



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

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|----------------|---|
| Level 1 | <ul style="list-style-type: none"> Principles of Agriculture, Food, & Natural Resources |
| Level 2 | <ul style="list-style-type: none"> Small Animal Management Equine Science Entrepreneurship 1 |
| Level 3 | <ul style="list-style-type: none"> Livestock Production |
| Level 4 | <ul style="list-style-type: none"> Advanced Animal Science Veterinary Medical Applications & Lab Practicum in Agriculture, Food, & Natural Resources |

Aligned Advanced Academic Courses

AP or IB	AP Biology
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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

Work-Based Learning Activities

- Shadow an animal scientist in a biology lab to learn about applying science to understand animals and wildlife
- Intern in a veterinary clinic, caring for animals and wildlife being treated in the clinic

Expanded Learning Opportunities

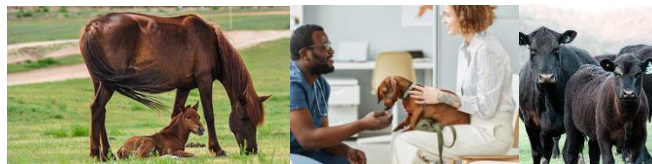
- Participate in an FFA career, leadership, and speaking contest like an agriscience fair
- Attend an agricultural industry seminar

Aligned Industry-Based Certifications

- Elanco Fundamentals of Animal Science Certification
- Elanco Veterinary Medical Applications Certification



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>

Animal Science Program of Study

Agriculture, Food, & Natural Resources Cluster *Business & Industry Endorsement*

Principles of Agriculture, Food,
& Natural Resources
(1 Credit)
9th-12th

Small Animal
Management
(0.5 Credit)
10th-12th

Equine Science
(0.5 Credit)
10th-12th

Entrepreneurship 1
(1 Credit)
10th-12th

Livestock Production
(1 Credit)
10th-12th

Advanced Animal Science
(1 Science Credit)
11th-12th

Veterinary Medical Applications
(2 Credits)
11th-12th

Practicum in Agriculture,
Food, & Natural Resources
(2 Credits)
11th-12th



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Statewide Program of Study: *Plant Science*

The Plant Science program of study focuses on occupational and educational opportunities associated with the science, research, and business of plants and other living organisms. This program of study includes the application of biology and life science to real-world life processes of plants and vegetation, either in laboratories or in the field.



Secondary Courses for High School Credit

- | | |
|----------------|--|
| Level 1 | <ul style="list-style-type: none"> Principles of Agriculture, Food, & Natural Resources |
| Level 2 | <ul style="list-style-type: none"> Entrepreneurship 1 |
| Level 3 | <ul style="list-style-type: none"> Floral Design |
| Level 4 | <ul style="list-style-type: none"> Practicum in Agriculture, Food, & Natural Resources |

Aligned Advanced Academic Courses

AP

AP Biology
AP Chemistry
AP Environmental Science

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

Work-Based Learning Activities

- Work in a part-time job at a landscaping company to learn about production and management of plants.
- Intern at an agricultural research company, working alongside a biological technician to learn about application of biology to plant production

Expanded Learning Opportunities

- Participate in an FFA career, leadership, and speaking contest like an agriscience fair
- Participate in an industry-related competition like an agriscience fair

Aligned Industry-Based Certifications

- Principles of Floral Design Certification



Example Postsecondary Opportunities

Apprenticeships

- Horticulturist

Associate Degrees

- Biology/Biological Sciences
- Biological and Physical Sciences

Bachelor's Degrees

- Horticulture
- Plant Pathology/Phytopathology

Master's, Doctoral, and Professional Degrees

- Plant Breeding
- Botany/Plant Biology

Additional Stackable IBCs/License

- Nursery Floral License
- Horticulturist Certification



Example Aligned Occupations

Pesticide Handlers, Sprayers, and Applicators, Vegetation

Median Wage: \$46,153

Annual Openings: 205

10-Year Growth: 17%

Biological Technicians

Median Wage: \$45,787

Annual Openings: 879

10-Year Growth: 14%

Farmers, Ranchers, and Other Agricultural Managers

Median Wage: \$65,490

Annual Openings: 28,020

10-Year Growth: 4%



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



**Agriculture, Food, & Natural
Resources Cluster**
Business & Industry Endorsement

**Plant Science
Program of Study**

Principles of Agriculture, Food,
& Natural Resources
(1 Credit)
9th-12th

Entrepreneurship 1
(1 Credit)
9th-12th

Floral Design
(1 Credit)
9th-12th

Practicum in Agriculture, Food,
& Natural Resources
(2 Credits)
12th

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