



SCHERTZ - CIBOLO - UNIVERSAL CITY ISD

## Career & Technical Education *Course Sequences*

2024-2025

Version 8-1-23



Career & Technical Education Department  
200 W Schlather  
Cibolo, Texas 78108

## MISSION

*In support of the SCUCISD Mission and the TEA State Plan for Career and Technical Education, SCUCISD Career and Technical Education (CTE) department embraces quality instructional practices and works to develop and expand college and industry partnerships to prepare all students for post-secondary education and success in a challenging, globally competitive workforce.*



### 2023-2024 Public Notification of Nondiscrimination in Career and Technical Education Programs

Schertz Cibolo Universal City ISD offers support to the school district for career and technical education programs in Agriculture, Food, and Natural Resources; Arts, Audio/Video Technology, and Communications; Business, Marketing, and Finance; Education and Training; Health Science; Hospitality and Tourism; Human Services; Law, Public Safety, Corrections, and Security; Manufacturing; and Science, Technology, Engineering, and Mathematics. Admission to these programs is based on enrollment in Schertz Cibolo Universal ISD secondary schools.

It is the policy of Schertz Cibolo Universal ISD not to discriminate on the basis of race, color, national origin, sex or handicap in its vocational programs, services or activities and provides equal access to the Boy Scouts and other designated youth groups as required by Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Education Amendments of 1972; and Section 504 of the Rehabilitation Act of 1973, as amended.

Schertz Cibolo Universal ISD will take steps to assure that lack of English language skills will not be a barrier to admission and participation in all educational and CTE programs.

For information about your rights or grievance procedures, contact the Title IX Coordinator, Linda Cannon, and/or the Section 504 Coordinator, at 1060 Elbel Rd, Schertz, TX 78154, (210) 945-6200.

Schertz Cibolo Universal ofrece programas vocacionales en Agriculture, Food, and Natural Resources; Arts, Audio/Video Technology, and Communications; Business, Marketing and Finance; Education and Training; Health Science; Hospitality and Tourism; Human Services; Law, Public Safety, Corrections, and Security; Manufacturing; and Science, Technology, Engineering, and Mathematics. La admisión a estos programas se basa en ESC-20 número de estudiantes en secundaria.

Es norma de Schertz Cibolo Universal ISD no discriminar en sus programas, servicios o actividades vocacionales y brinda igualdad de acceso a los Boy Scouts y otros grupos juveniles designados por motivos de raza, color, origen nacional, sexo o impedimento, tal como lo requieren el Título VI de la Ley de Derechos Civiles de 1964, según enmienda; Título IX de las Enmiendas en la Educación de 1972, y la Sección 504 de la Ley de Rehabilitación de 1973, según enmienda.

Schertz Cibolo Universal ISD tomará las medidas necesarias para asegurar que la falta de habilidad en el uso del inglés no sea un obstáculo para la admisión y participación en todos los programas educativos y vocacionales.

Para información sobre sus derechos o procedimientos para quejas, comuníquese con el Coordinador del Título IX, Linda Cannon, y/o el Coordinador de la Sección 504, en 1060 Elbel Rd, Schertz, TX 78154, (210) 945-6200



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## Career and Technical Education Student Organizations (CTSO) and CTE Extra-Curricular Organizations

Students are encouraged to participate in extended learning experiences in all course pathways offered in Schertz-Cibolo-Universal City ISD. There are Career and Technical Student Organizations (CTSOs) and other leadership or extra-curricular organizations. See your CTE Teacher for opportunities available in your career pathway.

	<p style="text-align: center;"><b><u>Family Career and Community Leaders of America (FCCLA)</u></b></p> <p>Involvement in FCCLA offers members the opportunity to expand their leadership potential and develop skills for life — planning, goal setting, problem solving, decision making and interpersonal communication — necessary in the home and workplace.</p> <p><a href="https://www.texasfccla.org/">https://www.texasfccla.org/</a></p>
	<p style="text-align: center;"><b><u>SkillsUSA</u></b></p> <p>SkillsUSA is a national organization serving teachers and high school and college students who are preparing for careers in technical, skilled and service occupations, including health occupations and for further education.</p> <p><a href="http://www.skillsusatx.org/">http://www.skillsusatx.org/</a></p>
	<p style="text-align: center;"><b><u>Health Occupations Students of America (HOSA)</u></b></p> <p>HOSA's two-fold mission is to promote career opportunities in the health care industry and to enhance the delivery of quality health care to all people HOSA's goal is to encourage all health occupations instructors and students to join and be actively involved in the HOSA Partnership.</p> <p><a href="https://texashosa.org/">https://texashosa.org/</a></p>
	<p style="text-align: center;"><b><u>TAFE</u></b></p> <p>The Texas Association of Future Educators is a statewide student organization created to allow young men and women an opportunity to explore the teaching profession. The organization provides students the necessary knowledge to make informed decisions about pursuing careers in education.</p> <p><a href="https://www.tafeonline.org/">https://www.tafeonline.org/</a></p>
	<p style="text-align: center;"><b><u>DECA</u></b></p> <p>Texas DECA prepares emerging leaders and entrepreneurs for careers in marketing, finance, hospitality and management in high schools and colleges around the globe.</p> <p><a href="http://www.texasdeca.org/">http://www.texasdeca.org/</a></p>
	<p style="text-align: center;"><b><u>FFA</u></b></p> <p>FFA is a dynamic student-led leadership development organization for students of agricultural education. The FFA changes lives and prepares students for premier leadership, personal growth and career success</p> <p><a href="https://www.texasffa.org/">https://www.texasffa.org/</a></p>
<p style="text-align: center;">Clubs Available at High School</p>	<ul style="list-style-type: none"> <li>• VEX Robotics</li> <li>• First Robotics</li> <li>• Best Robotics</li> <li>• Floral Club</li> <li>• Garden Club</li> <li>• E-sports Club</li> <li>• Law Club</li> </ul>

## Schertz-Cibolo-Universal City ISD Endorsement Options

### Business and Industry Endorsement (See 4-yr plans in this booklet)

- Agriculture, Food & Natural Resources
- Arts, Audio/Video Technology and Communications
- Business Marketing, and Finance
- Hospitality and Tourism
- Manufacturing
- Journalism & Communication: You must successfully complete four English elective credits, three of which must come from one of the following course areas: Advanced Journalism Newspaper, Advanced Journalism Yearbook, Public Speaking, OR Debate.

### Public Service Endorsement (See 4-yr plans in this booklet)

- Education & Training
- Human Services
- Health Science
- Law, Public Safety, Corrections & Security
- ROTC

### Science, Technology, Engineering and Math (STEM) Endorsement (See the STEM 4-yr plan in this booklet. Also, you can choose from the following)

- **Option 1:** ADVANCED MATH— (5) Math courses including Algebra I, Geometry, Algebra II and 2 or more advanced math courses. Math Models will NOT count as one of the 5 math courses.
- **Option 2:** ADVANCED SCIENCE— (5) Science courses including Biology, Chemistry, Physics and 2 or more advanced science courses

### Arts & Humanities Endorsement (Choose from the following)

ARTS AND HUMANITIES				
4 credits in a coherent sequence unless otherwise stated				
Area of Interest	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade/12 <sup>th</sup> Grade	
Social Studies	-World Geography -World History -AP Human Geography	-World Geography -World History -AP Human Geography -Psychology -AP Psychology -Sociology	Students must meet all pre-requisites -World Geography -World History -AP Human Geography -Psychology -AP Psychology -Sociology -U.S. Government -Texas Government -Economics	
	You must successfully complete 5 credits of social studies courses. These courses may be at the regular, Pre-AP, AP, Dual Credit, or IB levels. Note that U.S. History must be taken during the junior year and U.S. Government and Economics must be taken during the senior year.			
Fine Arts	-Fine Arts Level 1A	-Fine Arts Level 2A	-Fine Arts Level 3A	-Fine Arts Level 4A
	-Fine Arts Level 1A	-Fine Arts Level 2A	-Fine Arts Level 1B	-Fine Arts Level 2B
English	You must successfully complete 4 credits from the courses listed: English IV                      English IV Dual Credit                      Literary Genres                      Creative Writing AP English III                      AP English IV                      IB Language A1 HL                      Independent Study in English			
Languages Other Than English (LOTE)	-LOTE Level 1	-LOTE Level 2 (same language)	-LOTE Level 3 (same language)	-LOTE Level 4 (same language)
	-LOTE A - Level 1	-LOTE A - Level 2 (same language)	LOTE B – Level 1	LOTE B – Level 2 (same language)

### Multidisciplinary Studies Endorsement (Choose from the following)

<div style="display: flex; justify-content: space-between; align-items: center;"> <b>MULTIDISCIPLINARY</b>                      Requirements are stated below.                      </div>				
Program of Study	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
<b>Career Preparation</b>	You must successfully complete a minimum of 4 advanced elective credits (beyond level 1) that will prepare you for the workforce or post-secondary education OR You must complete 4 credits in each core area that are not considered electives. I.E. English I, II, III, and IV; World Geography, World History, U.S. History, Government, and Economics; Biology, Chemistry or Physics, and two additional science credits, Algebra I, Geometry, Algebra II, and one additional math credit.			
<b>Advanced Academics</b>	You must successfully complete the Foundation curriculum <b>INCLUDING</b> 4 AP, and/or Dual Credit credits from English, math, science, social studies, languages other than English OR fine arts.			
<b>International Baccalaureate (IB – Clemens only)</b>	You must successfully complete the Foundation curriculum <b>INCLUDING</b> four International Baccalaureate credits from English, math, science, social studies, languages other than English, <b>OR</b> fine arts. Students must follow the outlined course sequences for the IB program.			



SCHERTZ - CIBOLO - UNIVERSAL CITY ISD

## Career & Technical Education

### Career and Technical Education Endorsements by Campus 2024-2025

Campus	Endorsement	Programs of Study Offered
Byron P. Steele II High School and Samuel Clemens High School  * Principles courses in pathways also available at Dobie and Corbett Junior High	Business & Industry	Applied Agricultural Engineering *
		Animal Science *
		Plant Sciences *
		Marketing and Sales *
		Accounting and Financial Services *
		Entrepreneurship *
		Digital Communications
		Design and Multimedia Arts-Graphic Design
		Design and Multimedia Arts-Animation
		Design and Multimedia Arts-Video Game Design
		Culinary Arts
		Advanced Manufacturing and Machinery Mechanics (Robotics) *
	Public Services	Teaching and Training
		Family and Community Services
		Law Enforcement
		Healthcare Therapeutic Services
	STEM	Engineering Design
		Programming and Software Development



# 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 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.

## Applied Agricultural Engineering Statewide Program of Study



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.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Agriculture, Food, and Natural Resources

#### Level 2

- Agricultural Mechanics and Metal Technologies

#### Level 3

- Agricultural Structures Design and Fabrications

#### Level 4

- Agricultural Equipment Design and Fabrication/Lab
- Practicum in Agriculture, Food, and Natural Resources

### Postsecondary Opportunities

#### Associates Degrees

- Heavy Equipment Maintenance Technology/ Technician
- Agricultural Mechanization, General
- Small Engine Mechanics and Repair Technology/ Technician
- Welding Technology/ Welder

#### Bachelor's Degrees

- Agricultural Engineering
- Agricultural Mechanization, General

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

- Agricultural Engineering
- Agricultural Mechanization, General

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Tour a farm products or machinery plant
- Participate in Texas FFA

#### Work-Based Learning Activities

- Earn a welding certification
- Intern at a farm products or machinery plant
- Participate in an FFA supervised agriculture experience

### Industry-Based Certifications

- AWS D1.1 Structural Steel
- AWS D9.1 Sheet Metal Welding



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Outdoor Power Equipment and Other Small Engine Mechanics	\$32,406	366	16%
Welders	\$41,350	6171	9%
Farm Equipment Mechanics and Service Technicians	\$39,915	304	17%
Mobile Heavy Equipment Mechanics	\$47,299	1627	16%
Agricultural Engineers	\$64,792	9	13%

Successful completion of the Applied Agricultural Engineering program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised – August 2022



**PRINCIPLES of AGRICULTURE, FOOD AND NATURAL RESOURCES (1701)**

Grade Placement: 9–12

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.

**AGRICULTURAL MECHANICS AND METAL TECHNOLOGIES (1711)**

Grade Placement: 10–12

Credit: 1

Prerequisite: None.

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 the industry; and develop knowledge and skills regarding career opportunities, entry requirements, industry certifications, and industry expectations.

**AGRICULTURAL STRUCTURES DESIGN AND FABRICATION (1712)**

Grade Placement: 11–12

Credit: 1

Prerequisite: None.

Recommended 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.

**AGRICULTURE EQUIPMENT DESIGN AND FABRICATION/AGRICULTURE LABORATORY FIELD EXPERIENCE (1946)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

Recommended Prerequisites: Agricultural Structures Design and Fabrication.

In Agricultural Equipment Design and Fabrication, students will acquire knowledge and skills related to the design and fabrication of agricultural equipment.

**Certification Opportunity: AWS D1.1 and 1.9 (IBC)**

**PRACTICUM IN AG, FOOD, AND NATURAL RESOURCES (1769)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

Recommended Prerequisite: A minimum of one credit from the courses in the Agriculture, Food, and Natural Resources Career Cluster.

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.



# 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 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.

## Animal Science Statewide Program of Study



The Animal Science program of study focuses on the science, research, and business of animals and other living organisms. It teaches CTE learners 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.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Agriculture, Food, and Natural Resources

#### Level 2

- Small Animal Management
- Equine Science

#### Level 3

- Veterinary Medical Applications

#### Level 4

- Advanced Animal Science
- Practicum in Agriculture, Food, and Natural Resources



### Postsecondary Opportunities

#### Associates Degrees

- Food Science and Technology
- Veterinary Studies
- Biotechnology Laboratory Technician
- Biology Technician

#### Bachelor's Degrees

- Animal Sciences
- Agriculture
- Biology
- Zoology/ Animal Biology

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

- Genetics
- Veterinary Medicine
- Biological and Physical Sciences
- Biological and Biomedical Sciences

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in Texas FFA

#### Work-Based Learning Activities

- Compete in an Agri-Science Fair 4H
- Volunteer at a local farm or with a veterinarian
- Participate in an FFA supervised agriculture experience

### Industry-Based Certifications

- Certified Veterinary Assistant, Level 1
- Elanco Fundamentals of Animal Science Certification
- Elanco Veterinary Medical Applications Certification



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Animal Breeders	\$39,139	28	9%
Animal Scientists	\$57,533	22	12%
Medical Scientists	\$63,898	435	27%
Veterinarians	\$93,496	294	24%
Zoologists and Wildlife Biologists	\$67,309	45	32%

Successful completion of the Animal Science program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised – August 2022



**PRINCIPLES of AGRICULTURE, FOOD AND NATURAL RESOURCES (1701)**

Grade Placement: 9–12

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.

**SMALL ANIMAL MANAGEMENT (1704)**

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 (1703)**

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.

**VETERINARY MEDICAL APPLICATIONS (1717)**

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.

**ADVANCED ANIMAL SCIENCE (1705)**

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.

**PRACTICUM IN AG, FOOD, AND NATURAL RESOURCES (1769)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

Recommended Prerequisite: A minimum of one credit from the courses in the Agriculture, Food, and Natural Resources Career Cluster. 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.

# 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 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.

## Plant Science Statewide Program of Study



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.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Agriculture, Food, and Natural Resources

#### Level 2

- Greenhouse Operation and Production

#### Level 3

- Floral Design

#### Level 4

- Advanced Floral
- Advanced Plant and Soil Science



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

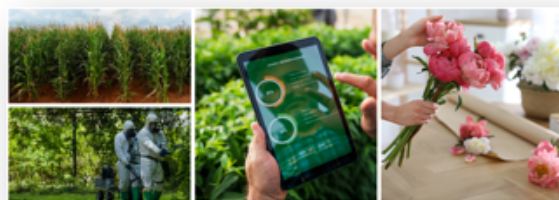
- Participate in Texas FFA

#### Work-Based Learning Activities

- Work at a florist or landscaper business
- Participate in an FFA supervised agriculture experience

### Industry-Based Certifications

- BASF Plant Science Certification
- Texas State Florist's Association Knowledge Based Floral Certification
- Texas State Florist's Association Level I Floral Certification
- Texas State Florist's Association Level II Floral Certification



### Postsecondary Opportunities

#### Associates Degrees

- Applied Horticulture/ Horticulture Operations, General
- Ornamental Horticulture
- Agricultural Business and Management, General
- Turf and Turfgrass Management

#### Bachelor's Degrees

- Applied Horticulture/ Horticulture Operations, General
- Agronomy and Crop Science
- Agricultural Business and Management, General
- Turf and Turfgrass Management

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

- Applied Horticulture/ Horticulture Operations, General
- Agronomy and Crop Science
- Agricultural Business and Management, General
- Farm/Farm and Ranch Management

### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Soil and Plant Scientists	\$54,662	116	21%
Tree Trimmers and Pruners	\$32,240	589	14%
Pesticide Handlers, Sprayers, and Applicators	\$36,733	196	22%
Landscaping Supervisors	\$44,408	807	19%
Biological Technicians	\$42,931	452	17%

Successful completion of the Plant Science program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised – August 2022



**PRINCIPLES of AGRICULTURE, FOOD AND NATURAL RESOURCES (1701)**

Grade Placement: 9–12

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.

**GREENHOUSE OPERATION AND PRODUCTION (1911)**

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.

**FLORAL DESIGN (1706)**

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.

**Advanced Floral Design (1707)**

Grade Placement: 11-12

Credit: 1

Prerequisite: Floral Design

In this course, students build on the knowledge from the Floral Design course and are introduced to more advanced floral design concepts, with an emphasis on specialty designs and specific occasion planning. This course focuses on building skills in advanced floral design and providing students with a thorough understanding of the design elements and planning techniques used to produce unique specialty floral designs that support the goals and objectives of a specific occasion or event. Through the analysis and evaluation of various occasion and event types, students explore the design needs and expectations of clients and propose and evaluate appropriate creations. From conception to evaluation, students are challenged to create and design appropriate specialty floral designs that meet the needs of the client. Furthermore, an emphasis on budgetary adherence and entrepreneurship equips students with many of the necessary skills needed for success in floral enterprises.

**ADVANCED PLANT AND SOIL SCIENCE (1716)**

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.

# Arts, Audio/Video Technology, and Communications Career Cluster

The Arts, A/V Technology and Communications (AAVTC) Career Cluster focuses on careers in designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services. Careers in the AAVTC career cluster require a creative aptitude, a strong background in computer and technology applications, a strong academic foundation, and a proficiency in oral and written communication.

## Digital Communications Statewide Program of Study



The Digital Communications program of study explores the occupations and educational opportunities associated with the production of audio and visual media formats for various purposes, such as TV broadcasts, advertising, video production, or motion pictures. This program of study may also include exploration into operating machines and equipment to record sound and images, such as microphones, sound speakers, video screens, projectors, video monitors, sound and mixing boards, and related electronic equipment.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Arts, Audio/Video Technology, and Communications
- Professional Communications

#### Level 2

- Audio/Video Production I

#### Level 3

- Audio/Video Production II/Lab

#### Level 4

- Practicum of Audio/Video Production



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Shadow a production team
- Participate in SkillsUSA

#### Work-Based Learning Activities

- Intern at a local television station or video production company
- Work with a local company on a project

### Industry-Based Certifications

- Adobe Certified Professional in Digital Video Publication Using Adobe Premier Pro

### Postsecondary Opportunities

#### Associates Degrees

- Recording Arts Technology/Technician
- Cinematography and Film/Video Production
- Radio and Television Broadcasting Technology/Technician
- Music Technology

#### Bachelor's Degrees

- Recording Arts Technology/Technician
- Cinematography and Film/Video Production
- Radio and Television
- Agricultural Communication/Journalism

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

- Communications Technology/Technician
- Cinematography and Film/Video Production
- Radio and Television
- Agricultural Communication/Journalism



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Sound Engineering Technicians	\$39,562	79	27%
Camera Operators, Television, Video, and Motion Picture	\$50,024	129	9%
Audio and Video Equipment Technicians	\$40,581	757	29%
Film and Video Editors	\$47,382	118	23%

Successful completion of the Digital Communications program of study will fulfill requirements of the Business and Industry endorsement. Revised – August 2022



**PRINCIPLES OF ARTS, A/V TECHNOLOGY, AND COMMUNICATIONS (1902)**

Grade Placement: 9

Credits: 1

Prerequisite: None.

The goal of this course is for the student understands arts, audio/video technology, and communications systems. Within this context, students will be expected to develop an understanding of the various and multifaceted career opportunities in this cluster and the knowledge, skills, and educational requirements for those opportunities.

**PROFESSIONAL COMMUNICATIONS (1700)**

Grade Placement: 9–12

Credits: .5

Prerequisite: None.

Professional Communications blends written, oral, and graphic communication in a career based environment. Careers in the global economy require individuals to be creative and have a strong background in computer and technology applications, a strong and solid academic foundation, and a proficiency in professional oral and written communication. Within this context, students will be expected to develop and expand the ability to write, read, edit, speak, listen, apply software applications, manipulate computer graphics, and conduct Internet research.

**AUDIO/VIDEO PRODUCTION I (1721)**

Grade Placement: 9–12

Credits: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Arts, Audio/Video Technology, and Communications.

Recommended Corequisite: Audio/Video Production I Lab.

In addition to developing technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an understanding of the industry with a focus on pre-production, production, and post-production audio and video products.

**AUDIO/VIDEO PRODUCTION II /AUDIO/VIDEO PRODUCTION II w/Lab (1718 & 1912)**

Grade Placement: 10–12

Credits: 2

Prerequisite: Audio/Video Production I.

Corequisite: Audio/Video Production II.

Building upon the concepts taught in Audio/Video Production, in addition to developing advanced knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an advanced understanding of the industry with a focus on pre-production, production, and postproduction products. Through diverse forms of storytelling and production, students will exercise and develop creativity, intellectual curiosity, and critical-thinking, problem-solving, and collaborative skills. This course may be implemented in an audio format or a format with both audio and video. Requiring a lab requisite for the course affords necessary time devoted specifically to the production and post-production process.

**PRACTICUM IN AUDIO/VIDEO PRODUCTION (1921)**

Grade Placement: 11–12

Credits: 2

Prerequisites: Audio/Video Production II and Audio/Video Production II Lab.

Building upon the concepts taught in Audio/Video Production II and its corequisite Audio/Video Production II Lab, in addition to developing advanced technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an increasing understanding of the industry with a focus on applying pre-production, production, and post-production audio and video products in a professional environment. This course may be implemented in an advanced audio/video or audio format. Instruction may be delivered through lab-based classroom experiences or career preparation opportunities.



# Arts, Audio/Video Technology, and Communications Career Cluster

The Arts, A/V Technology and Communications (AAVTC) Career Cluster focuses on careers in designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services. Careers in the AAVTC career cluster require a creative aptitude, a strong background in computer and technology applications, a strong academic foundation, and a proficiency in oral and written communication.

## Graphic Design & Multimedia Arts Statewide Program of Study



The Graphic Design and Multimedia Arts program of study explores the occupations and educational opportunities associated with designing or creating graphics to meet specific commercial or promotional needs, such as packaging, displays, or logos. This program of study may also include exploration into designing clothing and accessories and creating special effects, animation, or other visual images using film, video, computers, or other electronic tools and media, for use in computer games, movies, music videos, and commercials.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Arts, A/V Technology, and Communications

#### Level 2

- Graphic Design and Illustration I
- Animation I
- Video Game Design

#### Level 3

- Graphic Design and Illustration II/Lab
- Animation II
- Video Game Programming

#### Level 4

- Practicum in Graphic Design and Illustration
- 3-D Modeling and Animation
- Advanced Video Game Programming
- Practicum in Audio/Video Production



### Postsecondary Opportunities

#### Associates Degrees

- Animation, Interactive Technology, Video Graphics and Special Effects
- Graphic Design
- Game and Interactive Media Design

#### Bachelor's Degrees

- Animation, Interactive Technology, Video Graphics and Special Effects
- Graphic Design
- Game and Interactive Media Design

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

- Animation, Interactive Technology, Video Graphics and Special Effects
- Graphic Design
- Intermedia/Multimedia

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Join a website development or coding club
- Participate in SkillsUSA or TSA

#### Work-Based Learning Activities

- Intern with a multimedia or animation studio
- Obtain a certificate or certification in graphic design

### Industry-Based Certifications

- Adobe Certified Professional in Digital Video Using Adobe Premiere Pro
- Adobe Certified Professional in Graphic Design and Illustration Using Adobe Illustrator
- Adobe Certified Professional in Visual Design Using Adobe Photoshop
- Certified Professional Programmer-Unity
- Auto Desk Associate 3DS MAX
- Certified User: Programmer



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Graphic Designers	\$44,824	1,433	15%
Multimedia Artists and Animators	\$67,392	186	21%

Successful completion of the Graphic Design & Multimedia Arts program of study will fulfill the requirements of the Business and Industry endorsement. Revised – August 2022



**PRINCIPLES OF ARTS, A/V TECHNOLOGY, AND COMMUNICATIONS (1902)**

Grade Placement: 9

Credits: 1

Prerequisite: None.

The goal of this course is for the student understands arts, audio/video technology, and communications systems. Within this context, students will be expected to develop an understanding of the various and multifaceted career opportunities in this cluster and the knowledge, skills, and educational requirements for those opportunities.

**GRAPHIC DESIGN AND ILLUSTRATION I (1722)**

Grade Placement: 10–12

Credits: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Arts, Audio/Video Technology, and Communications.

Recommended Corequisite: Graphic Design and Illustration I Lab.

Within this context, in addition to developing knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an understanding of the industry with a focus on fundamental elements and principles of visual art and design.

**ANIMATION I (1723)**

Grade Placement: 10–12

Credits: 1

Prerequisite: None.

Recommended Prerequisite: Art I or Principles of Art, Audio/Video Technology, and Communications.

Recommended Corequisite: Animation I Lab.

In addition to developing technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an understanding of the history and techniques of the animation industry.

**VIDEO GAME DESIGN I (1724)**

Grade Placement: 9–12

Credits: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Art, Audio/Video Technology, and Communications.

Video Game Design will allow students to explore one of the largest industries in the global marketplace and the new emerging careers it provides in the field of technology. Students will learn gaming, computerized gaming, evolution of gaming, artistic aspects of perspective, design, animation, technical concepts of collision theory, and programming logic. Students will participate in a simulation of a real video game design team while developing technical proficiency in constructing an original game design.

**GRAPHIC DESIGN AND ILLUSTRATION II /GRAPHIC DESIGN AND ILLUSTRATION II w/Lab (1914 & 1915)**

Grade Placement: 10–12

Credits: 2

Prerequisite: None.

Recommended Prerequisite: Principles of Arts, Audio/Video Technology, and Communications.

Corequisite: Graphic Design and Illustration I.

Within this context, in addition to developing knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an understanding of the industry with a focus on fundamental elements and principles of visual art and design

**ANIMATION II (1903)**

Grade Placement: 11–12

Credits: 1

Prerequisite: Animation I.

Corequisite: Animation II.

In addition to developing advanced knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to create two- and three-dimensional animations. The instruction also assists students seeking careers in the animation industry. Districts are encouraged to offer this lab in a consecutive block with Animation II to allow students sufficient time to master the content of both courses.

**VIDEO GAME PROGRAMMING (1989)**

Grade Placement: 10–12

Credits: 1

Prerequisite: None.

Recommended Prerequisite: Video Game Design I

Video Game Programming expands on the foundation created in Video Game Design through programming languages such as: C# programming, XNA game studio, Java, and Android App. In this course, students will investigate the inner workings of a fully functional role-playing game (RPG) by customizing playable characters, items, maps, and chests and eventually applying customizations by altering and enhancing the core game code.

**FASHION DESIGN II /FASHION DESIGN II w/Lab (1758 & 1919)** Current class of 2023 and 2024 ONLY

Grade Placement: 11–12

Credits: 2

Prerequisite: Fashion Design I.

Corequisite: Fashion Design II.

Careers in fashion span all aspects of the textile and apparel industries. Within this context, in addition to developing technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an understanding of the fashion industry with an emphasis on design and construction.

**PRACTICUM IN AUDIO/VIDEO PRODUCTION (1921)**

Grade Placement: 11–12

Credits: 2

Prerequisites: Audio/Video Production II and Audio/Video Production II Lab.

Building upon the concepts taught in Audio/Video Production II and its corequisite Audio/Video Production II Lab, in addition to developing advanced technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop an increasing understanding of the industry with a focus on applying pre-production, production, and post-production audio and video products in a professional environment. This course may be implemented in an advanced audio/video or audio format. Instruction may be delivered through lab-based classroom experiences or career preparation opportunities.

**3-D MODELING AND ANIMATION**

Grade Placement: 10–12

Credits: 1

Prerequisites: Art, Level I

3-D Modeling and Animation consists of computer images created in a virtual three-dimensional (3-D) environment. 3-D Modeling and Animation has applications in many careers, including criminal justice, crime scene, and legal applications; construction and architecture; engineering and design; and the movie and game industries. Students in this course will produce various 3-D models of real-world objects. The six strands include creativity and innovation; communication and collaboration; research and information fluency; critical thinking; problem solving, and decision making; digital citizenship; and technology operations and concepts.

**PRACTICUM IN GRAPHIC DESIGN AND ILLUSTRATION (1915)**

Grade Placement: 10–12

Credits: 2

Prerequisites: Graphic Design and Illustration II and Graphic Design and Illustration II Lab.

In addition to developing technical knowledge and skills needed for success in the Arts, Audio/Video Technology, and Communications Career Cluster, students will be expected to develop a technical understanding of the industry with a focus on skill proficiency. Instruction may be delivered through lab-based classroom experiences or career preparation opportunities

**ADVANCED VIDEO GAME PROGRAMMING (1990)**

Grade Placement: 10-12

Credits: 1

Advanced Video Game Programming students will be introduced to mobile application design and programming using Java and Eclipse for Android devices. Time will be spent learning basic Java programming and working with Android Studio to develop real working apps. Using Unity as an introduction to 3D game development, students will have exposure to and an understanding of: object-oriented programming concepts; game development skill with programs such as Unity; 3D modeling with programs such as Blender; image manipulation with programs such as GIMP; concepts related to the design process; and the ability to communicate and collaborate on group-based projects.

# Business, Marketing, and Finance Career Cluster

The Business, Marketing, and Finance Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.

## Marketing & Sales Statewide Program of Study



The Marketing and Sales program of study teaches CTE learners how to collect information to determine potential sales of a product or service and/or create a marketing campaign to market or distribute goods and services. Through this program of study, students will learn the skills necessary to understand and apply data on customer demographics, preferences, needs, and buying habits.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Business, Marketing, and Finance

#### Level 2

- Fashion Marketing
- Sports and Entertainment Marketing

#### Level 3

- Social Media Marketing
- Advertising

#### Level 4

- Practicum in Marketing
- Career Preparation I



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in DECA

#### Work-Based Learning Activities

- Intern with a local marketing firm
- Shadow a real estate agent
- Operate a school store on campus

### Industry-Based Certifications

- Facebook Digital Marketing Associate Certification
- Stukent Social Media Marketing Certification

### Postsecondary Opportunities

#### Associates Degrees

- Marketing/ Marketing Management, General
- Consumer Merchandising/ Retailing Management
- International Marketing
- Business

#### Bachelor's Degrees

- Marketing/ Marketing Management, General
- Business Administration
- Applied Economics
- Marketing Research

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

- Marketing
- Business Administration
- Applied Economics
- Advertising



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Marketing Research Analysts and Marketing Specialists	\$70,346	4,664	40%
Insurance Sales Agent	\$43,181	5,886	30%
First-Line Supervisors of Retail Sales Workers	\$72,550	2,826	15%
Wholesale and Retail Buyers	\$51,106	1,229	19%

Successful completion of the Marketing and Sales program of study will fulfill requirements of the Business and Industry endorsement. Revised – August 2022



**PRINCIPLES OF BUSINESS, MARKETING, AND FINANCE (1728)**

Grade Placement: 8–11

Credits: 1

Prerequisite: None.

In Principles of Business, Marketing, and Finance, students gain knowledge and skills in economies and private enterprise systems, the impact of global business, the marketing of goods and services, advertising, and product pricing. Students analyze the sales process and financial management principles. This course allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings in business, marketing, and finance.

**FASHION MARKETING (1746)**

Grade Placement: 9–12

Credit: .5

Prerequisite: None.

Recommended Prerequisite: Principles of Business, Marketing, and Finance.

Fashion Marketing is designed to provide students with knowledge of the various business functions in the fashion industry. Students in Fashion Marketing will gain a working knowledge of promotion, textiles, merchandising, mathematics, selling, visual merchandising, and career opportunities.

**SPORTS AND ENTERTAINMENT MARKETING (1747)**

Grade Placement: 9–12

Credit: .5

Prerequisite: None.

Recommended Prerequisite: Principles of Business, Marketing, and Finance.

Sports and Entertainment Marketing will provide students with a thorough understanding of the marketing concepts and theories that apply to sports and entertainment. The areas this course will cover include basic marketing concepts, publicity, sponsorship, endorsements, licensing, branding, event marketing, promotions, and sports and entertainment marketing strategies.

**SOCIAL MEDIA MARKETING (1938)**

Grade Placement: 9–12

Credit: .5

Prerequisite: None.

Recommended Prerequisite: Principles of Business, Marketing and Finance or any marketing course.

Social Media Marketing is designed to look at the rise of social media and how marketers are integrating social media tools in their overall marketing strategy. The course will investigate how the marketing community measures success in the new world of social media. Students will manage a successful social media presence for an organization, understand techniques for gaining customer and consumer buy-in to achieve marketing goals, and properly select social media platforms to engage consumers and monitor and measure the results of these efforts.

**ADVERTISING (1748)**

Grade Placement: 9–12

Credit: .5

Prerequisite: None.

Recommended Prerequisite: Principles of Business, Marketing, and Finance.

Advertising is designed as a comprehensive introduction to the principles and practices of advertising. Students will gain knowledge of techniques used in current advertising, including print, broadcast, and digital media. The course explores the social, cultural, ethical, and legal issues of advertising, historical influences, strategies, media decision processes as well as integrated marketing communications, and careers in advertising and sales promotion. The course provides an overview of how communication tools can be used to reach target audiences and increase consumer knowledge.

**PRACTICUM IN MARKETING (1926)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

Recommended Prerequisite: Principles of Business, Marketing, and Finance.

Practicum in Marketing is a series of dynamic activities that focus on the customer to generate a profitable exchange. Students will gain knowledge and skills that help them to be proficient in one or more of the marketing functional areas associated with distribution, financing, marketing information management, pricing, product planning, promotion, purchasing, risk management, and selling skills. Students will integrate skills from academic subjects, information technology, interpersonal communication, and management training to make responsible decisions. The practicum course is a paid or unpaid experience for students participating in a coherent sequence of career and technical courses in marketing.

# Business, Marketing, and Finance Career Cluster

The Business, Marketing, and Finance Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.

## Accounting and Financial Services Statewide Program of Study



The Accounting and Financial Services program of study teaches CTE learners how to examine, analyze, and interpret financial records. Through this program of study, students will learn the skills necessary to perform financial services, prepare financial statements, interpret accounting records, give advice, or audit and evaluate statements prepared by others. This program of study will also introduce students to mathematical modeling tools.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Business, Marketing, and Finance
- Business Information Management I

#### Level 2

- Accounting I

#### Level 3

- Accounting II
- Financial Mathematics

#### Level 4

- Financial Mathematics
- Career Preparation I

### Postsecondary Opportunities

#### Associates Degrees

- Real Estate
- Financial, General
- Financial Planning and Services
- Certified Income Specialist

#### Bachelor's Degrees

- Accounting
- Financial, General
- Financial Planning and Services
- Certified Income Specialist

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

- Financial Accounting
- Business Administration
- Financial Planning

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in DECA

#### Work-Based Learning Activities

- Intern with a local accounting firm
- Earn Microsoft Office certifications

### Industry-Based Certifications

- Accounting - Basic
- Intuit QuickBooks Certified User

- Microsoft Office Specialist-Excel\*
- Microsoft Office Specialist-Word\*

\*IBC sunsetting 8/31/24



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Career & Technical Education



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Accountants and Auditors	\$71,469	14,436	22%
Loan Officers	\$68,598	2,419	19%
Personal Financial Advisors	\$86,965	1,861	52%
Administrative service Managers	\$96,138	2,277	21%
Insurance Underwriters	\$66,206	594	14%

Successful completion of the Accounting and Financial Services program of study will fulfill requirements of the Business and Industry endorsement. Revised – August 2022



**PRINCIPLES OF BUSINESS, MARKETING, AND FINANCE (1728)**

Grade Placement: 8–11

Credits: 1

Prerequisite: None.

In Principles of Business, Marketing, and Finance, students gain knowledge and skills in economies and private enterprise systems, the impact of global business, the marketing of goods and services, advertising, and product pricing. Students analyze the sales process and financial management principles. This course allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings in business, marketing, and finance.

**BUSINESS INFORMATION MANAGEMENT 1 (BIM I) (1733)**

Grade Placement: 9–12

Credits: 1

Prerequisite: None.

Recommended Prerequisite: Touch System Data Entry.

Recommended Corequisite: Business Lab.

In Business Information Management I, students implement personal and interpersonal skills to strengthen individual performance in the workplace and in society and make a successful transition to the workforce and postsecondary education. Students apply technical skills to address business applications of emerging technologies, create word processing documents, develop a spreadsheet, formulate a database, and make an electronic presentation using appropriate software.

**ACCOUNTING I (1735)**

Grade Placement: 10–12

Credit: 1

Prerequisites: None.

Recommended Prerequisites: Principles of Business, Marketing, and Finance.

In Accounting I, students will investigate the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students will reflect on this knowledge as they engage in the process of recording, classifying, summarizing, analyzing, and communicating accounting information. Students will formulate and interpret financial information for use in management decision making. Accounting includes such activities as bookkeeping, systems design, analysis, and interpretation of accounting information.

**ACCOUNTING II (1736)**

Grade Placement: 11–12

Credit: 1

Prerequisites: Accounting I.

In Accounting II, students will continue the investigation of the field of accounting, including how it is impacted by industry standards as well as economic, financial, technological, international, social, legal, and ethical factors. Students will reflect on this knowledge as they engage in various managerial, financial, and operational accounting activities. Students will formulate, interpret, and communicate financial information for use in management decision making. Students will use equations, graphical representations, accounting tools, spreadsheet software, and accounting systems in real-world situations to maintain, monitor, control, and plan the use of financial resources.

**FINANCIAL MATHEMATICS (1900)**

Grade Placement: 10–12

Credit: 1

Prerequisite: Algebra I.

Financial Mathematics is a course about personal money management. Students will apply critical-thinking skills to analyze personal financial decisions based on current and projected economic factors.

**CAREER PREPARATION 1 (1752)**

Grade Placement: 11–12

Credit: 2–3

Career Preparation I provides opportunities for students to participate in a work-based learning experience that combines classroom instruction with business and industry employment experiences. The goal is to prepare students with a variety of skills for a changing workplace. Career preparation is relevant and rigorous, supports student attainment of academic standards, and effectively prepares students for college and career success.



# Business, Marketing, and Finance Career Cluster

The Business, Marketing, and Finance Career Cluster focuses on careers in planning, organizing, directing, and evaluating business functions essential to efficient and productive business operations.

## Entrepreneurship Statewide Program of Study



The Entrepreneurship program of study teaches CTE learners how to plan, direct, and coordinate the management and operations of public or private sector organizations. Through this program of study, students will learn the skills necessary to formulate policies, manage daily operations, analyze management structures, and plan for the use of materials and human resources.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Business, Marketing, and Finance

#### Level 2

- Entrepreneurship

#### Level 3

- Entrepreneurship II

#### Level 4

- Project-Based Research
- Career Preparation I



### Postsecondary Opportunities

#### Associates Degrees

- Business Administration and Management
- Business/Commerce
- Public Administration
- Business Management

#### Bachelor's Degrees

- Business Administration and Management
- Business/Commerce
- Public Administration
- Management Science

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

- Business Administration and Management
- Business/Commerce
- Public Administration
- Management Science

### Work-Based Learning and Expanded-Learning Opportunities

#### Exploration Activities

- Participate in DECA

#### Work-Based Learning Activities

- Intern with a local management consulting firm

### Industry-Based Certifications

- Entrepreneurship and Small Business



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
General and Operations Managers	\$107,640	18,679	20%
Management Analysts	\$87,651	4,706	32%
Managers, All Others	\$113,110	1,794	26%

Successful completion of the Entrepreneurship program of study will fulfill requirements of the Business and Industry endorsement. Revised – August 2022





**PRINCIPLES OF BUSINESS, MARKETING, AND FINANCE (1728)**

Grade Placement: 8–11

Credits: 1

Prerequisite: None.

In Principles of Business, Marketing, and Finance, students gain knowledge and skills in economies and private enterprise systems, the impact of global business, the marketing of goods and services, advertising, and product pricing. Students analyze the sales process and financial management principles. This course allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings in business, marketing, and finance.

**BUSINESS MANAGEMENT (1729)**

Grade Placement: 10–12

Credits: 1

Prerequisite: None.

Business Management is designed to familiarize students with the concepts related to business management as well as the functions of management, including planning, organizing, staffing, leading, and controlling. Students will also demonstrate interpersonal and project-management skills.

**ENTREPRENEURSHIP (1749)**

Grade Placement: 10–12

Credit: 1

Prerequisite: None.

Recommended Prerequisites: Principles of Business, Marketing, and Finance.

Students will learn the principles necessary to begin and operate a business. The primary focus of the course is to help students understand the process of analyzing a business opportunity, preparing a business plan, determining feasibility of an idea using research, and developing a plan to organize and promote the business and its products and services.

**PROJECT-BASED RESEARCH (1726)**

Grade Placement: 11-12

Credit: 1

Project-Based Research is a course for students to research a real-world problem. Students are matched with a mentor from the business or professional community to develop an original project on a topic related to career interests. Students use scientific methods of investigation to conduct in-depth research, compile findings, and present their findings to an audience that includes experts in the field. To attain academic success, students must have opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.

**ENTREPRENEURSHIP II**

Grade Placement: 11-12

Credit: 1

Prerequisite: Entrepreneurship

The purpose of the course is to prepare students with the knowledge and skills needed to become a successful entrepreneur within an innovative marketplace. The goal and outcome of the course is for students to have their business launched by the end of the course or have the tools necessary to launch and operate their business. Students are encouraged to work in close cooperation with local industry leaders, community members, and educators to develop ideas and objectives, complete a business model canvas, pitch to potential investors, register with governmental agencies, develop their brand identity, and participate in local chamber of commerce meetings and events. The recommended participants are students in the CTE Entrepreneurship program of study, students in grades 11-12, and those interested in starting a business.

**CAREER PREPARATION 1 (1752)**

Grade Placement: 11-12

Credit: 2-3

Career Preparation I provides opportunities for students to participate in a work-based learning experience that combines classroom instruction with business and industry employment experiences. The goal is to prepare students with a variety of skills for a changing workplace. Career preparation is relevant and rigorous, supports student attainment of academic standards, and effectively prepares students for college and career success.

## Hospitality and Tourism Career Cluster

The Hospitality and Tourism Career Cluster focuses on the management, marketing, and operations of restaurants and other food/beverage services, lodging, attractions, recreation events, and travel-related services. Students acquire knowledge and skills focusing on communication, time management, and customer service that meet industry standards. Students will explore the history of the hospitality and tourism industry and examine characteristics needed for success.

### Culinary Arts Statewide Program of Study



The Culinary Arts program of study introduces CTE learners to occupations and educational opportunities related to the planning, directing, or coordinating activities of a food and beverage organization or department. This program of study also explores opportunities involved in directing and participating in the preparation and cooking of food.

#### Secondary Courses for High School Credit

##### Level 1

- Introduction to Culinary Arts

##### Level 2

- Culinary Arts

##### Level 3

- Advanced Culinary Arts

##### Level 4

- Food Science
- Practicum in Culinary Arts



#### Postsecondary Opportunities

##### Associates Degrees

- Hotel and Restaurant Management
- Restaurant Culinary and Catering Management
- Hospitality Administration/ Management, General
- Culinary Arts/ Chef Training

##### Bachelor's Degrees

- Hotel and Restaurant Management
- Food Service Systems Administration/ Management
- Hospitality Administration/ Management, General
- Culinary Science and Food Service Management

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

- Hotel and Restaurant Management
- Food Service Systems Administration/ Management
- Hospitality Administration/ Management, General
- Business Administration Management, General

#### Work-Based Learning and Expanded Learning Opportunities

##### Exploration Activities

- Participate in Family, Career, and Community Leaders of America

##### Work-Based Learning Activities

- Plan a catering event or work for a catering company
- Participate in a cooking course
- Work in a restaurant

#### Industry-Based Certifications

- Food Safety & Science Certification
- ServSafe Manager
- Servsafe Food Handler- Local



#### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Food and Beverage Managers	\$55,619	1,561	28%
Chef and Head Cooks	\$43,285	1,366	25%
Food Science Technicians	\$34,382	236	11%

Successful completion of the Culinary Arts program of study will fulfill requirements of the Business and Industry endorsement. Revised – August 2022



**INTRODUCTION TO CULINARY ARTS (1909)**

Grade Placement: 9–10

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Hospitality and Tourism.

Introduction to Culinary Arts will emphasize the principles of planning, organizing, staffing, directing, and controlling the management of a variety of food service operations. The course will provide insight into the operation of a well-run restaurant. Introduction to Culinary Arts will provide insight into food production skills, various levels of industry management, and hospitality skills. This is an entry level course for students interested in pursuing a career in the food service industry. This course is offered as a classroom and laboratory-based course.

**CULINARY ARTS (1774)**

Grade Placement: 10–12

Credit: 2

Prerequisite: None.

Recommended Prerequisites: Principles of Hospitality and Tourism and Introduction to Culinary Arts.

Culinary Arts begins with the fundamentals and principles of the art of cooking and the science of baking and includes management and production skills and techniques. Students can pursue a national sanitation certification or other appropriate industry certifications. This course is offered as a laboratory-based course.

**ADVANCED CULINARY ARTS (1775)**

Grade Placement: 10–12

Credit: 2

Prerequisite: Culinary Arts.

Advanced Culinary Arts will extend content and enhance skills introduced in Culinary Arts by in-depth instruction of industry-driven standards to prepare students for success in higher education, certifications, and/or immediate employment.

**FOOD SCIENCE (1906)**

Grade Placement: 11–12

Credit: 1

Prerequisites: Three units of science, including Chemistry and Biology.

Recommended Prerequisite: Principles of Hospitality and Tourism.

In Food Science students conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Food Science is the study of the nature of foods, the causes of deterioration in food products, the principles underlying food processing, and the improvement of foods for the consuming public.

Note: This course satisfies a science credit requirement for students on the Foundation High School Program.

**PRACTICUM IN CULINARY ARTS (1789)**

Grade Placement: 11–12

Credit: 2

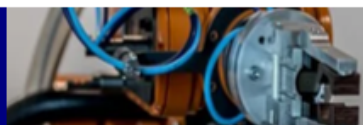
Prerequisite: Culinary Arts.

Practicum in Culinary Arts is a unique practicum that provides occupationally specific opportunities for students to participate in a learning experience that combines classroom instruction with actual business and industry career experiences. Practicum in Culinary Arts integrates academic and career and technical education; provides more interdisciplinary instruction; and supports strong partnerships among schools, businesses, and community institutions with the goal of preparing students with a variety of skills in a fast-changing culinary art based workplace.

# Manufacturing Career Cluster

The Manufacturing Career Cluster focuses on planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance, and manufacturing/process engineering.

## Advanced Manufacturing and Machinery Mechanics Statewide Program of Study



The Advanced Manufacturing and Machinery Mechanics program of study focuses on the assembly, operation, maintenance, and repair of electromechanical equipment or devices. CTE learners may work in a variety of mechanical fields, gaining knowledge and experience in robotics, refinery and pipeline systems, deep ocean exploration, or hazardous waste removal. CTE concentrators may work in a variety of fields of engineering.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Applied Engineering

#### Level 2

- Robotics I

#### Level 3

- Robotics II

#### Level 4

- Practicum in Manufacturing

### Postsecondary Opportunities

#### Associates Degrees

- Electromechanical Engineering/Technology
- Certified Quality Technician
- Industrial Mechanics and Maintenance Technology

#### Bachelor's Degrees

- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering

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

- Electrical Engineering
- Industrial Engineering
- Mechanical Engineering

### Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
<ul style="list-style-type: none"><li>Participate in SkillsUSA and local STEM events</li></ul>	<ul style="list-style-type: none"><li>Work at a local business or industry apprenticeship</li><li>Join the American Welding Society</li></ul>

### Industry-Based Certifications

- FAA Part 107 Remote Drone Pilot



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Electro-Mechanical Assemblers	\$30,160	951	9%
Electro-Mechanical Technicians	\$56,555	127	9%
Industrial Machinery Mechanics	\$49,816	3,788	27%

Successful completion of the Advanced Manufacturing and Machinery Mechanics program of study will fulfill requirements of the Business and Industry or STEM endorsement if the math and science requirements are met.  
Revised – August 2022



### **PRINCIPLES OF APPLIED ENGINEERING (1788)**

Grade Placement: 9–10

Credit: 1

Prerequisite: None.

Principles of Applied Engineering provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Upon completing this course, students will understand the various fields of engineering and will be able to make informed career decisions. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.

### **ROBOTICS I (1907)**

Grade Placement: 9–10

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Applied Engineering.

In Robotics I, students will transfer academic skills to component designs in a project based environment through implementation of the design process. Students will build prototypes or use simulation software to test their designs. Additionally, students will explore career opportunities, employer expectations, and educational needs in the robotic and automation industry.

### **ROBOTICS II (1929)**

Grade Placement: 10–12

Credit: 1

Prerequisite: Robotics I.

In Robotics II, students will explore artificial intelligence and programming in the robotic and automation industry. Through implementation of the design process, students will transfer academic skills to component designs in a project-based environment. Students will build prototypes and use software to test their designs.

### **PRACTICUM IN MANUFACTURING (1933)**

Grade Placement: 12

Credit: 2

Prerequisite: None.

The Practicum in Manufacturing course is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience.





# Education and Training Career Cluster

The Education and Training Career Cluster focuses on planning, managing, and providing education and training services and related learning support services. All parts of courses are designed to introduce learners to the various careers available within the Education and Training career cluster.

## Teaching and Training Statewide Program of Study



The Teaching and Training program of study prepares CTE learners for careers related to teaching, instruction, and creation of instructional and enrichment materials. The program of study introduces CTE learners to a wide variety of student groups and their corresponding needs. It familiarizes them with the processes for developing curriculum, coordinating educational content, and coaching groups and individuals.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Human Service

#### Level 2

- Child Development

#### Level 3

- Instructional Practices

#### Level 4

- Practicum in Education and Training



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in the Texas Association of Future Educators or Family, Career, and Community Leaders of America

#### Work-Based Learning Activities

- Teach a community education class
- Intern as a teaching assistant or tutor
- Serve as a camp counselor

### Industry-Based Certifications

- Educational Aide I
- Early Childhood Education-Basic

### Postsecondary Opportunities

#### Associates Degrees

- Teacher Education
- Education, General (or specific subject area)
- Special Education
- Health and Physical Education/Fitness

#### Bachelor's Degrees

- Bilingual and Multilingual Education
- Education, General (or specific subject area)
- Special Education
- Health and Physical Education/Fitness

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

- Instruction and Learning
- Educational Leadership and Administration, General
- Special Education
- Social and Philosophical Foundations of Education



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Adult Basic and Secondary Education and Literacy Teachers and Instructors	\$48,069	862	17%
Middle School Teachers, Except Special and Career/Technical Education	\$54,510	6,407	15%
Career and Technical Education Teachers, Secondary School	\$56,360	719	9%
Special Education Teachers, Secondary School	\$56,720	980	18%

Successful completion of the Teaching and Training program of study will fulfill requirements of the Public Service endorsement. Revised – August 2022



### **PRINCIPLES OF HUMAN SERVICES (1768)**

Grade Placement: 9–12

Credit: 1

Prerequisite: None.

Principles of Human Services is a laboratory course that will enable students to investigate careers in the Human Services Career Cluster, including counseling and mental health, early childhood development, family and community, personal care, and consumer services. Each student is expected to complete the knowledge and skills essential for success in high-skill, high-wage, or high-demand human services careers.

### **CHILD DEVELOPMENT (1779)**

Grade Placement: 10–12

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Human Services.

Child Development is a technical laboratory course that addresses knowledge and skills related to child growth and development from prenatal through school-age children, equipping students with child development skills. Students use these skills to promote the well-being and healthy development of children and investigate careers related to the care and education of children.

### **INSTRUCTIONAL PRACTICES (1771 – Ready, Set, Teach I)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

Recommended Prerequisites: Principles of Education and Training and Human Growth and Development.

Instructional Practices is a field-based (practicum) internship that provides students with background knowledge of child and adolescent development as well as principles of effective teaching and training practices. Students work under the joint direction and supervision of both a teacher with knowledge of early childhood, middle childhood, and adolescence education and exemplary educators or trainers in direct instructional roles with elementary-, middle school-, and high school-aged students.

Students learn to plan and direct individualized instruction and group activities, prepare instructional materials, develop materials for educational environments, assist with record keeping, and complete other responsibilities of teachers, trainers, paraprofessionals, or other educational personnel.

### **PRACTICUM IN EDUCATION AND TRAINING (1772 – Ready, Set, Teach II)**

Grade Placement: 12

Credit: 2

Prerequisite: Instructional Practices.

Recommended Prerequisites: Principles of Education and Training and Human Growth and Development.

Practicum in Education and Training is a field-based internship that provides students background knowledge of child and adolescent development principles as well as principles of effective teaching and training practices. Students in the course work under the joint direction and supervision of both a teacher with knowledge of early childhood, middle childhood, and adolescence education and exemplary educators in direct instructional roles with elementary-, middle school-, and high school-aged students. Students learn to plan and direct individualized instruction and group activities, prepare instructional materials, assist with record keeping, make physical arrangements, and complete other responsibilities of classroom teachers, trainers, paraprofessionals, or other educational personnel.



# Human Services Career Cluster

The Human Services Career Cluster focuses on preparing individuals for employment in career pathways that relate to families and human needs such as counseling and mental health services, family and community services, personal care services, and consumer services.

## Family and Community Services Statewide Program of Study



The Family and Community Services program of study introduces students to knowledge and skills related to social services, including child and human development and consumer sciences. CTE learners may learn about or practice managing social and community services or teaching family and consumer sciences. Students may follow career paths in social work or therapy for children, families, or school communities.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Human Services

#### Level 2

- Child Development

#### Level 3

- Counseling and Mental Health
- Practicum in Human Services - 1<sup>st</sup> Taken

#### Level 4

- Practicum in Human Services - 2<sup>nd</sup> Taken
- Project Based Research



### Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
<ul style="list-style-type: none"> <li>Participate in Career and Community Leaders of America</li> </ul>	<ul style="list-style-type: none"> <li>Volunteer at a community center</li> <li>Intern for a community non-profit organization</li> </ul>

### Industry-Based Certifications

- Pre-Professional Certification in Early Childhood Education

### Postsecondary Opportunities

#### Associates Degrees

- Human Development and Family Studies
- Human Services/Sciences, General
- Family and Consumer Sciences
- Community Health Services

#### Bachelor's Degrees

- Human Development and Family Studies
- Human Services/Sciences, General
- Family and Consumer Sciences
- Child and Family Services

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

- Human Development and Family Studies
- Marriage and Family Therapy/Counseling
- Human Services/Sciences
- Family Studies



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Child, Family, and School Social Workers	\$41,350	2,221	17%
Social and Community Services Managers	\$65,146	608	33%
Marriage and Family Therapists	\$42,266	217	35%
Social and Human Service Assistants	\$32,448	2,822	25%

Successful completion of the Family and Community Services program of study will fulfill requirements of the Public Service endorsement. Revised – August 2022



**PRINCIPLES OF HUMAN SERVICES (1768)**

Grade Placement: 9–12

Credit: 1

Prerequisite: None.

Principles of Human Services is a laboratory course that will enable students to investigate careers in the Human Services Career Cluster, including counseling and mental health, early childhood development, family and community, personal care, and consumer services. Each student is expected to complete the knowledge and skills essential for success in high-skill, high-wage, or high-demand human services careers.

**CHILD DEVELOPMENT (1779)**

Grade Placement: 10–12

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Human Services.

Child Development is a technical laboratory course that addresses knowledge and skills related to child growth and development from prenatal through school-age children, equipping students with child development skills. Students use these skills to promote the well-being and healthy development of children and investigate careers related to the care and education of children.

**COUNSELING AND MENTAL HEALTH (1757)**

Grade Placement: 11–12

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Human Services.

In Counseling and Mental Health, students model the knowledge and skills necessary to pursue a counseling and mental health career through simulated environments. Students are expected to apply knowledge of ethical and legal responsibilities, limitations on their actions and responsibilities, and the implications of their actions. Students understand how professional integrity in counseling and mental health care is dependent on acceptance of ethical and legal responsibilities.

**PRACTICUM IN HUMAN SERVICES I AND II (1781/1786) – PALS I and PALS II)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

Practicum in Human Services provides background knowledge and occupation-specific training that focuses on the development of consumer services, early childhood development and services, counseling and mental health services, and family and community-services careers. Content for Practicum in Human Services is designed to meet the occupational preparation needs and interests of students and should be based upon the knowledge and skills selected from two or more courses in a coherent sequence in the human services cluster. Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.

**Certification Opportunity:**

**PROJECT-BASED RESEARCH (1726)**

Grade: 11 – 12

Credit: 1

Project-Based Research is a course for students to research a real-world problem. Students are matched with a mentor from the business or professional community to develop an original project on a topic related to career interests. Students use scientific methods of investigation to conduct in-depth research, compile findings, and present their findings to an audience that includes experts in the field. To attain academic success, students must have opportunities to learn, reinforce, apply, and transfer their knowledge and skills in a variety of settings.

# Health Science Career Cluster

The Health Science Career Cluster focuses on planning, managing, and providing therapeutic services, diagnostics services, health informatics, support services, and biotechnology research and development. To pursue a career in the health science industry, students should learn to reason, think critically, make decisions, solve problems, communicate effectively, and work well with others.

## Healthcare Therapeutic Statewide Program of Study



The Healthcare Therapeutic program of study introduces students to occupations and educational opportunities related to diagnosing and treating acute, episodic, or chronic illness independently or as part of a healthcare team. This program of study also includes an introduction to the opportunities associated with providing treatment and counsel to patients as well as rehabilitative programs that help build or restore daily living skills to persons with disabilities or developmental delays.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Health Science

#### Level 2

- Health Science Theory

#### Level 3

- Anatomy and Physiology
- Medical Microbiology

#### Level 4

- Practicum in Health Science



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in Health Occupation Students of America

#### Work-Based Learning Activities

- Volunteer at a community wellness center, hospital, assisted living, or nursing home

### Industry-Based Certifications

- Certified Clinical Medical Assistant
- Certified Dental Assistant
- Certified Patient Care Technician (CPCT)
- Pharmacy Technician
- First Aid/CPR- Local certification
- HIPPA-Local certification
- Bloodborne Pathogens-Local certification



### Postsecondary Opportunities

#### Associates Degrees

- Dental Hygienist
- Medical/Clinical Assistant

#### Bachelor's Degrees

- Dental Hygienist

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

- Dentist
- Physician Assistant
- Family and General Practitioners
- Pharmacist

### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Medical Assistants	\$29,598	8,862	30%
Surgical Technologists	\$45,032	1,150	20%
Dental Hygienists	\$73,507	1,353	38%
Physicians and Surgeons	\$213,071	1,151	30%

Successful completion of the Healthcare Therapeutic program of study will fulfill requirements of a Public Service endorsement or STEM endorsement if the math and science requirements are met. Revised – August 2022



**PRINCIPLES OF HEALTH SCIENCE (1754)**

Grade Placement: 9–10

Credit: 1

Prerequisite: None.

The Principles of Health Science course is designed to provide an overview of the therapeutic, diagnostic, health informatics, support services, and biotechnology research and development systems of the healthcare industry.

**HEALTH SCIENCE THEORY (1756)**

Grade Placement: 10–12

Credit: 1

Prerequisites: Biology.

Recommended Corequisite: Health Science Clinical.

The Health Science Theory course is designed to provide for the development of advanced knowledge and skills related to a wide variety of health careers. Students will employ hands-on experiences for continued knowledge and skill development.

**ANATOMY AND PHYSIOLOGY (1790)**

Grade Placement: 10–12

Credit: 1

Prerequisite: Biology and a second science credit.

Recommended Prerequisite: A course from the Health and Science Career Cluster.

The Anatomy and Physiology course is designed for students to conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Students in Anatomy and Physiology will study a variety of topics, including the structure and function of the human body and the interaction of body systems for maintaining homeostasis.

**MEDICAL MICROBIOLOGY (1759)**

Grade Placement: 10–12

Credit: 1

Prerequisites: Biology and Chemistry.

Recommended Prerequisites: A course from the Health Science Career Cluster.

The Medical Microbiology course is designed to explore the microbial world, studying topics such as pathogenic and non-pathogenic microorganisms, laboratory procedures, identifying microorganisms, drug resistant organisms, and emerging diseases. Students must meet the 40% laboratory and fieldwork requirement. This course satisfies a high school science graduation requirement.

Note: This course satisfies a science credit requirement for students on the Foundation High School Program.

**MEDICAL MICROBIOLOGY DUAL CREDIT (1761)**

Grade Placement: 10-12

Credit: 1

Prerequisite: successful completion of Biology AND Chemistry.

Recommended: Successful completion of another Health Science course

The Medical Microbiology course is designed to explore the microbial world, studying topics such as pathogenic and non-pathogenic microorganisms, laboratory procedures, identifying microorganisms, drug resistant organisms, and emerging diseases. Students must meet the 40% laboratory and fieldwork requirement. This course satisfies a high school science graduation requirement.

\*Please see the information about Dual Credit at the end of the Course Description section to learn about college application and testing requirements.

**PRACTICUM IN HEALTH SCIENCE (1931/1935) Certified Clinical Medical Assistant (Course location – Steele and Clemens)****PRACTICUM IN HEALTH SCIENCE (1995/1996) Dental Assistance (Course location – Steele and Clemens)****PRACTICUM IN HEALTH SCIENCE (1770) Patient Care Technician (Course location – Steele)****PRACTICUM IN HEALTH SCIENCE (1770) Pharmacy Technician (Course location – Clemens)**

Grade Placement: 11–12

Credit: 2

Prerequisites: Health Science Theory and Biology.

The Practicum in Health Science course is designed to give students practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience.



# Law and Public Service Career Cluster

The Law and Public Service Career Cluster focuses on planning, managing, and providing legal services, public safety, protective services, and homeland security, including professional and technical support services. Students will examine the roles and responsibilities of police, courts, corrections, private security, and fire and emergency services.

## Law Enforcement Statewide Program of Study



The Law Enforcement program of study teaches CTE learners about the development of, adherence to, and protection of various branches of law. Students will learn how to appropriately and legally respond to breaches in the law according to statutory rules and regulations as well as investigate how and why the breaches occurred.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Law, Public Safety, Corrections, and Security

#### Level 2

- Law Enforcement I

#### Level 3

- Law Enforcement II

#### Level 4

- Forensic Science
- Practicum in Law, Public Safety Corrections, and Security



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Join the Texas Public Service Association or local criminal justice clubs

#### Work-Based Learning Activities

- Attend court hearings and other legal procedures

### Industry-Based Certifications

- Non-Commissioned Security Officer Level II

### Postsecondary Opportunities

#### Associates Degrees

- Criminal Justice/Safety Studies/Law
- Enforcement Administration
- Criminal Justice/Police Science
- Corrections
- Criminalistics and Criminal Science

#### Bachelor's Degrees

- Criminal Justice/Safety Studies/Law
- Enforcement Administration
- Criminal Justice/Police Science
- Juvenile Corrections
- Cyber/Computer Forensics and Counterterrorism

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

- Criminal Justice/Safety Studies/Law
- Enforcement Administration
- Natural Resources
- Law Enforcement and Protective Services



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Police and Sheriff's Patrol Officers	\$60,112	5,241	13%
Probation Officers and Correctional Treatment Officers	\$44,054	793	9%
Correctional Officers and Jailers	\$40,186	4,683	9%
Immigration and Customs Inspectors	\$78,104	1,236	9%
First-Line Supervisors of Police and Detectives	\$91,312	253	25%

Successful completion of the Law and Public Service program of study will fulfill requirements of the Public Service endorsement. Revised – August 2022



**PRINCIPLES OF LAW, PUBLIC SAFETY, CORRECTIONS AND SECURITY (1762)**

Grade Placement: 9–12

Credit: 1

Prerequisite: None.

Principles of Law, Public Safety, Corrections, and Security introduces students to professions in law enforcement, protective services, corrections, firefighting, and emergency management services. Students will examine the roles and responsibilities of police, courts, corrections, private security, and protective agencies of fire and emergency services. The course provides students with an overview of the skills necessary for careers in law enforcement, fire service, protective services, and corrections.

**Certification Opportunity: CPR & First AID (Local)**

**LAW ENFORCEMENT I (1763)**

Grade Placement: 10–12

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Principles of Law, Public Safety, Corrections, and Security.

Law Enforcement I is an overview of the history, organization, and functions of local, state, and federal law enforcement. Students will understand the role of constitutional law at local, state, and federal levels; the U.S. legal system; criminal law; and law enforcement terminology and the classification and elements of crime.

**LAW ENFORCEMENT II (1764)**

Grade Placement: 10–12

Credit: 1

Prerequisite: None.

Recommended Prerequisite: Law Enforcement I.

Law Enforcement II provides the knowledge and skills necessary to prepare for a career in law enforcement. Students will understand ethical and legal responsibilities, patrol procedures, first responder roles, telecommunications, emergency equipment operations, and courtroom testimony.

**FORENSIC SCIENCE (1765)**

Grade Placement: 11–12

Credit: 1

Prerequisites: Biology and Chemistry.

Recommended Prerequisite or Corequisite: Any Law, Public Safety, Corrections, and Security Career Cluster course.

Forensic Science is a course that introduces students to the application of science to connect a violation of law to a specific criminal, criminal act, or behavior and victim. Students will learn terminology and procedures related to the search and examination of physical evidence in criminal cases as they are performed in a typical crime laboratory. Using scientific methods, students will collect and analyze evidence such as fingerprints, bodily fluids, hairs, fibers, paint, glass, and cartridge cases. Students will also learn the history and the legal aspects as they relate to each discipline of forensic science. Scientific methods of investigation can be experimental, descriptive, or comparative. The method chosen should be appropriate to the question being asked.

**PRACTICUM IN LAW (1940)**

Grade Placement: 11–12

Credit: 2

Prerequisite: None.

The practicum course is designed to give students supervised practical application of previously studied knowledge and skills in law, public safety, corrections, and security. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience. Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.



# Science, Technology, Engineering, and Mathematics Career Cluster

The Science, Technology, Engineering, and Mathematics (STEM) Career Cluster focuses on planning, managing, and providing, scientific research and professional and technical services, including laboratory and testing services, and research and development services.

## Engineering Statewide Program of Study



The Engineering program of study focuses on the design, development, and use of engines, machines, and structures. CTE learners will learn how to apply science, mathematical methods, and empirical evidence to the innovation, design, construction, operation, and maintenance of different manufacturing systems.

### Secondary Courses for High School Credit

#### Level 1

- Principles of Applied Engineering

#### Level 2

- Engineering Design and Presentation I

#### Level 3

- Engineering Design and Presentation II

#### Level 4

- Engineering Design and Problem Solving

### Postsecondary Opportunities

#### Associates Degrees

- Electrical and Electronics Engineering
- Drafting and Design Technology/ Technician, General
- Engineering Technology

#### Bachelor's Degrees

- Electrical and Electronics Engineering
- CAD/CADD Drafting and/or Design Technology/ Technician
- Bioengineering and Biomedical Engineering
- Construction Engineering Technology/ Technician

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

- Electrical and Electronics Engineering
- Mechanical Engineering
- Bioengineering and Biomedical Engineering

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in Skills USA competitions

#### Work-Based Learning Activities

- Intern at an engineering firm
- Shadow a machinist

### Industry-Based Certifications

- Autodesk Associate (Certified User) AutoCAD
- Autodesk Associate (Certified User) Inventor for Mechanical Design



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Aerospace Engineers	\$110,843	481	9%
Industrial Engineers	\$97,074	1,263	10%
Mechanical Engineers	\$91,107	1,535	11%
Chemical Engineers	\$112,819	474	9%
Electrical Engineers	\$98,405	1,137	10%

Successful completion of the Engineering program of study will fulfill requirements of the Business and Industry or STEM endorsement if the math and science requirements are met. Revised – August 2022



**PRINCIPLES OF APPLIED ENGINEERING (1788)**

Grade Placement: 9–10

Credit: 1

Prerequisite: None.

Principles of Applied Engineering provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Upon completing this course, students will understand the various fields of engineering and will be able to make informed career decisions. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.

**ENGINEERING DESIGN AND PRESENTATION I (1785)**

Grade Placement: 10–12

Credit: 1

Prerequisite: Algebra I.

Recommended Prerequisite: Principles of Applied Engineering.

Engineering Design and Presentation I is a continuation of knowledge and skills learned in Principles of Applied Engineering. Students enrolled in this course will demonstrate knowledge and skills of the design process as it applies to engineering fields using multiple software applications and tools necessary to produce and present working drawings, solid model renderings, and prototypes. Students will use a variety of computer hardware and software applications to complete assignments and projects. Through implementation of the design process, students will transfer advanced academic skills to component designs. Additionally, students explore career opportunities in engineering, technology, and drafting and what is required to gain and maintain employment in these areas.

**Certification Opportunity: Autodesk Certified User: Auto CAD and Inventor (Local)**

**ENGINEERING DESIGN AND PRESENTATION II (1744)**

Grade Placement: 11–12

Credit: 2

Prerequisites: Algebra I and Geometry.

Recommended Prerequisite: Principles of Applied Engineering or Engineering Design and Presentation I.

Engineering Design and Presentation II is a continuation of knowledge and skills learned in Engineering Design and Presentation I. Students enrolled in this course will demonstrate knowledge and skills of the design process as it applies to engineering fields using multiple software applications and tools necessary to produce and present working drawings, solid model renderings, and prototypes. Students will use a variety of computer hardware and software applications to complete assignments and projects. Through implementation of the design process, students will transfer advanced academic skills to component designs. Emphasis will be placed on using skills from ideation through prototyping.

**Certification Opportunity: Autodesk Certified User: Auto CAD and Inventor (Local)**

**ENGINEERING DESIGN AND PROBLEM SOLVING (1745)**

Grade Placement: 11–12

Credit: 1

Prerequisites: Algebra I and Geometry.

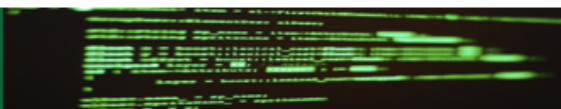
Recommended Prerequisites: two Science, Technology, Engineering, and Mathematics Career Cluster credits.

The Engineering Design and Problem-Solving course is the creative process of solving problems by identifying needs and then devising solutions. The solution may be a product, technique, structure, or process depending on the problem. Science aims to understand the natural world, while engineering seeks to shape this world to meet human needs and wants. Engineering design takes into consideration limiting factors or "design under constraint." Various engineering disciplines address a broad spectrum of design problems using specific concepts from the sciences and mathematics to derive a solution. The design process and problem solving are inherent to all engineering disciplines. This course satisfies a high school science graduation requirement. Students shall be awarded one credit for successful completion of this course.

# Science, Technology, Engineering, and Mathematics Career Cluster

The Science, Technology, Engineering, and Mathematics (STEM) Career Cluster focuses on planning, managing, and providing, scientific research and professional and technical services, including laboratory and testing services, and research and development services.

## Programming and Software Development Statewide Program of Study



The Programming and Software Development program of study explores the occupations and education opportunities associated with researching, designing, developing, and testing operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computer applications. This program of study may also include exploration into creating, modifying, and testing the codes, forms, and script that allow computer applications to run.

### Secondary Courses for High School Credit

#### Level 1

- Computer Science I

#### Level 2

- Computer Science II

#### Level 3

- AP Computer Science A, MATH
- AP Computer Science A, LOTE
- Computer Science III

#### Level 4

- Practicum in Information Technology



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Join TSA
- Participate in a coding club at school

#### Work-Based Learning Activities

- Obtain a programming IBC

### Industry-Based Certifications

- Oracle Certified Associate Java SE 8 Programmer



### Postsecondary Opportunities

#### Associates Degrees

- Computer Programming/Programmer General
- Computer Software Engineer
- Computer Science
- Certified Software Analyst

#### Bachelor's Degrees

- Management Information Systems, General
- Computer Software Engineer
- Computer Science
- Information Science/ Studies

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

- Computer Software Engineer
- Computer Science
- Information Science/ Studies

### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Software Developer, Systems Software	\$103,334	2,985	25%
Software Developers, Application	\$104,499	6,311	30%
Computer Programmers	\$79,893	1,454	9%

Successful completion of the Programming and Software Development program of study will fulfill requirements of the Business and Industry endorsement and STEM endorsement if the math and science requirements are met. Revised – August 2022



**COMPUTER SCIENCE I (1282)**

Grade Placement: 9–12

Credit: 1

Prerequisite: Algebra I

Computer Science I will foster students' creativity and innovation by presenting opportunities to design, implement, and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor, and various electronic communities to solve the problems presented throughout the course. Through data analysis, students will identify task requirements, plan search strategies, and use computer science concepts to access, analyze, and evaluate information needed to solve problems. By using computer science knowledge and skills that support the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create solutions, and evaluate the results. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect. Students will gain an understanding of the principles of computer science through the study of technology operations, systems, and concepts.

**AP COMPUTER SCIENCE A (1283 Math/1284 LOTE)**

Grade Placement: 9-12

Credit: 2

Prerequisites: Algebra I and Geometry.

As introductory course to computer science, students will learn the basic structure and theories of computer programming to solve problems and create software. The course focuses on the AP Java subset (standard Java) programming language and no previous computer knowledge is required. This course counts as a fourth year math course and is recommended for any student pursuing a STEM career.

**COMPUTER SCIENCE II (1992)**

Grade Placement: 11–12

Credit: 1

Prerequisite: Algebra I and either Computer Science I or Fundamentals of Computer Science

Computer Science II will foster students' creativity and innovation by presenting opportunities to design, implement, and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor, and various electronic communities to solve the problems presented throughout the course. Through data analysis, students will identify task requirements, plan search strategies, and use computer science concepts to access, analyze, and evaluate information needed to solve problems. By using computer science knowledge and skills that support the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create solutions, and evaluate the results. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect. Students will gain an understanding of computer science through the study of technology operations, systems, and concepts.

**COMPUTER SCIENCE III (1997)**

Grade Placement: 11–12

Credit: 1

Prerequisite: Algebra I and either Computer Science I or Fundamentals of Computer Science

Computer Science III will foster students' creativity and innovation by presenting opportunities to design, implement, and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor, and various electronic communities to solve the problems presented throughout the course. Through data analysis, students will identify task requirements, plan search strategies, and use computer science concepts to access, analyze, and evaluate information needed to solve problems. By using computer science knowledge and skills that support the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create solutions, and evaluate the results. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect. Students will gain an understanding of advanced computer science data structures through the study of technology operations, systems, and concepts. The six strands include creativity and innovation; communication and collaboration; research and information fluency; critical thinking; problem-solving, and decision-making; digital citizenship; and technology operations and concepts.

**PRACTICUM IN INFORMATION TECHNOLOGY (1719)**

Grade Placement: 12

Credit: 2

Prerequisite: A minimum of two high school information technology (IT) courses.

In the Practicum in Information Technology, students will gain advanced knowledge and skills in the application, design, production, implementation, maintenance, evaluation, and assessment of products, services, and systems. Knowledge and skills in the proper use of analytical skills and application of IT concepts and standards are essential to prepare students for success in a technology-driven society. Critical thinking, IT experience, and product development may be conducted in a classroom setting with an industry mentor, as an unpaid or paid internship, as part of a capstone project, or as career preparation.



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## **Career & Technical Education**



For School Year 2023-2024  
Last 8-3-22