PATHWAYS FOR CAREER, COLLEGE, AND GLOBAL SUCCESS

Red Oak Independent School Dristrict

CAREER & TECHNOLOGY EDUCATION

Academic Skills | Professional Career Skills | 21st Century Work Skills

Students entering high school in 2017-2018 or later graduate on the Foundation High School Program with an Endorsement. In order for a student to receive a CTE endorsement, they must successfully complete a coherent sequence of 3 or more courses for 4 or more credits within that endorsement area while observing all prerequisites; the last course within the sequence must be an advanced course. Below is a list of the Endorsements available through Red Oak ISD Career and Technology Education Clusters.

| Business & Industry Endorsement	Public Services Endorsement	Science, Technology, Engineering, and Math (STEM)
Agriculture	Education	PLTW Engineering
Architecture	Health Science	Cybersecurity
Construction	Human Services	Programming
Arts, A/V Technology, and Communication	Law, Public Safety, Corrections, and Security	
Business, Finance, and Marketing		
Information Technology		
Manufacturing		
Transportation, Distribution, and Logistics		

Red Oak ISD CTE courses provide students the opportunity to earn industry-recognized certifications. These certifications demonstrate to prospective employers students have the knowledge and skills to enter a specific career field. Currently, the following certifications are offered at Red Oak ISD.

CTE Programs of Study	Industry Certifications Offered
Accounting and Financial Services	Certified Insurance Service Representative, IBC for Insurance and Coding Specialist
Advanced Manufacturing and Machinery Mechanics	Level 1 Certification through TSTC
Animal Science	Certified Veterinary Assistant
Applied Agricultural Engineering	AWS D1.1 and AWS D9.1
Architecture	AutoCAD and/or Auto Revit, Level 1 Certification from TSTC
Automotive	ASE Brakes, ASE Electrical/Electronic Systems, ASE Engine Performance, ASE Engine Repair, ASE Maintenance & Light Repair, ASE Steering & Suspension
Aviation Maintenance	Level 1 certification through TSTC
Business Management	Microsoft Office Specialist, MOS Access Expert, MOS Excel Expert, MOS Word Expert, Microsoft 365 Fundamentals, and Stukent
Carpentry	NCCER Carpentry Level 1
Cosmetology	Cosmetology Operators License
Cybersecurity	CCNA Cyber Ops
Design & Multimedia Arts	Adobe Photoshop and Adobe Illustrator
Diesel and Heavy Equipment	Level 1 Certification from TSTC
Digital Communications	Adobe Photoshop and Adobe Premier Pro
Electrical	Electrical Apprenticeship, Level 1 Certification from TSTC
Emergency Services	EMT-Basic through Navarro College
Health Informatics	Level 2 Certificate from TSTC
Healthcare Diagnostics	Certified EKG Technician and Certified Patient Care Technician
Healthcare Therapeutic	Certified Pharmacy Tech
Law Enforcement	Emergency Telecommunicator
Masonry	NCCER Masonry Level 1
Networking Systems	Comp Tia+ and/or MOS Technology Associate
Programming and Software Development	MOS Introduction to Programming Using Java Script, MOS Introduction to Programming Using Python, and MOS Introduction to Programming Using HMTL & CSS
Teaching and Training	Educational Aide 1
Web Development	Certified Web Design and/or MOS Technology Associate, NOCTI Job Ready Web Development
Welding	AWS D1.1 and AWS D9.1

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
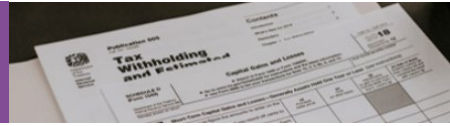
The Accounting and Financial Services program of study teaches CTE learners how to examine, analyze, and interpret financial records. Through this program of study, students will learn the skills necessary to perform financial services, prepare financial statements, interpret accounting records, give 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
- Money Matters
- Business Information Management I/Lab

Level 2
- Accounting I
- Banking and Financial Services
- Financial Mathematics

Level 3
- Accounting II
- Financial Analysis
- Insurance Operations

Level 4
- Securities and Investments
- Practicum in Business Management
- Practicum in Entrepreneurship
- 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	Work-Based Learning Activities
• Participate in Business Professionals of America, Future Business Leaders of America, or DECA	• Intern with a local accounting firm • Earn Microsoft Office certifications

Industry-Based Certifications

- Accounting - Basic
- Accounting Foundations
- Certified Insurance Service Representative
- Intuit QuickBooks Certified User
- MB-920: Microsoft Dynamics 365 Fundamentals Finance and Operations Apps
- Microsoft Office Specialist: Microsoft Access Expert (Access and Access 2019) Microsoft Office Specialist: Microsoft Excel Expert (Excel and Excel 2019)
- Volunteer Income Tax Assistance/Tax Counseling Certification: Advanced
- Volunteer Income Tax Assistance/Tax Counseling Certification: Basic
- Volunteer Income Tax Assistance/Tax Counseling Certification: Volunteer for Elderly

- -

- Microsoft Office Specialist-Excel*

*IBC sunsetting 8/31/24

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 – October 2022

TEA
Texas Education Agency

Accounting and Financial Services
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	None
Money Matters	13016200 (1 credit)	None	None
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Accounting I	13016600 (1 credit)	None	None
Banking and Financial Services	13016300 (.5 credit)	None	None
Financial Mathematics	13018000 (1 credit)	Algebra I	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Accounting II	13016700 (1 credit)	Accounting I	None
Financial Analysis	13016800 (1 credit)	Accounting I	None
Insurance Operations	13016500 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Securities and Investments	13016400 (1 credit)	None	None
Practicum in Business Management	13012200 (2 credits) 13012205 (3 credits) 13012210 (2 credits) 13012215 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE BUSINESS, MARKETING, AND FINANCE CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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 Manufacturing
- Principles of Applied Engineering

Level 2
- Occupational Safety and Environmental Technology I
- Robotics I
- Manufacturing Engineering Technology I
- Programmable Logic Controller I

Level 3
- Engineering Design and Presentation I
- Manufacturing Engineering Technology II
- Robotics II
- Occupational Safety and Environmental Technology II
- Programmable Logic Controller II

Level 4
- Practicum in Manufacturing
- Practicum in Entrepreneurship
- Career Preparation I

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
• Participate in SkillsUSA and local STEM events	• Work at a local business or industry apprenticeship • Join the American Welding Society

Industry-Based Certifications

- C-101 Certified Industry 4.0 Associate - Basic Operations
- C-103 Certified Industry 4.0 Associate - Robot System Operations
- C-200 Certified Industry 4.0 Automation System Specialist I - 216 Robotic System Integration 1
- C-200 Certified Industry 4.0 Automation Systems Specialist I - 208 Programmable Controller Troubleshooting 1
- C-200 Certified Industry 4.0 Automation Systems Specialist I - 215 Robotic Operations 1
- Certified Manufacturing Associate
- CNC Lathe Operations
- CNC Lathe Set Up and Operations
- FANUC Robot Operator 1
- FESTO Certified Industry 4.0 Associate Fundamentals
- Industrial Technology Maintenance (ITM) - Process Control Systems
- Machining CNC Mill Operations Level I
- Machining CNC Mill Programming Setup and Operations Level I
- Machining CNC Milling Skills Level II
- Machining CNC Milling Skills Level II

- Industrial Technology Maintenance (ITM) - Electronic Control Systems*
- ISCET Certified Electronics Technicians*
- Mastercam Associate Certification Mill Design and Toolpaths*
- Mastercam Certified Professional Mill Level 1*
- Mastercam Professional Level Certification*
- OSHA 30 Hour General*

*IBC sunsetting 8/31/24

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

TEA
Texas Education Agency

Advanced Manufacturing and Machinery Mechanics Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Manufacturing	13032200 (1 credit)	None	None
Principles of Applied Engineering	13036200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None
Robotics I	13037000 (1 credit)	None	None
Manufacturing Engineering Technology I	13032900 (1 credit)	None	None
Programmable Logic Controller I	N1303689 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Design and Presentation I	13036500 (1 credit)	Algebra I	None
Manufacturing Engineering Technology II	13032950 (1 credit)	Manufacturing Engineering Technology I	None
Robotics II	13037050 (1 credit)	Robotics I	None
Occupational Safety and Environmental Technology II	N1303681 (1 credit)	OSET I	None
Programmable Logic Controller II	N1303690 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Manufacturing	13033000 (2 credits) 13033005 (3 credits) 13033010 (2 credits) 13033015 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE MANUFACTURING CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Livestock Production/Lab

Level 4
- Advanced Animal Science
- Veterinary Medical Applications/Lab
- Practicum in Agriculture, Food, and Natural Resources
- Project-Based Research
- Scientific Research and Design

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	Work-Based Learning Activities
• Participate in Texas FFA	• 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

- Agricultural Biotechnology
- Certified Veterinary Assistant, Level 1
- Elanco Fundamentals of Animal Science Certification
- Elanco Veterinary Medical Applications Certification
- Equine Management & Evaluation Certification
- Feedyard Technician in Cattle Care and Handling
- Licensed Veterinary Technician
- Production Agriculture - Job Ready
- Small Animal Science and Technology
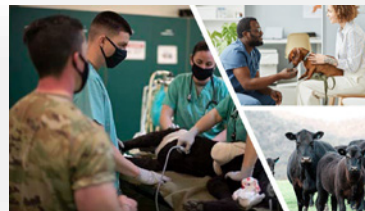
Aligned Occupations

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

Animal Science
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Small Animal Management	13000400 (0.5 credit)	None	None
Equine Science	13000500 (0.5 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Livestock Production/Lab	13000300 (1 credit) 13000310 (2 credits)	None	None

See next page for Level 4 courses

Animal Science
Course Information

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Advanced Animal Science	13000700 (1 credit)	Biology and Chemistry or Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and either Small Animal Management, Equine Science, or Livestock Production	None
Veterinary Medical Applications/Lab	13000600 (1 credit) 13000610 (2 credits)	Equine Science, Small Animal Management, or Livestock Production	None
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	None
Project-Based Research	12701500 (1 credit)	None	None
Scientific Research and Design	13037200 (1 credit)	Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	None

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
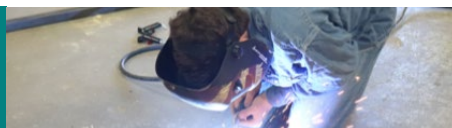
The Applied Agricultural Engineering program of study explores the occupations and educational opportunities associated with applying knowledge of engineering technology and biological science to agricultural problems concerned with power and machinery, electrification, structures, soil and water conservation, 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/Lab

Level 3
- Agricultural Structures Design and Fabrications/Lab
- Agricultural Power Systems/Lab
- Geographic Information Systems for Agriculture

Level 4
- Agricultural Equipment Design and Fabrication/Lab
- Practicum in Agriculture, Food, and Natural Resources
- Project-Based Research
- Scientific Research and Design

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, Genera

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Tour a farm products or machinery plant • Participate in Texas FFA	• Earn a welding certification • Intern at a farm products or machinery plant • Participate in an FFA supervised agriculture experience

Industry-Based Certifications

- Agriculture Mechanics
- API 1104 Welding Pipelines and Related Facilities AWS Certified Welder
- AWS D1.1 Structural Steel
- AWS D9.1 Sheet Metal Welding
- AWS SENSE Level 1: Entry Welder
- Feedyard Technician in Machinery Operation, Repair and Maintenance
- Industrial Technology Maintenance (ITM) - Maintenance Welding
- Machining Measurement, Material, and Safety Level I
- NCCER Welding Level I
- NCCER Core
- General Welding - Job Ready

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- OSHA General 30*

*IBC sunsetting 8/31/24

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 – October 2022

Applied Agricultural Engineering
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Agricultural Mechanics and Metal Technologies/Lab	13002200 (1 credit) 13002210 (2 credits)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Agricultural Structures Design and Fabrications/Lab	13002300 (1 credit) 13002310 (2 credits)	None	None
Agricultural Power Systems/Lab	13002400 (2 credits) 13002410 (3 credits)	None	None
Geographic Information Systems for Agriculture	N1300272 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Agricultural Equipment Design and Fabrication/Lab	13002350 (1 credit) 13002360 (2 credits)	None	None
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	None
Project-Based Research	12701500 (1 credit)	None	None
Scientific Research and Design	13037200 (1 credit)	Biology, Chemistry, Integrated Physics, and Chemistry (IPC),or Physics	

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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 Design
Statewide Program of Study

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

Level 1
- Principles of Architecture

Level 2
- Architectural Design I
- Interior Design I
- Computer Aided Drafting for Architecture

Level 3
- Architectural Design II
- Interior Design II
- Civil Engineering and Architecture (PLTW)

Level 4
- Practicum in Architectural Design
- Career Preparation I

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	Work-Based Learning Activities
• Shadow an architect, interior designer or civil engineer • Participate in SkillsUSA	• Intern at an architectural firm

Industry-Based Certifications

- Autodesk Associate (Certified User) 3ds MAX
- Autodesk Associate (Certified User) AutoCAD
- Autodesk Associate (Certified User) Fusion 360
- Autodesk Associate (Certified User) Revit Architecture
- Autodesk Associate (Certified User) Revit for Electrical
- Autodesk Associate (Certified User) Revit for Structural Design Autodesk Certified Professional Fusion 360
- Autodesk Certified Professional in AutoCAD for Design and Drafting
- Autodesk Certified Professional in Civil 3D for Infrastructure Design
- Autodesk Certified Professional in Revit for Architectural Design
- Autodesk Certified Professional in Revit for Electrical Design
- Autodesk Certified Professional in Revit for Structural Design
- LEED Green Associate

- Certified SOLIDWORKS Associate*
- Mastercam Associate Certification*

*IBC sunsetting 8/31/24

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%

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

Architectural Design
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Architecture	13004210 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Architectural Design I	13004600 (1 credit)	Algebra I and English I	None
Interior Design I	13004300 (1 credit)	Algebra I and English I	None
Computer Aided Drafting for Architecture	N1300429 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Architectural Design II	13004700 (2 credits)	Architectural Design l or Advanced Interior Design and Geometry	None
Interior Design II	13004400 (2 credits)	English ll, Geometry, and Interior Design I	None
Civil Engineering and Architecture (PLTW)	N1303747 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Architectural Design	13004800 (2 credits) 13004805 (3 credits) 13004810 (2 credits) 13004815 (3 credits)	Architectural Design II	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE ARCHITECTURE AND CONSTRUCTION CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
Statewide Program of Study

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

Level 1
- Principles of Transportation Systems
- Small Engine Technology I
- Basic Collision Repair and Refinishing

Level 2
- Automotive Basics
- Introduction to Transportation Technology
- Small Engine Technology II
- Collision Repair/Lab
- Occupational Safety and Environmental Technology I

Level 3
- Automotive Technology I
- Energy and Power of Transportation Systems
- Paint and Refinishing/Lab

Level 4
- Automotive Technology II/Lab
- Practicum in Transportation Systems
- Practicum in Entrepreneurship
- Career Preparation I

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	Work-Based Learning Activities
• Join SkillsUSA or the Automotive Service Association	• Work at a local automotive repair or body shop

Industry-Based Certifications

- ASE Entry Level Automobile Maintenance and Light Repair (MR)
- ASE Entry-Level Automobile Automatic Transmission/Transaxle (AT)
- ASE Entry-Level Automobile Brakes (BR)
- ASE Entry-Level Automobile Electronic/Electrical Systems (EE)
- ASE Entry-Level Automobile Engine Performance (EP)
- ASE Entry-Level Automobile Engine Repair (ER)
- ASE Entry-Level Automobile Heating and Air Conditioning (AC)
- ASE Entry-Level Automobile Manual Drive Train and Axles (MD)
- ASE Entry-Level Automobile Service Technology
- ASE Entry-Level Automobile Suspension and Steering (SS)
- ASE Entry-Level Collision Mechanical and Electrical Components (ME)
- ASE Entry-Level Collision Non-Structural Analysis and Damage Repair (SR)
- ASE Entry-Level Collision Painting and Refinishing (PR)
- ASE Entry-Level Collision Structural Analysis and Damage Repair
- ASE Refrigerant Recovery and Recycling
- Principles of Small Engine Technology Certification
- Small Engine Technology

- OSHA 30 Hour General*
- ASE Suspension and Steering*
- ASE Structural Analysis Damage Repair*
- ASE Painting & Refinishing*
- ASE Non-Structural Analysis Damage Repair*
- ASE Mech Elec Components*
- ASE Manual Drive Train Axles*
- ASE Maintenance Light Repair*
- ASE Heating, Ventilation, AC (HVAC)*
- ASE Auto Transmission*
- ASE Automobile Service Technology*
- ASE Brakes*
- ASE Electrical/Electronic Systems*
- ASE Engine Performance*
- ASE Engine Repair*
  - *IBC sunsetting 8/31/24

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%

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

TEA
Texas Education Agency

Automotive
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Transportation Systems	13039250 (1 credit)	None	None
Small Engine Technology I	13040000 (1 credit)	None	None
Basic Collision Repair and Refinishing	13039750 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Automotive Basics	13039550 (1 credit)	None	None
Introduction to Transportation Technology	13039270 (.5 credit)	None	None
Small Engine Technology II	13040100 (2 credits)	Small Engine Technology I	None
Collision Repair/Lab	13039800 (2 credits) 13039810 (3 credits)	None	None
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Automotive Technology I: Maintenance and Light Repair	13039600 (2 credits)	None	None
Energy and Power of Transportation Systems	13039300 (1 credit)	None	None
Paint and Refinishing/Lab	13039900 (2 credits) 13039910 (3 credits)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Automotive Technology II/Lab	13039700 (2 credits) 13039710 (3 credits)	Automotive Technology I: Maintenance and Light Repair	None
Practicum in Transportation Systems	13040450 (2 credits) 13040455 (3 credits) 13040460 (2 credits) 13040465 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

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PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Aviation Maintenance
Statewide Program of Study

The Aviation Maintenance program of study introduces students to the occupations and education opportunities related to inspecting aircraft, maintenance procedures, air navigational aids, air traffic controls, and communications equipment to ensure conformance with federal safety regulations.

Secondary Courses for High School Credit

Level 1
- Introduction to Aircraft Technology

Level 2
- Occupational Safety and Environmental Technology I
- Aviation Maintenance (TBD)

Level 3
- Aircraft Airframe Technology/Lab

Level 4
- Aircraft Powerplant Technology/Lab
- Practicum in Transportation Systems
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Avionics Maintenance Technology/Technician
- Aircraft Powerplant Technology/ Technician
- Airframe Mechanics and Aircraft Maintenance Technology/Technician

Bachelor's Degrees
- Airframe Mechanics and Aircraft Maintenance Technology/Technician

Work-Based Learning and Expanded Learning Opportunities

| Exploration Activities	Work-Based Learning Activities
• Participate in SkillsUSA • Explore virtual aviation websites	• Seek part-time work at an airport, aviation services agency, or airline

Industry-Based Certifications

- Aerospace Manufacturing Certification

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- OSHA 30 Hour General*
- Certified Aerospace Technician*
- FAA Aviation Maintenance Technician Airframe*
- FAA Aviation Maintenance Technician General*
- ISCET Certified Electronics Technicians*

*IBC sunsetting 8/31/24
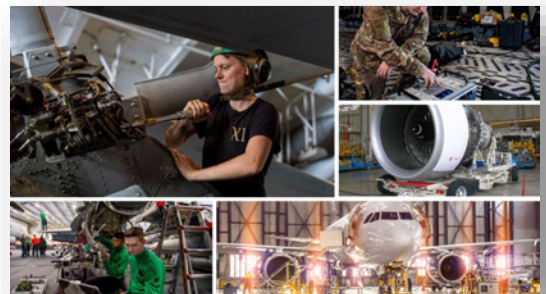
Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Aircraft Mechanics and Technicians	$58,698	1,469	9%
Avionics Technicians	$59,114	170	9%

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

Aviation Maintenance
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Introduction to Aircraft Technology	13039350 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None
Aviation Maintenance (TBD)	TBD	TBD	TBD

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Aircraft Airframe Technology/Lab	13039400 (2 credits) 13039410 (3 credits)	Introduction to Aircraft Technology	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Aircraft Powerplant Technology/Lab	13039500 (2 credits) 13039510 (3 credits)	Introduction to Aircraft Technology	None
Practicum in Transportation Systems	13040450 (2 credits) 13040455 (3 credits) 13040460 (2 credits) 13040465 (3 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

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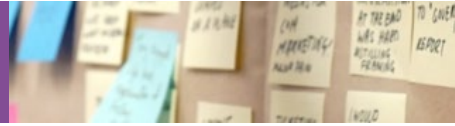PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Business Management
Statewide Program of Study

The Business Management program of study teaches CTE learners how to plan, direct, and coordinate the administrative services and operations of an organization. Through this program of study, students will learn the skills necessary to formulate policies, manage daily operations, and allocate the use of materials and human resources. This program of study will also introduce students to mathematical modeling tools and organizational evaluation methods.

Secondary Courses for High School Credit

Level 1
- Principles of Business, Marketing, and Finance
- Business Information Management I/Lab

Level 2
- Business Law
- Virtual Business
- Business Information Management II/Lab

Level 3
- Business Management
- Global Business
- Human Resources Management

Level 4
- Statistics and Business Decision Making
- Practicum in Business Management
- Practicum in Entrepreneurship
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Business Administration
- Business/Commerce
- Public Administration
- Business Management

Bachelor's Degrees
- Business Administration
- Business/Commerce
- Public Administration
- Management Science

Master's, Doctoral, and Professional Degrees
- Business Administration
- Business Management
- Public Administration
- Management Science

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Participate in Business Professional of America, Future Business Leaders of America, or DECA	• Intern with a local business or chamber of commerce

Industry-Based Certifications

- Administrative Assisting
- Certified Associate in Project Management (CAPM)
- Entrepreneurship and Small Business
- MB-920: Microsoft Dynamics 365 Fundamentals Finance and Operations Apps
- Microsoft Office Specialist 2016 Master
- Microsoft Office Specialist: Microsoft Access Expert (Access and Access 2019)
- Microsoft Office Specialist: Microsoft Excel Expert (Excel and Excel 2019)
- Microsoft Office Specialist: Microsoft Word Expert (Word and Word 2019)
- Project Management Institute (PMI) Project Management Ready

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

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Administrative Service Managers	$96,138	2,277	21%
Management Analysts	$87,651	4,706	32%
General and Operations Managers	$107,640	18,679	20%
Supervisors of Administrative Support Works	$57,616	14,982	20%

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

TEA
Texas Education Agency

Business Management
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	None
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Business Law	13011700 (1 credit)	None	None
Virtual Business	13012000 (.5 credit)	None	None
Business Information Management II/Lab	13011500 (1 credit) 13011510 (2 credits)	Business Information Management I	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Business Management	13012100 (1 credit)	None	None
Global Business	13011800 (.5 credit)	None	None
Human Resources Management	13011900 (.5 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Statistics and Business Decision Making	13016900 (1 credit)	Algebra II	None
Practicum in Business Management	13012200 (2 credits) 13012205 (3 credits) 13012210 (2 credits) 13012215 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE BUSINESS, MARKETING, AND FINANCE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Carpentry
Statewide Program of Study

The Carpentry program of study explores the occupations and educational opportunities related to constructing, installing, or repairing structures and fixtures made of wood, such as concrete forms (including frameworks, partitions, joists, studding, rafters, and stairways). This program of study may also include exploration into installing, dismantling, or moving machinery and heavy equipment according to layout plans, blueprints, or other drawings.

Secondary Courses for High School Credit

Level 1
- Principles of Construction
- Principles of Architecture

Level 2
- Construction Technology I

Level 3
- Construction Technology II
- Mill & Cabinetmaking Technology

Level 4
- Practicum in Construction Technology
- Practicum in Entrepreneurship
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Carpentry/Carpenter
- Industrial Mechanics and Maintenance Technology

Bachelor's Degrees
- Construction Science

Master's, Doctoral, and Professional Degrees
- Construction Management

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Shadow a carpenter or millwright • Participate in SkillsUSA	• Obtain an NCCER certification in Millwright Level 1 or Carpentry Level 1

Industry-Based Certifications

- HBI Pre-Apprenticeship Certificate Training (PACT), Basic Carpentry
- HBI Pre-Apprenticeship Certificate Training (PACT), Core
- HBI Pre-Apprenticeship Certificate Training (PACT), Green Core
- NCCER Carpentry Level I
- NCCER Carpentry Level II
- NCCER Commercial Carpenter
- NCCER Construction Technology Certification Level I
- NCCER Core
- NCCER Painting: Commercial and Residential Level I

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- OSHA 30 Hour Construction*
- OSHA 30 Hour General*

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Carpenters	$35,922	5,031	26%
Cost Estimators	$63,939	2,239	21%

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

Carpentry
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Construction	13004220 (1 credit)	None	None
Principles of Architecture	13004210 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Construction Technology I	13005100 (2 credits)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Construction Technology II	13005200 (2 credits)	Construction Technology I	None
Mill & Cabinetmaking Technology	13005300 (2 credits)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	Construction Technology II, Building Maintenance Technology II, Electrical Technology II, Heating, Ventilation Air Conditioning (HVAC) and Refrigeration Technology II, Plumbing Technology I, or Mill and Cabinetmaking Technology	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE ARCHITECTURE AND CONSTRUCTION CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
Regional Program of Study

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

Level 1
- Principles of Cosmetology Design and Color Theory
- Microbiology and Safety for Cosmetology Careers

Level 2
- Introduction to Cosmetology
- Nail Care, Enhancements, and Spa Services
- Esthetics

Level 3
- Cosmetology I/Lab
- Barbering I

Level 4
- Cosmetology II/Lab
- Barbering II

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

### Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Participate in TIVA or SkillsUSA	• Job shadow a cosmetologist • Work part-time at a salon, spa, or barbershop

Industry-Based Certifications

- Cosmetology Operator License
- Cosmetology Esthetician Specialty License
- Cosmetology Manicurist Specialty License
- Barber Operating License
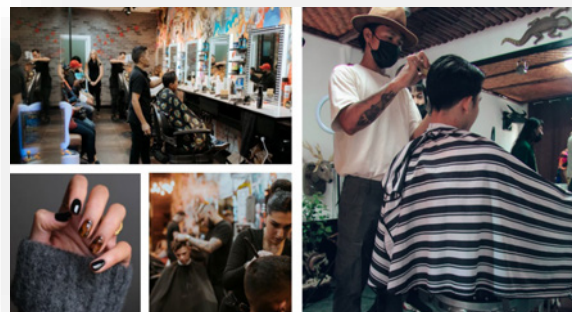
Aligned Occupations

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%

Successful completion of the Cosmetology and Personal Care Services regional program of study will fulfill requirements of the Public Service endorsement. Revised – August 2022

Cosmetology and Personal Care Services
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Cosmetology Design and Color Theory	13025050 (1 credit)	None	None
Microbiology and Safety for Cosmetology Careers	N1302540 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Introduction to Cosmetology	13025100 (1 credit)	None	None
Nail Care, Enhancements, and Spa Services	N1302531 (2 credits)	None	None
Esthetics	N1302533 (2 credits)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Cosmetology I/Lab	13025200 (2 credits) 13025210 (3 credits)	None	None
Barbering I	N1302534 (3 credits)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Cosmetology II/Lab	13025300 (2 credits) 13025310 (3 credits)	Cosmetology I	None
Barbering II	N1302535 (3 credits)	Barbering I	None

FOR ADDITIONAL INFORMATION ON THE HUMAN SERVICES CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Cybersecurity
Statewide Program of Study

The Cybersecurity program of study includes the occupations and educational opportunities related to planning, implementing, upgrading, or monitoring security measure for the protection of computer networks and information. This program of study may also include exploration into responding to computer security breaches and virus and administering network security measures.

Secondary Courses for High School Credit

Level 1
- Principles of Information Technology
- Fundamentals of Computer Science
- Foundations of Cybersecurity

Level 2
- Internetworking Technologies I
- Computer Science I
- AP Computer Science Principles
- Computer Maintenance/Lab

Level 3
- Engineering Applications of Computer Science Principles
- Networking/Lab
- Digital Forensics
- Internetworking Technologies II
- AP Computer Science A-Math
- AP computer Science B-LOTE
- IB Computer Science Standard Level
- Discrete Mathematics for Computer Science

Level 4
- Cybersecurity Capstone
- Practicum in Information Technology
- Practicum in STEM
- Project-Based Research
- Independent Study in Technology Applications
- Independent Study in Evolving/Emerging Technologies
- IB Computer Science Higher Level- Math
- IB Computer Science Higher Level-LOTE

Postsecondary Opportunities

Associates Degrees
- System Networking, and LAN/WAN Management
- Information Technology
- Computer and Information Sciences, General
- Computer Science

Bachelor's Degrees
- Computer Systems Networking and Telecommunications
- Computer Systems Networking and Telecommunications
- Computer and Information Sciences, General
- Computer Science

Master's, Doctoral, and Professional Degrees
- Computer Systems Analysis/Analyst
- Information Technology
- Computer Information Sciences, General
- Computer Science

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Join TSA • Job shadow a computer system analyst or information security analyst	• Obtain a cybersecurity IBC

Industry-Based Certifications

- Cisco 200-201 CBROPS - Understanding Cisco Cybersecurity Operations Fundamentals
- CompTIA A+ Certification
- CompTIA Network+
- CompTIA Security+
- Cybersecurity Fundamentals
- CyberSecurity Fundamentals: An ISACA Certificate
- Oracle Certified Associate Java SE 8 Programmer

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- Associate of (ISC)*
  *IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Information Security Analysts	$91,915	814	29%
Network and Computer System Administrators	$82,597	2,814	19%
Computer System Analysts	$87,568	5,937	29%

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

TEA
Texas Education Agency

Cybersecurity
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principals of Information Technology	1302700 (1 credit)	None	None
Fundamentals of Computer Science	03580140 (1 credit)	None	None
Foundations of Cybersecurity	03580850 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Internetworking Technologies I	N1302803 (1 credit)	None	None
Computer Science I	03580200 (1 credit)	Algebra I	None
AP Computer Science Principles	A3580300 (1 credit)	None	None
Computer Maintenance/Lab	13027300 (1 credit) 13027310 (2 credits)	Principles of Technology	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Applications of Computer Science Principles	N1303772 (1 credit)	None	None
Networking/Lab	13027400 (1 credit) 13027410 (2 credits)	None	None
Digital Forensics	03580360 (1 credit)	None	None
Internetworking Technologies II	N1302804 (1 credit)	Internetworking Technologies I	None
AP Computer Science A-Math	A3580110 (1 credit)	None	None
AP Computer Science B-LOTE	A3580120 (1 credit)	None	None
IB Computer Science Standard Level	I3580200 (2 credits)	None	None
Discrete Mathematics for Computer Science	03580370 (1 credit)	Algebra II	None

Cybersecurity
Course Information

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Cybersecurity Capstone	03580855 (1 credit)	None	None
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	Two high school Information Technology courses	None
Practicum in STEM	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (3 credits)	Algebra I and Geometry	None
Project-Based Research	12701500 (1 credit)	None	None
Independent Study in Technology Applications	03580900 (1 credit)	None	None
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	None
IB Computer Science Higher Level - Math	I3580310 (1 credit)	None	None
IB Computer Science Higher Level-LOTE	I3580320 (1 credit)	None	None

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEEERING, AND MATHEMATICS CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
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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.

Diesel and Heavy Equipment
Statewide Program of Study

The Diesel and Heavy Equipment program of study teaches students to diagnose, repair, modify, or redo mechanical and hydraulic equipment on crane, bulldozer, grader, conveyor, construction equipment, bus, and truck diesel engines.

Secondary Courses for High School Credit

Level 1
- Introduction to Transportation Technology
- Principles of Transportation Systems

Level 2
- Diesel Equipment Technology I
- Occupational Safety and Environmental Technology I

Level 3
- Diesel Equipment Technology II/Lab

Level 4
- Practicum in Transportation Systems
- Practicum in Entrepreneurship
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Diesel Mechanics Technology/ Technician
- Heavy Equipment Maintenance Technology/ Technician

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Participate in SkillsUSA	• Volunteer or work part time for an engine repair shop

Industry-Based Certifications

- ASE Entry Level Automobile Maintenance and Light Repair (MR)
- ASE Entry-Level Automobile Engine Performance (EP)
- ASE Entry-Level Automobile Engine Repair (ER)
- ASE Entry-Level Collision Non-Structural Analysis and Damage Repair (SR)
- ASE Entry-Level Collision Painting and Refinishing (PR)
- ASE Entry-Level Collision Structural Analysis and Damage Repair
- ASE Entry-Level Medium/Heavy Truck, Brakes (TB)
- ASE Entry-Level Medium/Heavy Truck, Diesel Engines (DE)
- ASE Entry-Level Medium/Heavy Truck, Electrical/Electronic Systems (TE)
- ASE Entry-Level Medium/Heavy Truck, Suspension and Steering (TS)
- ASE Refrigerant Recovery and Recycling
- Diesel Technology - Job Ready
- Heavy Equipment Maintenance and Repair - Job Ready

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- ASE Engine Performance*
- ASE Engine Repair*
- ASE Maintenance Light Repair*
- ASE Non-Structural Analysis Damage Repair*
- ASE Painting & Refinishing*
- ASE Structural Analysis Damage Repair*
- ASE Truck Technician Brakes*
- ASE Truck Technician Diesel Engines*
- ASE Truck Technician Drive Trains*
- ASE Truck Technician Electronic Systems*
- ASE Truck Technician HVAC*
- ASE Truck Technician Suspension Steering*
- OSHA 30 Hour General*

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Bus and Truck Mechanics and Diesel Engine Specialists	$44,574	3,150	21%
Mobile Heavy Equipment Mechanics, Except Engines	$47,299	1,627	16%

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

Diesel and Heavy Equipment
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Introduction to Transportation Technology	13039270 (.5 credit)	None	None
Principles of Transportation Systems	13039250 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Diesel Equipment Technology I	13040150 (2 credits)	None	None
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Diesel Equipment Technology II/Lab	13040160 (2 credits) 13040170 (3 credits)	Diesel Equipment Technology I	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Transportation Systems	13040450 (2 credits) 13040455 (3 credits) 13040460 (2 credits) 13040465 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Web Communications
- Digital Communications in the 21st Century

Level 2
- Audio/Video Production I/Lab
- Digital Audio Technology I

Level 3
- Audio/Video Production II/Lab
- Digital Audio Technology II

Level 4
- Practicum of Audio/Video Production
- Practicum in Digital Audio Technology
- Practicum in Entrepreneurship
- Career Preparation I

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

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Shadow a production team • Participate in SkillsUSA or TSA	• 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 Print and Digital Media Publication Using Adobe InDesign
- Adobe Certified Professional in Print and Digital Media Publication Using Adobe InDesign
- Adobe Certified Professional in Visual Design
- Adobe Certified Professional in Visual Design Using Adobe Photoshop
- Adobe Certified Professional in Digital Video Using Adobe Premiere Pro
- Audio-Visual Communications - Job Ready
- Broadcasting and 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 – October 2022

Digital Communications
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Arts, A/V Technology, and Communications	13008200 (1 credit)	None	None
Professional Communication	13009900 (.5 credit)	None	None
Web Communications	03580810 (.5 credit)	None	None
Digital Communications in the 21st Century	03580610 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Audio/Video Production I/Lab	13008500 (1 credit) 13008510 (2 credits)	None	None
Digital Audio Technology I	13009950 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES (CREQ)
Audio/Video Production II/Lab	13008600 (1 credit) 13008610 (2 credits)	Audio/Video Production I	None
Digital Audio Technology II	13009960 (1 credit)	Digital Audio Technology I	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Audio/Video Production	13008700 (2 credits) 13008705 (3 credits) 13008710 (2 credits) 13008715 (3 credits)	Audio/Video Production II/Lab	None
Practicum in Digital Audio Technology	N1300996 (2 credits)	Digital Audio Technology I & Digital Audio Technology II	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE ARTS, AUDIO/VIDEO TECHNOLOGY, AND COMMUNICATIONS CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Distribution and Logistics
Statewide Program of Study

The Distribution and Logistics program of study teaches students how to plan, coordinate, and direct people and operational plans related to distributed goods and services. Students will learn how to manage daily operations and logistics personnel.

Secondary Courses for High School Credit

Level 1
- Principles of Distribution and Logistics

Level 2
- Management of Transportation Systems
- Concepts of Distribution and Logistics Technology
- Occupational Safety and Environmental Technology I
- Raster-Based Geographic Information Systems

Level 3
- Distribution and Logistics
- Logistics Engineering

Level 4
- Practicum in Distribution and Logistics
- Practicum in Entrepreneurship
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Business Administration and Management, General
- Operations Management and Supervision
- General Office Occupations and Clerical Services

Bachelor's Degrees
- Business Administration and Management, General
- Operations Management and Supervision
- Business/Commerce, General

Master's, Doctoral, and Professional Degrees
- Business Administration and Management, General
- Operations Management and Supervision
- Public Administration

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Join SkillsUSA, FBA, FBLA, or the Technology Student Association	• Intern at a distribution or warehousing center

Industry-Based Certifications

- Certified Logistics Technician (CLT)

- -

- OSHA 30 Hour General*
      *IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Logisticians	$72,210	1,550	13%
Supply Chain Managers	$113,110	1,794	26%
Transportation, Storage, and Distribution Managers	$89,045	965	17%
Purchasing Managers	$121,722	497	14%
Purchasing Agents, Except Wholesale, Retail, and Farm Products	$64,293	2,727	9%

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

Distribution and Logistics
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Distribution and Logistics	13039260 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Management of Transportation Systems	13040200 (1 credit)	None	None
Concepts of Distribution and Logistics Technology	N1303800 (1 credit)	None	None
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	None
Raster-Based Geographic Information Systems	N1302806 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Distribution and Logistics	13040300 (1 credit)	None	None
Logistics Engineering	N1303801 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Distribution and Logistics	13040470 (2 credits) 13040475 (3 credits) 13040480 (2 credits) 13040485 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE TRANSPORTATION, DISTRIBUTION, AND LOGISTICS CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Electrical
Statewide Program of Study

The Electrical program of study explores the occupations and educational opportunities associated with installing, maintaining, and repairing electrical wiring, equipment, and fixtures. This program of study may also include exploration into installing and repairing telecommunications cable including fiber optics.

Secondary Courses for High School Credit

Level 1
- Principles of Construction

Level 2
- Electrical Technology I

Level 3
- Electrical Technology II

Level 4
- Practicum in Construction Technology
- Practicum in Entrepreneurship
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Electrician
- Communications Systems Installation and Repair Technology

Bachelor's Degrees
- Construction Science

Master's, Doctoral, and Professional Degrees
- Construction Management

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Shadow an electrician or fiber optics line installer • Participate in SkillsUSA	• Intern or shadow an electrician

Industry-Based Certifications

- C-200 Certified Industry 4.0 Automation Systems Specialist I - 201 Electrical Systems 1
- HBI Pre-Apprenticeship Certificate Training (PACT), Basic Electrical
- HBI Pre-Apprenticeship Certificate Training (PACT), Core
- NCCER Commercial Electrician
- NCCER Construction Technology Certification Level I
- NCCER Core
- NCCER Electrical Level I
- NCCER Electrical Level II
- NCCER Electronic System Technician Level I
- NCCER Electronic System Technician Level II

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- Certified Electronics Systems Associate *
- Electrical Apprenticeship Certificate Level 1*
- ISCET Certified Electronics Technicians *
- OSHA 30 Hour Construction*
- OSHA 30 Hour General*

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Electrical Linemen	$54,184	1,314	28%
Electricians	$44,013	8,460	21%
Electrical and Electronics Installers	$37,544	245	19%
Security and Fire Alarm Installers	$43,638	1,112	22%
Telecommunication Line Installers and Repairers	$49,150	1,228	10%

Successful completion of the Electrical 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

TEA
Texas Education Agency

Electrical
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Construction	13004220 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES (CREQ)
Electrical Technology I	13005600 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Electrical Technology II	13005700 (2 credits)	Electrical Technology I	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	Construction Technology II; Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE ARCHITECTURE AND CONSTRUCTION CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Emergency Services
Statewide Program of Study

The Emergency Services program of study focuses on training CTE learners to respond to emergency situations, such as medical emergencies and fire-based emergencies. Students will learn how to prevent emergencies, respond appropriately and in accordance with rules and regulations during crises, and investigate and delineate the source of the emergency.

Secondary Courses for High School Credit

Level 1
- Principles of Law, Public Safety, Corrections, and Security

Level 2
- Disaster Response

Level 3
- Firefighter I
- Emergency Medical Technician – Basic
- Anatomy and Physiology
- National Security
- Counseling and Mental Health

Level 4
- Firefighter II
- Practicum in Law, Public Safety, Corrections, and Security
- Project-Based Research

Postsecondary Opportunities
Associates Degrees
- Emergency Medical Technology/Technician (EMT Paramedic)
- Fire Prevention and Safety Technology/Technician
- Fire Science/Firefighting

Bachelor's Degrees
- Emergency Medical Technology/Technician (EMT Paramedic)
- Natural Resources Law Enforcement and Protective Services

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Attend local emergency awareness events • Join the Texas Public Service Association	• Volunteer at a hospital or a fire station

Industry-Based Certifications

- Basic Structure Fire Protection
- Emergency Medical Responder
- Emergency Medical Technician - Basic
- IAED Emergency Telecommunicator

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- OSHA Hazardous Waste Operations and Emergency Response*

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Firefighters	$50,149	2,309	13%
Fire Inspectors and Investigators	$54,787	161	14%
Emergency Medical Technicians	$34,091	1,880	31%

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

TEA
Texas Education Agency

Emergency Services
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Law, Public Safety, Corrections, and Security	13029200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Disaster Response	N1303011 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Emergency Medical Technician - Basic	N1303015 (2 credits)	Biology	None
Counseling and Mental Health	13024600 (1 credit)	None	None
Firefighter I	13029900 (2 credits)	None	None
Anatomy and Physiology	13020600 (1 credit)	Biology and a second science credit	None
National Security	13018800 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Firefighter II	13030000 (3 credits)	Firefighter I	None
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits) 13030110 (2 credits) 13030115 (3 credits)	None	None
Project-Based Research	12701500 (1 credit)	None	None

FOR ADDITIONAL INFORMATION ON THE LAW AND PUBLIC SERVICE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Introduction to Engineering Design (PLTW)
- Engineering Essentials (PLTW)

Level 2
- Manufacturing Engineering Technology I

Level 3
- Engineering and Design and Development (PLTW)
- Engineering Design and Presentation I
- Computer Integrated Manufacturing (PLTW)
- Aerospace Engineering (PLTW)
- Digital Electronics
- Civil Engineering and Architecture (PLTW)
- Engineering Science
- Environmental Sustainability (PTLW)

Level 4
- Engineering Design and Problem Solving
- Engineering Design and Presentation II
- Practicum in STEM
- Scientific Research and Design

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	Work-Based Learning Activities
• Participate in Skills USA competitions	• Intern at an engineering firm • Shadow a machinist

Industry-Based Certifications

- Autodesk Associate (Certified User) AutoCAD
- Autodesk Associate (Certified User) Fusion 360
- Autodesk Associate (Certified User) Inventor for Mechanical Design
- Autodesk Associate (Certified User) Revit Architecture
- Autodesk Associate (Certified User) Revit for Electrical
- Autodesk Associate (Certified User) Revit for Structural Design
- Autodesk Certified Professional Fusion 360
- Autodesk Certified Professional in AutoCAD for Design and Drafting
- Autodesk Certified Professional in Civil 3D for Infrastructure Design
- Autodesk Certified Professional in Inventor for Mechanical Design
- Autodesk Certified Professional in Revit for Architectural Design
- Autodesk Certified Professional in Revit for Electrical Design
- Autodesk Certified Professional in Revit for Structural Design
- C-103 Certified Industry 4.0 Associate - Robot System Operations
- Engineering Technology Foundations
- Lean Six Sigma Green Belt Certification
- Pre-Engineering/Engineering Technology - Job Ready

- Certified SOLIDWORKS Associate*
  *IBC sunsetting 8/31/24

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

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 – November 2022

TEA
Texas Education Agency

Engineering
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Applied Engineering	13036200 (1 credit)	None	None
Introduction to Engineering Design (PLTW)	N1303742 (1 credit)	None	None
Engineering Essentials (PLTW)	N1303760 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Manufacturing Engineering Technology I	13032900 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Design and Development (PLTW)	N1303749 (1 credit)	None	None
Engineering Design and Presentation I	13036500 (1 credit)	Algebra I	None
Computer Integrated Manufacturing (PLTW)	N1303748 (1 credit)	None	None
Aerospace Engineering (PLTW)	N1303745 (1 credit)	None	None
Civil Engineering & Architecture (PLTW)	N1303747 (1 credit)	None	None
Environmental Sustainability (PLTW)	N1303746 (1 credit)	None	None
Digital Electronics	13037600 (1 credit)	Algebra I and Geometry	None
Engineering Science	13037500 (1 credit)	Algebra I, Biology, Chemistry and either Integrated Physics (IPC) or Physics, and at least one credit in a course from the STEM career cluster	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Engineering Design & Problem Solving	13037300 (1 credit)	Algebra I and Geometry	None
Engineering Design and Presentation II	13036600 (2 credits)	Algebra I and Geometry	None
Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (2 credits)	Algebra I and Geometry	None
Scientific Research & Design	13037200 (1 credit)	Biology, Chemistry and either Integrated Physics (IPC) or Physics	None

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEERING AND MATH CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

Red Oak ISD does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs or activities and provides equal access to the Boy Scouts and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: Title IX Coordinator Kevin Freels, 972-617-2941, Kevin.Freels@redoakisd.org

Further nondiscrimination information can be found at Notification of Nondiscrimination in Career and Technical

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
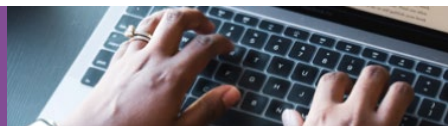
The Entrepreneurship program of study teaches CTE learners how to plan, direct, and coordinate the management and operations of public or private sector organizations. Through this program of study, students will learn the skills necessary to formulate policies, manage daily operations, analyze management 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
- Business Information Management I/Lab

Level 2
- Entrepreneurship

Level 3
- Mobile Application Development
- Entrepreneurship II

Level 4
- Practicum in Business Management
- Practicum in Marketing
- Practicum in Entrepreneurship
- 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	Work-Based Learning Activities
• Participate in Business Professionals of America, Future Leaders of America, or DECA	• Intern with a local management consulting firm

Industry-Based Certifications

- Entrepreneurship and Small Business
- Facebook Digital Marketing Associate Certification

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

TEA
Texas Education Agency

Entrepreneurship
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	None
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Entrepreneurship	13034400 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Mobile Application Development	03580390 (1 credit)	Algebra I	None
Entrepreneurship II	N1303423 (1 credit)	Entrepreneurship	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Business Management	13012200 (2 credits) 13012205 (3 credits) 13012210 (2 credits) 13012215 (3 credits)	None	None
Practicum in Marketing	13034800 (2 credits) 13034805 (3 credits) 13034810 (2 credits) 13034815 (3 credits)	None	None
Practicum in Business Entrepreneurship	N1303425 (2 credits)	None	None
Project-Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE BUSINESS, MARKETING, AND FINANCE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Professional Communications
- Interpersonal Studies
- Dollars and Sense
- Principles of Community Services

Level 2
- Lifetime Nutrition and Wellness
- Human Growth and Development
- Child Development
- Social and Community Services

Level 3
- Counseling and Mental Health
- Family and Community Services

Level 4
- Practicum in Human Services
- Practicum in Entrepreneurship
- Project-Based Research
- Career Preparation I

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	Work-Based Learning Activities
• Participate in American Association of Family and Consumer Sciences or Family, Career and Community Leaders of America	• Volunteer at a community center • Intern for a community non-profit organization

Industry-Based Certifications

- Community Health Workers
- Child Development Associate (CDA)

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

TEA
Texas Education Agency

Family and Community Services
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Human Services	13024200 (1 credit)	None	None
Professional Communications	13009900 (.5 credit)	None	None
Interpersonal Studies	13024400 (.5 credit)	None	None
Dollars and Sense	13024300 (.5 credit)	None	None
Principles of Community Services	N1302542 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Lifetime Nutrition and Wellness	13024500 (.5 credit)	None	None
Human Growth and Development	13014300 (1 credit)	None	None
Child Development	13024700 (1 credit)	None	None
Social and Community Services	N1302543 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Counseling and Mental Health	13024600 (1 credit)	None	None
Family and Community Services	13024900 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Human Services	13025000 (2 credits) 13025005 (3 credits) 13025010 (2 credits) 13025015 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Project-Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE HUMAN SERVICES CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Video Game Design
- Digital Media

Level 2
- Graphic Design and Illustration I/Lab
- Animation I/Lab
- Video Game Programming
- Commercial Photography I/Lab
- Fashion Design I/Lab
- Digital Design and Media Productions
- Game Programming and Design

Level 3
- Graphic Design and Illustration II/Lab
- Animation II/Lab
- Advanced Video Game Programming
- Commercial Photography II/Lab
- Fashion Design II/Lab
- Digital Arts and Animation
- 3-D Modeling and Animation
- Web Game Development

Level 4
- Practicum in Graphic Design and Illustration
- Practicum in Animation
- Practicum in Commercial Photography
- Practicum in Entrepreneurship
- Career Preparation I

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
• Join a website development or coding club • Participate in SkillsUSA or TSA	• 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 Print and Digital Media Publication Using Adobe InDesign
- Adobe Certified Professional in Visual Design
- Adobe Certified Professional in Visual Design Using Adobe Photoshop
- Adobe Certified Professional In Visual Effects and Motion Graphics Using Adobe After Effects
- Audio-Visual Communications - Job Ready
- Autodesk Associate (Certified User) 3ds MAX
- Certified Professional Photographer
- Certified Professional Programmer
- Graphic Production Technology - Job Ready
- C++ Certified Associate Programmer
- Oracle Certified Associate Java SE 9 Programmer
- Certified Entry-Level Python Programmer (PCEP)

- - - - - - - - - - -

- Adobe Certified Professional Animate*

  *   *IBC Sunsetting 8/31/24

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 requirements of the Business and Industry endorsement. Revised – October 2022

TEA
Texas Education Agency

Graphic Design & Multimedia Arts
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Arts, A/V Technology, & Communications	13008200 (1 credit)	None	None
Video Game Design	13009970 (1 credit)	None	None
Digital Media	13027800 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Graphic Design and Illustration I /Lab	13008800 (1 credit) 13008810 (2 credits)	None	None
Animation I/Lab	13008300 (1 credit) 13008310 (2 credits)	None	None
Video Game Programming	N1300994 (1 credit)	None	None
Commercial Photography I/Lab	13009100 (1 credit) 13009110 (2 credits)	None	None
Fashion Design I/Lab	13009300 (1 credit) 13009310 (2 credits)	None	None
Digital Design and Media Production	03580400 (1 credit)	None	None
Game Programing and Design	03580380 (1 credit)	Algebra I	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Graphic Design and Illustration II/Lab	13008900 (1 credit) 13008910 (2 credits)	Graphic Design and Illustration l/Lab	None
Animation II/Lab	13008400 (1 credit) 13008410 (2 credits)	Animation I	None
Advanced Video Game Programming	N1300995 (1 credit)	None	None
Fashion Design II/Lab	13009400 (1 credit) 13009410 (2 credits)	Fashion Design I/Lab	None
Digital Arts and Animation	03580500 (1 credit)	None	None
3-D Modeling and Animation	03580510 (1 credit)	None	None
Commercial Photography II/Lab	13009200 (1 credit) 13009210 (2 credits)	None	None
Web Game Development	03580830 (1 credit)	None	None

Graphic Design & Multimedia Arts
Course Information

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ)	COREQUISITES (CREQ)
Practicum in Graphic Design and Illustration	13009000 (2 credits) 13009005 (3 credits) 13009010 (2 credits) 13009015 (3 credits)	Graphic Design and Illustration II/Lab	None
Practicum in Animation	13008450 (2 credits) 13008455 (3 credits) 13008460 (2 credits) 13008465 (3 credits)	Animation II/Lab	None
Practicum in Commercial Photography	13009250 (2 credits) 13009255 (3 credits) 13009260 (2 credits) 13009265 (3 credits)	Commercial Photography I/Lab	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE ARTS, AUDIO/VIDEO TECHNOLOGY, AND COMMUNICATIONS CAREER CLUSTER, PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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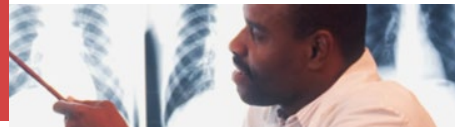
The Healthcare Diagnostics program of study introduces students to occupations and education opportunities related to performing complex medical laboratory tests for the diagnosis, treatment, and prevention of disease. This program of study may also include exploration into the opportunities associated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

Secondary Courses for High School Credit

Level 1
- Principles of Health Science
- Principles of Diagnostic Healthcare
- Introduction to Imaging Technology

Level 2
- Medical Terminology
- Imaging Technology I

Level 3
- Health Science Theory/Health Science Clinical
- Medical Microbiology
- Imaging Technology II

Level 4
- Anatomy and Physiology
- Pathophysiology
- 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	Work-Based Learning Activities
• Participate in Health Occupation Students of America	• Perform clinical rotations at a community wellness center, hospital, assisted living, nursing home

Industry-Based Certifications
- Certified Cardiographic Technician
- Certified Clinical Medical Assistant
- Emergency Medical Technician - Basic
- Certified EKG Technician
- ECG Technician
- Limited Medical Radiologic Technologist
- Medical Assistant
- Medical Laboratory Assistant
- Medical Laboratory Technician
- Nationally Registered Certified EKG Technician
- Phlebotomy Technician

- Registered Diagnostic Medical Sonographer - Abdomen*
- Registered Diagnostic Medical Sonographer - Obstetrics and Gynecology*
- Registered Technologist - Cardiac-Interventional Radiography*
- Registered Technologist - Computed Tomography*
- Registered Technologist - Magnetic Resonance Imaging*
- Registered Technologist - Mammography*
- Registered Technologist - Nuclear Medicine Technology*
- Registered Technologist - Radiography*
- Registered Technologist - Sonography*
- Registered Technologist - Vascular Sonography*
- Registered Technologist - Vascular-Interventional Radiography*
- Registered Vascular Technology*

*IBC sunsetting 8/31/24

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%

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

TEA
Texas Education Agency

Healthcare Diagnostics
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Health Science	13020200 (1 credit)	None	None
Principles of Diagnostic Healthcare	N1302106 (1 credit)	None	None
Introduction to Imaging Technology	N1302102 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Medical Terminology	13020300 (1 credit)	None	None
Imaging Technology I	N1302123 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Health Science Theory/Health Science Clinical	13020400 (1 credit) 13020410 (2 credits)	Biology	None
Medical Microbiology	13020700 (1 credit)	Biology and Chemistry	None
Imaging Technology II	N1302131 (1 credit)	Imaging Technology I	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Anatomy and Physiology	13020600 (1 credit)	Biology and a second science credit	None
Pathophysiology	13020800 (1 credit)	Biology and Chemistry	None
Practicum in Health Science	13020500 (2 credits) 13020505 (3 credits) 13020510 (2 credits) 13020515 (3 credits)	Health Science Theory and Biology	None

FOR ADDITIONAL INFORMATION ON THE HEALTH SCIENCE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Principles of Therapeutic Healthcare
- Introduction to Pharmacy Science
- Introduction to Dental Science

Level 2
- Medical Terminology
- Dental Anatomy and Physiology
- Pharmacy I

Level 3
- Anatomy and Physiology
- Health Science Theory/Health Science Clinical
- Medical Microbiology
- Pharmacy II
- Medical Assistant
- Dental Equipment and Procedures

Level 4
- Pathophysiology
- Pharmacology
- Practicum in Health Science

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

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Participate in SkillsUSA or Health Occupation Students of America	• Volunteer at a community wellness center, hospital, assisted living, or nursing home

Industry-Based Certifications

- Certified Clinical Medical Assistant
- Certified Dental Assistant
- Certified EKG Technician
- Emergency Medical Technician - Basic
- Certified Nurse Aide (CNA)
- Certified Occupational Therapy Assistant
- Certified Patient Care Technician (CPCT)
- ECG Technician
- Medical Assistant
- Medical Laboratory Assistant
- Nationally Registered Certified EKG Technician
- Patient Care Technician
- Pharmacy Technician
- Phlebotomy Technician
- Registered Dental Assistant X-Ray Certification

- Certified Ophthalmic Technician*
- Certified Surgical Technologist*
- Licensed Dental Hygienist*
- Orthopedic Technologist*

*IBC sunsetting 8/31/24

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

Healthcare Therapeutic
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Health Science	13020200 (1 credit)	None	None
Principles of Therapeutic Healthcare	N1302110 (1 credit)	None	None
Introduction to Pharmacy Science	N1302103 (1 credit)	None	None
Introduction to Dental Science	N1302101 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Medical Terminology	13020300 (1 credit)	None	None
Dental Anatomy and Physiology	N1302122 (1 credit)	None	None
Pharmacy I	N1302127 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Anatomy and Physiology	13020600 (1 credit)	One credit in Biology, one credit in Chemistry, Integrated Physics and Chemistry, or Physics.	None
Health Science Theory/ Health Science Clinical	13020400 (1 credit) 13020410 (2 credits)	Biology	None
Medical Microbiology	13020700 (1 credit)	Biology and Chemistry	None
Pharmacy II	13021030 (2 credits)	Biology and Chemistry and Pharmacy I	None
Medical Assistant	13021015 (1 credit)	Anatomy and Physiology	Anatomy and Physiology
Dental Equipment and Procedures	N1302130 (1 credit)	None	None

See next page for Level 4 courses

Healthcare Therapeutic
Course Information

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Pathophysiology	13020800 (1 credit)	Biology and Chemistry	None
Pharmacology	13020950 (1 credit)	Biology and Chemistry	None
Practicum in Health Science	13020500 (2 credits) 13020505 (3 credits) 13020510 (2 credits) 13020515 (3 credits)	Health Science Theory and Biology	None

FOR ADDITIONAL INFORMATION ON THE HEALTH SCIENCE CAREER CLUSTER,
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https://tea.texas.gov/cte

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
Statewide Program of Study

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

Level 1
- Lifetime Nutrition and Wellness
- Principles of Exercise Science and Wellness

Level 2
- Kinesiology I

Level 3
- Anatomy and Physiology
- Kinesiology II

Level 4
- Practicum in Entrepreneurship
- Project Based Research
- Career Preparation I

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	Work-Based Learning Activities
• Participate in Health Occupations Students of America	• Volunteer at a hospital or rehabilitation center • Manage a school sports team

Industry-Based Certifications

- Certified Personal Trainer
- Pre-Professional Certification in Nutrition, Food, and Wellness

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%

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

TEA
Texas Education Agency

Exercise Science and Wellness
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Lifetime Nutrition and Wellness	13024500 (.5 credit)	None	None
Principles of Exercise Science and Wellness	N1302107 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Kinesiology I	N1302104 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Anatomy and Physiology	13020600 (1 credit)	Biology and a second science credit	None
Kinesiology II	N1302124 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Project Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE HEALTH SCIENCE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Information Technology Support and Services
Statewide Program of Study

The Information Technology Support and Services program of study explores the occupations and educational opportunities associated with administering, testing, and implementing computer databases and applying knowledge of database management systems. This program of study may also include analyzing user requirements and problems to automate or improve existing systems and review computer system capabilities. This program of study may also include exploration into the research, design, or testing of computer or computer-related equipment for commercial, industrial, military, or scientific use.

Secondary Courses for High School Credit

Level 1
- Principles of Information Technology
- Geographic Information Systems

Level 2
- Computer Maintenance/Lab
- Raster Based GIS

Level 3
- Computer Technician Practicum
- Spatial Technology and Remote Sensing
- IT Troubleshooting

Level 4
- Computer Technician Practicum (2nd Time)
- Practicum of Information Technology
- Practicum in Entrepreneurship
- Intendent Study in Technology Applications
- Independent Study in Evolving/Emerging Technologies
- Project-Based Research
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Computer and Information Sciences, General
- Computer and Information Systems Security/ Information Assurance
- Information Technology
- Computer Systems Networking and Telecommunications

Bachelor's Degrees
- Computer and Information Sciences, General
- Computer and Information Systems Security /Information Assurance
- Computer Engineering, General
- Computer Systems Networking and Telecommunications

Master's, Doctoral, and Professional Degrees
- Computer and Information Sciences, General
- Computer Systems Analysis/ Analyst
- Computer Engineering, General
- Information Technology

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Join TSA • Job shadow a database administrator or computer hardware engineer	• Earn an IT certification

Industry-Based Certifications

- Business Information Processing
- Cloud Essentials+
- CompTIA A+ Certification
- CompTIA IT Fundamentals+
- Computer Repair Technology - Job Ready
- Google IT Support Professional Certificate

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Database Administrator	$83,075	1,063	19%
Computer Hardware Engineer	$111,738	343	24%
Computer System Analyst and Support	$87,568	5,937	29%

Successful completion of the Information Technology Support and Services program of study will fulfill requirements of the Business and Industry endorsement or STEM endorsement if the math and science requirements are met.
Revised – October 2022

Information Technology Support and Services
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Information Technology	13027200 (1 credit)	None	None
Geographic Information Systems	N1302805 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Computer Maintenance/Lab	13027300 (1 credit) 13027310 (2 credits)	Principles of Information Technology	None
Raster Based GIS	N1302806 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Computer Technician Practicum	13027500 (2 credits) 13027505 (3 credits)	None	None
Spatial Technology and Remote Sensing	N1302807 (1 credit)	None	None
IT Troubleshooting	N1302815 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Computer Technician Practicum (2nd Time)	13027510 (2 credits) 13027515 (3 credits)	Computer Technician Practicum	None
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	A minimum of two high school Information Technology (IT) courses	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Independent Study in Technology Applications	03580900 (1 credit)	None	None
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	None
Project-Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE INFORMATION TECHNOLOGY CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

Information Technology Support and Services

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.

Legal Studies
Statewide Program of Study

The Legal Studies program of study introduces CTE learners to the occupations and educational opportunities related to representing clients in criminal and civil litigation and other legal proceedings, as well as assisting lawyers and preparing legal documents. This program of study explores possible specializations in a single area of law.

Secondary Courses for High School Credit

Level 1
- Principles of Law, Public Safety, Corrections, and Security

Level 2
- Court Systems and Practices
- Business Law
- Political Science I

Level 3
- Legal and Research Writing
- Political Science II
- Advanced Legal Skills and Professions

Level 4
- Practicum in Law, Public Safety, Corrections, and Security
- Project-Based Research
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Legal Assistant/Paralegal

Bachelor's Degrees
- Legal Assistant/Paralegal

Master's, Doctoral, and Professional Degrees
- Law
- Intellectual Property Law
- Advanced Legal Research/Studies General
- International Law and Legal Studies

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Attend court hearings and other legal procedures • Join the Texas Public Service Association	• Intern with a local attorney • Script and conduct a mock trial

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Lawyers	$126,131	2,801	19%
Paralegal and Legal Assistants	$50,544	2,837	19%

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

Legal Studies
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Law, Public Safety, Corrections, and Security	13029200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Court Systems and Practices	13029600 (1 credit)	None	None
Business Law	13011700 (1 credit)	None	None
Political Science I	13018300 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Legal Research and Writing	N1303014 (1 credit)	None	None
Political Science II	13018400 (1 credit)	None	None
Advanced Legal Skills and Professions	N1303016 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits) 13030110 (2 credits) 13030115 (3 credits)	None	None
Project-Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE LAW AND PUBLIC SERVICE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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.

Masonry
Statewide Program of Study
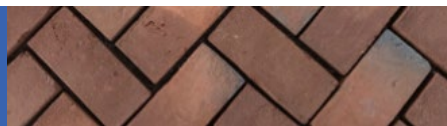
The Masonry program of study explores the occupations and educational opportunities related to laying and binding materials, such as brick, structural tile, concrete block, and other types of mortar and substances to construct or repair walls and other structures. This program of study may also include exploration into raising and uniting iron or steel to form completed structures or structural frameworks and building structures using stone.

Secondary Courses for High School Credit

Level 1
- Principles of Construction

Level 2
- Masonry Technology I

Level 3
- Masonry Technology II

Level 4
- Practicum in Masonry Technology
- Practicum in Construction Technology
- Practicum in Entrepreneurship
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Mason/ Masonry

Bachelor's Degrees
- Construction Science

Master's, Doctoral, and Professional Degrees
- Construction Management

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Job shadow a brickmason, stonemason, or ironworker • SkillsUSA	• Intern with a person working within masonry

Industry-Based Certifications

- HBI Pre-Apprenticeship Certificate Training (PACT), Brick Masonry
- HBI Pre-Apprenticeship Certificate Training (PACT), Core
- NCCER Core
- NCCER Masonry, Level I
- NCCER Masonry, Level II
- NCCER Construction Technology Certification Level I

- -

- OSHA 30 Hour Construction*
- OSHA 30 Hour General*

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Brickmasons and Blockmasons	$44,013	605	47%
Cement Masons and Concrete Finishers	$32,739	2,883	12%
Cost Estimators	$63,939	2,239	21%

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

TEA
Texas Education Agency

Masonry
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Construction	13004220 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Masonry Technology I	13006300 (2 credits)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Masonry Technology II	13006400 (2 credits)	Masonry Technology I	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Masonry Technology	13006450 (2 credits) 13006455 (3 credits) 13006460 (2 credits) 13006465 (3 credits)	Masonry Technology II	None
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	Construction Technology II; Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE ARCHITECTURE AND CONSTRUCTION CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
Statewide Program of Study

The Networking Systems program of study explores the occupations and educational opportunities associated with designing and implementing computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. This program of study may also include exploration into analyzing science, engineering, and other data processing problems to implement and improve computer systems.

Secondary Courses for High School Credit

Level 1
- Computer Science I
- Principles of Information Technology

Level 2
- Internetworking Technologies I
- Computer Maintenance/Lab
- AP Computer Science Principles

Level 3
- Internetworking Technologies II
- Advanced Cloud Computing
- Networking/Lab

Level 4
- Practicum in Information Technology
- Practicum in Entrepreneurship
- Independent Study in Technology Applications
- Independent Study in Evolving/Emerging Technologies
- Project Based Research
- Career Preparation I

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	Work-Based Learning Activities
• Join TSA • Job shadow a computer network architect or support specialist	• Earn an IT certification

Industry-Based Certifications

- Cisco 100-490 RSTECH Supporting Cisco Routing and Switching Network Devices
- Cisco CCNA (200-301) Implementing and Administering Cisco Solutions
- CompTIA A+ Certification
- CompTIA Network+
- CompTIA Server+
- Computer Networking Fundamentals - Job Ready
- Google Cloud Certified Professional - Cloud Architect

- - - - - - - - - - - -

- Associate of (ISC)*

  *IBC sunsetting 8/31/24

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%

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

TEA Texas Education Agency

Networking Systems
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Computer Science I	03580200 (1 credit)	Algebra I	None
Principles of Information Technology	13027200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Internetworking Technologies I	N1302803 (1 credit)	None	None
Computer Maintenance/Lab	13027300 (1 credit) 13027310 (2 credits)	Principles of Information Technology	None
AP Computer Science Principles	A3580300 (1 credit)	Algebra I	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Internetworking Technologies II	N1302804 (1 credit)	Internetworking Technologies I	None
Advanced Cloud Computing	N1302813 (1 credit)	None	None
Networking/Lab	13027400 (1 credit) 13027410 (2 credits)	None	Networking w/ Lab

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	Minimum of two high school Information Technology (IT) courses	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Independent Study in Technology Applications	03580900 (1 credit)	None	None
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	None
Project Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE INFORMATION TECHNOLOGY CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
- Federal Law Enforcement and Protective Services
- Criminal Investigation

Level 3
- Law Enforcement II
- Correctional Services
- Forensic Psychology

Level 4
- Counseling and Mental Health
- Forensic Science
- Practicum in Law, Public Safety Corrections, and Security

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	Work-Based Learning Activities
• Join the Texas Public Service Association or local criminal justice clubs	• Attend court hearings and other legal procedures

Industry-Based Certifications

- Non-Commissioned Security Officer Level II
- IAED Emergency Telecommunicator

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

Law Enforcement
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Law, Public Safety, Corrections, and Security	13029200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Law Enforcement I	13029300 (1 credit)	None	None
Federal Law Enforcement and Protective Services	13029800 (1 credit)	None	None
Criminal Investigation	13029550 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Law Enforcement II	13029400 (1 credit)	None	None
Correctional Services	13029700 (1 credit)	None	None
Forensic Psychology	N1303012 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Counseling and Mental Health	13024600 (1 credit)	None	None
Forensic Science	13029500 (1 credit)	Biology and Chemistry	None
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits) 13030110 (2 credits) 13030115 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE LAW AND PUBLIC SERVICE CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
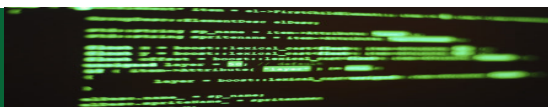
The Programming and Software Development program of study explores the occupations and education opportunities associated with researching, designing, developing, and testing operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, 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
- Fundamentals of Computer Science

Level 2
- AP Computer Science Principles
- Computer Science I
- Game Programming and Design

Level 3
- Introduction to C# Programming Applications
- AP Computer Science A, MATH
- AP Computer Science A, LOTE
- Mobile Application Development
- Computer Science II
- IB Computer Science Standard Level
- Discrete Mathematics for Computer Science
- Advanced Cloud Computing

Level 4
- Computer Science III
- IB Computer Science Higher Level, LOTE
- IB Computer Science Higher Level, MATH
- Practicum in Information Technology
- Practicum in Audio/Video Production
- Practicum in Science, Technology, Engineering, and Mathematics
- Practicum in Entrepreneurship
- Career Preparation I
- Independent Study in Technology Applications
- Independent Study in Evolving/Emerging Technologies

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

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Join TSA • Participate in coding club at school	• Obtain an industry-based certification

Industry-Based Certifications

- C++ Certified Associate Programmer
- Certified Entry-Level Python Programmer (PCEP)
- Certified Professional Programmer
- CompTIA Linux+
- Oracle Certified Associate Java SE 8 Programmer
- Oracle Database SQL Certified Associate

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

Programming and Software Development
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Fundamentals of Computer Science	03580140 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
AP Computer Science Principles	A3580300 (1 credit)	None	None
Computer Science I	03580200 (1 credit)	Algebra I	None
Game Programming and Design	03580380 (1 credit)	Algebra I	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Introduction to C# Programming Applications	N1302812 (1 credit)	None	None
AP Computer Science A, MATH, LOTE	A3580110 (1 credit) A3580120 (1 credit)	None	None
Mobile Application Development	03580390 (1 credit)	Algebra I	None
Computer Science II	03580300 (1 credit)	Algebra I, Computer Science I, or Fundamentals of Computer Science	None
IB Computer Science Standard Level	I3580200 (2 credits)	None	None
Discrete Mathematics for Computer Science	03580370 (1 credit)	Algebra I	None
Advanced Cloud Computing	N1302813 (1 credit)	None	None

Level 4

Course Name	Service ID	PREREQUISITES	COREQUISITES
Computer Science III	03580350 (1 credit)	Computer Science II, AP Computer Science A	None
IB Computer Science Higher Level, MATH, LOTE	I3580320 (1 credit) I3580310 (1 credit)	None	None
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	Two high school Information Technology courses	None

See next page for additional Level 4 courses

Programming and Software Development
Course Information

Level 4 Continued

Course Name	Service ID	PREREQUISITES	COREQUISITES
Practicum in Audio/Video Production	13008700 (2 credits) 13008705 (3 credits) 13008710 (2 credits) 13008715 (3 credits)	Audio/Video Production II Lab	None
Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (3 credits)	Algebra I and Geometry	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None
Independent Study in Technology Applications	03580900 (1 credit)	None	None
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	None

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEEERING, AND MATHEMATICS CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

Red Oak ISD does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs or activities and provides equal access to the Boy Scouts and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: Title IX Coordinator Kevin Freels, 972-617-2941, Kevin.Freels@redoakisd.org

Further nondiscrimination information can be found at Notification of Nondiscrimination in Career and Technical Education Programs.

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 Education and Training
- Principles of Human Service

Level 2
- Human Growth and Development
- Child Development
- Communication and Technology in Education

Level 3
- Instructional Practices
- Teaching Strategies for Special Populations (TBD)

Level 4
- Practicum in Education and Training
- Project Based Research
- Career Preparation I

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	Work-Based Learning Activities
• Participate in the Texas Association of Future Educators or Family, Career, and Community Leaders of America	• Teach a community education class • Intern as a teaching assistant or tutor • Serve as a camp counselor

Industry-Based Certifications

- Educational Aide I

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

TEA
Texas Education Agency

Teaching and Training Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Education and Training	13014200 (1 credit)	None	None
Principles of Human Services	13024200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Human Growth and Development	13014300 (1 credit)	None	None
Child Development	13024700 (1 credit)	None	None
Communication and Technology in Education	N1300510 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Instructional Practices	13014400 (2 credits)	1 credit from Education and Training Career Cluster	None
Teaching Strategies for Special Populations (TBD)	TBD	TBD	TBD

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Education and Training	13014500 (2 credits) 13014505 (3 credits) 13014510 (2 credits) 13014515 (3 credits)	Instructional Practices	None
Project Based Research	12701500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

Teaching and Training

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.

Web Development
Statewide Program of Study

The Web Development program of study explores the occupations and educational opportunities associated with designing, creating, and modifying websites. This program of study may also explore integrating websites with other computer applications, and converting written, graphic, audio, and video components to compatible web formats by using software designed to facilitate the creation of web and multimedia content.

Secondary Courses for High School Credit

Level 1
- Principles of Information Technology

Level 2
- Web Communications
- Computer Science I
- Foundations of User Experience (UX)

Level 3
- Web Design
- Web Game Development
- Advanced User Experience Design

Level 4
- Practicum in Information Technology
- Practicum in Entrepreneurship
- Project Based Research
- Independent Study in Technology Applications
- Independent Study in Evolving/Emerging Technologies
- Career Preparation I

Postsecondary Opportunities

Associates Degrees
- Computer Programming/Programmer, General
- Computer Science
- Web Page, Digital/Multimedia and Information Resources Design
- Computer Systems Networking and Telecommunications

Bachelor's Degrees
- Web/Multimedia Management and Webmaster
- Computer Science
- Web Page, Digital/Multimedia and Information Resources Design
- Computer Systems Networking and Telecommunications

Master's, Doctoral, and Professional Degrees
- Computational Science
- Computer Science
- Information Science/Studies
- Computer Systems Networking and Telecommunications

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Join TSA • Participate in a coding or computer programming club • Create a web page	• Earn an Oracle or web certification

Industry-Based Certifications

- Certified Web and Mobile App Developer Apprentice
- Certified Web Animator Associate
- Oracle Certified Associate Java SE 8 Programmer
- Web Design- Job Ready

- Google Analytics Individual Qualification*
- WD Certified Web Design*

*IBC sunsetting 8/31/24

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Web Developers	$67,912	1,079	39%
Web Administrators, Computer Occupations	$85,197	1,616	20%
Software Developers	$104,499	6,311	30%

Successful completion of the Web 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 – October 2022

TEA
Texas Education Agency

Web Development
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Principles of Information Technology	13027200 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Web Communications	03580810 (.5 credit)	None	None
Computer Science I	03580200 (1 credit)	Algebra I	None
Foundations of User Experience (UX)	N1302809 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Web Design	03580820 (1 credit)	None	None
Web Game Development	03580830 (1 credit)	None	None
Advanced User Experience Design	N1302814 (1 credit)	None	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	A minimum of two high school Information Technology (IT) courses	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Project Based Research	12701500 (1 credit)	None	None
Independent Study in Technology Applications	03580900 (1 credit)	None	None
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE INFORMATION TECHNOLOGY CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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
Statewide Program of Study

The Welding program of study focuses on the development and use of automatic and computer-controlled machines, tools, and robots that perform work on metal or plastic. CTE learners will learn how to modify parts to make or repair machine tools or maintain individual machines, and how to use hand-welding or flame-cutting equipment.

Secondary Courses for High School Credit

Level 1
- Introduction to Welding

Level 2
- Welding I
- Introduction to Film Interpretation of Weldments

Level 3
- Welding II/Lab

Level 4
- Practicum in Manufacturing
- Practicum in Entrepreneurship
- Career Preparation I

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	Work-Based Learning Activities
• Participate and compete in SkillsUSA • Job shadow a machinist	• Work in a local business or industry apprenticeship • Join the American Welding Society

Industry-Based Certifications

- API 1104 Welding Pipelines and Related Facilities
- AWS Certified Welder
- AWS D1.1 Structural Steel
- AWS D9.1 Sheet Metal Welding
- AWS SENSE Level 1: Entry Welder
- Industrial Technology Maintenance (ITM) - Maintenance Welding
- NCCER Construction Technology Certification Level I
- NCCER Core
- NCCER Welding Level I
- Welding - Job Ready

- OSHA 30 Hour General*
  *IBC sunsetting 8/31/24

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%

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

TEA
Texas Education Agency

Welding
Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Introduction to Welding	13032250 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Welding I	13032300 (2 credits)	None	None
Introduction to Film Interpretation of Weldments	N1303687 (1 credit)	None	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Welding II/Lab	13032400 (2 credits) 13032410 (3 credits)	Welding I	None

Level 4

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Practicum in Manufacturing	13033000 (2 credits) 13033005 (3 credits) 13033010 (2 credits) 13033015 (3 credits)	None	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None

FOR ADDITIONAL INFORMATION ON THE MANUFACTURING CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

RED OAK INDEPENDENT SCHOOL DISTRICT
PUBLIC NOTIFICATION OF NONDISCRIMINATION IN CAREER AND TECHNICAL EDUCATON PROGRAMS

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Red Oak ISD will take steps to assure the lack of English language skills will not be a barrier to admission and participation in all Career Technical educational programs. For information about your rights or grievance procedures, contact the Title IX Coordinator, Kevin Freels, and/or the Section 504 Coordinator, Magda Davis, at Red Oak Independent School District, 109 W. Red Oak Road, PO Box 9000, Red Oak, TX 75154, PH: (972) 617-2941, FAX: (972) 617-4333.

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