



# 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: *Environmental and Natural Resources*

The Environmental and Natural Resources program of study focuses on occupational and educational opportunities associated with the research, design, and engineering of plans for prevention and control of environmental hazards. This program of study includes conducting research for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population.



### 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>Beekeeping and Honey Processing</li> <li>Wildlife, Fisheries, and Ecology Management</li> <li>Wildlife, Fisheries, and Ecology Management + Agricultural Laboratory and Field Experience</li> <li>Forestry and Woodland Ecosystems</li> <li>Forestry and Woodland Ecosystems + Agricultural Laboratory and Field Experience</li> </ul>   |
| <b>Level 3</b> | <ul style="list-style-type: none"> <li>Energy and Natural Resources Technology</li> <li>Energy and Natural Resource Technology + Agricultural Laboratory and Field Experience</li> <li>Range Ecology and Management</li> <li>Range Ecology and Management + Agricultural Laboratory and Field Experience</li> <li>Conservation and Natural Resources Management (TBD)</li> </ul>  |
| <b>Level 4</b> | <ul style="list-style-type: none"> <li>Advanced Energy and Natural Resource Technology</li> <li>Advanced Energy and Natural Resource Technology + Agricultural Laboratory and Field Experience</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</li> <li>Career and Technical Education Project-Based Capstone</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 Environmental Science</li> <li>IB Biology SL</li> <li>IB Biology HL</li> <li>IB Environmental Systems and Societies SL</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>Intern in an environmental services office in local government to learn about sanitation and waste management</li> <li>Participate in a water treatment plant operator apprenticeship at a local water management company</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>Attend an agricultural industry seminar</li> </ul>

### Aligned Industry-Based Certifications

- Ducks Unlimited Ecology Conservation and Management Certification
- Natural Resources Systems
- Water Operators, Class D

Successful completion of the Environmental and Natural Resources program of study will fulfill requirements of the Business and Industry endorsement.



### Example Postsecondary Opportunities

#### Apprenticeships

- Water Treatment Plant Operator

#### Associate Degrees

- Environmental/Environmental Engineering Technology
- Water Quality and Wastewater Treatment Management and Recycling Technology

#### Bachelor's Degrees

- Environmental Engineering
- Environmental Health

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

- Biology/Biological Sciences
- Ecology

#### Additional Stackable IBCs/Licensures

- Pesticide Dealer License



### Example Aligned Occupations

#### *Environmental Engineering Technologists and Technicians*

Median Wage: \$48,124  
Annual Openings: 186  
10-Year Growth: 18%

#### *Environmental Scientists and Specialists*

Median Wage: \$75,421  
Annual Openings: 731  
10-Year Growth: 25%

#### *Environmental Engineers*

Median Wage: \$103,246  
Annual Openings: 316  
10-Year Growth: 18%

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>



# Agriculture, Food, and Natural Resources Career Cluster

## Statewide Program of Study: *Environmental and Natural Resources*

### Course Information

Level 1

Course	Prerequisites   Corequisites	Career Clusters
<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

Course	Prerequisites   Corequisites	Career Clusters
<b>Beekeeping and Honey Processing</b> N1300273 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Principles of AFNR <b>Recommended Corequisites:</b> None	
<b>Wildlife, Fisheries, and Ecology Management</b> 13001500 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Wildlife, Fisheries, and Ecology Management + Agricultural Laboratory and Field Experience</b> 13001510 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Forestry and Woodland Ecosystems</b> 13001700 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Forestry and Woodland Ecosystems + Agricultural Laboratory and Field Experience</b> 13001710 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	

Level 3

Course	Prerequisites   Corequisites	Career Clusters
<b>Energy and Natural Resources Technology</b> 13001100 (1 credit)	<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	

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

For additional information on the **Agriculture, Food, and Natural Resources** career cluster, contact [ctcte@tea.texas.gov](mailto:ctcte@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: *Environmental and Natural Resources*

### Course Information

Level 3

Course	Prerequisites   Corequisites	Career Clusters
<b>Energy and Natural Resource Technology + Agricultural Laboratory and Field Experience</b> 13001110 (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>Range Ecology and Management</b> 13001600 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Range Ecology and Management + Agricultural Laboratory and Field Experience</b> 13001610 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Conservation and Natural Resources Management</b> TBD (TBD credit)	<b>Prerequisites:</b> TBD <b>Corequisites:</b> TBD <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Advanced Energy and Natural Resource Technology</b> 13001200 (1 credit)	<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 and Energy and Natural Resource Technology <b>Recommended Corequisites:</b> None	
<b>Advanced Energy and Natural Resource Technology + Agricultural Laboratory and Field Experience</b> 13001210 (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 and Energy and Natural Resource Technology <b>Recommended Corequisites:</b> None	

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# Agriculture, Food, and Natural Resources Career Cluster

## Statewide Program of Study: *Environmental and Natural Resources*

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<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	
<b>Career Preparation for Programs of Study + Extended Career Preparation*</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>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>Scientific Research and Design*</b> 13037200 (1 credit)	<b>Prerequisites:</b> Biology, Chemistry, Integrated Physics, Chemistry (IPC), or Physics <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	

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