



# 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: Animal Science

The Animal Science program of study focuses on occupational and educational opportunities associated with the science, research, and business of animals and other living organisms. This program of study includes applying biology and life science to real-world life processes of animals and wildlife, either in laboratories or in the field, which could include a veterinary office, a farm or ranch, or any outdoor area harboring animal life. Students will research and analyze the growth and destruction of species and research or diagnose diseases and injuries of animals.

## 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>Small Animal Management</li> <li>Equine Science</li> <li>Entrepreneurship I</li> </ul>   |
| <b>Level 3</b> | <ul style="list-style-type: none"> <li>Livestock Production</li> <li>Livestock Production + Agricultural Laboratory and Field Experience</li> </ul>   |
| <b>Level 4</b> | <ul style="list-style-type: none"> <li>Advanced Animal Science</li> <li>Veterinary Medical Applications</li> <li>Veterinary Medical Applications + Agricultural Laboratory and Field Experience</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>Practicum in Entrepreneurship</li> <li>Practicum in Entrepreneurship + Extended Practicum in Entrepreneurship</li> <li>Career Preparation for Programs of Study</li> <li>Career Preparation for Programs of Study + Extended Career Preparation</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>IB Biology SL</li> <li>IB Biology 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 an animal scientist in a biology lab to learn about applying science to understand animals and wildlife</li> <li>Intern in a veterinary clinic, caring for animals and wildlife being treated in the clinic</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

- Agricultural Biotechnology
- AgriLife Veterinary Assistant Certificate
- Certified Veterinary Assistant, Level I
- Elanco Fundamentals of Animal Science Certification
- Elanco Veterinary Medical Applications Certification
- Equine Management and Evaluation Certification
- Feedyard Technician in Cattle Care and Handling
- Licensed Veterinary Technician
- Production Agriculture - Job Ready
- Small Animal Science and Technology

Successful completion of the Animal Science program of study will fulfill requirements of a Business and Industry endorsement.



## Example Postsecondary Opportunities

### Apprenticeships

- Reproduction Technician

### Associate Degrees

- Biological and Physical Sciences
- Entomology

### Bachelor's Degrees

- Animal Science
- Zoology/Animal Biology

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

- Marine Sciences
- Biotechnology

### Additional Stackable IBCs/License

- Veterinarian
- Certified Veterinary Technician



## Example Aligned Occupations

### Veterinary Assistants and Laboratory Animal Caretakers

Median Wage: \$29,906  
Annual Openings: 1,348  
10-Year Growth: 24%

### Veterinary Technologists and Technicians

Median Wage: \$33,679  
Annual Openings: 1,217  
10-Year Growth: 24%

### Veterinarian

Median Wage: \$103,160  
Annual Openings: 347  
10-Year Growth: 26%

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: Animal Science

### 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>Small Animal Management</b> 13000400 (0.5 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
	<b>Equine Science</b> 13000500 (0.5 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
	<b>Entrepreneurship I*</b> 13011101 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Principles of Business, Marketing and Finance <b>Recommended Corequisites:</b> None	         
Level 3	<b>Livestock Production</b> 13000300 (1 credit)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
	<b>Livestock Production + Agricultural Laboratory and Field Experience</b> 13000310 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> Livestock Production <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	

\* 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>



# Agriculture, Food, and Natural Resources Career Cluster

## Statewide Program of Study: Animal Science

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Advanced Animal Science</b> 13000700 (1 credit)	<b>Prerequisites:</b> Biology and Chemistry or Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and either Small Animal Management, Equine Science, or Livestock Production <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Veterinary Medical Applications <b>Recommended Corequisites:</b> None	
<b>Veterinary Medical Applications</b> 13000600 (1 credit)	<b>Prerequisites:</b> Equine Science, Small Animal Management, or Livestock Production <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> None <b>Recommended Corequisites:</b> None	
<b>Veterinary Medical Applications + Agricultural Laboratory and Field Experience</b> 13000610 (2 credits)	<b>Prerequisites:</b> Equine Science, Small Animal Management, or Livestock Production <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>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	

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# Agriculture, Food, and Natural Resources Career Cluster

## Statewide Program of Study: Animal Science

### Course Information

Level 4

Course	Prerequisites   Corequisites	Career Clusters
<b>Practicum in Entrepreneurship*</b> First Time Taken: 13011111 (2 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Entrepreneurship I and Entrepreneurship II or successful completion of at least two courses in a CTE program of study <b>Recommended Corequisites:</b> None	
<b>Practicum in Entrepreneurship + Extended Practicum in Entrepreneurship*</b> First Time Taken: 13011121 (3 credits)	<b>Prerequisites:</b> None <b>Corequisites:</b> None <b>Recommended Prerequisites:</b> Entrepreneurship I and II or successful completion of at least two courses in a CTE program of study <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>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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