Local Implementation Considerations:

Students completing two or more courses for two or more credits within a program of study earn concentrator status for Perkins V federal accountability reporting.

Proposed Indicator: Students finishing three or more courses for four or more credits with one course from a TEA recognized capstone course (in bold) within a program of study earn completer status for federal accountability reporting.
The Animal Science program of study focuses on the science, research, and business of animals and other living organisms. It teaches students how to apply 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 may also research and analyze the growth and destruction of species and research or diagnose diseases and injuries of animals.

**High School/Industry Certification**

**Certificate/License**: Pet Groomer

**Associate's Degree**: Food Science and Technology

**Bachelor's Degree**: Animal Sciences

**Master's/Doctoral Professional Degree**: Genetics

**Feedyard Technician in Cattle Care and Handling**

**Veterinary Technician**: Veterinary Studies

**Agriculture**: Veterinary Medicine

**Certified Veterinary Assistant**

**Licensed Breeder**: Biotechnology Laboratory Technician

**Biology**: Biological and Physical Sciences

**Zoology/Animal Biology**: Biological and Biomedical Sciences

* Additional industry based certification information is available from the TEA CTE website.

**Offered at GISD Campus**

For more information on postsecondary options for this program of study, visit TXCTE.org.

### Work Based Learning and Expanded Learning Opportunities

**Exploration Activities**
- Texas FFA

**Work Based Learning Activities**
- Agri-Science Fair
- 4H Volunteer at a local farm or veterinary office

### Occupations

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Median Wage</th>
<th>Annual Openings</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Breeders</td>
<td>$39,135</td>
<td>28</td>
<td>9%</td>
</tr>
<tr>
<td>Animal Scientists</td>
<td>$57,533</td>
<td>22</td>
<td>12%</td>
</tr>
<tr>
<td>Medical Scientists</td>
<td>$63,898</td>
<td>435</td>
<td>27%</td>
</tr>
<tr>
<td>Veterinarians</td>
<td>$93,496</td>
<td>294</td>
<td>24%</td>
</tr>
<tr>
<td>Zoologists and Wildlife Biologists</td>
<td>$67,309</td>
<td>45</td>
<td>32%</td>
</tr>
</tbody>
</table>

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 a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist.

Successful completion of the Animal Science program of study will fulfill requirements of the Business and Industry Endorsement. Approved Statewide Program of Study - September 2019
The Animal Science program of study focuses on the science, research, and business of animals and other living organisms. It teaches students how to apply 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 may also research and analyze the growth and destruction of species and research or diagnose diseases and injuries of animals.

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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 a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist.

Successful completion of the Animal Science program of study will fulfill requirements of the Business and Industry Endorsement. Approved Statewide Program of Study - September 2019
## Course Information: Animal Science

<table>
<thead>
<tr>
<th>Course Number/Course Name</th>
<th>Service ID/Credit</th>
<th>Prerequisites (Preq) Recommended Prerequisites (RPreq)</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A100 Principles of Agriculture, Food, and Natural Resources</td>
<td>13000200 (1 credit)</td>
<td>None</td>
<td>9-10</td>
</tr>
<tr>
<td>8A110S Small Animal Management</td>
<td>13000400 (0.5 credit)</td>
<td>PREQ: Principles of Agriculture, Food, and Natural Resources</td>
<td>10-12</td>
</tr>
<tr>
<td>8A230 Equine Science</td>
<td>13000500 (0.5 credit)</td>
<td>PREQ: Principles of Agriculture, Food, and Natural Resources</td>
<td>10-12</td>
</tr>
<tr>
<td>8A220 Livestock Production (Not at NFHS)</td>
<td>13000300 (1 credit)</td>
<td>PREQ: Principles of Agriculture, Food, and Natural Resources</td>
<td>10-12</td>
</tr>
<tr>
<td>8A410 Advanced Animal Science</td>
<td>13000700 (1 credit)</td>
<td>PREQ: Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and either Small Animal Management, Equine Science, or Livestock Production</td>
<td>11-12</td>
</tr>
<tr>
<td>8A940 GRCTC Veterinary Medical Applications/Lab</td>
<td>13000600 (1 credit) 13000610 (2 credits)</td>
<td>PREQ: Equine Science, Small Animal Management, or Livestock Production</td>
<td>11-12</td>
</tr>
<tr>
<td>8A950/8A953 EXT GRCTC Practicum in Agriculture, Food, and Natural Resources - Veterinary Medical</td>
<td>13000500 (2 credits) 13000505 (3 credits)</td>
<td>PREQ: Veterinary Medical Applications/Lab</td>
<td>11-12</td>
</tr>
<tr>
<td>8A320/8A330 EXT Practicum in Agriculture, Food, and Natural Resources</td>
<td>13000500 (2 credits) 13000505 (3 credits)</td>
<td>PREQ: Two courses in the AGRNR Program of Study</td>
<td>11-12</td>
</tr>
</tbody>
</table>
## Agribusiness, Food, and Natural Resources: Applied Agricultural Engineering

### Postsecondary Options

<table>
<thead>
<tr>
<th>High School/Industry Certification</th>
<th>Certificate/License*</th>
<th>Associate's Degree</th>
<th>Bachelor's Degree</th>
<th>Master's/Doctoral Professional Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA 30 Hour General Industry</td>
<td>Certified Professional Agronomist</td>
<td>Heavy Equipment Maintenance Technology/Technician</td>
<td>Agricultural Engineering</td>
<td></td>
</tr>
<tr>
<td>Feedyard Technician in Machinery, Operation, Repair and Maintenance</td>
<td>Certified Reliability Engineer</td>
<td>Agricultural Mechanization, General</td>
<td>Agricultural Mechanization, General</td>
<td></td>
</tr>
<tr>
<td>AWS SENSE Welding Level 1</td>
<td>Certified Irrigation Designer</td>
<td>Small Engine Mechanics and Repair Technology/Technician</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCCER Core Certification**</td>
<td>Fluid Power Mobile Hydraulic Mechanic</td>
<td>Welding Technology/Welder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For more information on postsecondary options for this program of study, visit TXCTE.org. Additional industry-based certification information is available from the TEA CTE website.

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### Occupations, Median Wage, Annual Openings, and % Growth

<table>
<thead>
<tr>
<th>Occupations</th>
<th>Median Wage</th>
<th>Annual Openings</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Power Equipment and Other Small Farm Mechanic Welders</td>
<td>$32,406</td>
<td>366</td>
<td>16%</td>
</tr>
<tr>
<td>Mobile Heavy Equipment Mechanics</td>
<td>$47,299</td>
<td>1,627</td>
<td>16%</td>
</tr>
<tr>
<td>Agricultural Engineers</td>
<td>$64,792</td>
<td>9</td>
<td>13%</td>
</tr>
<tr>
<td>Welders</td>
<td>$41,350</td>
<td>6,171</td>
<td>9%</td>
</tr>
</tbody>
</table>

---

### Work Based Learning and Expanded Learning Opportunities

**Exploration Activities:**
- Tour a farm products or machinery plant
- Texas FFA

**Work Based Learning Activities:**
- Earn a welding certification; intern at a farm products or machinery plant

The Applied Agricultural Engineering program of study explores the occupations and educational opportunities associated with applying knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, and processing agricultural products. This program of study may also include exploration into diagnosing, repairing, or overhauling farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems.

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 a diverse spectrum of occupations, ranging from farmer, rancher, veterinarian to geologist, land conservator, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of this program of study will fulfill requirements of a Business and Industry Endorsement. Approved Statewide Program of Study - September 2019
<table>
<thead>
<tr>
<th>COURSE NUMBER/ COURSE NAME</th>
<th>SERVICE ID/CREDIT</th>
<th>PREREQUISITES (PREQ) RECOMMENDED PREREQUISITES (RPREQ)</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A100A/B Principles of Agriculture, Food, and Natural Resources</td>
<td>13000200 (1 credit)</td>
<td>None</td>
<td>9-10</td>
</tr>
<tr>
<td>8A200A/B Agricultural Mechanics and Metal Technologies</td>
<td>13002200 (1 credit)</td>
<td>None</td>
<td>10-12</td>
</tr>
<tr>
<td>8A360 Agricultural Structures Design and Fabrications</td>
<td>13002300 (1 credit)</td>
<td>PREQ: Agricultural Mechanics and Metal Technologies</td>
<td>10-12</td>
</tr>
<tr>
<td>8A210 Agricultural Power Systems</td>
<td>13002400 (2 credits)</td>
<td>PREQ: Agricultural Mechanics and Metal Technologies</td>
<td>11-12</td>
</tr>
<tr>
<td>8A307 Agricultural Equipment Design and Fabrication</td>
<td>13002350 (1 credit)</td>
<td>PREQ: Agricultural Mechanics and Metal Technologies</td>
<td>11-12</td>
</tr>
<tr>
<td>8A320/8A330 EXT Practicum in Agriculture, Food, and Natural Resources</td>
<td>13002500 (2 credits) 13002505 (3 credits)</td>
<td>PREQ: A minimum of two credits in Agriculture, Food, and Natural Resources</td>
<td>11-12</td>
</tr>
</tbody>
</table>
AGRICULTURE, FOOD, AND NATURAL RESOURCES:
ENVIRONMENTAL AND NATURAL RESOURCES

POSTSECONDARY OPTIONS

<table>
<thead>
<tr>
<th>HIGH SCHOOL/INDUSTRY CERTIFICATION</th>
<th>CERTIFICATE/LICENSE*</th>
<th>ASSOCIATE'S DEGREE</th>
<th>BACHELOR'S DEGREE</th>
<th>MASTER'S/DOCTORAL PROFESSIONAL DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater Collections, Class 1</td>
<td>Board Certified Environmental Engineer - Hazardous Waste Management</td>
<td>Environmental Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water Operators, Class D</td>
<td>Certified Water Technologist</td>
<td>Environmental Studies</td>
<td>Environmental/Environmental Health Engineering</td>
<td></td>
</tr>
<tr>
<td>OSHA Hazardous Waste Operations and Emergency Response</td>
<td>Certified Environmental Scientist</td>
<td>Wildlife, Fish, and Woodlands Science and Management</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Certified in Public Health</td>
<td>Environmental Engineering Technology/Environmental Technology</td>
<td>Natural Resources Law Enforcement and Protective Services</td>
<td>Fishing and Fisheries Science and Management</td>
</tr>
</tbody>
</table>

Additional industry based certification information is available from the TEA CTE website.

For more information on postsecondary options for this program of study, visit TXCTE.org.

The Environmental and Natural Resources program of study explores the occupations and educational opportunities associated with the research, design, and planning of engineering or technical duties in the prevention and control of environmental hazards. This program of study may also include exploration into 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.

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 a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Environmental and Natural Resources program of study will fulfill requirements of a Business and Industry Endorsement. Approved Statewide Program of Study - September 2019

<table>
<thead>
<tr>
<th>OCCUPATIONS</th>
<th>MEDIAN WAGE</th>
<th>ANNUAL OPENINGS</th>
<th>% GROWTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Engineering Technicians</td>
<td>$53,352</td>
<td>101</td>
<td>32%</td>
</tr>
<tr>
<td>Environmental Engineers</td>
<td>$86,757</td>
<td>288</td>
<td>25%</td>
</tr>
<tr>
<td>Environmental Science and Protection Technicians, Including Health</td>
<td>$40,268</td>
<td>508</td>
<td>17%</td>
</tr>
<tr>
<td>Environmental Scientists and Specialists, Including Health</td>
<td>$77,896</td>
<td>644</td>
<td>24%</td>
</tr>
<tr>
<td>Zoologists and Wildlife Biologists</td>
<td>$67,309</td>
<td>45</td>
<td>32%</td>
</tr>
</tbody>
</table>

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:
- Attend summer leadership events
- Texas FFA

Work Based Learning Activities:
- Intern at a waste treatment plant
<table>
<thead>
<tr>
<th>COURSE NUMBER/COURSE NAME</th>
<th>SERVICE ID/ CREDIT</th>
<th>PREREQUISITES (PREQ) RECOMMENDED PREREQUISITES (RPREQ)</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A100 Principles of Agriculture, Food, and Natural Resources</td>
<td>13000200 (1 credit)</td>
<td>None</td>
<td>9-12</td>
</tr>
<tr>
<td>8A120 Wildlife, Fisheries, and Ecology Management</td>
<td>13001500 (1 credit)</td>
<td>PREQ: Principles of Agriculture, Food, and Natural Resources</td>
<td>9-12</td>
</tr>
<tr>
<td>8A250 Energy and Natural Resources Technology</td>
<td>13001100 (1 credit)</td>
<td>PREQ: Minimum one credit from the courses in Agriculture, Food, and Natural Resources Career Cluster</td>
<td>10-12</td>
</tr>
<tr>
<td>8A320/8A330 EXT Practicum in Agriculture, Food, and Natural Resources</td>
<td>13002500 (2 credits) 13002505 (3 credits)</td>
<td>PREQ: A minimum of two credits in Agriculture, Food, and Natural Resources</td>
<td>11-12</td>
</tr>
</tbody>
</table>
The Food Science and Technology program of study explores the occupations and educational opportunities associated with working with agricultural and food scientists in food, fiber, and animal research, production, and processing. This program of study may also include assisting with animal breeding and nutrition, and conducting tests and experiments to improve yield and quality of crops or to increase the resistance of plants and animals to disease or insects.

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 a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Food Science and Technology program of study will fulfill requirements of a Business and Industry Endorsement. Approved Statewide Program of Study - September 2019
<table>
<thead>
<tr>
<th>COURSE NUMBER/ COURSE NAME</th>
<th>SERVICE ID/CREDIT</th>
<th>PREREQUISITES (PREQ)</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A100 Principles of Agriculture, Food, and Natural Resources</td>
<td>13000200 (1 credit)</td>
<td>None</td>
<td>9-12</td>
</tr>
<tr>
<td>8A213 Food Technology and Safety</td>
<td>13001300 (1 credit)</td>
<td>PREQ: Principles of Agriculture, Food, and Natural Resources</td>
<td>10-12</td>
</tr>
<tr>
<td>8A273 Food Processing</td>
<td>13001400 (1 credit)</td>
<td>PREQ: Principles of Agriculture, Food, and Natural Resources</td>
<td>10-12</td>
</tr>
<tr>
<td>8A320 Practicum in Agriculture, Food, and Natural Resources</td>
<td>13002500 (2 credits)</td>
<td>PREQ: A minimum of two credits in Agriculture, Food, and Natural Resources</td>
<td>11-12</td>
</tr>
</tbody>
</table>
The Plant Science program of study focuses on the science, research, and business of plants and other living organisms. It teaches students how to apply biology and life science to real-world life processes of plants and vegetation, either in laboratories or in the field.

Additional industry-based certification information is available from the TEA CTE website.

**Added and offered at GISD Campus**

For more information on postsecondary options for this program of study, visit TXCTE.org.

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 a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

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

Approved Statewide Program of Study - September 2019
<table>
<thead>
<tr>
<th>COURSE NUMBER/ COURSE NAME</th>
<th>SERVICE ID &amp; CREDIT</th>
<th>PREREQUISITES (PREQ)</th>
<th>COREQUISITES (CREQ)</th>
<th>GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>8A170 Horticultural Science</td>
<td>13001800 (1 credit) 13001810 (2 credits)</td>
<td>None</td>
<td>None</td>
<td>9-11</td>
</tr>
<tr>
<td>8A130S Landscape Design and Management</td>
<td>13001900 (.5 credit)</td>
<td>None</td>
<td>None</td>
<td>9-12</td>
</tr>
<tr>
<td>8A140S Turf Grass Management</td>
<td>13001950 (.5 credit)</td>
<td>None</td>
<td>None</td>
<td>10-12</td>
</tr>
<tr>
<td>8A160 Floral Design</td>
<td>13000200 (1 credit)</td>
<td>None</td>
<td>None</td>
<td>10-11</td>
</tr>
<tr>
<td>8A270 Greenhouse Operation and Production/Lab</td>
<td>13002050 (1 credit)</td>
<td>None</td>
<td>None</td>
<td>10-12</td>
</tr>
<tr>
<td>8A240 Advanced Floral Design</td>
<td>N1300270 (1 credit)</td>
<td>PREQ: Floral Design</td>
<td>_</td>
<td>11-12</td>
</tr>
<tr>
<td>8A418 Advanced Plant and Soil Science</td>
<td>13002100 (1 credit)</td>
<td>None</td>
<td>None</td>
<td>11-12</td>
</tr>
<tr>
<td>8A320/8A330 Practicum in Agriculture, Food, and Natural Resources</td>
<td>13002500 (2 credits) 13002505 (3 credits)</td>
<td>PREQ: A minimum of two credits in Agriculture, Food, and Natural Resources</td>
<td>_</td>
<td>11-12</td>
</tr>
</tbody>
</table>
**Principles of Agriculture, Food, and Natural Resources**  
8A100  
TSDS PEIMS Code: 13000200 (PRINAFNR)  
Grade Placement: 9–10, Credit: 1  
Prerequisite: None.  
Principles of Agriculture, Food, and Natural Resources will allow students to develop knowledge and skills regarding career and educational opportunities, personal development, globalization, industry standards, details, practices, and expectations.

**Horticulture Science**  
8A170 (NFHS)  
TSDS PEIMS Code: 13002000 (HORTISCI)  
Grade Placement: 9 -11, Credit: 1  
Prerequisite: None.  
Horticultural Science is designed to develop an understanding of common horticultural management practices as they relate to food and ornamental plant production.

**Wildlife, Fisheries, and Ecology Management**  
8A120  
TSDS PEIMS Code: 13001500 (WFECGT)  
Grade Placement: 9–12, Credit: 1  
Prerequisite: Principles of Agriculture, Food and Natural Resources  
Wildlife, Fisheries, and Ecology Management examines the management of game and non-game wildlife species, fish, and aqua crops and their ecological needs as related to current agricultural practices. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.

**Floral Design**  
8A160  
TSDS PEIMS Code: 13001800 (FLORAL)  
Grade Placement: 9–12 Credit: 1  
Prerequisite: None.  
Floral Design is designed to develop students’ ability to identify and demonstrate the principles and techniques related to floral design as well as develop an understanding of the management of floral enterprises. Through the analysis of artistic floral styles and historical periods, students will develop respect for the traditions and contributions of diverse cultures. Students will respond to and analyze floral designs, thus contributing to the development of lifelong skills of making informed judgments and evaluations. Note: This course satisfies a fine arts credit requirement for students on the Foundation High School Program.

**Small Animal Management**  
8A119S  
TSDS PEIMS Code: 13000400 (SMANIMGT)  
Grade Placement: 10–12, Credit: .5  
Prerequisite: None.  
In Small Animal Management, students will acquire knowledge and skills related to small animals and the small animal management industry. Small Animal Management may address topics related to small mammals such as dogs and cats, amphibians, reptiles, and birds.

**Equine Science**  
8A230S  
TSDS PEIMS Code: 13000500 (EQUINSCI)  
Grade Placement: 10–12, Credit: .5  
Prerequisite: None.  
In Equine Science, students will acquire knowledge and skills related to equine animal systems and the equine industry. Equine Science may address topics related to horses, donkeys, and mules.
Livestock Production  
8A220  
TSDS PEIMS Code: 13000300 (LIVEPROD)  
Grade Placement: 10–12, Credit: 1  
Prerequisite: None.  
In Livestock Production, students will acquire knowledge and skills related to livestock and the livestock production industry. Livestock Production may address topics related to beef cattle, dairy cattle, swine, sheep, goats, and poultry.

Agricultural Mechanics and Metal Technologies  
8A200  
TSDS PEIMS Code: 13002200 (AGMECHMT)  
Grade Placement: 10–12, Credit: 1  
Recommended Prerequisite: Principles of Agriculture, Food, and Natural Resources. Agricultural Mechanics and Metal Technologies is designed to develop an understanding of agricultural mechanics as it relates to safety and skills in tool operation, electrical wiring, plumbing, carpentry, fencing, concrete, and metal working techniques. To prepare for careers in agricultural power, structural, and technical systems, students must attain academic skills and knowledge; acquire technical knowledge and skills related to power, structural, and technical agricultural systems and industry; and develop knowledge and skills regarding career opportunities, entry requirements, industry certifications, and industry expectations.

Agricultural Power Systems  
8A210  
TSDS PEIMS Code: 13002400 (AGPOWSYS)  
Grade Placement: 10–12, Credit: 2  
Recommended Prerequisite: Principles of Agriculture, Food, and Natural Resources. Agricultural Power Systems is designed to develop an understanding of power and control systems as related to energy sources, small and large power systems, and agricultural machinery. To prepare for careers in agricultural power, structural, and technical systems, students must attain academic skills and knowledge; acquire technical knowledge and skills related to power, structural, and technical agricultural systems and the workplace; and develop knowledge and skills regarding career opportunities, entry requirements, industry certifications, and industry expectations.

Food Technology and Safety  
8A213  
TSDS PEIMS Code: 13001300 (FOODTS)  
Grade Placement: 10–12, Credit: 1  
Prerequisite: None.  
Food Technology and Safety examines the food technology industry as it relates to food production, handling, and safety. To prepare for careers in value-added and food processing systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to value-added and food processing and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

Agricultural Structures Design and Fabrication  
8A360  
TSDS PEIMS Code: 13002300 (AGSDF)  
Grade Placement: 10–12, Credit: 1  
Prerequisites: Agricultural Mechanics and Metal Technologies.  
In Agricultural Structures Design and Fabrication, students will explore career opportunities, entry requirements, and industry expectations. To prepare for careers in mechanized agriculture and technical systems, students must attain knowledge and skills related to agricultural structures design and fabrication.
Food Processing
8A273
TSDS PEIMS Code: 13001400 (FOODPRO)
Grade Placement: 10–12, Credit: 1
Recommended Prerequisite: Food Technology and Safety.
Food Processing focuses on the food processing industry with special emphasis on the handling, processing, and marketing of food products. To prepare for careers in food products and processing systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to natural resources and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.

Energy and Natural Resources Technology
8A250
TSDS PEIMS Code: 13001100 (ENGNRT)
Grade Placement: 10–12, Credit: 1
Recommended Prerequisites: Minimum one credit from the courses in Agriculture, Food, and Natural Resources Career Cluster. Energy and Natural Resource Technology examines the interrelatedness of environmental issues and production agriculture. Students will evaluate the environmental benefits provided by sustainable resources and green technologies. Instruction is designed to allow for the application of science and technology to measure environmental impacts resulting from production agriculture through field and laboratory experiences.

Landscape Design and Management
8A130 (NFHS)
TSDS PEIMS Code: 13001900 (LNDMGT)
Grade Placement: 10–12, Credit: .5
Prerequisite: None.
Landscape Design and Management is designed to develop an understanding of landscape design and management techniques and practices. To prepare for careers in horticultural systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticultural systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

Turf Grass Management
8A140S (NFHS)
TSDS PEIMS Code: 13001950 (TGMGT)
Grade Placement: 10–12, Credit: .5
Prerequisite: None.
Turf Grass Management is designed to develop an understanding of turf grass management techniques and practices.

Advanced Floral Design
8A240 (NFHS)
TSDS PEIMS Code:
Grade Placement: 10–11, Credit: 1
Prerequisite: Floral Design
Floral Design is designed to develop students’ ability to identify and demonstrate the principles and techniques related to floral design as well as develop an understanding of the management of floral enterprises. Through the analysis of artistic floral styles and historical periods, students will develop respect for the traditions and contributions of diverse cultures. Students will respond to and analyze floral designs, thus contributing to the development of lifelong skills of making informed judgments and evaluations. Note: This course satisfies a fine arts credit requirement for students on the Foundation High School Program.
Greenhouse Operation and Production
8A270 (NFHS)
TSDS PEIMS Code: 13002050 (GREOP)
Grade Placement: 10–12 Credit: 1
Prerequisite: None.
Greenhouse Operation and Production is designed to develop an understanding of greenhouse production techniques and practices. To prepare for careers in horticultural systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticultural systems and the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations.

Advanced Plant and Soil Science
8A410 (NFHS)
TSDS PEIMS Code: 13002100 (ADVPSSCI)
Grade Placement: 11–12 Credit: 1
Prerequisite: None.
Recommended Prerequisites: Biology, Integrated Physics and Chemistry, Chemistry, or Physics and a minimum of one credit from the courses in the Agriculture, Food, and Natural Resources Career Cluster. Advanced Plant and Soil Science provides a way of learning about the natural world. Students should know how plant and soil science has influenced a vast body of knowledge, that there are still applications to be discovered, and that plant and soil science is the basis for many other fields of science. To prepare for careers in plant and soil science, students must attain academic skills and knowledge, acquire technical knowledge and skills related to plant and soil science and the workplace. Note: This course satisfies a science credit requirement for students on the Foundation High School Program.

Agricultural Equipment Design and Fabrication
8A307
TSDS PEIMS Code: 13002350 (AGEQDF)
Grade Placement: 11–12 Credit: 1
Prerequisites: Agricultural Mechanics and Metal Technologies.
In Agricultural Equipment Design and Fabrication, students will acquire knowledge and skills related to the design and fabrication of agricultural equipment.

Advanced Animal Science
8A410
TSDS PEIMS Code: 13000700 (ADVANSCI)
Grade Placement: 11–12 Credit: 1
Prerequisites: Biology and Chemistry or Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and either Small Animal Management, Equine Science, or Livestock Production.
Recommended Prerequisite: Veterinary Medical Applications. Advanced Animal Science examines the interrelatedness of human, scientific, and technological dimensions of livestock production. Instruction is designed to allow for the application of scientific and technological aspects of animal science through field and laboratory experiences. Note: This course satisfies a science credit requirement for students on the Foundation High School Program.

Veterinary Medical Applications
8A940 (GRCTC)
TSDS PEIMS Code: 13000600 (VETMEDAP)
Grade Placement: 11–12 Credit: 1
Prerequisites: Equine Science, Small Animal Management, or Livestock Production.
Veterinary Medical Applications covers topics relating to veterinary practices, including practices for large and small animal species.
Practicum in Agriculture, Food, and Natural Resources/Extended Practicum in Agriculture, Food, and Natural Resources
8A320/8A330 EXT
TSDS PEIMS Code:13002500(PRAFNR1) / Extended 13002505 (EXPRACFNR1)
Grade Placement: 12, Credit: 2 or 3 EXT
Prerequisites: A minimum of one credit from the courses in the Agriculture, Food, and Natural Resources Career Cluster. Extended Practicum in Agriculture, Food, and Natural Resources 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 experiences such as employment, independent study, internships, assistantships, mentorships, or laboratories. 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 Agriculture, Food, and Natural Resources Career Cluster.

Practicum in Agriculture, Food, and Natural Resources/Extended Practicum in Agriculture, Food, and Natural Resources - Veterinary Medical Lab GRCTC
8A950/8A953 EXT (GRCTC)
TSDS PEIMS Code: 13002500 (EXPRAFNR1), Extended 13002505 (EXPRACFNR1)
Grade Placement: 12, Credit: 2 or 3 EXT
Prerequisite: Veterinary Medical Applications
Extended Practicum in Agriculture, Food, and Natural Resources 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 experiences such as employment, independent study, internships, assistantships, mentorships, or laboratories. 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 Agriculture, Food, and Natural Resources Career Cluster.