safety standards, including battery maintenance

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(iii) explain Occupational Safety and Health Administration forklift safety standards, including liquid propane tank maintenance
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(iv) explain Occupational Safety and Health Administration forklift safety standards, including lift truck stability
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(v) explain Occupational Safety and Health Administration forklift safety standards, including load weight limits
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(vi) explain Occupational Safety and Health Administration forklift safety standards, including seat belt requirements

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(vii) explain Occupational Safety and Health Administration forklift safety standards, including overhead guards
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(viii) explain Occupational Safety and Health Administration forklift safety standards, including tip over prevention
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures	(ix) explain Occupational Safety and Health Administration forklift safety standards, including ride-out procedures
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(B) perform visual inspection of forklifts and their operating environment	(i) perform visual inspection of forklifts
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(B) perform visual inspection of forklifts and their operating environment	(ii) perform visual inspection of [forklifts'] operating environment
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(C) discuss proper start-up, shut-down, and traveling procedures	(i) discuss proper start-up procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(C) discuss proper start-up, shut-down, and traveling procedures	(ii) discuss proper shut-down procedures
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(C) discuss proper start-up, shut-down, and traveling procedures	(iii) discuss proper traveling procedures
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(D) perform maintenance inspections and documentation procedures	(i) perform maintenance inspections
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(D) perform maintenance inspections and documentation procedures	(ii) perform documentation procedures
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(E) discuss forklift attachments	(i) discuss forklift attachments
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers	(i) evaluate proper lifting
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers	(ii) evaluate proper carrying
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers	(iii) evaluate proper load stability

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers	(iv) evaluate proper stacking procedures for loading trailers
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers	(v) evaluate proper stacking procedures for loading boxcars
(5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:	(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers	(xii) evaluate proper stacking procedures for loading containers
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(A) explain safety issues pertaining to heavy equipment operation	(i) explain safety issues pertaining to heavy equipment operation
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(i) discuss principles of heavy equipment components, including cooling systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(ii) discuss principles of heavy equipment components, including fuel systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(iii) discuss principles of heavy equipment components, including lubrication systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(iv) discuss principles of heavy equipment components, including electrical systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(v) discuss principles of heavy equipment components, including air systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(vi) discuss principles of heavy equipment components, including power systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(vii) discuss principles and maintenance of heavy equipment components, including braking systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(viii) discuss principles of heavy equipment components, including pneumatic systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(ix) discuss principles of heavy equipment components, including hydraulic systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(x) discuss principles of heavy equipment components, including operator ergonomics systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xi) discuss principles of heavy equipment components, including tires
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xii) discuss principles of heavy equipment components, including tracks
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xiii) discuss principles of heavy equipment components, including track frames
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xiv) discuss maintenance of heavy equipment components, including cooling systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xv) discuss maintenance of heavy equipment components, including fuel systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xvi) discuss maintenance of heavy equipment components, including lubrication systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xvii) discuss maintenance of heavy equipment components, including electrical systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xviii) discuss maintenance of heavy equipment components, including air systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xix) discuss maintenance of heavy equipment components, including power systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xx) discuss maintenance and maintenance of heavy equipment components, including braking systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xxi) discuss maintenance of heavy equipment components, including pneumatic systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xxii) discuss maintenance of heavy equipment components, including hydraulic systems

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xxiii) discuss maintenance of heavy equipment components, including operator ergonomics systems
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xxiv) discuss maintenance of heavy equipment components, including tires
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xxv) discuss maintenance of heavy equipment components, including tracks
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames	(xxvi) discuss maintenance of heavy equipment components, including track frames

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(C) observe the operation of heavy equipment such as bull dozers, crawler tractors, backhoes, excavators, track hoes, graders, scrapers, skid steer loaders, mini excavators, dump trucks, trenchers, cranes, hoists, soil compactors, land planes, landscaping equipment, and quarry equipment	(i) observe the operation of heavy equipment
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(D) discuss safe transportation of heavy equipment	(i) discuss safe transportation of heavy equipment
(6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:	(E) discuss equipment theft prevention procedures	(i) discuss equipment theft prevention procedures

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.462. Distribution and Logistics (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12. Recommended prerequisite: Principles of Distribution and Logistics. Students shall be awarded one credit for successful completion of this course.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Distribution and Logistics is designed to provide training for entry-level employment in distribution and logistics, This course focuses on the business planning and management aspects of distribution and logistics. To prepare for success, students will learn, reinforce, experience, apply, and transfer their knowledge and skills related to distribution and logistics.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in distribution and logistics	(i) identify career development opportunities in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities in distribution and logistics	(ii) identify entrepreneurship opportunities in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) identify careers in distribution and logistics	(i) identify careers in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(i) apply competencies related to resources in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(ii) apply competencies related to information in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(iii) apply competencies related to interpersonal skills in distribution and logistics

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(iv) apply competencies related to problem solving in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(v) apply competencies related to critical thinking in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in distribution and logistics	(vi) apply competencies related to systems of operation in distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) investigate certifications required to meet state requirements for selected fields	(i) investigate certifications required to meet state requirements for selected fields
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational safety, health, and first-aid policy in the workplace	(i) demonstrate knowledge of personal safety policy in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational safety, health, and first-aid policy in the workplace	(i) demonstrate knowledge of occupational safety policy in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational safety, health, and first-aid policy in the workplace	(iii) demonstrate knowledge of health policy in the workplace

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational safety, health, and first-aid policy in the workplace	(iv) demonstrate knowledge of first-aid policy in the workplace
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) develop response plans to emergency situations	(i) develop response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii)identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify good citizenship skills

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal career goals, objectives, and strategies as part of a plan for future career and educational opportunities	(i) develop personal career goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal career goals, objectives, and strategies as part of a plan for future career and educational opportunities	(ii) develop personal career objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal career goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iii) develop personal career strategies as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal career goals, objectives, and strategies as part of a plan for future career and educational opportunities	(iv) develop personal career goals as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal career goals, objectives, and strategies as part of a plan for future career and educational opportunities	(v) develop personal career objectives as part of a plan for future educational opportunities
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(H) develop personal career goals, objectives, and strategies as part of a plan for future career and educational opportunities	(vi) develop personal career strategies as part of a plan for future educational opportunities
(2) The student identifies concepts related to cultural diversity. The student is expected to:	(A) identify similarities and differences in international cultures	(i) identify similarities and differences in international cultures
(2) The student identifies concepts related to cultural diversity. The student is expected to:	(B) explain the variety of world markets	(i) explain the variety of world markets

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student identifies concepts related to cultural diversity. The student is expected to:	(C) describe marketing factors and practices that impact other cultures	(i) describe marketing factors that impact other cultures
(2) The student identifies concepts related to cultural diversity. The student is expected to:	(C) describe marketing factors and practices that impact other cultures	(ii) describe marketing practices that impact other cultures
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(A) define terms associated with the distribution and logistics industries	(i) define terms associated with the distribution and logistics industries
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(B) identify the scope of the distribution and logistics industries and the industries' effect on society	(i) identify the scope of the distribution and logistics industries
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(B) identify the scope of the distribution and logistics industries and the industries' effect on society	(ii) identify [distribution and logistics] industries' effect on society
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(C) identify significant historical and current issues in the distribution and logistics industries	(i) identify significant historical issues in the distribution and logistics industries
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(C) identify significant historical and current issues in the distribution and logistics industries	(ii) identify signicant current issues in the distribution and logistics industries
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(D) identify potential future scenarios for the distribution and logistics industries	(i) identify potential future scenarios for the distribution and logistics industries

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(E) describe how emerging technology and globalization impacts the distribution and logistics industries	(i) describe how emerging technology impacts the distribution and logistics industries
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(E) describe how emerging technology and globalization impacts the distribution and logistics industries	(i) describe how globalization impacts the distribution and logistics industries
(3) The student describes the historical, current, and future significance of the distribution and logistics industries. The student is expected to:	(F) compare and contrast issues affecting the distribution and logistics industries such as international trade, employment, safety, and environmental issues	(i) compare and contrast issues affecting the distribution and logistics industries
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(A) identify reasons for world trade and globalization	(i) identify reasons for world trade
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(A) identify reasons for world trade and globalization	(ii) identify reasons for globalization
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(B) identify the political impact of distribution and logistics	(i) identify the political impact of distribution and logistics
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws to evaluate their impact on the distribution and logistics industry	(i) review regulations to evaluate their impact on the distribution and logistics industry

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(C) review regulations and major laws to evaluate their impact on the distribution and logistics industry	(ii) review major laws to evaluate their impact on the distribution and logistics industry
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(D) read appropriate written material to stay abreast of current issues	(i) read appropriate written material to stay abreast of current issues
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(E) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues	(i) use critical-thinking skills to identify alternatives
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(E) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues	(ii) use critical-thinking skills to organize alternatives
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(E) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues	(iii) use critical-thinking skills to identify public policy issues
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(E) use critical-thinking skills to identify and organize alternatives and evaluate public policy issues	(iv) use critical-thinking skills to evaluate public policy issues
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(F) evaluate performance and contract compliance of contractors and service providers	(i) evaluate performance of contractors

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(F) evaluate performance and contract compliance of contractors and service providers	(ii) evaluate performance of service providers
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(F) evaluate performance and contract compliance of contractors and service providers	(iii) evaluate contract compliance of contractors
(4) The student explains the distribution and logistics industries at local, state, national, and international levels. The student is expected to:	(F) evaluate performance and contract compliance of contractors and service providers	(iv) evaluate contract compliance of service providers
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and apply workplace ethical and legal responsibilities	(i) describe workplace ethical responsibilities
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and apply workplace ethical and legal responsibilities	(ii) apply workplace ethical responsibilities
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and apply workplace ethical and legal responsibilities	(iii) describe workplace legal responsibilities
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(A) describe and apply workplace ethical and legal responsibilities	(iv) apply workplace legal responsibilities
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) define the uses of proper etiquette and behavior	(i) define the uses of proper etiquette

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(B) define the uses of proper etiquette and behavior	(ii) define the uses of proper behavior
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) identify appropriate personal appearance and health habits	(i) identify appropriate personal appearance
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(C) identify appropriate personal appearance and health habits	(i) identify appropriate health habits
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills and employ effective listening skills	(i) practice written communication skills
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills and employ effective listening skills	(ii) practice oral communication skills
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(D) practice written and oral communication skills and employ effective listening skills	(iii) employ effective listening skills
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(E) comprehend technical reading materials common to the distribution and logistics industries	(i) comprehend technical reading materials common to the distribution and logistics industries
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) employ sound writing and preparation skills for prepared and extemporaneous oral presentations, including presentations of technical information	(i) employ sound writing skills for prepared oral presentations, including presentations of technical information
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) employ sound writing and preparation skills for prepared and extemporaneous oral presentations, including presentations of technical information	(ii) employ sound writing skills for extemporaneous oral presentations, including presentations of technical information

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) employ sound writing and preparation skills for prepared and extemporaneous oral presentations, including presentations of technical information	(iii) employ sound preparation skills for prepared oral presentations, including presentations of technical information
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(F) employ sound writing and preparation skills for prepared and extemporaneous oral presentations, including presentations of technical information	(iv) employ sound preparation skills for extemporaneous oral presentations, including presentations of technical information
(5) The student demonstrates appropriate personal and communication skills. The student is expected to:	(G) demonstrate speaking skills	(i) demonstrate speaking skills
(6) The student applies appropriate research methods for distribution and logistics topics. The student is expected to:	(A) define major fields of research and development	(i) define major fields of research
(6) The student applies appropriate research methods for distribution and logistics topics. The student is expected to:	(A) define major fields of research and development	(ii) define major fields of development
(6) The student applies appropriate research methods for distribution and logistics topics. The student is expected to:	(B) demonstrate proficiency in using a variety of resources for both research and development	(i) demonstrate proficiency in using a variety of resources for research
(6) The student applies appropriate research methods for distribution and logistics topics. The student is expected to:	(B) demonstrate proficiency in using a variety of resources for both research and development	(i) demonstrate proficiency in using a variety of resources for development

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student applies appropriate research methods for distribution and logistics topics. The student is expected to:	(C) describe the scientific method of research	(i) describe the scientific method of research
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(A) discuss project proposals	(i) discuss project proposals
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(B) develop and maintain records	(i) develop records
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(B) develop and maintain records	(ii) maintain records
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(i) collect data
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(ii) organize data in graphs
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(iii) organize data in tables

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(iv) organize data in charts
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(C) collect and organize data in graphs, tables, charts, and plots	(v) organize data in plots
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(i) analyze data from graphs
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(ii) analyze data from tables
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(iii) analyze data from charts
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(iv) analyze data from plots
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(v) interpret data from graphs

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(vi) interpret data from tables
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(vii) interpret data from charts
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(D) analyze and interpret data from graphs, tables, charts, and plots	(viii) interpret data from plots
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(E) maintain appropriate financial records such as journals, inventories, income and expense logs, and financial statements and balance sheets	(i) maintain appropriate financial records
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) conduct formative, summative, and financial analyses of project learning objectives and records in order to problem-solve for the future	(i) conduct formative analyses of project learning objectives in order to problem-solve for the future
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) conduct formative, summative, and financial analyses of project learning objectives and records in order to problem-solve for the future	(ii) conduct summative financial analyses of project learning objectives in order to problem-solve for the future
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) conduct formative, summative, and financial analyses of project learning objectives and records in order to problem-solve for the future	(iii) conduct financial analyses of project learning objectives in order to problem-solve for the future

Knowledge and Skill Statement	Student Expectation	Breakout
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) conduct formative, summative, and financial analyses of project learning objectives and records in order to problem-solve for the future	(iv) conduct formative analyses of records in order to problem-solve for the future
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) conduct formative, summative, and financial analyses of project learning objectives and records in order to problem-solve for the future	(v) conduct summative financial analyses of records in order to problem-solve for the future
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(F) conduct formative, summative, and financial analyses of project learning objectives and records in order to problem-solve for the future	(vi) conduct financial analyses of records in order to problem-solve for the future
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(G) review commercial driver license (CDL) preparation guidelines	(i) review commercial driver license (CDL) preparation guidelines
(7) The student applies problem-solving, mathematical, and organizational skills to maintain financial and logistical records. The student is expected to:	(H) explain CDL guidelines in preparation for testing	(i) explain CDL guidelines in preparation for testing
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(A) use personal management software, email applications, and Internet applications	(i) use personal management software
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(A) use personal management software, email applications, and Internet applications	(ii) use email applications

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(A) use personal management software, email applications, and Internet applications	(iii) use Internet applications
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(i) use word-processing software
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(ii) use database software
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(iii) use spreadsheet software
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(B) use word-processing, database, spreadsheet, and presentation software	(iv) use presentation software
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(C) use collaborative or virtual meeting software	(i) use collaborative or virtual meeting software
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(i) use Geographic Information Systems (GIS) hardware

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(ii) use Geographic Information Systems (GIS) applications
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(iii) use Global Positioning Systems (GPS) hardware
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(iv) use Global Positioning Systems (GPS) applications
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(v) explain the benefits of Geographic Information Systems (GIS) hardware
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(vi) explain the benefits of Geographic Information Systems (GIS) applications
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(vii) explain the benefits of Global Positioning Systems (GPS) hardware
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(D) use and explain the benefits of Geographic Information Systems (GIS) and Global Positioning Systems (GPS) hardware and applications	(viii) explain the benefits of Global Positioning Systems (GPS) applications

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(E) use computer-based equipment to manage human resources and physical assets	(i) use computer-based equipment to manage human resources
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(E) use computer-based equipment to manage human resources and physical assets	(ii) use computer-based equipment to manage physical assets
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(F) use technology applications such as barcode systems to identify and track goods and shipments	(i) use technology applications to identify goods
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(F) use technology applications such as barcode systems to identify and track goods and shipments	(ii) use technology applications to identify shipments
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(F) use technology applications such as barcode systems to identify and track goods and shipments	(iii) use technology applications to track goods
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(F) use technology applications such as barcode systems to identify and track goods and shipments	(iv) use technology applications to track shipments
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(G) use mobile applications such as GPS to track goods and shipments	(i) use mobile applications to track goods

Knowledge and Skill Statement	Student Expectation	Breakout
(8) The student uses information technology tools to access, manage, and create information. The student is expected to:	(G) use mobile applications such as GPS to track goods and shipments	(ii) use mobile applications to track shipments
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(A) use data to identify areas of operation that need improvement to optimize business operations	(i) use data to identify areas of operation that need improvement to optimize business operations
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(B) identify alternative processes and procedures to improve and optimize business operations	(i) identify alternative processes to improve business operations
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(B) identify alternative processes and procedures to improve and optimize business operations	(ii) identify alternative processes to optimize business operations
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(B) identify alternative processes and procedures to improve and optimize business operations	(iii) identify alternative procedures to improve business operations
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(B) identify alternative processes and procedures to improve and optimize business operations	(iv) identify alternative procedures to optimize business operations

Knowledge and Skill Statement	Student Expectation	Breakout
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(C) make data-based decisions on optimizing storage space and distribution routes	(i) make data-based decisions on optimizing storage space
(9) The student uses data to optimize distribution and logistics business operations such as storage, distribution routes, equipment, and human resources. The student is expected to:	(C) make data-based decisions on optimizing storage space and distribution routes	(ii) make data-based decisions on optimizing distribution routes
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(A) identify, assess, and control hazards to maintain safe and healthy working conditions	(i) identify hazards to maintain safe working conditions
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(A) identify, assess, and control hazards to maintain safe and healthy working conditions	(ii) assess hazards to maintain safe working conditions
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(A) identify, assess, and control hazards to maintain safe and healthy working conditions	(iii) control hazards to maintain safe working conditions
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(A) identify, assess, and control hazards to maintain safe and healthy working conditions	(iv) identify hazards to maintain healthful working conditions

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(A) identify, assess, and control hazards to maintain safe and healthy working conditions	(v) assess hazards to maintain healthful working conditions
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(A) identify, assess, and control hazards to maintain safe and healthy working conditions	(vi) control hazards to maintain healthful working conditions
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(B) state the role and summarize the benefits of each component in a health, safety, and environmental management system	(i) state the role of each component in a health management system
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(B) state the role and summarize the benefits of each component in a health, safety, and environmental management system	(ii) state the role of each component in a safety management system
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(B) state the role and summarize the benefits of each component in a health, safety, and environmental management system	(iii) state the role of each component in a environmental management system
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(B) state the role and summarize the benefits of each component in a health, safety, and environmental management system	(iv) summarize the benefits of each component in a health management system

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(B) state the role and summarize the benefits of each component in a health, safety, and environmental management system	(v) summarize the benefits of each component in a safety management system
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(B) state the role and summarize the benefits of each component in a health, safety, and environmental management system	(vi) summarize the benefits of each component in a environmental management system
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(C) demonstrate emergency procedures to reduce and mitigate workplace accidents	(i) demonstrate emergency procedures to reduce workplace accidents
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(C) demonstrate emergency procedures to reduce and mitigate workplace accidents	(ii) demonstrate emergency procedures to mitigate workplace accidents
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(i) perform tool audits
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(ii) perform equipment audits

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(iii) perform facility audits
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(iv) perform personal protective equipment audits
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(v) perform tool inspections
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(vi) perform equipment inspections
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(vii) perform facility inspections
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(D) perform tool, equipment, facility, and personal protective equipment audits and inspections	(viii) perform personal protective equipment inspections

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(E) identify rules and laws designed to promote safety and health in the workplac	(i) identify rules designed to promote safety in the workplace
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(E) identify rules and laws designed to promote safety and health in the workplac	(ii) identify rules designed to promote health in the workplace
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(E) identify rules and laws designed to promote safety and health in the workplace	(iii) identify laws designed to promote safety in the workplace
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(E) identify rules and laws designed to promote safety and health in the workplace	(iv) identify laws designed to promote health in the workplace
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(F) demonstrate knowledge of first aid and cardiopulmonary resuscitation procedures and proper use of safety equipment	(i) demonstrate knowledge of first aid
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(F) demonstrate knowledge of first aid and cardiopulmonary resuscitation procedures and proper use of safety equipment	(ii) demonstrate knowledge of cardiopulmonary resuscitation procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(10) The student assesses and implements methods to reduce sources of workplace hazards common in the industry in order to promote a safe and accident-free work environment. The student is expected to:	(F) demonstrate knowledge of first aid and cardiopulmonary resuscitation procedures and proper use of safety equipment	(iii) demonstrate proper use of safety equipment
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(A) determine risks or damage from normal rigors such as compression, shock, drop, moisture, corrosion, vibration, temperature, and motion during transportation and handling	(i) determine risks or damage from normal rigors
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(B) discuss the transporting and handling of hazardous materials	(i) discuss the transporting of hazardous materials
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(B) discuss the transporting and handling of hazardous materials	(ii) discuss the handling of hazardous materials
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(C) explain size, weight, and shape requirements for packaging	(i) explain size requirements for packaging
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(C) explain size, weight, and shape requirements for packaging	(ii) explain weight requirements for packaging

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(C) explain size, weight, and shape requirements for packaging	(iii) explain shape requirements for packaging
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(i) discuss handling methods for various types of packaging
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(ii) discuss storage methods for various types of packaging
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(iii) discuss shipping methods for various types of packaging
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(iv) discuss handling methods for various types of warehouse providers
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(v) discuss storage methods for various types of warehouse providers

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(vi) discuss shipping methods for various types of warehouse providers
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(vii) discuss handling methods for various types of warehouse providers
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(viii) discuss storage methods for various types of shipping providers
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(D) discuss handling, storage, and shipping methods for various types of packaging and warehouse and shipping providers	(ix) discuss shipping methods for various types of shipping providers
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(E) assess requirements for various packaging types	(i) assess requirements for various packaging types
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(F) analyze visual design and appearance requirements, including displaying required documentation, handling information, and warnings	(i) analyze visual design and appearance requirements, including displaying required documentation

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(F) analyze visual design and appearance requirements, including displaying required documentation, handling information, and warnings	(ii) analyze visual design and appearance requirements, including displaying required handling information
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(F) analyze visual design and appearance requirements, including displaying required documentation, handling information, and warnings	(iii) analyze visual design and appearance requirements, including displaying required warnings
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(G) create layout plans for processing incoming and outgoing, cross-docking, and storage of products	(i) create layout plans for processing incoming products
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(G) create layout plans for processing incoming and outgoing, cross-docking, and storage of products	(ii) create layout plans for processing outgoing products
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(G) create layout plans for processing incoming and outgoing, cross-docking, and storage of products	(iii) create layout plans for cross-docking products
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(G) create layout plans for processing incoming and outgoing, cross-docking, and storage of products	(iv) create layout plans for storage of products

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(H) evaluate material handling and storage equipment	(i) evaluate material handling
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(H) evaluate material handling and storage equipment	(ii) evaluate storage equipment
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(I) assess the processing of incoming goods and materials using standard industry protocols and procedures	(i) assess the processing of incoming goods using standard industry protocols
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(I) assess the processing of incoming goods and materials using standard industry protocols and procedures	(ii) assess the processing of incoming goods using standard industry procedures
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(I) assess the processing of incoming goods and materials using standard industry protocols and procedures	(iii) assess the processing of incoming materials using standard industry protocols
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(I) assess the processing of incoming goods and materials using standard industry protocols and procedures	(iv) assess the processing of incoming materials using standard industry procedures

Knowledge and Skill Statement	Student Expectation	Breakout
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(J) examine equipment and staffing requirements and develop traffic management plans and work schedules	(i) examine equipment requirements
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(J) examine equipment and staffing requirements and develop traffic management plans and work schedules	(ii) examine staffing requirements
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(J) examine equipment and staffing requirements and develop traffic management plans and work schedules	(iii) develop traffic management plans
(11) The student examines the planning, preparation, processing, handling, and storing of goods and materials in warehouses and distribution centers. The student is expected to:	(J) examine equipment and staffing requirements and develop traffic management plans and work schedules	(iv) develop work schedules
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(A) define terms commonly used in sales contracts as published by the International Chamber of Commerce	(i) define terms commonly used in sales contracts as published by the International Chamber of Commerce
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(B) summarize laws and regulations concerning interstate and international trade	(i) summarize laws concerning international trade
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(B) summarize laws and regulations concerning interstate and international trade	(ii) summarize laws concerning interstate trade

Knowledge and Skill Statement	Student Expectation	Breakout
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(B) summarize laws and regulations concerning interstate and international trade	(iii) summarize regulations concerning interstate trade
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(B) summarize laws and regulations concerning interstate and international trade	(iv) summarize regulations concerning nternational trade
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(C) explain the role of homeland security in interstate and international trade	(i) explain the role of homeland security in international trade
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(C) explain the role of homeland security in interstate and international trade	(ii) explain the role of homeland security in interstate trade
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(D) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy change, security, and culture	(i) evaluate risk factors
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(D) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy change, security, and culture	(ii) evaluate social trends
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(D) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy change, security, and culture	(iii) evaluate economic trends
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(i) evaluate documentation for interstate transportation

Knowledge and Skill Statement	Student Expectation	Breakout
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(ii) evaluate documentation for interstate logistics
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(iii) evaluate documentation for international transportation
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(iv) evaluate documentation for international logistics
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(v) evaluate other requirements for interstate transportation
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(vi) evaluate other requirements for interstate logistics
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(vii) evaluate other requirements for international transportation
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(E) evaluate documentation and other requirements for interstate and international transportation and logistics	(viii) evaluate other requirements for international logistics
(12) The student reviews issues related to interstate and international trade. The student is expected to:	(F) describe transportation issues such as internal processing, product and supply storage, forecasting, scheduling, cost analysis, documentation confirmation, packing lists, material safety data sheets, product seals, packaging types, packaging labels, and routing issues	(i) describe transportation issues

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.463. Practicum in Transportation Systems (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12. The practicum course is a paid or unpaid capstone experience for students participating in a coherent sequence of career and technical education courses in the Transportation, Distribution, and Logistics Career Cluster. Students shall be awarded two credits for successful completion of this course. A student may repeat this course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Practicum in Transportation Systems is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience such as internships, mentorships, independent study, or laboratories. The Practicum can be either school lab based or worked based.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities related to transportation systems	(i) identify career development opportunities related to transportation systems
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(A) identify career development and entrepreneurship opportunities related to transportation systems	(ii) identify entrepreneurship opportunities related to transportation systems
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(B) identify careers in transportation systems	(i) identify careers in transportation systems
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(i) apply competencies related to resources within transportation
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(ii) apply competencies related to information within transportation
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(iii) apply competencies related to interpersonal skills within transportation

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(iv) apply competencies related to problem solving within transportation
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(v) apply competencies related to critical thinking within transportation
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(C) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation within transportation	(vi) apply competencies related to systems of operation within transportation
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(D) discuss certification opportunities	(i) discuss certification opportunities
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(i) demonstrate knowledge of personal health
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(ii) demonstrate knowledge of occupational health

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(iii) demonstrate knowledge of personal safety
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(E) demonstrate knowledge of personal and occupational health and safety	(iv) demonstrate knowledge ofoccupational safety
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(F) discuss response plans to emergency situations	(i) discuss response plans to emergency situations
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(i) identify employers' expectations
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(ii) identify appropriate work habits
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iii) identify ethical conduct

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(iv) identify legal responsibilities
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(G) identify employers' expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	(v) identify good citizenship skills
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(i) explore career goals as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(ii) explore career objectives as part of a plan for future career opportunities
(1) The student demonstrates professional standards/employability skills as related by business and industry. The student is expected to:	(H) explore career goals, objectives, and strategies as part of a plan for future career opportunities	(iii) explore career strategies as part of a plan for future career opportunities
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(A) adhere to policies and procedures	(i) adhere to policies

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(A) adhere to policies and procedures	(ii) adhere to procedures
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including demonstrating punctuality, time management, initiative, and cooperation	(i) demonstrate positive work attitudes
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including demonstrating punctuality, time management, initiative, and cooperation	(ii) demonstrate positive work behaviors, including demonstrating punctuality
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including demonstrating punctuality, time management, initiative, and cooperation	(iii) demonstrate positive work behaviors, including time management
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including demonstrating punctuality, time management, initiative, and cooperation	(iv) demonstrate positive work behaviors, including initiative
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including demonstrating punctuality, time management, initiative, and cooperation	(v) demonstrate positive work behaviors, including cooperation

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(C) accept constructive criticism	(i) accept constructive criticism
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(D) apply ethical reasoning to a variety of situations in order to make ethical decisions	(i) apply ethical reasoning to a variety of situations in order to make ethical decisions
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(i) complete tasks with the highest standards to ensure quality products
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(ii) complete tasks with the highest standards to ensure quality services
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(F) model professional appearance, including using appropriate dress, grooming, and personal protective equipment	(i) model professional appearance, including using appropriate dress
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(F) model professional appearance, including using appropriate dress, grooming, and personal protective equipment	(ii) model professional appearance, including grooming

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(F) model professional appearance, including using appropriate dress, grooming, and personal protective equipment	(iii) model professional appearance, including personal protective equipment
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(i) comply with safety rules and regulations to maintain safe working conditions in the practicum setting
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(ii) comply with safety rules and regulations to maintain healthy working conditions in the practicum setting
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(iii) comply with safety rules and regulations to maintain safe environments in the practicum setting
(2) The student demonstrates professional standards as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(iv) comply with safety rules and regulations to maintain healthy environments in the practicum setting
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) analyze elements of a problem to develop creative and innovative solutions	(i) analyze elements of a problem to develop creative solutions

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) analyze elements of a problem to develop creative and innovative solutions	(ii) analyze elements of a problem to develop innovative solutions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(B) critically analyze information to determine its relevance to the problem-solving task	(i) critically analyze information to determine its relevance to the problem-solving task
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) compare and contrast alternatives using a variety of problem-solving and critical-thinking skills	(i) compare and contrast alternatives using a variety of problem-solving skills
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) compare and contrast alternatives using a variety of problem-solving and critical-thinking skills	(ii) compare and contrast alternatives using a variety of critical-thinking skills
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(D) conduct technical research to gather information necessary for decision making	(i) conduct technical research to gather information necessary for decision making
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(i) analyze leadership characteristics related to trusting others in a work situation
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(ii) analyze leadership characteristics related to maintaining a positive attitude in a work situation

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(iii) analyze leadership characteristics related to maintaining integrity in a work situation
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(iv) analyze leadership characteristics related accepting key responsibilities in a work situation
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(B) demonstrate teamwork skills through working cooperatively with others to achieve tasks	(i) demonstrate teamwork skills through working cooperatively with others to achieve tasks
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(i) demonstrate teamwork processes that promote team building
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(ii) demonstrate teamwork processes that promote consensus
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(iii) demonstrate teamwork processes that promote continuous improvement

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(iv) demonstrate teamwork processes that promote respect for the opinions of others
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(v) demonstrate teamwork processes that promote cooperation
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(vi) demonstrate teamwork processes that promote adaptability
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(vii) demonstrate teamwork processes that promote conflict resolution
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(D) demonstrate responsibility for group and individual work tasks	(i) demonstrate responsibility for group work tasks
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(D) demonstrate responsibility for group and individual work tasks	(ii) demonstrate responsibility for individual work tasks

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(i) establish effective working relationships in order to accomplish objectives
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(ii) establish effective working relationships in order to accomplish tasks
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(iii) maintain effective working relationships in order to accomplish objectives
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(iv) maintain effective working relationships in order to accomplish tasks
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(F) demonstrate effective working relationships using interpersonal skills	(i) demonstrate effective working relationships using interpersonal skills
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(G) use positive interpersonal skills to work cooperatively with others	(i) use positive interpersonal skills to work cooperatively with others

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(H) negotiate effectively to arrive at decisions	(i) negotiate effectively to arrive at decisions
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(I) demonstrate respect for individuals, including those from different cultures, genders, and backgrounds	(i) demonstrate respect for individuals, including those from different cultures
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(I) demonstrate respect for individuals, including those from different cultures, genders, and backgrounds	(ii) demonstrate respect for individuals, including those from different genders
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(I) demonstrate respect for individuals, including those from different cultures, genders, and backgrounds	(iii) demonstrate respect for individuals, including those from different backgrounds
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(J) demonstrate sensitivity to and value for diversity	(i) demonstrate sensitivity to diversity
(4) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(J) demonstrate sensitivity to and value for diversity	(ii) demonstrate value for diversity

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(i) demonstrate the use of conten when analyzing information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(ii) demonstrate the use of technical conceptwhen analyzing information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iii) demonstrate the use of vocabulary when analyzing information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iv) demonstrate the use of conten when following directions
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(v) demonstrate the use of technical concepts when following directions

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(vi) demonstrate the use of vocabulary when following directions
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(B) employ verbal skills when obtaining and conveying information	(i) employ verbal skills when obtaining information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(B) employ verbal skills when obtaining and conveying information	(ii) employ verbal skills when conveying information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(i) use informational texts to review information sources for occupational tasks
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(ii) use Internet websites to review information sources for occupational tasks

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(iii) use technical materials to review information sources for occupational tasks
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(iv) use informational texts to apply information sources for occupational tasks
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(v) use Internet websites to apply information sources for occupational tasks
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(vi) use technical materials to apply information sources for occupational tasks
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(i) evaluate the reliability of information from informational texts

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(ii) evaluate the reliability of information from Internet websites
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(iii) evaluate the reliability of information from technical materials
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(iv) evaluate the reliability of information from technical resources
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(E) interpret verbal and nonverbal cues or behaviors to enhance communication	(i) interpret verbal cues or behaviors to enhance communication
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(E) interpret verbal and nonverbal cues or behaviors to enhance communication	(ii) interpret nonverbal cues or behaviors to enhance communication

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(F) apply active listening skills to obtain and clarify information	(i) apply active listening skills to obtain information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(F) apply active listening skills to obtain and clarify information	(ii) apply active listening skills to clarify information
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(G) use academic skills to facilitate effective written and oral communication	(i) use academic skills to facilitate effective written ommunication
(5) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(G) use academic skills to facilitate effective written and oral communication	(ii) use academic skills to facilitate effective oral communication
(6) The student demonstrates technical knowledge and skills required to pursue a career in the transportation systems. The student is expected to:	(A) develop advanced technical knowledge and skills related to the student's personal career goals	(i) develop advanced technical knowledge related to the student's personal career goals

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student demonstrates technical knowledge and skills required to pursue a career in the transportation systems. The student is expected to:	(A) develop advanced technical knowledge and skills related to the student's personal career goals	(ii) develop advanced technical skills related to the student's personal career goals
(6) The student demonstrates technical knowledge and skills required to pursue a career in the transportation systems. The student is expected to:	(B) evaluate technical skill proficiencies	(i) evaluate technical skill proficiencies
(6) The student demonstrates technical knowledge and skills required to pursue a career in the transportation systems. The student is expected to:	(C) accept critical feedback provided by the supervisor	(ii) accept critical feedback provided by the supervisor
(7) The student documents technical knowledge and skills. The student is expected to:	(A) update a professional portfolio to include information such as: (i) attainment of technical skill competencies, licensures or certifications, recognitions, awards, and scholarships; (ii) extended learning experiences such as community service and active participation in career and technical student organizations and professional organizations; (iii) abstract of technical competencies mastered during the practicum; (iv) resume; (v) samples of work; and (vi) evaluation from the practicum supervisor	(i) update a professional portfolio
(7) The student documents technical knowledge and skills. The student is expected to:	(B) present the portfolio to interested stakeholders	(i) present the portfolio to interested stakeholders

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.464. Practicum in Distribution and Logistics (Two Credits), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12. The practicum course is a paid or unpaid capstone experience for students participating in a coherent sequence of career and technical education courses in the distribution and logistics industry. Students shall be awarded two credits for successful completion of this course. A student may repeat this course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Practicum in Distribution and Logistics is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience such as internships, mentorships, independent study, or laboratories. The Practicum can be either school lab based or work based.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) adhere to policies and procedures	(i) adhere to policies
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) adhere to policies and procedures	(ii) adhere to procedures
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including punctuality, time management, initiative, and cooperation	(i) demonstrate positive work attitudes
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including punctuality, time management, initiative, and cooperation	(ii) demonstrate positive work behaviors, including punctuality
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including punctuality, time management, initiative, and cooperation	(iii) demonstrate positive work behaviors, including time management
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including punctuality, time management, initiative, and cooperation	(iv) demonstrate positive work behaviors, including initiative

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) demonstrate positive work attitudes and behaviors, including punctuality, time management, initiative, and cooperation	(v) demonstrate positive work behaviors, including cooperation
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) accept constructive criticism	(i) accept constructive criticism
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) apply ethical reasoning to a variety of situations in order to make ethical decisions	(i) apply ethical reasoning to a variety of situations in order to make ethical decisions
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(i) complete tasks with the highest standards to ensure quality products
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(ii) complete tasks with the highest standards to ensure quality services
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) model professional appearance, including using appropriate dress, grooming, and personal protective equipment	(i) model professional appearance, including using appropriate dress

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) model professional appearance, including using appropriate dress, grooming, and personal protective equipment	(ii) model professional appearance, including using appropriate grooming
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) model professional appearance, including using appropriate dress, grooming, and personal protective equipment	(iii) model professional appearance, including using personal protective equipment
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(i) comply with safety rules and regulations to maintain safe working conditions in the practicum setting
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(ii) comply with safety rules and regulations to maintain healthy working conditions in the practicum setting
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(iii) comply with safety rules and regulations to maintain safe environments in the practicum setting
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments in the practicum setting	(iv) comply with safety rules and regulations to maintain healthy environments in the practicum setting

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) analyze elements of a problem to develop creative and innovative solutions	(i) analyze elements of a problem to develop creative solutions
(2) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) analyze elements of a problem to develop creative and innovative solutions	(ii) analyze elements of a problem to develop innovative solutions
(2) The student applies concepts of critical thinking and problem solving. The student is expected to:	(B) critically analyze information to determine its relevance to the problem-solving task	(i) critically analyze information to determine its relevance to the problem-solving task
(2) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) compare and contrast alternatives using a variety of problem-solving and critical-thinking skills	(i) compare and contrast alternatives using a variety of problem-solving skills
(2) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) compare and contrast alternatives using a variety of problem-solving and critical-thinking skills	(ii) compare and contrast alternatives using a variety of critical-thinking skills
(2) The student applies concepts of critical thinking and problem solving. The student is expected to:	(D) conduct technical research to gather information necessary for decision making	(i) conduct technical research to gather information necessary for decision making
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(i) analyze leadership characteristics related to trusting others in a work situation

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(ii) analyze leadership characteristics related to maintaining a positive attitude in a work situation
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(iii) analyze leadership characteristics related to maintaining integrity in a work situation
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(A) analyze leadership characteristics related to trusting others, maintaining a positive attitude and integrity, and accepting key responsibilities in a work situation	(iv) analyze leadership characteristics related to accepting key responsibilities in a work situation
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(B) demonstrate teamwork skills through working cooperatively with others to achieve tasks	(i) demonstrate teamwork skills through working cooperatively with others to achieve tasks
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and	(i) demonstrate teamwork processes that promote team building
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(ii) demonstrate teamwork processes that promote consensus

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(iii) demonstrate teamwork processes that promote continuous improvement
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(iv) demonstrate teamwork processes that promote respect for the opinions of others
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(v) demonstrate teamwork processes that promote cooperation
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(vi) demonstrate teamwork processes that promote adaptability
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(C) demonstrate teamwork processes that promote team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution	(vii) demonstrate teamwork processes that promote conflict resolution
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(D) demonstrate responsibility for group and individual work tasks	(i) demonstrate responsibility for group work tasks

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(i) establish effective working relationships in order to accomplish objectives
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(ii) maintain effective working relationships in order to accomplish objectives
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(iii) establish effective working relationships in order to accomplish tasks
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(E) establish and maintain effective working relationships in order to accomplish objectives and tasks	(iv) maintain effective working relationships in order to accomplish tasks
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(F) demonstrate effective working relationships using interpersonal skills	(i) demonstrate effective working relationships using interpersonal skills
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(G) use positive interpersonal skills to work cooperatively with others	(i) use positive interpersonal skills to work cooperatively with others

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(H) negotiate effectively to arrive at decisions	(i) negotiate effectively to arrive at decisions
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(I) demonstrate respect for individuals, including those from different cultures, genders, and backgrounds	(i) demonstrate respect for individuals, including those from different cultures
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(I) demonstrate respect for individuals, including those from different cultures, genders, and backgrounds	(ii) demonstrate respect for individuals, including those from different genders
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(I) demonstrate respect for individuals, including those from different cultures, genders, and backgrounds	(iii) demonstrate respect for individuals, including those from different backgrounds
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(J) demonstrate sensitivity to and value for diversity	(i) demonstrate sensitivity to diversity
(3) The student demonstrates leadership and teamwork skills in collaborating with others to accomplish goals and objectives. The student is expected to:	(J) demonstrate sensitivity to and value for diversity	(ii) demonstrate value for diversity

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(i) demonstrate the use of content when analyzing information
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(ii) demonstrate the use of technical concepts when analyzing information
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iii) demonstrate the use of vocabulary when analyzing information
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iv) demonstrate the use of content when following directions
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(v) demonstrate the use of technical concepts when following directions

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(A) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(vi) demonstrate the use of vocabulary when following directions
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(B) employ verbal skills when obtaining and conveying information	(i) employ verbal skills when obtaining information
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(B) employ verbal skills when obtaining and conveying information	(ii) employ verbal skills when conveying information
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(i) use informational texts to review information sources for occupational tasks
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(ii) use Internet websites to review information sources for occupational tasks

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(iii) use technical materials to review information sources for occupational tasks
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(iv) use informational texts to apply information sources for occupational tasks
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(v) use Internet websites to apply information sources for occupational tasks
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(C) use informational texts, Internet websites, and technical materials to review and apply information sources for occupational tasks	(vi) use technical materials to apply information sources for occupational tasks
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(i) evaluate the reliability of information from informational texts

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(ii) evaluate the reliability of information from Internet websites
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(iii) evaluate the reliability of information from technical materials
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(D) evaluate the reliability of information from informational texts, Internet websites, and technical materials and resources	(iv) evaluate the reliability of information from technical resources
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(E) interpret verbal and nonverbal cues or behaviors to enhance communication	(i) interpret verbal and nonverbal cues or behaviors to enhance communication
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(F) apply active listening skills to obtain and clarify information	(i) apply active listening skills to obtain information

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(F) apply active listening skills to obtain and clarify information	(ii) apply active listening skills to clarify information
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(G) use academic skills to facilitate effective written and oral communication	(i) use academic skills to facilitate effective written communication
(4) The student demonstrates oral and written communication skills in creating, expressing, and interpreting information and ideas, including technical terminology and information. The student is expected to:	(G) use academic skills to facilitate effective written and oral communication	(ii) use academic skills to facilitate effective oral communication
(5) The student demonstrates technical knowledge and skills required to pursue a career in the distribution and logistics industries. The student is expected to:	(A) develop advanced technical knowledge and skills related to the student's personal career goals	(i) develop advanced technical knowledge related to the student's personal career goals
(5) The student demonstrates technical knowledge and skills required to pursue a career in the distribution and logistics industries. The student is expected to:	(A) develop advanced technical knowledge and skills related to the student's personal career goals	(ii) develop advanced technical skills related to the student's personal career goals

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student demonstrates technical knowledge and skills required to pursue a career in the distribution and logistics industries. The student is expected to:	(B) evaluate technical skill proficiencies	(i) evaluate technical skill proficiencies
(5) The student demonstrates technical knowledge and skills required to pursue a career in the distribution and logistics industries. The student is expected to:	(C) accept critical feedback provided by the supervisor	(i) accept critical feedback provided by the supervisor
(6) The student documents technical knowledge and skills. The student is expected to:	(A) update a professional portfolio to include information such as: (i) attainment of technical skill competencies, licensures or certifications, recognitions, awards, and scholarships; (ii) extended learning experiences such as community service and active participation in career and technical student organizations and professional organizations; (iii) abstract of technical competencies mastered during the practicum; (iv) resume; (v) samples of work; and (vi) evaluation from the practicum supervisor	(i) update a professional portfolio
(6) The student documents technical knowledge and skills. The student is expected to:	(B) present the portfolio to interested stakeholders	(i) present the portfolio to interested stakeholders

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.465. Extended Practicum in Transportation Systems (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12. The practicum course is a paid or unpaid capstone experience for students participating in a coherent sequence of career and technical education courses in the Transportation, Distribution, and Logistics Career Cluster. Corequisite: Practicum in Transportation Systems. This course must be taken concurrently with Practicum in Transportation Systems and may not be taken as a stand-alone course. Students shall be awarded one credit for successful completion of this course. A student may repeat this course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Extended Practicum in Transportation Systems is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience such as internships, mentorships, independent study, or laboratories. Extended Practicum in Transportation Systems can be either school lab based or worked based.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to transportation systems	(i) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge related to transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to transportation systems	(ii) participate in a paid or unpaid, laboratory- or work-based application of previously studied skills related to transportation systems
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment	(i) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate professional standards and personal qualities needed to be employable such as self-discipline, positive attitude, integrity, leadership, appreciation for diversity, customer service, work ethic, and adaptability with increased fluency	(i) demonstrate professional standards needed to be employable
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate professional standards and personal qualities needed to be employable such as self-discipline, positive attitude, integrity, leadership, appreciation for diversity, customer service, work ethic, and adaptability with increased fluency	(ii) demonstrate personal qualities needed to be employable
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(i) use personal information management applications with increased fluency

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(ii) use email applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(iii) use Internet applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(iv) use writing and publishing applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(v) use presentation applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(vi) use spreadsheet or database applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) employ teamwork and conflict-management skills with increased fluency to achieve collective goals	(i) employ teamwork skills with increased fluency to achieve collective goals

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) employ teamwork and conflict-management skills with increased fluency to achieve collective goals	(ii) employ conflict-management skills with increased fluency to achieve collective goals
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(i) employ planning skills with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(ii) employ planning skills with increased fluency to complete work tasks
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(iii) employ planning tools with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(iv) employ planning tools with increased fluency to complete work tasks
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(v) employ time-management skills with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(vi) employ time-management skills with increased fluency to complete work tasks

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(vii) employ time-management tools with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(viii) employ time-management tools with increased fluency to complete work tasks
(2) The student implements advanced professional communications strategies. The student is expected to:	(A) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner	(i) demonstrate verbal communication consistently in a clear, concise, and effective manner
(2) The student implements advanced professional communications strategies. The student is expected to:	(A) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner	(ii) demonstrate non-verbal communication consistently in a clear, concise, and effective manner
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(i) analyze information
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(ii) analyze data
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(iii) analyze observations
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(iv) interpret information
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(v) interpret data

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(vi) interpret observations
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(vii) effectively communicate information
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(viii) effectively communicate data
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(ix) effectively communicate observations
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(i) observe verbal cues to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(ii) observe nonverbal cues to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(iii) observe verbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(iv) observe nonverbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(v) interpret verbal cues to enhance communication

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(vi) interpret nonverbal cues to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(vii) interpret verbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(viii) interpret nonverbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(D) apply active listening skills to obtain and clarify information	(i) apply active listening skills to obtain information
(2) The student implements advanced professional communications strategies. The student is expected to:	(D) apply active listening skills to obtain and clarify information	(ii) apply active listening skills to clarify information
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(i) employ critical-thinking skills with increased fluency independently to solve problems
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(ii) employ critical-thinking skills with increased fluency in groups to solve problems
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(iii) employ critical-thinking skills with increased fluency independently to make decisions

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(iv) employ critical-thinking skills with increased fluency in groups to make decisions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(B) analyze elements of a problem to develop creative and innovative solutions	(i) analyze elements of a problem to develop creative solutions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(B) analyze elements of a problem to develop creative and innovative solutions	(ii) analyze elements of a problem to develop innovative solutions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(i) demonstrate the use of content when analyzing information
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(ii) demonstrate the use of content when following directions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iii) demonstrate the use of technical concepts when analyzing information
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iv) demonstrate the use of technical concepts when following directions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(v) demonstrate the use of vocabulary when analyzing information

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(vi) demonstrate the use of vocabulary when following directions
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(A) understand and consistently follow workplace safety rules and regulations, including Occupational Safety and Health Administration regulations	(i) understand workplace safety rules and regulations, including Occupational Safety and Health Administration regulations
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(A) understand and consistently follow workplace safety rules and regulations, including Occupational Safety and Health Administration regulations	(ii) consistently follow workplace safety rules and regulations, including Occupational Safety and Health Administration regulations
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(i) demonstrate knowledge of procedures for reporting accidents
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(ii) demonstrate knowledge of procedures for reporting safety incidents
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(iii) demonstrate knowledge of procedures for handling accidents
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(iv) demonstrate knowledge of procedures for handling safety incidents

Knowledge and Skill Statement	Student Expectation	Breakout
(5) The student understands the professional, ethical, and legal responsibilities in transportation systems. The student is expected to:	(A) demonstrate a positive, productive work ethic by performing assigned tasks as directed	(i) demonstrate a positive, productive work ethic by performing assigned tasks as directed
(5) The student understands the professional, ethical, and legal responsibilities in transportation systems. The student is expected to:	(B) apply ethical reasoning to a variety of situations in order to make ethical decisions	(i) apply ethical reasoning to a variety of situations in order to make ethical decisions
(5) The student understands the professional, ethical, and legal responsibilities in transportation systems. The student is expected to:	(C) comply with all applicable rules, laws, and regulations in a consistent manner	(i) comply with all applicable rules in a consistent manner
(5) The student understands the professional, ethical, and legal responsibilities in transportation systems. The student is expected to:	(C) comply with all applicable rules, laws, and regulations in a consistent manner	(ii) comply with all applicable laws in a consistent manner
(5) The student understands the professional, ethical, and legal responsibilities in transportation systems. The student is expected to:	(C) comply with all applicable rules, laws, and regulations in a consistent manner	(iii) comply with all applicable regulations in a consistent manner
(6) The student participates in a transportation systems experience. The student is expected to:	(A) conduct, document, and evaluate learning activities in a supervised transportation systems experience	(i) conduct learning activities in a supervised transportation systems experience
(6) The student participates in a transportation systems experience. The student is expected to:	(A) conduct, document, and evaluate learning activities in a supervised transportation systems experience	(ii) document learning activities in a supervised transportation systems experience
(6) The student participates in a transportation systems experience. The student is expected to:	(A) conduct, document, and evaluate learning activities in a supervised transportation systems experience	(iii) evaluate learning activities in a supervised transportation systems experience

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student participates in a transportation systems experience. The student is expected to:	(B) develop advanced technical knowledge and skills related to the student's occupational objective	(i) develop advanced technical knowledge related to the student's occupational objective
(6) The student participates in a transportation systems experience. The student is expected to:	(B) develop advanced technical knowledge and skills related to the student's occupational objective	(ii) develop advanced technical skills related to the student's occupational objective
(6) The student participates in a transportation systems experience. The student is expected to:	(C) demonstrate growth of technical skill competencies	(i) demonstrate growth of technical skill competencies
(6) The student participates in a transportation systems experience. The student is expected to:	(D) evaluate strengths and weaknesses in technical skill proficiency	(i) evaluate strengths in technical skill proficiency
(6) The student participates in a transportation systems experience. The student is expected to:	(D) evaluate strengths and weaknesses in technical skill proficiency	(ii) evaluate weaknesses in technical skill proficiency
(6) The student participates in a transportation systems experience. The student is expected to:	(E) collect representative work samples	(i) collect representative work samples

Subject	**Chapter 130. Career and Technical Education, Subchapter P. Transportation, Distribution, and Logistics**
Course Title	**§130.466. Extended Practicum in Distribution and Logistics (One Credit), Adopted 2015.**

(a) General Requirements. This course is recommended for students in Grades 11 and 12. The practicum course is a paid or unpaid capstone experience for students participating in a coherent sequence of career and technical education courses in the Transportation, Distribution, and Logistics Career Cluster. Corequisite: Practicum in Distribution and Logistics. This course must be taken concurrently with Practicum in Distribution and Logistics and may not be taken as a stand-alone course. Students shall be awarded one credit for successful completion of this course. A student may repeat this course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.

(b) Introduction.

(1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
(2) The Transportation, Distribution, and Logistics Career Cluster focuses on planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment, and facility maintenance.
(3) Extended Practicum in Distribution and Logistics is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience such as internships, mentorships, independent study, or laboratories. Extended Practicum in Distribution and Logistics can be either school lab based or work based.
(4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to distribution and logistics	(i) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge related to distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(A) participate in a paid or unpaid, laboratory- or work-based application of previously studied knowledge and skills related to distribution and logistics	(ii) participate in a paid or unpaid, laboratory- or work-based application of previously studied skills related to distribution and logistics
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(B) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment	(i) participate in training, education, or preparation for licensure, certification, or other relevant credentials to prepare for employment
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate professional standards and personal qualities needed to be employable such as self-discipline, positive attitude, integrity, leadership, appreciation for diversity, customer service, work ethic, and adaptability with increased fluency	(i) demonstrate professional standards needed to be employable
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(C) demonstrate professional standards and personal qualities needed to be employable such as self-discipline, positive attitude, integrity, leadership, appreciation for diversity, customer service, work ethic, and adaptability with increased fluency	(ii) demonstrate personal qualities needed to be employable
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(i) use personal information management applications with increased fluency

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(ii) use email applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(iii) use Internet applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(iv) use writing and publishing applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(v) use presentation applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(D) use personal information management, email, Internet, writing and publishing, presentation, and spreadsheet or database applications with increased fluency	(vi) use spreadsheet or database applications with increased fluency
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(i) complete tasks with the highest standards to ensure quality products

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(E) complete tasks with the highest standards to ensure quality products and services	(ii) complete tasks with the highest standards to ensure quality services
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ teamwork and conflict-management skills with increased fluency to achieve collective goals	(i) employ teamwork skills with increased fluency to achieve collective goals
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(F) employ teamwork and conflict-management skills with increased fluency to achieve collective goals	(ii) employ conflict-management skills with increased fluency to achieve collective goals
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(i) employ planning skills with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(ii) employ planning skills with increased fluency to complete work tasks
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(iii) employ planning tools with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(iv) employ planning tools with increased fluency to complete work tasks

Knowledge and Skill Statement	Student Expectation	Breakout
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(v) employ time-management skills with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(vi) employ time-management skills with increased fluency to complete work tasks
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(vii) employ time-management tools with increased fluency to enhance results
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	(G) employ planning and time-management skills and tools with increased fluency to enhance results and complete work tasks	(viii) employ time-management tools with increased fluency to complete work tasks
(2) The student implements advanced professional communications strategies. The student is expected to:	(A) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner	(i) demonstrate verbal communication consistently in a clear, concise, and effective manner
(2) The student implements advanced professional communications strategies. The student is expected to:	(A) demonstrate verbal and non-verbal communication consistently in a clear, concise, and effective manner	(ii) demonstrate non-verbal communication consistently in a clear, concise, and effective manner
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(i) analyze information
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(ii) analyze data

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(iii) analyze observations
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(iv) interpret information
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(v) interpret data
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(vi) interpret observations
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(vii) effectively communicate information
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(viii) effectively communicate data
(2) The student implements advanced professional communications strategies. The student is expected to:	(B) analyze, interpret, and effectively communicate information, data, and observations	(ix) effectively communicate observations
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(i) observe verbal cues to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(ii) observe nonverbal cues to enhance communication

Knowledge and Skill Statement	Student Expectation	Breakout
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(iii) observe verbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(iv) observe nonverbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(v) interpret verbal cues to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(vi) interpret nonverbal cues to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(vii) interpret verbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(C) observe and interpret verbal and nonverbal cues and behaviors to enhance communication	(viii) interpret nonverbal behaviors to enhance communication
(2) The student implements advanced professional communications strategies. The student is expected to:	(D) apply active listening skills to obtain and clarify information	(i) apply active listening skills to obtain information
(2) The student implements advanced professional communications strategies. The student is expected to:	(D) apply active listening skills to obtain and clarify information	(ii) apply active listening skills to clarify information
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(i) employ critical-thinking skills with increased fluency independently to solve problems

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(ii) employ critical-thinking skills with increased fluency in groups to solve problems
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(iii) employ critical-thinking skills with increased fluency independently to make decisions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(A) employ critical-thinking skills with increased fluency both independently and in groups to solve problems and make decisions	(iv) employ critical-thinking skills with increased fluency in groups to make decisions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(B) analyze elements of a problem to develop creative and innovative solutions	(i) analyze elements of a problem to develop creative solutions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(B) analyze elements of a problem to develop creative and innovative solutions	(ii) analyze elements of a problem to develop innovative solutions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(i) demonstrate the use of content when analyzing information
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(ii) demonstrate the use of content when following directions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iii) demonstrate the use of technical concepts when analyzing information

Knowledge and Skill Statement	Student Expectation	Breakout
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(iv) demonstrate the use of technical concepts when following directions
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(v) demonstrate the use of vocabulary when analyzing information
(3) The student applies concepts of critical thinking and problem solving. The student is expected to:	(C) demonstrate the use of content, technical concepts, and vocabulary when analyzing information and following directions	(vi) demonstrate the use of vocabulary when following directions
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(A) understand and consistently follow workplace safety rules and regulations, including Occupational Safety and Health Administration regulations	(i) understand workplace safety rules and regulations, including Occupational Safety and Health Administration regulations
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(A) understand and consistently follow workplace safety rules and regulations, including Occupational Safety and Health Administration regulations	(ii) consistently follow workplace safety rules and regulations, including Occupational Safety and Health Administration regulations
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(i) demonstrate knowledge of procedures for reporting accidents
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(ii) demonstrate knowledge of procedures for reporting safety incidents

Knowledge and Skill Statement	Student Expectation	Breakout
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(iii) demonstrate knowledge of procedures for handling accidents
(4) The student understands and applies proper safety techniques in the workplace. The student is expected to:	(B) demonstrate knowledge of procedures for reporting and handling accidents and safety incidents	(iv) demonstrate knowledge of procedures for handling safety incidents
(5) The student understands the professional, ethical, and legal responsibilities in distribution and logistics systems. The student is expected to:	(A) demonstrate a positive, productive work ethic by performing assigned tasks as directed	(i) demonstrate a positive, productive work ethic by performing assigned tasks as directed
(5) The student understands the professional, ethical, and legal responsibilities in distribution and logistics systems. The student is expected to:	(B) apply ethical reasoning to a variety of situations in order to make ethical decisions	(i) apply ethical reasoning to a variety of situations in order to make ethical decisions
(5) The student understands the professional, ethical, and legal responsibilities in distribution and logistics systems. The student is expected to:	(C) comply with all applicable rules, laws, and regulations in a consistent manner	(i) comply with all applicable rules in a consistent manner
(5) The student understands the professional, ethical, and legal responsibilities in distribution and logistics systems. The student is expected to:	(C) comply with all applicable rules, laws, and regulations in a consistent manner	(ii) comply with all applicable laws in a consistent manner
(5) The student understands the professional, ethical, and legal responsibilities in distribution and logistics systems. The student is expected to:	(C) comply with all applicable rules, laws, and regulations in a consistent manner	(iii) comply with all applicable regulations in a consistent manner

Knowledge and Skill Statement	Student Expectation	Breakout
(6) The student participates in a distribution and logistics experience. The student is expected to:	(A) conduct, document, and evaluate learning activities in a supervised distribution and logistics experience	(i) conduct learning activities in a supervised distribution and logistics experience
(6) The student participates in a distribution and logistics experience. The student is expected to:	(A) conduct, document, and evaluate learning activities in a supervised distribution and logistics experience	(ii) document learning activities in a supervised distribution and logistics experience
(6) The student participates in a distribution and logistics experience. The student is expected to:	(A) conduct, document, and evaluate learning activities in a supervised distribution and logistics experience	(iii) evaluate learning activities in a supervised distribution and logistics experience
(6) The student participates in a distribution and logistics experience. The student is expected to:	(B) develop advanced technical knowledge and skills related to the student's occupational objective	(i) develop advanced technical knowledge related to the student's occupational objective
(6) The student participates in a distribution and logistics experience. The student is expected to:	(B) develop advanced technical knowledge and skills related to the student's occupational objective	(ii) develop advanced technical skills related to the student's occupational objective
(6) The student participates in a distribution and logistics experience. The student is expected to:	(C) demonstrate growth of technical skill competencies	(i) demonstrate growth of technical skill competencies
(6) The student participates in a distribution and logistics experience. The student is expected to:	(D) evaluate strengths and weaknesses in technical skill proficiency	(i) evaluate strengths in technical skill proficiency
(6) The student participates in a distribution and logistics experience. The student is expected to:	(D) evaluate strengths and weaknesses in technical skill proficiency	(ii) evaluate weaknesses in technical skill proficiency
(6) The student participates in a distribution and logistics experience. The student is expected to:	(E) collect representative work samples	(i) collect representative work samples