Agriculture, Food, and Natural Resources

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.

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.

Courses

9th Grade	Principles of Agriculture, Food, and Natural Resources
10th Grade	Greenhouse Operation and Production Entrepreneurship I
11th Grade	Floral Design Horticultural Science
12th Grade	Advanced Plant and Soil Science Advanced Floral Design OR Career Preparation for Programs of Study

Work-Based Learning/Expanded Learning Opportunities

Work-Based Learning Activities	• Earn industry certification • Work at a florist or landscaping business • Work with Sheldon Blooms
Expanded Learning Opportunities	Sheldon FFA

Aligned Industry-Based Certifications

- Texas State Florist's Association Knowledge Based Floral Certification
- BASF Plant Science 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: $44, 570
Annual Openings: 121
10-Year Growth: 17%

Biological Technicians
Median Wage: $47,968
Annual Openings: 665
10-Year Growth: 14%

Farmers, Ranchers, and Other Agricultural Managers
Median Wage: $79,064
Annual Openings: 30,363
10-Year Growth: 4%

Successful completion of this program of study will fulfill requirements of the Business and Industry Endorsement.
Approved Statewide Program of Study. C. E. King High School – 2026-27

Plant Science
Course Information

Level 1

Principles of Agriculture, Food & Natural Resources **13000200**

Grade: 9-10 **Credit: 1**

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. To prepare for careers in agriculture, food, and natural resources, students must attain academic skills and knowledge in agriculture. To prepare for success, students need opportunities to learn, reinforce, experience, apply, and transfer their knowledge and skills in a variety of settings.

Level 2

Greenhouse Operation and Production **13002050**

Grade: 10-12 **Credit: 1**

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. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills and technologies in a variety of settings.

Entrepreneurship I **13011101**

Grade: 10-12 **Credit: 1**

In Entrepreneurship I, students will gain the knowledge and skills needed to become an entrepreneur in a free enterprise system. Students will learn the key concepts necessary to begin and operate a business. The primary focus of the course is to help students identify the types and selection criteria of business structures, understand the components of a business plan, determine feasibility of an idea using research, and develop and present a business concept. In addition, students will understand the basics of management, accounting, finance, marketing, risk, and product development.

Level 3

Horticultural Science **13002000**

Grade: 11-12 **Credit: 1**

Prerequisite: At least one credit from the Agriculture, Food, and Natural Resources Career Cluster

Horticultural Science is designed to develop an understanding of common horticultural management practices as they relate to food and ornamental plant production. To prepare for careers in horticultural systems, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticulture 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 knowledge and skills in a variety of settings.

Floral Design (Satisfies a fine arts credit) **13001800**

Grade: 11-12 **Credit: 1**

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. To prepare for careers in floral design, students must attain academic skills and knowledge, acquire technical knowledge and skills related to horticultural systems, 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 and technologies in a variety of settings.

Industry Based Certification: Texas State Florist's Association Knowledge Based Floral Certification

Level 4

Advanced Plant & Soil Science (Satisfies a science credit) 13002100

Grade: 12 **Credit: 1**

Prerequisite Biology and Chemistry or Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and Horticultural Science or Greenhouse Operation and Production or Floral Design

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, 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 and technologies in a variety of settings.

Advanced Floral Design 13001850

Grade: 12 **Credit: 1**

Prerequisite: Floral Design

In Advanced Floral Design, students gain advanced knowledge and skills specifically needed to enter the workforce as floral designers or as freelance floral event designers, with an emphasis on specialty designs and occasion-specific designs and planning. Students are also prepared to enter postsecondary certification or degree programs in floral design or special events design. Students build on the knowledge base from Principles and Elements of Floral Design and are introduced to more advanced floral design concepts. In addition, students gain knowledge of the design elements and planning techniques used to produce unique specialty floral designs that support the goals and objectives of an occasion or event.

Industry Based Certification: Texas State Florist's Association Level 1 Floral Certification