



# Agriculture, Food, and Natural Resources Career Cluster

The Agriculture, Food, and Natural Resources (AFNR) career cluster focuses on the essential elements of life, food, water, land, and air. This career cluster includes occupations ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist.

## Statewide Program of Study: Food Science and Technology

The Food Science and Technology program of study focuses on the occupational and educational opportunities associated with the research, production, and processing of food from plants and animals. This program of study includes exploration of safety, processing, preserving, packaging, and storing food for human consumption.



### Secondary Courses for High School Credit

- |                |  |
|----------------|--|
| <b>Level 1</b> | <ul style="list-style-type: none"> <li>Principles of Agriculture, Food, and Natural Resources</li> </ul>   |
| <b>Level 2</b> | <ul style="list-style-type: none"> <li>Food Technology and Safety</li> <li>Food Technology and Safety + Agricultural Laboratory and Field Experience</li> </ul>  |
| <b>Level 3</b> | <ul style="list-style-type: none"> <li>Food Processing</li> <li>Food Processing + Agricultural Laboratory and Field Experience</li> <li>Meat Processing + Agricultural Laboratory and Field Experience (TBD)</li> </ul>  |
| <b>Level 4</b> | <ul style="list-style-type: none"> <li>Food Science</li> <li>Career and Technical Education Project-Based Capstone</li> <li>Practicum in Agriculture, Food, and Natural Resources</li> <li>Practicum in Agriculture, Food, and Natural Resources + Extended Practicum in Agriculture, Food, and Natural Resources</li> <li>Career Preparation for Programs of Study</li> <li>Career Preparation for Programs of Study + Extended Career Preparation for Programs of Study</li> <li>Scientific Research and Design</li> </ul> |

### Aligned Advanced Academic Courses

<b>AP or IB</b>	<ul style="list-style-type: none"> <li>AP Biology</li> <li>AP Chemistry</li> <li>IB Chemistry SL</li> <li>IB Chemistry HL</li> </ul>
<b>Dual Credit</b>	Dual credit offerings will vary by local education agency.

Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses not listed under the Secondary Courses for High School Credit section of this framework document do not count towards concentrator/completer status for this program of study.

### Work-Based Learning and Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>Shadow employees at a food production company to learn about application of food science to production and quality control</li> <li>Intern in a food science lab working alongside a food science technician to learn about safe and efficient processing of food products</li> </ul>
<b>Expanded Learning Opportunities</b>	<ul style="list-style-type: none"> <li>Participate in an FFA career, leadership, and speaking contest like an agriscience fair</li> <li>Participate in an industry-related competition like an agriscience fair</li> </ul>

### Aligned Industry-Based Certifications

- Culinary Meat Selection and Cookery Certification
- Food Safety and Science Certification
- Pre-Professional Certification in Food Science Fundamentals



### Example Postsecondary Opportunities

#### Apprenticeships

- Butcher

#### Associate Degrees

- Biology/Biological Sciences

#### Bachelor's Degrees

- Food Science and Technology
- Human Nutrition

#### Master's, Doctoral, and Professional Degrees

- Human Nutrition
- Food Science and Technology

#### Additional Stackable IBCs/License

- National Meat Cutting and Processing Certification



### Example Aligned Occupations

#### Butchers and Meat Cutters

Median Wage: \$35,554  
Annual Openings: 2,044  
10-Year Growth: 17%

#### Food Science Technicians

Median Wage: \$53,890  
Annual Openings: 227  
10-Year Growth: 18%

#### Agricultural Inspectors

Median Wage: \$50,690  
Annual Openings: 181  
10-Year Growth: 14%

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024



For more information visit:









<https://tea.texas.gov/academics/college-career-and-military-prep/career-and-technical-education/programs-of-study-additional-resources>



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## Statewide Program of Study: Food Science and Technology

### Course Information

	Course	Prerequisites   Corequisites	Career Clusters
Level 1	<b>Principles of Agriculture, Food, and Natural Resources*</b> 13000200 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
Level 2	<b>Food Technology and Safety</b> 13001300 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	 
	<b>Food Technology and Safety + Agricultural Laboratory and Field Experience</b> 13001310 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
Level 3	<b>Food Processing</b> 13001400 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Food Technology and Safety <b>Recommended Corequisites:</b> None	
	<b>Food Processing + Agricultural Laboratory and Field Experience</b> 13001410 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Food Technology and Safety <b>Recommended Corequisites:</b> None	 
	<b>Meat Processing + Agricultural Laboratory and Field Experience</b> TBD (TBD credit)	<b>Prerequisites:</b> TBD <b>Corequisites:</b> TBD <b>Recommended Prerequisites:</b> TBD <b>Recommended Corequisites:</b> TBD	

\* Indicates course is included in more than one program of study.

For additional information on the **Agriculture, Food, and Natural Resources** career cluster, contact [cte@tea.texas.gov](mailto:cte@tea.texas.gov) or visit <https://tea.texas.gov/cte>



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# Agriculture, Food, and Natural Resources Career Cluster

## Statewide Program of Study: Food Science and Technology

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Food Science</b> 13023000 (1 credit)	<b>Prerequisites:</b> One credit in Biology, one credit in Chemistry, and at least one credit in a Level 2 or higher course from the Hospitality and Tourism career cluster <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Principles of Hospitality and Tourism <b>Recommended Corequisites:</b> None	
<b>Career and Technical Education Project-Based Capstone*</b> First Time Taken: 12701101 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Practicum in Agriculture, Food, and Natural Resources*</b> First Time Taken: 13002500 (2 credits) Second Time Taken: 13002510 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> A minimum of one credit from the courses in the AFNR career cluster <b>Recommended Corequisites:</b> None	
<b>Practicum in Agriculture, Food, and Natural Resources + Extended Practicum in Agriculture, Food, and Natural Resources*</b> First Time Taken: 13002505 (3 credits) Second Time Taken: 13002515 (3 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> A minimum of one credit from the courses in the AFNR career cluster <b>Recommended Corequisites:</b> None	
<b>Career Preparation for Programs of Study*</b> First Time Taken: 12701121 (2 credits)	<b>Prerequisites:</b> At least one Level 2 or higher CTE course <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	

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## Statewide Program of Study: Food Science and Technology

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Career Preparation for Programs of Study + Extended Career Preparation for Programs of Study*</b> First Time Taken: 12701141 (3 credits)	<b>Prerequisites:</b> At least one Level 2 or higher CTE course <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Scientific Research and Design*</b> 13037200 (1 credit)	<b>Prerequisites:</b> Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	

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