

# 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



## Career & Technical Education

The Animal Science program of study focuses on the science, research, and business of animals and other living organisms. This pathway encompasses everything from putting food on our tables to turning raw materials into products everyone uses. Students will apply biology and life science to real-world life processes of animals and wildlife, either in laboratories or in the field. Students conclude with courses focusing on animal health and welfare, including diagnosis and treatment of diseases and injuries of animals.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Principles of Agriculture, Food, and Natural Resources

#### 10<sup>th</sup> Grade

- Small Animal Management (Fall)
- Equine Science (Spring)

#### 11<sup>th</sup> Grade

- Livestock Production/Lab (AAC)

#### 12<sup>th</sup> Grade

- Advanced Animal Science (AAC)

or

- Veterinary Medical Applications + Lab (AAC)

#### 9<sup>th</sup> - 12<sup>th</sup> Grade

*Floral Design (Non-Pathway Course)*

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in FFA supervised agriculture experience

#### Work-Based Learning Activities

- Volunteer at a local farm or with a veterinarian

### Industry-Based Certifications

- Elanco Fundamentals of Animal Science Certification



### Postsecondary Opportunities

#### Associates Degrees

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

### 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%

# Architecture and Construction Career Cluster

The Architecture and Construction Career Cluster focuses on designing, planning, managing, building, and maintaining the built environment. Principles of Architecture provides an overview to the various fields of architecture, interior design, and construction management.

## Architectural Drafting & Design Statewide Program of Study



## Career & Technical Education

The Architectural Design program of study explores the occupations and educational opportunities associated with developing, engineering, and designing building structures and facilities. This program of study may also include exploration into collecting and interpreting geographic information, researching and preparing maps, and interior design.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Principles of Architecture

#### 10<sup>th</sup> Grade

- Architectural Design I

#### 11<sup>th</sup> Grade

- Computer Aided Drafting for Architecture

#### 12<sup>th</sup> Grade

- Architectural Design II (AAC)

### Postsecondary Opportunities

#### Associates Degrees

- Architecture
- Interior Design
- Civil Engineering, General
- Geographic Information Science and Cartography

#### Bachelor's Degrees

- Architecture
- Interior Design
- Civil Engineering, General
- Geographic Information Science and Cartography

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

- Architecture
- Interior Architecture
- Civil Engineering, General
- Geographic Information Science and Cartography

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Shadow an architect, interior designer or civil engineer
- Participate in SkillsUSA

#### Work-Based Learning Activities

- Intern at an architectural firm

### Industry-Based Certifications

- Autodesk Associate (Certified User & Professional) AutoCAD



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Architects	\$77,043	808	16%
Geographic Information Analysts and Surveyors	\$58,926	162	27%
Architectural/ Civil Drafters	\$50,170	1,068	9%
Construction Managers	\$87,402	2,401	14%

# 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 (James Reese) Statewide Program of Study



## Career & Technical Education

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

#### 10<sup>th</sup> Grade

- Audio/Video Production I + Lab

#### 11<sup>th</sup> Grade

- Audio/Video Production II + Lab

#### 12<sup>th</sup> Grade

- 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

- Participate in SkillsUSA or TSA
- FBISD Film Fest

#### 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



### Aligned Occupations

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

# Architecture and Construction Career Cluster

The Architecture and Construction Career Cluster focuses on designing, planning, managing, building, and maintaining the built environment. Principles of Architecture provides an overview to the various fields of architecture, interior design, and construction management.

## HVAC and Sheet Metal (James Reese) Statewide Program of Study



## Career & Technical Education

The HVAC and Sheet Metal program of study explores the occupations and educational opportunities associated with installing, serving, or repairing heating and air conditioning systems and also the fabrication, assembly, installation, and repair of sheet metal products and equipment, such as ducts, control boxes, drainpipes, and furnace casings. This program of study may also include exploration into preparing cost estimates for certain construction projects involving heating and air conditioning and sheet metal.

### Secondary Courses for High School Credit

#### 11th Grade

- Principles of Construction and
- Heating, Ventilation Air Conditioning (HVAC) and Refrigeration Technology I

#### 12th Grade

- Heating, Ventilation Air Conditioning (HVAC) and Refrigeration Technology II (AAC)

### Postsecondary Opportunities

#### Associates Degrees

- Business Administration and Management, General
- Mechanical Engineering
- Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/ Technician
- Business/ Commerce, General

#### Bachelor's Degrees

- Business Administration and Management
- Mechanical Engineering
- Construction Engineering Technology/ Technician
- Business/ Commerce, General

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

- Business Administration and Management
- Mechanical Engineering
- Construction Engineering
- Business/Commerce, General

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

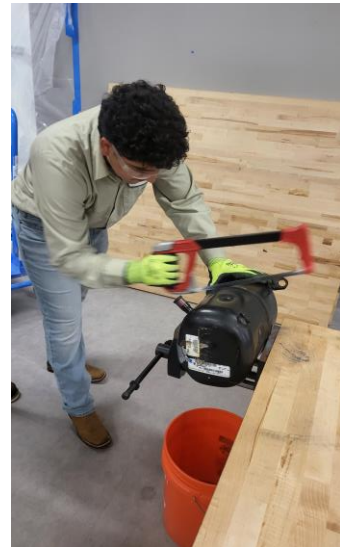
- Shadow an HVAC worker or cost estimator
- Participate in SkillsUSA

#### Work-Based Learning Activities

- Intern with an HVAC and/or sheet metal company

### Industry-Based Certifications

- OSHA 30-Hour: Construction
- EPA 608 Universal Refrigerant Handling



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Heating, Air Conditioning, and Refrigeration Mechanics	\$41,808	3,356	26%
Sheet Metal Workers	\$37,419	1,479	17%
Cost Estimators	\$63,939	2,239	21%

# 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



## Career & Technical Education

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

#### 9<sup>th</sup> Grade

- Principles of Business, Marketing, and Finance

#### 10<sup>th</sup> Grade

- Business Information Management I

#### 11<sup>th</sup> Grade

- Accounting I

#### 12<sup>th</sup> Grade

- Securities and Investments (AAC)

### Postsecondary Opportunities

#### Associates Degrees

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

#### Bachelor's Degrees

- Accounting
- Business Administration
- 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

- Microsoft Office Specialist: Word Expert
- Microsoft Office Specialist: Excel Expert
- Microsoft Office Specialist: PowerPoint



### 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%



# 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.

## Welding (James Reese) Statewide Program of Study



## Career & Technical Education

The Welding students will learn how to interpret technical sketches and blueprints, modify parts to make or repair machine tools or products, maintain individual machines and structures, and obtain certification in the use of hand-welding or flame-cutting equipment on metal raw or pre-manufactured goods. If you are a creative problem solver, can follow detailed instructions, or are good at organizing people and processes, then Manufacturing may be the right career choice for you.

### Secondary Courses for High School Credit

#### 11<sup>th</sup> Grade

- Introduction to Welding

#### and

- Welding I

#### 12<sup>th</sup> Grade

- Welding II/Lab

### Postsecondary Opportunities

#### Associates Degrees

- Certified Welder or Welder Inspector
- Machine Shop Technology/Assistant
- Operations Management and Supervision
- Occupational Safety and Health Technology/Technician

#### Bachelor's Degrees

- Welding Engineering Technology/Technician
- Biomedical Technology/Technician
- Operations Management and Supervision
- Environmental Health

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

- Welding Engineering Technology/Technician
- Occupational Health and Industrial Hygiene
- Operations Management and Supervision
- Environmental Health

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate and compete in SkillsUSA

#### Work-Based Learning Activities

- Work in a local business or industry apprenticeship
- Join the American Welding Society

### Industry-Based Certifications

- AWS Welding D1.1, D9.1, or API 1104 Certification- 1G (Flat), 2G (Horizontal), 3G (Vertical), and/or 4G (Overhead)



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Welders, Cutters, Solderers, and Brazers	\$41,350	6,171	9%
Welding Soldering and Brazing Machine Setters, Operators and Tenders	\$40,040	280	9%

# 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 (James Reese) Statewide Program of Study



## Career & Technical Education

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

#### 10<sup>th</sup> Grade

- Culinary Arts

#### 11<sup>th</sup> Grade

- Advanced Culinary Arts (AAC)

#### 12<sup>th</sup> Grade

- 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 (FCCLA) or SkillsUSA

#### 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

- ServSafe: Food Handler
- ServSafe: Food Manager



### 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%

# Information Technology Career Cluster

The Information Technology (IT) Career Cluster focuses on building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services.

## Networking Systems (James Reese) Statewide Program of Study



## Career & Technical Education

The Networking Systems program of study explores the occupations and educational opportunities associated with both computer and network maintenance. Students grow their experience from basic computer maintenance to designing and implementing computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. If you are good at grasping how technology works or want a career that is always changing, then Information Technology Systems may be the right career pathway for you.

### Secondary Courses for High School Credit

#### 11<sup>th</sup> Grade

- Internetworking Technologies I

#### and

- Computer Maintenance/Lab

#### 12<sup>th</sup> Grade

- Networking/Lab (AAC)

### Postsecondary Opportunities

#### Associates Degrees

- Computer and Information Sciences, General
- Computer Systems Networking And Telecommunications
- Information Technology
- Network and System Administration/ Administrator

#### Bachelor's Degrees

- Computer and Information Sciences, General
- Computer Systems Networking And Telecommunications
- Computer and Information Systems Security/ Information Assurance
- Computer Engineering, General

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

- Computer and Information Sciences, General
- Information Technology
- Computer and Information Systems Security/ Information Assurance
- Computer Engineering, General

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Join TSA or SkillsUSA

#### Work-Based Learning Activities

- Earn an IT certification
- Job shadow a computer network architect or support specialist

### Industry-Based Certifications

- CompTIA A+ Certification
- CompTIA Network+ Certification
- CompTIA I. T. Fundamentals+



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Computer Network Architects	\$111,633	1,082	23%
Computer Systems Analysts	\$87,568	5,937	29%
Computer Network Support Specialists	\$68,037	1,824	19%



# Information Technology Career Cluster

The Information Technology (IT) Career Cluster focuses on building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services.

## Programming & Software Development *Statewide Program of Study*



## Career & Technical Education

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 any industry or practical purpose. Largely, this is accomplished through guided exploration into creating, modifying, and testing the codes, forms, and scripts that allow computer applications to run.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Computer Science I

#### 10<sup>th</sup> Grade

- AP Computer Science A

#### 11<sup>th</sup> Grade

- Computer Science III

#### 12<sup>th</sup> Grade

- Independent Study

#### 9<sup>th</sup> – 12<sup>th</sup> Grade

- AP Computer Science Principles

### Postsecondary Opportunities

#### Associates Degrees

- Computer Programmer
- Computer Software Engineer
- Certified Software Analyst

#### Bachelor's Degrees

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

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

- Computer Software Engineer
- Information Science/Studies

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Join TSA or UIL Computer Science
- Job shadow a software engineer

#### Work-Based Learning Activities

- Earn an IT certification

### Industry-Based Certifications

- Python Certified Entry Level Programmer



### Aligned Occupations

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

# 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 (James Reese) Statewide Program of Study



## Career & Technical Education

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

#### 10<sup>th</sup> Grade

- Principles of Education and Training

#### and

- Child Development

#### 11<sup>th</sup> Grade

- Instructional Practices (AAC)

#### 12<sup>th</sup> Grade

- Practicum in Education and Training

### 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

### 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



### 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%

# 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.

## Cosmetology and Personal Care Services (James Reese)

*Regional Program of Study*



## Career & Technical Education

The Cosmetology and Personal Care Services regional program of study introduces CTE learners to knowledge and skills related to providing beauty and personal care services. CTE concentrators may learn about or practice managing personal care facilities and coordinating or supervising personal service workers.

### Secondary Courses for High School Credit

#### 10<sup>th</sup> Grade

- Principles of Cosmetology Design and Color Theory

#### and

- Introduction to Cosmetology

#### 11<sup>th</sup> Grade

- Cosmetology I (AAC)

#### 12<sup>th</sup> Grade

- Cosmetology II (AAC)

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in SkillsUSA

#### Work-Based Learning Activities

- Job shadow a cosmetologist
- Work part-time at a salon, spa, or barbershop

### Postsecondary Opportunities

#### Certificate/License

- Certified Aesthetic Laser Operator
- Cosmetologist
- Certified Spa Supervisor
- Nail Technician/Specialist and Manicurist

#### Associates Degrees

- Cosmetology/Cosmetologist, General
- Aesthetician/Esthetician and Skin Care Specialist
- Salon/Beauty Salon Management/Manager
- Cosmetology, Barber/Styling, and Nail Instructor

### Industry-Based Certifications

- Cosmetology TDLR- Knowledge Based (900 hours)
- Cosmetology TDLR- Practical (1,000 hours)



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
First-Line Supervisors of Personal Service Workers	\$36,941	1,634	24%
Barbers	\$28,267	348	14%
Hairdressers, Hairstylists, and Cosmetologists	\$21,507	3,489	22%
Manicurists and Pedicurists	\$21,715	418	45%
Shampooers	\$18,720	139	24%
Skincare Specialists	\$26,437	637	22%

# 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*



## Career & Technical Education

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

#### 9<sup>th</sup> Grade

- Principles of Human Services

#### 10<sup>th</sup> Grade

- Human Growth and Development

#### 11<sup>th</sup> Grade

- Counseling and Mental Health

#### 12<sup>th</sup> Grade

- Family and Community Services (AAC)

### 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

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in Family, Career and Community Leaders of America (FCCLA)

#### Work-Based Learning Activities

- Volunteer at a community center
- Intern for a community non-profit organization

### Industry-Based Certifications

- American Heart Association Heartsaver CPR/First Aid



### 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%

# 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.

## Diagnostics & Therapeutics Statewide Program of Study



## Career & Technical Education

The Healthcare Diagnostics program of study introduces students to occupations and education opportunities related to performing complex medical laboratory tests for the diagnosis, treatment, and prevention of disease. This program of study may also include exploration into the opportunities associated with blood laboratories as well as radiologic technology and ultrasound technology.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Principles of Health Science

#### 10<sup>th</sup> Grade

- Medical Terminology

#### 11<sup>th</sup> Grade

- Anatomy and Physiology (AAC)

#### 12<sup>th</sup> Grade

- Health Science Theory (AAC)

### Postsecondary Opportunities

#### Associates Degrees

- Nuclear Medical Technology/Technologist
- Magnetic Resonance Imaging (MRI) Technology/Technician

#### Bachelor's Degrees

- Nuclear Medical Technology/Technologist
- Medical Radiologic Technology/Science Radiation Therapist

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

- Radiologist
- Radiologic Technology/Science Radiographer



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

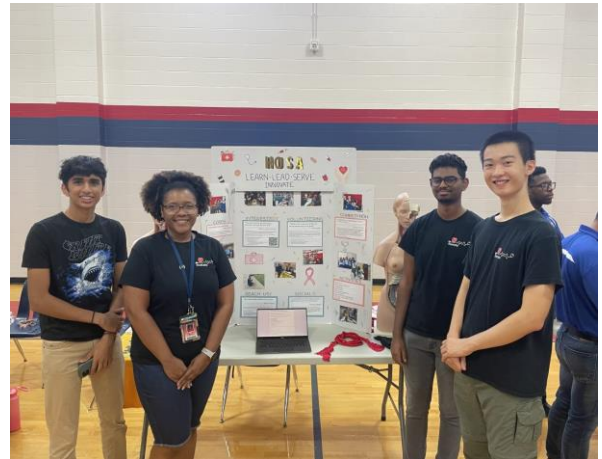
- Participate in Health Occupation Students of America (HOSA)

#### Work-Based Learning Activities

- Perform clinical rotations at a community wellness center, hospital, assisted living, nursing home

### Industry-Based Certifications

- American Heart Association Heartsaver CPR/First Aid



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Diagnostic Medical Sonographers	\$69,909	495	35%
Phlebotomist	\$30,597	1,442	36%
Nuclear Medicine Technologists	\$75,962	91	13%
Radiologic Technologists	\$55,494	1,196	21%
Magnetic Resonance Imaging Technologists	\$68,661	217	21%



# 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.

## Diagnostics & Therapeutics (James Reese) Statewide Program of Study



## Career & Technical Education

The Healthcare Diagnostics program of study introduces students to occupations and education opportunities related to performing complex medical laboratory tests for the diagnosis, treatment, and prevention of disease. This program of study may also include exploration into the opportunities associated with blood laboratories as well as radiologic technology and ultrasound technology.

### Secondary Courses for High School Credit

#### 10<sup>th</sup> Grade

- Principles of Health Science

And

- Medical Terminology

#### 11<sup>th</sup> Grade

- Anatomy and Physiology (AAC)

And

- Medical Assistant

#### 12<sup>th</sup> Grade

- Practicum in Health Science

### Postsecondary Opportunities

#### Associates Degrees

- Nuclear Medical Technology/Technologist
- Magnetic Resonance Imaging (MRI) Technology/Technician

#### Bachelor's Degrees

- Nuclear Medical Technology/Technologist
- Medical Radiologic Technology/Science Radiation Therapist

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

- Radiologist
- Radiologic Technology/Science Radiographer



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

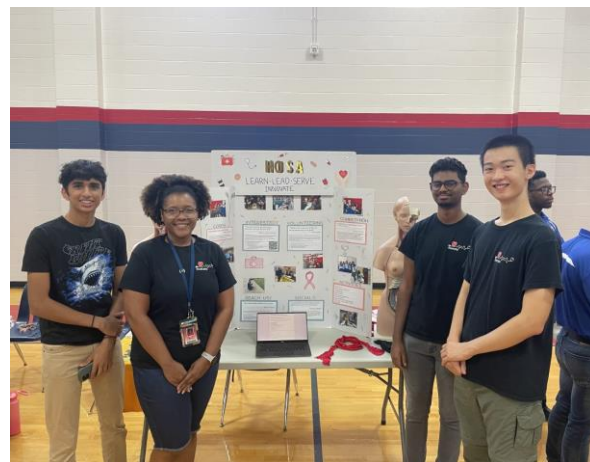
- Participate in Health Occupation Students of America (HOSA)

#### Work-Based Learning Activities

- Perform clinical rotations at a community wellness center, hospital, assisted living, nursing home

### Industry-Based Certifications

- American Heart Association Heartsaver CPR/First Aid



### Aligned Occupations

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Radiologic Technologists	\$55,494	1,196	21%
Magnetic Resonance Imaging Technologists	\$68,661	217	21%

# 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



## Career & Technical Education

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

#### 9<sup>th</sup> Grade

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

#### 10<sup>th</sup> Grade

- Law Enforcement I

#### 11<sup>th</sup> Grade

- Law Enforcement II (AAC)

#### 12<sup>th</sup> Grade

- Forensic Science (AAC)

### 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

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

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

#### Work-Based Learning Activities

- Attend court hearings and other legal procedures



### 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%

# Engineering 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 and research and development services.

## Engineering Foundations Statewide Program of Study



## Career & Technical Education

The Engineering program of study focuses on the design, development, and use of engines, machines, structures, and automation processes, as well as rapid prototyping methods. Engineering pathway students will learn how to apply science, mathematical methods, and empirical evidence to the innovation, design, construction, operation, and maintenance of different operations and manufacturing systems. Engineering students endeavor to improve the state of the world in ethical, cost-effective, efficient, and innovative ways. If you enjoy identifying a problem, producing solutions, and turning ideas into reality, then Engineering may be the right career pathway for you.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Principles of Applied Engineering

#### 10<sup>th</sup> Grade

- Engineering Design and Presentation I

#### 11<sup>th</sup> Grade

- Engineering Science

#### 12<sup>th</sup> Grade

- Engineering Design and Problem Solving

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in SkillsUSA or TSA competitions

#### Work-Based Learning Activities

- Intern at an engineering firm

### Industry-Based Certifications

- Autodesk Associate (Certified User) & Professional Fusion 360



### 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

### 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	105

# Transportation, Distribution, and Logistics Career Cluster

The Transportation, Distribution, and Logistics Career Cluster focuses on careers in planning, management, and movement of people, materials, and goods by road, pipeline, air, rail, and water. It also includes related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.

## Automotive (James Reese) Statewide Program of Study



## Career & Technical Education

The Automotive program of study teaches CTE learners how to repair and refinish automobiles and service various types of vehicles. CTE learners may learn to collect payment for services or supplies and perform typical vehicle maintenance procedures such as lubrication, oil changes, installation of antifreeze, or replacement of accessories like wiper blades or tires.

### Secondary Courses for High School Credit

#### 10<sup>th</sup> Grade

- Automotive Basics

and

- Small Engine Technology I

#### 11<sup>th</sup> Grade

- Automotive Technology I (AAC)

#### 12<sup>th</sup> Grade

- Automotive Technology II (AAC)

### Postsecondary Opportunities

#### Associates Degrees

- Autobody/ Collision and Repair Technology/ Technician
- Medium/Heavy Vehicle and Truck Technology/ Technician
- Mechanical Engineering/ Mechanical Technology/ Technician

#### Bachelor's Degrees

- Mechanical Engineering/ Mechanical Technology/ Technician

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

- Mechanical Engineering



### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Join SkillsUSA

#### Work-Based Learning Activities

- Work at a local automotive repair or body shop

### Industry-Based Certifications

- ASE Entry Level Automobile Maintenance and Light Repair G1
- ASE Entry-Level Automobile Electronic/Electrical Systems A6
- EPA 609 Credentials
- ASE Entry-Level Automobile Series (MR, AS, ER, AT, MD, SS, BR, EE, AC, EP)



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Automotive Body and Related Repairers	\$40,144	1,456	25%
Automotive Service Technician and Mechanics	\$38,459	5,557	18%



# 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 & Interactive Media (Academy) Statewide Program of Study



## Career & Technical Education

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

*\*All courses are at Hightower High School*

#### 9<sup>th</sup> Grade

- Principles of Arts, AV Technology and Communications

#### 10<sup>th</sup> Grade

- Graphic Design and Illustration I

#### 11<sup>th</sup> Grade

- Graphic Design and Illustration/ Lab II (AAC)

#### 12<sup>th</sup> Grade

- Practicum in Graphic Design and Illustration

### 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	Work-Based Learning Activities
<ul style="list-style-type: none"><li>Join a website development or coding club</li><li>Participate in SkillsUSA or TSA</li></ul>	<ul style="list-style-type: none"><li>Intern with a multimedia or animation studio</li><li>Obtain a certificate or certification in graphic design</li></ul>

### Industry-Based Certifications

- Adobe Certified Professional in Adobe Photoshop
- Adobe Certified Professional in Graphic Design and Illustration Using Adobe Illustrator



## Aligned Occupations

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



# 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 (Academy) Statewide Program of Study



## Career & Technical Education

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

#### 9<sup>th</sup> Grade

- Principles of Business, Marketing, and Finance

and

- Business Information Management I

#### 10<sup>th</sup> Grade

- Entrepreneurship I

#### 11<sup>th</sup> Grade

- Entrepreneurship II (AAC)

#### 12<sup>th</sup> Grade

- Practicum in Entrepreneurship

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

#### Exploration Activities

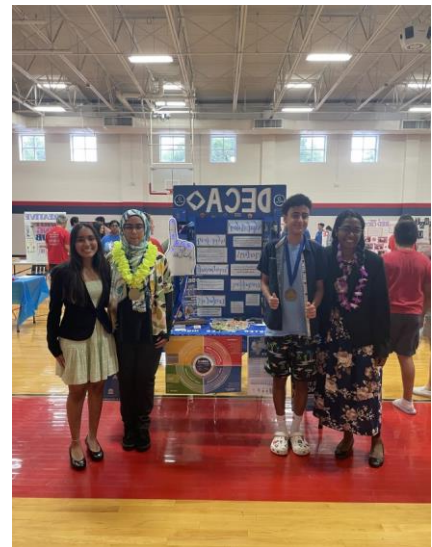
- Participate in DECA

#### Work-Based Learning Activities

- Intern with a local management consulting firm

### Industry-Based Certifications

- Microsoft Office Specialist: Word Expert
- Microsoft Office Specialist: Excel Expert
- Microsoft Office Specialist: PowerPoint



### 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%

# 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 (Academy) Statewide Program of Study



## Career & Technical Education

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

#### 9<sup>th</sup> Grade

- Principles of Business, Marketing, and Finance

#### 10<sup>th</sup> Grade

- Marketing

#### and

- Sports Marketing (Fall)
- Social Media Marketing (Spring)

#### 11<sup>th</sup> Grade

- Advanced Marketing (AAC)

#### 12<sup>th</sup> Grade

- Practicum in Marketing

### 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

### 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

### Industry-Based Certifications

- Microsoft Office Specialist: Word Expert
- Microsoft Office Specialist: Excel Expert
- Microsoft Office Specialist: PowerPoint



### 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%

# 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.

## Exercise Science and Wellness (Academy) Statewide Program of Study



## Career & Technical Education

The Exercise Science and Wellness program of study introduces CTE learners to the fields that assist patients with maintaining physical, mental, and emotional health. Students will research diet and exercise needed to maintain a healthy, balanced lifestyle and learn about and practice techniques to help patients recover from injury, illness, or disease.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Principles of Exercise Science and Wellness

#### 10<sup>th</sup> Grade

- Kinesiology I

#### 11<sup>th</sup> Grade

- Kinesiology II (AAC)

#### and

- Anatomy & Physiology (AAC)

#### 12<sup>th</sup> Grade

- Practicum in Health Science

### Postsecondary Opportunities

#### Associates Degrees

- Physical Therapist Assistant
- Physical Therapy Aides
- Dietetic Technician

#### Bachelor's Degrees

- Kinesiology and Exercise Science
- Therapeutic Recreation/Recreational Therapy
- Athletic Training/Trainer

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

- Exercise Physiology
- Therapeutic Recreation/Recreation Therapy
- Athletic Training/Trainer
- Physical Therapist

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

#### Exploration Activities

- Participate in Health Occupations Students of America (HOSA)

#### Work-Based Learning Activities

- Volunteer at a hospital or rehabilitation center
- Manage a school sports team

### Industry-Based Certifications

- American Heart Association Heartsaver CPR/First Aid



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Athletic Trainers	\$53,450	215	22%
Exercise Physiologists	\$41,662	33	33%
Coaches and Scouts	\$40,010	2,133	23%
Dieticians and Nutritionists	\$57,762	428	24%
Recreational Therapists	\$45,906	74	24%

# Health Science

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.

## Biomedical Science (Academy) Statewide Program of Study



## Career & Technical Education

The Biomedical Science program of study focuses on the study of biology and medicine in order to introduce CTE learners to the knowledge and skills necessary to be successful in the healthcare field, such as researching and diagnosing diseases, pre-existing conditions, or other determinants of health. Students may also practice patient care and communication.

### Secondary Courses for High School Credit

#### 9<sup>th</sup> Grade

- Principles of Biomedical Sciences (PLTW)

#### 10<sup>th</sup> Grade

- Human Body Systems (PLTW)

and

- Medical Terminology

#### 11<sup>th</sup> Grade

- Medical Interventions (PLTW)

and

- Health Science Theory (AAC)

#### 12<sup>th</sup> Grade

- Biomedical Innovation (AAC) (PLTW)

### Postsecondary Opportunities

#### Associates Degrees

- Histologic Technician
- Clinical Laboratory Science/Medical Technology/Technologist

#### Bachelor's Degrees

- Biomedical Engineers
- Clinical Laboratory Science/Medical Technology/Technologist

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

- Genetic Counseling
- Medical Scientists
- Epidemiology

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

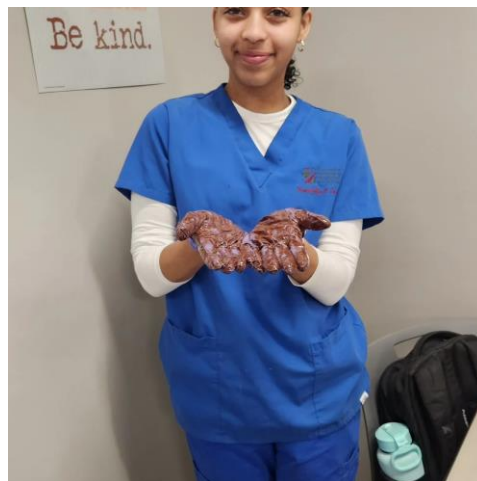
- Join Health Occupations Students of America (HOSA)

#### Work-Based Learning Activities

- Intern at a lab
- Shadow a healthcare or medical professional

### Industry-Based Certifications

- American Heart Association Heartsaver CPR/First Aid



### Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Medical and Laboratory Technicians	\$37,981	1,159	28%
Biological Technicians	\$42,931	452	17%
Forensic Science Technicians	\$48,152	171	35%
Chemical Technicians	\$49,733	672	10%
Medical and Clinical Laboratory Technologists	\$58,760	1,166	35%

# Engineering 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 Foundations (Academy) Statewide Program of Study



## Career & Technical Education

The Engineering program of study focuses on the design, development, and use of engines, machines, structures, and automation processes, as well as rapid prototyping methods. Engineering pathway students will learn how to apply science, mathematical methods, and empirical evidence to the innovation, design, construction, operation, and maintenance of different operations and manufacturing systems. Engineering students endeavor to improve the state of the world in ethical, cost-effective, efficient, and innovative ways. If you enjoy identifying a problem, producing solutions, and turning ideas into reality, then Engineering may be the right career pathway for you.

### Secondary Courses for High School Credit

*\*All courses are held at Elkins High School*

#### 9<sup>th</sup> Grade

- Introduction to Engineering Design (PLTW)

#### 10<sup>th</sup> Grade

- Engineering Essentials (PLTW)

#### 11<sup>th</sup> Grade

- Aerospace Engineering (PLTW)

#### and

- Civil Engineering and Architecture (PLTW)

#### 12<sup>th</sup> Grade

- Engineering Design and Development (PLTW)

### Work-Based Learning and Expanded Learning Opportunities

#### Exploration Activities

- Participate in SkillsUSA or TSA competitions

#### Work-Based Learning Activities

- Intern at an engineering firm
- Shadow a machinist

### Industry-Based Certifications

- Autodesk Associate (Certified User) & Professional Fusion 360
- Autodesk Associate (Certified User) & Professional Revit



### 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

### 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	105