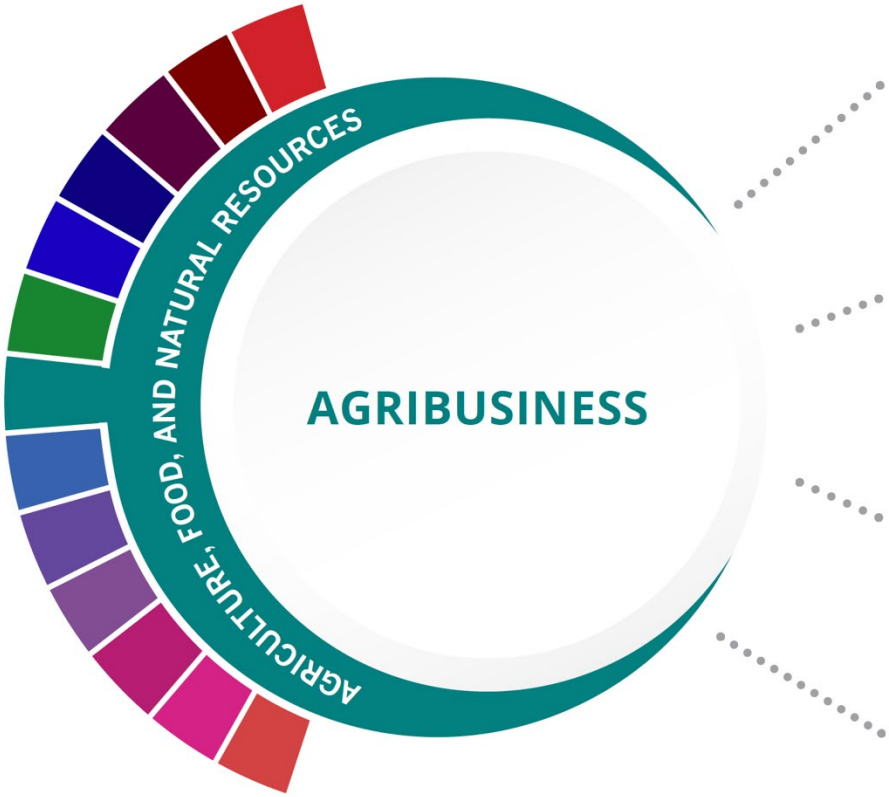

Level 1	Principles of Agriculture, Food, and Natural Resources
Level 2	Professional Standards in Agribusiness Professional Communications
Level 3	Agribusiness Management and Marketing/Lab
Level 4	Agricultural Leadership, Research, and Communications Practicum in Agriculture, Food, and Natural Resources Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
	Certified Professional Public Buyer	Agricultural Business and Management, General	Agricultural Business and Management, General	Agricultural Business and Management, General
		Banking and Financial Support Services	Finance, General	Finance, General
		Advertising	Financial Mathematics	Financial Mathematics
		Marketing/ Marketing Management, General	Marketing/ Marketing Management, General	Marketing/ Marketing Management, General

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

Occupations	Median Wage	Annual Openings	% Growth
Farmers, Ranchers, and Other Agricultural Managers	$59,134	405	9%
Farm and Ranch Loan Officers	$45,594	268	25%
Buyers and Purchasing Agents, Farm Products	$46,488	102	20%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Tour a farm machinery products company Texas FFA	Internship with a farm machinery products company; Work on a farm or ranch FFA Supervised Agriculture Experience (SAE)

The Agribusiness program of study explores the occupations and educational opportunities associated with the business of farming and agriculturally related business that supplies farm inputs, such as machinery and seeds. This program of study may also include exploration into the marketing of farm products, the purchase of farm products either for further processing or resale and grading or classifying unprocessed food or other agricultural products.

The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Agribusiness program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-12
Professional Standards in Agribusiness	13000800 (.5 credit)	None	10-12
Professional Communications	13009900 (.5 credit)	None	9-12
Agribusiness Management and Marketing/Lab	13000900 (1 credit) 13000910 (2 credits)	None	10-12
Agricultural Leadership, Research, and Communications	N1300266 (1 credit)	PREQ: One credit from courses in the Agriculture, Food, and Natural Resources Career Cluster	10-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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

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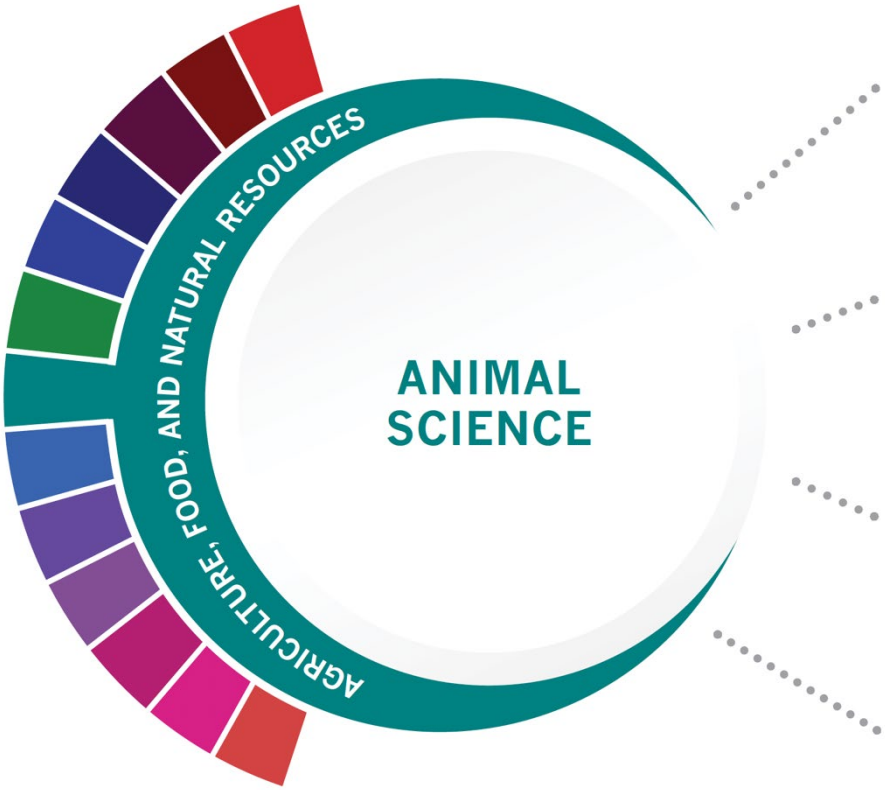

Level 1	Principles of Agriculture, Food, and Natural Resources
Level 2	Small Animal Management Equine Science
Level 3	Livestock Production/Lab
Level 4	Advanced Animal Science Veterinary Medical Applications/Lab Practicum in Agriculture, Food, and Natural Resources Project-Based Research Scientific Research and Design

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Licensed Veterinary Technician	Pet Groomer	Food Science and Technology	Animal Sciences	Genetics
Feedyard Technician in Cattle Care and Handling	Veterinary Technician	Veterinary Studies	Agriculture	Veterinary Medicine
Certified Veterinary Assistant	Licensed Breeder	Biotechnology Laboratory Technician	Biology	Biological and Physical Sciences
		Biology Technician	Zoology/ Animal Biology	Biological and Biomedical Sciences

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

Occupations	Median Wage	Annual Openings	% Growth
Animal Breeders	$39,135	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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Texas FFA	Agri-Science Fair 4H Volunteer at a local farm or veterinary office FFA Supervised Agriculture Experience (SAE)

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.

The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the 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 - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-12
Small Animal Management	13000400 (0.5 credit)	None	10-12
Equine Science	13000500 (0.5 credit)	None	10-12
Livestock Production/Lab	13000300 (1 credit) 13000310 (2 credits)	None	10-12
Advanced Animal Science	13000700 (1 credit)	PREQ: Biology and Chemistry or Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and either Small Animal Management, Equine Science, or Livestock Production;	11-12
Veterinary Medical Applications/Lab	13000600 (1 credit) 13000610 (2 credits)	PREQ: Equine Science, Small Animal Management, or Livestock Production	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER, PLEASE CONTACT: Les Hudson | Les.Hudson@tea.texas.gov
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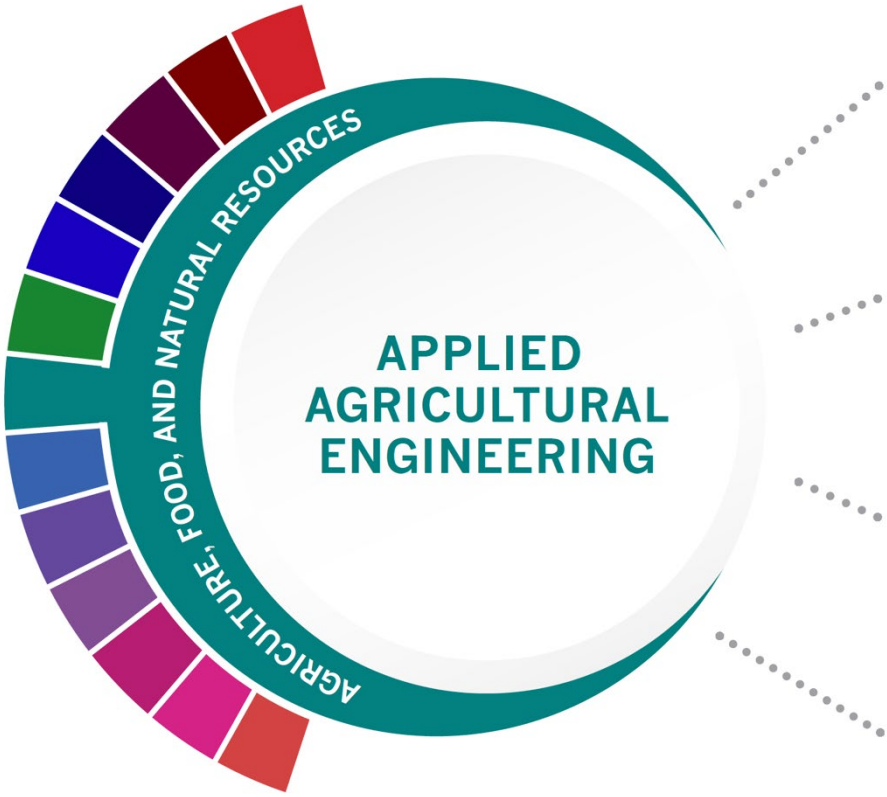

Level 1	Principles of Agriculture, Food, and Natural Resources
Level 2	Agricultural Mechanics and Metal Technologies/Lab
Level 3	Agricultural Structures Design and Fabrications/Lab Agricultural Power Systems/Lab Geographic Information Systems for Agriculture
Level 4	Agricultural Equipment Design and Fabrication/Lab Practicum in Agriculture, Food, and Natural Resources Project-Based Research Scientific Research and Design

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
OSHA 30 Hour General Industry	Certified Professional Agronomist	Heavy Equipment Maintenance Technology/ Technician	Agricultural Engineering	Agricultural Engineering
Feedyard Technician in Machinery, Operation, Repair and Maintenance	Certified Reliability Engineer	Agricultural Mechanization, General	Agricultural Mechanization, General	Agricultural Mechanization, General
AWS SENSE Welding Level 1	Certified Irrigation Designer	Small Engine Mechanics and Repair Technology/ Technician		
AWS D1.1 or D9.1 Certification	Fluid Power Mobile Hydraulic Mechanic	Welding Technology/ Welder		

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

Occupations	Median Wage	Annual Openings	% Growth
Outdoor Power Equipment and Other Small Engine Mechanics	$32,406	366	16%
Welders	$41,350	6,171	9%
Farm Equipment Mechanics and Service Technicians	$39,915	304	17%
Mobile Heavy Equipment Mechanics	$47,299	1,627	16%
Agricultural Engineers	$64,792	9	13%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Tour a farm products or machinery plant Texas FFA	Earn a welding certification Intern at a farm products or machinery plant FFA Supervised Agriculture Experience (SAE)

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

The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the 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 - July 2020

Texas Education Agency

08/2021

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-12
Agricultural Mechanics and Metal Technologies/Lab	13002200 (1 credit) 13002210 (2 credits)	None	10-12
Agricultural Structures Design and Fabrications/Lab	13002300 (1 credit) 13002310 (2 credits)	None	11-12
Agricultural Power Systems/Lab	13002400 (2 credits) 13002410 (3 credits)	None	10-12
Geographic Information Systems for Agriculture	N1300272 (1 credit)	None	10-12
Agricultural Equipment Design and Fabrication/Lab	13002350 (1 credit) 13002360 (2 credits)	None	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12

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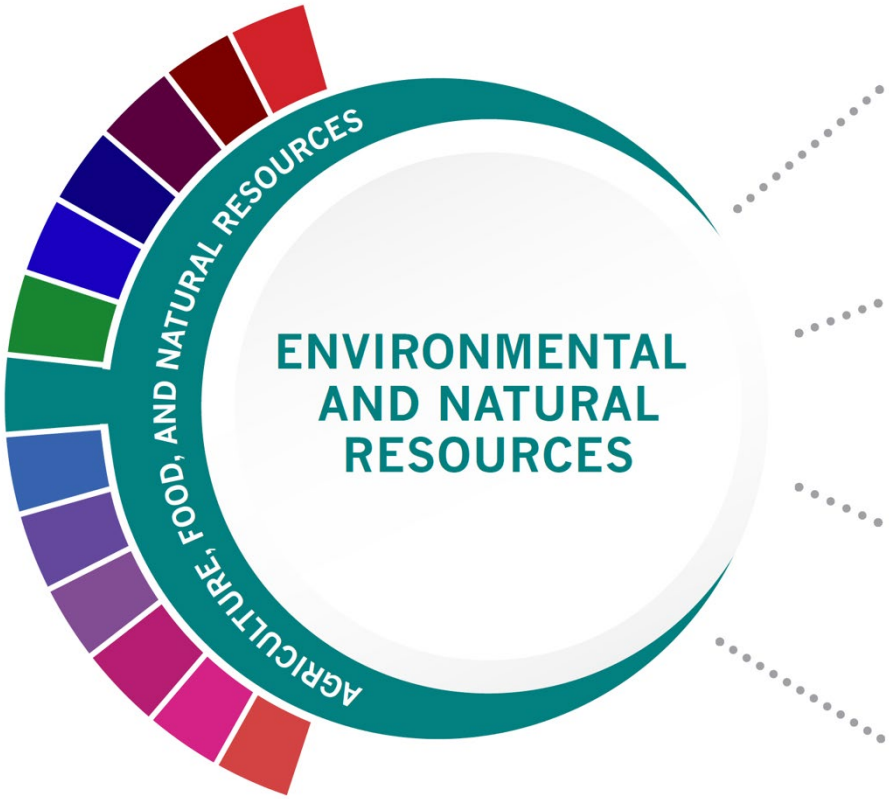

Level 1	Principles of Agriculture, Food, and Natural Resources
Level 2	Wildlife, Fisheries, and Ecology Management/Lab Forestry and Woodland Ecosystems/Lab
Level 3	Range Ecology Management/Lab Energy and Natural Resources Technology/Lab
Level 4	Advanced Energy and Natural Resource/Lab Practicum in Agriculture, Food, and Natural Resources Project-Based Research Scientific Research and Design

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

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

Occupations	Median Wage	Annual Openings	% Growth
Environmental Engineering Technicians	$53,352	101	32%
Environmental Engineers	$86,757	288	25%
Environmental Science and Protection Technicians, Including Health	$40,268	508	17%
Environmental Scientists and Specialists, Including Health	$77,896	644	24%
Zoologists and Wildlife Biologists	$67,309	45	32%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Attend summer leadership events Texas FFA	Intern at a waste treatment plant FFA Supervised Agriculture Experience (SAE)

The Environmental and Natural Resources program of study explores the occupations and educational opportunities associated with the research, design, and planning of engineering or technical duties in the prevention and control of environmental hazards. This program of study may also include exploration into conducting research for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population.

The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Environmental and Natural Resources program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-12
Wildlife, Fisheries, and Ecology Management/Lab	13001500 (1 credit) 13001510 (2 credits)	None	9-12
Forestry and Woodland Ecosystems/Lab	13001700 (1 credit) 13001710 (2 credits)	None	10-12
Range Ecology Management/Lab	13001600 (1 credit) 13001610 (2 credits)	None	10-12
Energy and Natural Resources Technology/Lab	13001100 (1 credit) 13001110 (2 credits)	None	10-12
Advanced Energy and Natural Resources/Lab	13001200 (1 credit) 13001210 (2 credits)	None	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER, PLEASE CONTACT:

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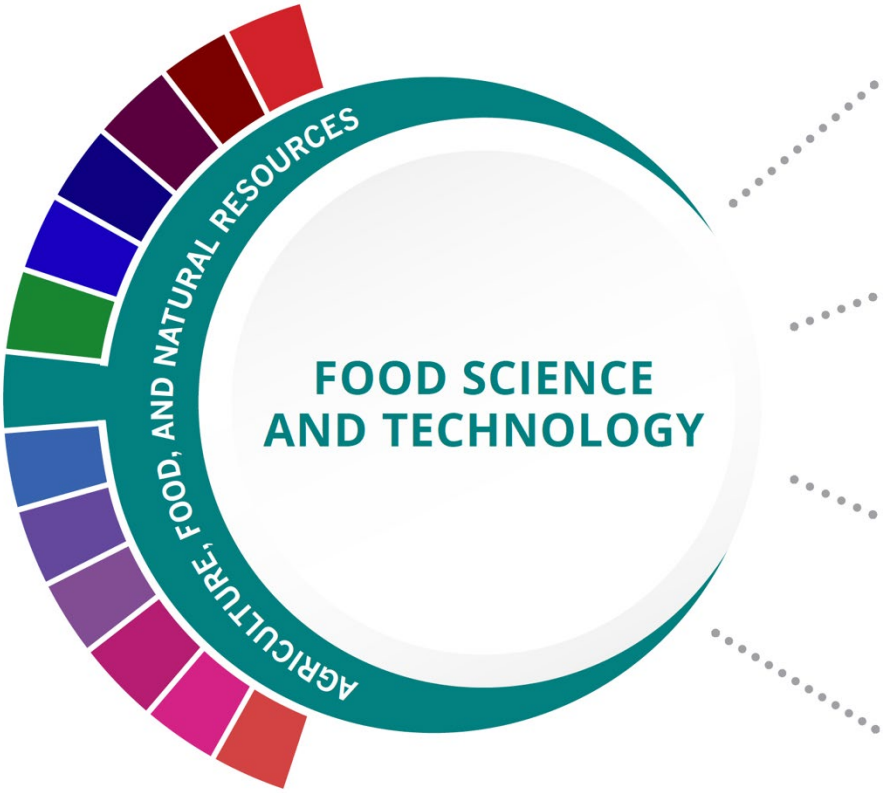

Level 1	Principles of Agriculture, Food, and Natural Resources
Level 2	Food Technology and Safety/Lab
Level 3	Food Processing/Lab
Level 4	Practicum in Agriculture, Food, and Natural Resources Project Based Research Scientific Research and Design

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
	Certified Professional Agronomist	Food Science	Agricultural and Food Products Processing	Quality Control Technology/ Technician
	Certified Crop Advisor		Food Science and Nutrition	
	Certified Weighing Salespersons		Food Science and Technology	

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

Occupations	Median Wage	Annual Openings	% Growth
Agricultural and Food Science Technicians	$34,382	236	11%
Supervisors of Production and Operating	$62,171	5,094	9%
Inspectors, Testers, Sorters, Samplers, and Weighers	$37,689	6,653	9%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Tour a food products processing facility Texas FFA	Intern at a food products processing facility FFA Supervised Agriculture Experience (SAE)

The Food Science and Technology program of study explores the occupations and educational opportunities associated with working with agricultural and food scientists in food, fiber, and animal research, production, and processing. This program of study may also include assisting with animal breeding, nutrition, and conducting tests and experiments to improve yield and quality of crops or to increase the resistance of plants and animals to disease or insects.

The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Food Science and Technology program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-12
Food Technology and Safety/Lab	13001300 (1 credit) 13001310 (2 credits)	None	10-12
Food Processing/Lab	13001400 (1 credit) 13001410 (2 credits)	None	10-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER, PLEASE CONTACT:

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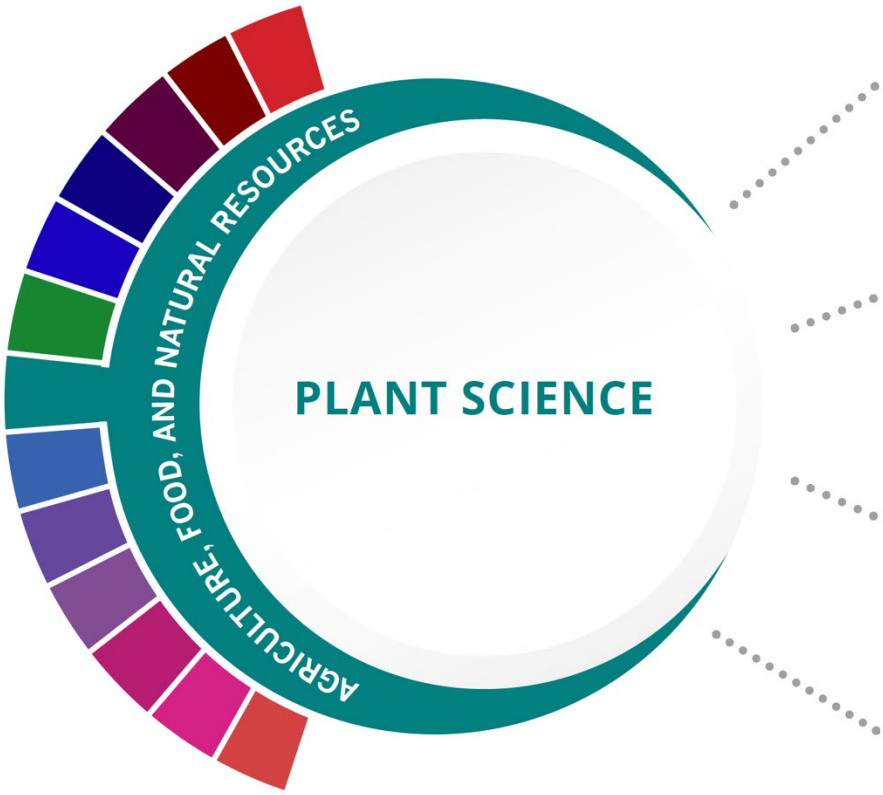

Level 1	Principles of Agriculture, Food, and Natural Resources
Level 2	Landscape Design and Management Turf Grass Management Greenhouse Operation and Production/Lab
Level 3	Floral Design/Lab Horticultural Science/Lab Viticulture
Level 4	Practicum in Agriculture, Food, and Natural Resources Advanced Plant and Soil Science Advanced Floral Design Project-Based Research Scientific Research and Design

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Landscape Irrigation Technician License	Pesticide Applicator	Applied Horticulture/ Horticulture Operations, General	Applied Horticulture/ Horticulture Operations, General	Applied Horticulture/ Horticulture Operations, General
Commercial/ Noncommercial Pesticide Applicator	Certified Floral Designer	Ornamental Horticulture	Agronomy and Crop Science	Agronomy and Crop Science
Texas State Floral Association Level One Floral Certification	Accredited Member of AIFD	Agricultural Business and Management, General	Agricultural Business and Management, General	Agricultural Business and Management, General
Texas State Floral Association Level Two Floral Certification	Landscape Industry Certified Technician	Turf and Turfgrass Management	Turf and Turfgrass Management	Farm/Farm and Ranch Management

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Texas FFA	Work part-time at a florist; start or work for a local landscaping business FFA Supervised Agriculture Experience (SAE)

The Plant Science program of study focuses on the science, research, and business of plants and other living organisms. It teaches students how to apply biology and life science to real-world life processes of plants and vegetation, either in laboratories or in the field.

The Agriculture, Food, and Natural Resources (AFNR) Career Cluster focuses on the essential elements of life—food, water, land, and air. This career cluster includes a diverse spectrum of occupations, ranging from farmer, rancher, and veterinarian to geologist, land conservationist, and florist. It also includes non-traditional agricultural occupations like wind energy, solar energy, and oil and gas production.

Successful completion of the Plant Science program of study will fulfill requirements of a Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-12
Floral Design/Lab	13001800 (1 credit) 13001810 (2 credits)	None	9-12
Landscape Design and Management	13001900 (.5 credit)	None	10-12
Turf Grass Management	13001950 (.5 credit)	None	10-12
Horticultural Science/Lab	13002000 (1 credit) 13002010 (2 credits)	None	10-12
Advanced Floral Design	N1300270 (1 credit)	PREQ: Floral Design	11-12
Greenhouse Operation and Production/Lab	13002050 (1 credit) 13002060 (2 credits)	None	10-12
Viticulture	N1300265 (1 credit)	None	10-12
Advanced Plant and Soil Science	13002100 (1 credit)	None	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits) 13002505 (3 credits) 13002510 (2 credits) 13002515 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics	11-12

FOR ADDITIONAL INFORMATION ON THE AGRICULTURE, FOOD, AND NATURAL RESOURCE CAREER CLUSTER, PLEASE CONTACT:

Les Hudson | Les.Hudson@tea.texas.gov
https://tea.texas.gov/cte

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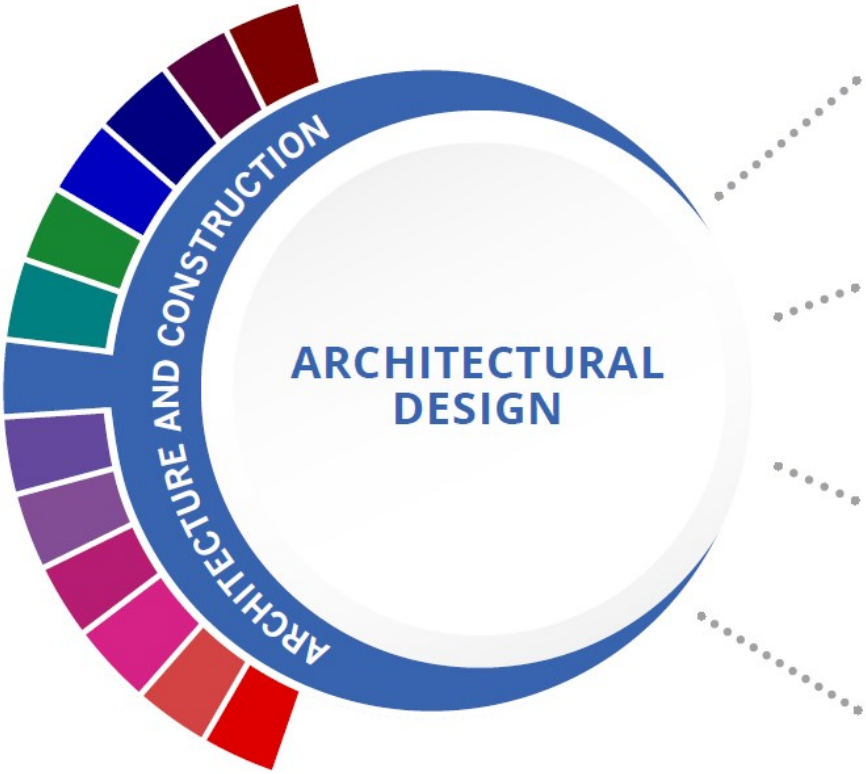

Level 1	Principles of Architecture
Level 2	Architectural Design I Interior Design I Computer Aided Drafting for Architecture
Level 3	Architectural Design II Interior Design II Civil Engineering and Architecture (PLTW)
Level 4	Practicum in Architectural Design Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Autodesk Certified Professional or User in AutoCAD	Certified Photogrammetric Technologist	Architecture	Architecture	Architecture
Autodesk Certified Professional or User in AutoCAD Civil 3D	Certified Development, Design & Construction Professional	Interior Design	Interior Design	Interior Architecture
Autodesk Certified Professional or User in Autodesk Revit Architecture	National Council Certified Interior Designer	Civil Engineering, General	Civil Engineering, General	Civil Engineering, General
Autodesk Certified Professional or User in Autodesk Revit MEP Electrical	LEED AP Building Design & Construction	Geographic Information Science and Cartography	Geographic Information Science and Cartography	Geographic Information Science and Cartography

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Shadow an architect, interior designer, or civil engineer. SkillsUSA	Intern at an architecture firm.

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.

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.

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 - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Architecture	13004210 (1 credit)	None	9-12
Architectural Design I	13004600 (1 credit)	PREQ: Algebra I and English I	10-12
Interior Design I	13004300 (1 credit)	PREQ: Algebra I and English I	10-12
Computer Aided Drafting for Architecture	N1300429 (1 credit)	None	10-12
Architectural Design II	13004700 (2 credits)	PREQ: Architectural Design l or Advanced Interior Design and Geometry	11-12
Interior Design II	13004400 (2 credits)	PREQ: English ll, Geometry, and Interior Design l	11-12
Civil Engineering and Architecture (PLTW)	N1303747 (1 credit)	None	9-12
Practicum in Architectural Design	13004800 (2 credits) 13004805 (3 credits) 13004810 (2 credits) 13004815 (3 credits)	PREQ: Architectural Design II	12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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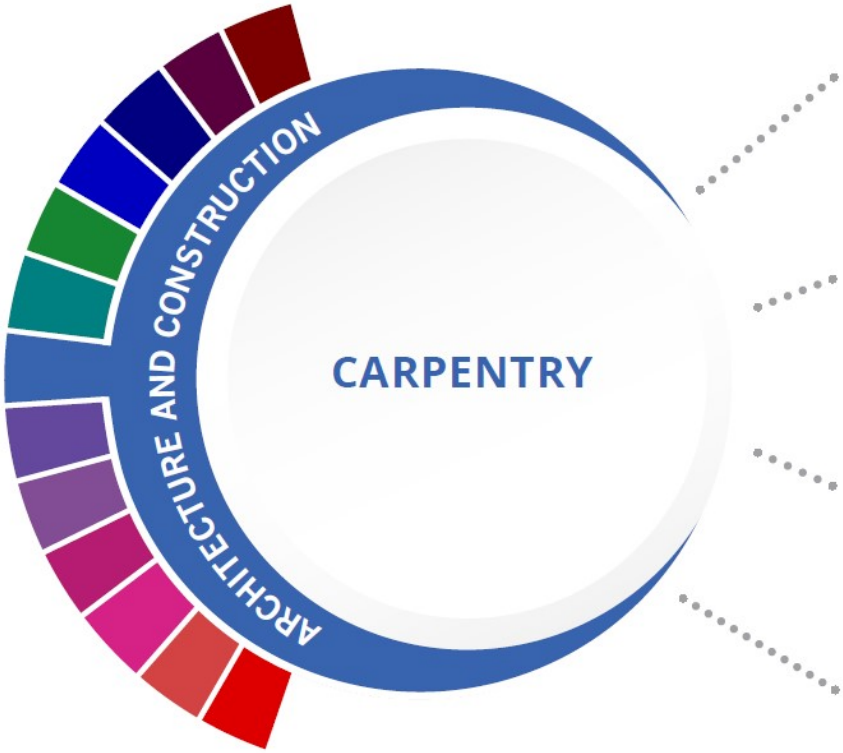

Level 1	Principles of Construction Principles of Architecture
Level 2	Construction Technology I
Level 3	Construction Technology II Mill & Cabinetmaking Technology
Level 4	Practicum in Construction Technology Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
NCCER Carpentry, Level 1 & 2	Certified Lead Carpenter	Carpentry/ Carpenter	Construction Science	Construction Management
NCCER Commercial Carpenter	Certified Installer	Industrial Mechanics and Maintenance Technology		
NCCER Core Curriculum	Certified Door Consultant			
NCCER Construction Technology	Fluid Power Connector and Conductor			

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

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

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.

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.

Successful completion of the Carpentry program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Construction	13004220 (1 credit)	None	9-12
Principles of Architecture	13004210 (1 credit)	None	9-12
Construction Technology I	13005100 (2 credits)	None	10-12
Construction Technology II	13005200 (2 credits)	PREQ: Construction Technology I	11-12
Mill & Cabinetmaking Technology	13005300 (2 credits)	None	10-12
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	PREQ: Construction Technology II, Building Maintenance Technology II, Electrical Technology II, Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II, Plumbing Technology I, or Mill and Cabinetmaking Technology	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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Level 1	Principles of Construction
Level 2	Building Maintenance Technology I Construction Management I
Level 3	Building Maintenance Technology II Construction Management II
Level 4	Practicum in Construction Management Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE / LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
NCCER Construction Technology	Code Enforcement Officer, Texas Department of Health Code Enforcement	Construction Engineering Technology/ Technician	Construction Engineering Technology/ Technician	Materials Engineering
NCCER Core Curriculum	Certified Cost Estimator/ Analyst	Business Administration and Management, General	Business Administration and Management, General	Business Administration and Management, General
OSHA 30 Hour Construction	Certified Professional Estimator	Mechanical Engineering	Mechanical Engineering	Mechanical Engineering
NCCER Construction Site Safety Technician	Structural Masonry Special Inspector	Business/ Commerce, General	Business/ Commerce, General	Manufacturing Engineering

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

Occupations	Median Wage	Annual Openings	% Growth
Construction and Building Inspectors	$53,914	983	17%
Cost Estimators	$63,939	2,239	21%
Construction Managers	$87,402	2,401	14%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Shadow a building inspector or cost estimator SkillsUSA	Intern with a construction company shadowing project managers or inspectors

The Building Codes and Inspection program of study explores the occupations and educational opportunities associated with cost estimates for construction projects or services to aid management in bidding on or determining the price of products or services. This program of study may also include exploration into inspecting structures using engineering skills to determine structural soundness and compliance with specifications, building codes, and other regulations.

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.

Successful completion of the Construction Management and Inspection program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Construction	13004220 (1 credit)	None	9-12
Building Maintenance Technology I	13005400 (2 credits)	None	10-12
Construction Management I	13004900 (2 credits)	None	10-12
Building Maintenance Technology II	13005500 (2 credits)	PREQ: Building Maintenance Technology I	11-12
Construction Management II	13005000 (2 credits)	PREQ: Construction Management I	11-12
Practicum in Construction Management	13006200 (2 credits) 13006205 (3 credits) 13006210 (2 credits) 13006215 (3 credits)	PREQ: Construction Management II	12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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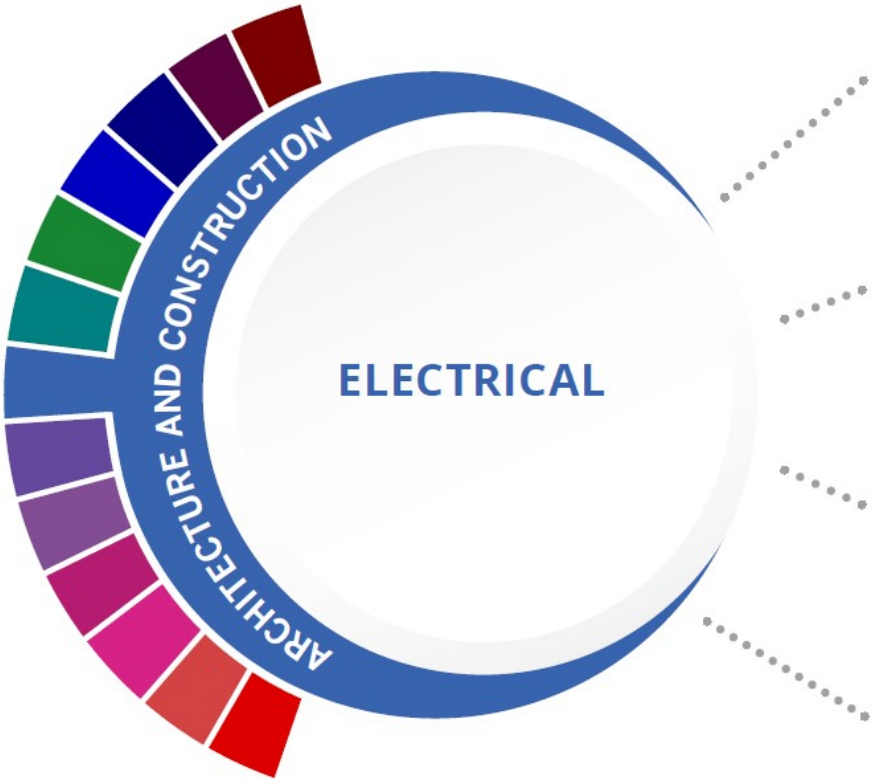

Level 1	Principles of Construction
Level 2	Electrical Technology I
Level 3	Electrical Technology II
Level 4	Practicum in Construction Technology Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE 'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
NCCER Electrical, Level 1 & 2	Electrical Plans Examiner	Electrician	Construction Science	Construction Management
NCCER Electronic Systems Technician, Level 1 & 2	Certified Electrical Inspector - Master	Communications Systems Installation and Repair Technology		
Electrical Apprenticeship Certificate, Level 1	Fiber Optics Technician - Outside Plant			
NCCER Commercial Electrician	Certification in Fire Alarm Systems - Level 1			

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Shadow an electrician or fiber optics line installer SkillsUSA	Intern or shadow an electrician

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.

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.

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 - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Construction	13004220 (1 credit)	None	9-12
Electrical Technology I	13005600 (1 credit)	None	10-12
Electrical Technology II	13005700 (2 credit)	PREQ: Electrical Technology I	11-12
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	PREQ: Construction Technology ll; Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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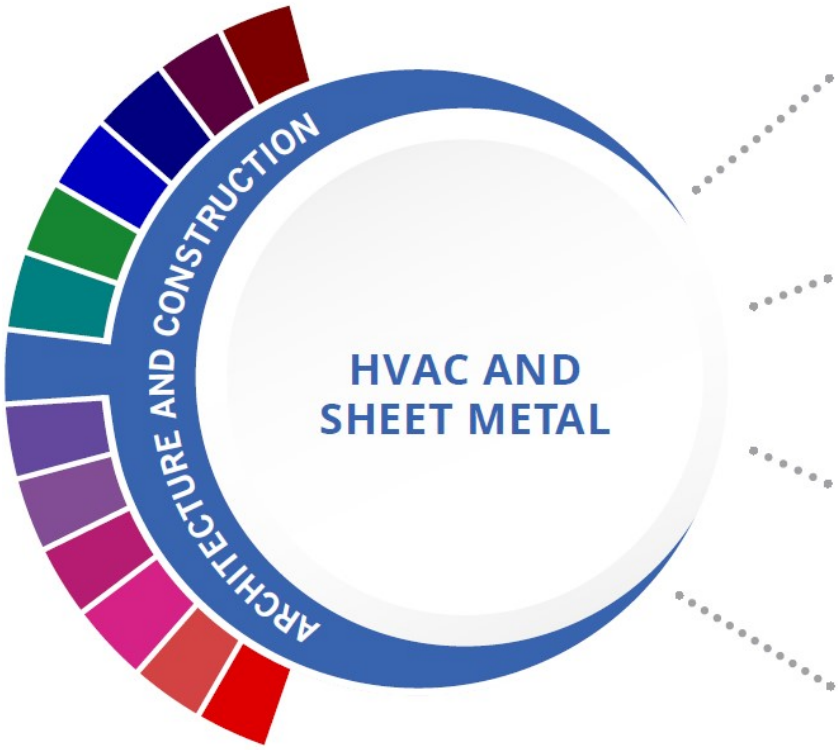

Level 1	Principles of Construction
Level 2	Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology I
Level 3	Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II Sheet Metal
Level 4	Practicum in Construction Technology Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE / LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Refrigerant Handling (EPA 608)	Residential HVAC Design for Quality Installation	Business Administration and Management, General	Business Administration and Management, General	Business Administration and Management, General
OSHA 30 Hour Construction	Certified Cost Technician	Mechanical Engineering	Mechanical Engineering	Mechanical Engineering
NCCER HVAC, Level 1	Precision Sheet Metal Operator Certification	Heating, Ventilation, Air Conditioning and Refrigeration Engineering Technology/ Technician	Construction Engineering Technology/ Technician	Construction Engineering
NCCER Sheet Metal, Level 1	Certified Ventilation System Inspector	Business/ Commerce, General	Business/ Commerce, General	Business/ Commerce, General

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Shadow an HVAC worker or cost estimator SkillsUSA	Intern with a company that works with HVAC and/or sheet metal

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

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.

Successful completion of the HVAC and Sheet Metal program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Construction	13004220 (1 credit)	None	9-12
Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology I	13005800 (1 credit)	None	10-12
Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II	13005900 (2 credits)	PREQ: Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology I	11-12
Sheet Metal	N1300430 (1 credit)	None	11-12
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	PREQ: Construction Technology ll; Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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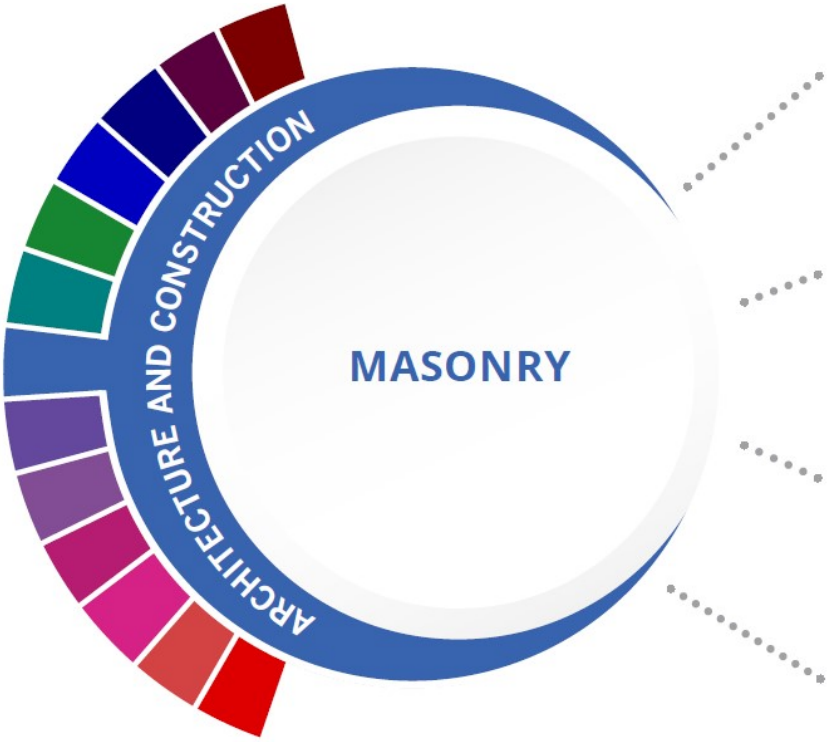

Level 1	Principles of Construction
Level 2	Masonry Technology I
Level 3	Masonry Technology II
Level 4	Practicum in Masonry Technology Practicum in Construction Technology Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
NCCER Masonry, Level 1 & 2	Structural Masonry Special Inspector	Mason/ Masonry	Construction Science	Construction Management
NCCER Core Curriculum	Structural Steel and Bolting Special Inspector			
NCCER Construction Technology, Level 1	Masonry Contractor			
NCCER Weatherization, Level 1	Masonry Field Testing Technician			

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

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%

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.

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.

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.

Successful completion of the Masonry program of study will fulfill requirements of the Business and Industry Endorsement.
Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Construction	13004220 (1 credit)	None	9-12
Masonry Technology I	13006300 (2 credits)	None	10-12
Masonry Technology II	13006400 (2 credits)	PREQ: Masonry Technology I	11-12
Practicum in Masonry Technology	13006450 (2 credits) 13006455 (3 credits) 13006460 (2 credits) 13006465 (3 credits)	PREQ: Masonry Technology II	12
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	PREQ: Construction Technology ll; Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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

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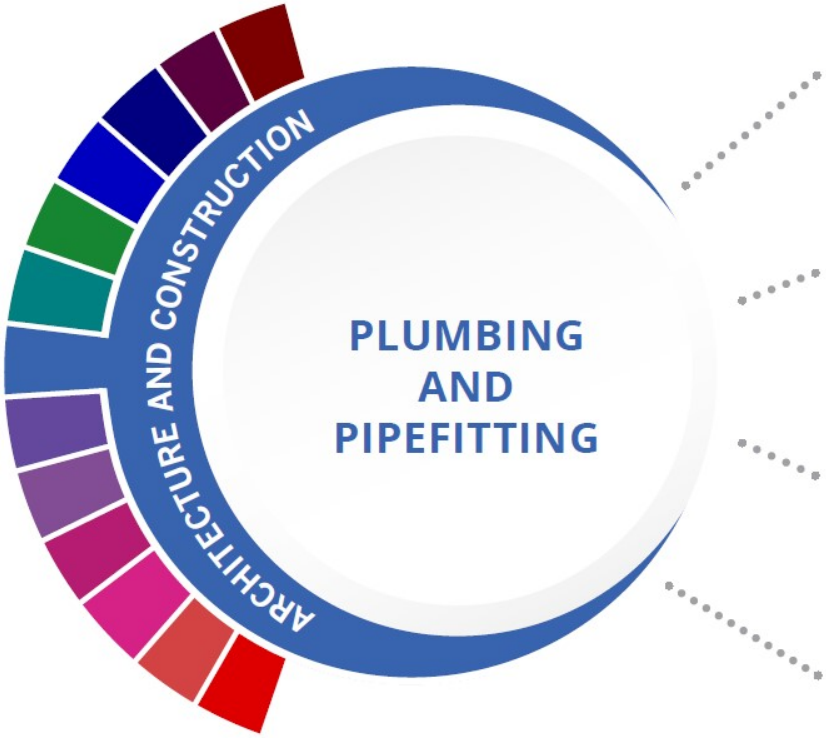

Level 1	Principles of Construction Introduction to Welding
Level 2	Plumbing Technology I Pipefitting Technology I/Lab
Level 3	Plumbing Technology II Pipefitting Technology II/Lab
Level 4	Practicum in Construction Technology Practicum in Entrepreneurship Career Preparation

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
NCCER Pipefitting, Level 1	Commercial Plumbing Inspector	Plumbing Technology/ Plumber	Construction Science	Construction Management
NCCER Plumbing, Level 1 & 2	Journey Level Pipefitter-Steamfitter	Electrical and Power Transmission Installation/ Installer, General	Operations Management and Supervision	Operations Management and Supervision
NCCER Construction Technology	Plumbing Plans Inspector	Pipefitting/ Pipefitter and Sprinkler Fitter		
Tradesman Plumber – Limited License	Certified Service Manager	High Performance and Custom Engine Technician/ Mechanic		

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

Occupations	Median Wage	Annual Openings	% Growth
Mechanics, Installers, and Repairers	$63,710	4,243	17%
Plumbers, Pipefitters and Steamfitters	$44,928	5,765	23%
Helpers-Pipelayers, Plumbers, Pipefitters, and Steamfitters	$30,098	1,567	18%
Pipe Installers	$31,616	802	21%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Job shadow a plumber, pipefitter, or steamfitter SkillsUSA	Obtain a Core Curriculum NCCER certification in Pipefitting Level 1 or Plumbing Level 1

The Plumbing and Pipefitting program of study explores the occupations and educational opportunities related to assembling, installing, or repairing pipes, fittings, or fixtures of heating, water, or drainage systems. This program of study may also include exploration into maintaining pipe supports or related hydraulic or pneumatic equipment for steam, hot water, heating, cooling, lubricating, sprinkling, or industrial production or processing systems.

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.

Successful completion of the Plumbing and Pipefitting program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Construction	13004220 (1 credit)	None	9-12
Introduction to Welding	13032250 (1 credit)	None	9-12
Plumbing Technology I	13006000 (1 credit)	None	10-12
Pipefitting Technology I/Lab	N1300425 (1 credit) N1300427 (1 credit)	PREQ: Algebra I and Geometry	11-12
Plumbing Technology II	13006100 (2 credits)	PREQ: Plumbing Technology I	11-12
Pipefitting Technology II/Lab	N1300426 (1 credit) N1300428 (1 credit)	PREQ: Plumbing Technology I	11-12
Practicum in Construction Technology	13005250 (2 credits) 13005255 (3 credits) 13005260 (2 credits) 13005265 (3 credits)	PREQ: Construction Technology ll; Building Maintenance Technology II; Electrical Technology II; Heating, Ventilation, and Air Conditioning (HVAC) and Refrigeration Technology II; Plumbing Technology I; or Mill and Cabinetmaking Technology	12
Practicum in Entrepreneurship	N1303425	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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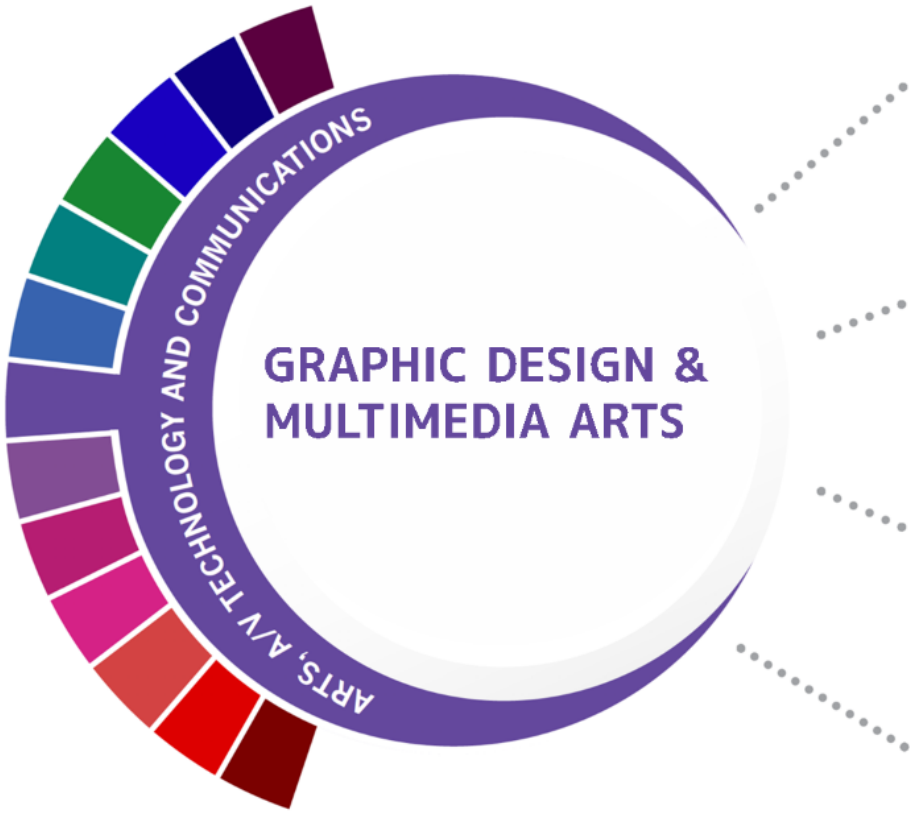

Level 1	Principles of Arts, A/V Technology, and Communications Video Game Design Digital Media
Level 2	Graphic Design and Illustration I/Lab Animation I/Lab Video Game Programming Commercial Photography I/Lab Fashion Design I/Lab Digital Design and Media Productions Game Programming and Design
Level 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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Adobe Certified Associate Certifications	Certified Digital Designer	Animation, Interactive Technology, Video Graphics and Special Effects	Animation, Interactive Technology, Video Graphics and Special Effects	Animation, Interactive Technology, Video Graphics and Special Effects
Adobe Certified Expert Certifications	WOW Certified Web Designer Apprentice	Graphic Design	Graphic Design	Graphic Design
Apple Logic Pro X	Adobe Suite Certifications	Game and Interactive Media Design	Game and Interactive Media Design	Intermedia/ Multimedia

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

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

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.

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.

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.

Successful completion of the Graphic Design & Multimedia Arts program of study will fulfill requirements of the Business and Industry Endorsement. Revised - March 2022

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Arts, A/V Technology, and Communications	13008200 (1 credit)	None	9
Video Game Design	13009970 (1 credit)	None	9-12
Digital Media	13027800 (1 credit)	None	9-12
Graphic Design and Illustration I /Lab	13008800 (1 credit) 13008810 (2 credits)	None	10-12
Animation I/Lab	13008300 (1 credit) 13008310 (2 credits)	None	10-12
Video Game Programming	N1300994 (1 credit)	None	10-12
Commercial Photography I/Lab	13009100 (1 credit) 13009110 (2 credits)	None	9-12
Fashion Design I/Lab	13009300 (1 credit) 13009310 (2 credits)	None	10-12
Digital Design and Media Production	03580400 (1 credit)	None	9-12
Game Programing and Design	03580380 (1 credit)	PREQ: Algebra I	9-12
Graphic Design and Illustration II/Lab	13008900 (1 credit) 13008910 (2 credits)	PREQ: Graphic Design and Illustration I	10-12
Animation II/Lab	13008400 (1 credit) 13008410 (2 credits)	PREQ: Animation I	11-12
Advanced Video Game Programming	N1300995 (1 credit)	None	10-12
Fashion Design II/Lab	13009400 (1 credit) 13009410 (2 credits)	PREQ: Fashion Design I	11-12
Digital Art and Animation	03580500 (1 credit)	None	9-12
3-D Modeling and Animation	03580510 (1 credit)	None	9-12
Commercial Photography II/Lab	13009200 (1 credit) 13009210 (2 credit)	None	10-12

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Web Game Development	03580830 (1 credit)	None	11-12
Practicum in Graphic Design and Illustration	13009000 (2 credits) 13009005 (3 credits) 13009010 (2 credits) 13009015 (3 credits)	PREQ: Graphic Design and Illustration II and Graphic Design and Illustration II Lab	10-12
Practicum in Animation	13008450 (2 credits) 13008455 (3 credits) 13008460 (2 credits) 13008465 (3 credits)	PREQ: Animation II and Animation II Lab	11-12
Practicum in Commercial Photography	13009250 (2 credits) 13009255 (3 credits) 13009260 (2 credits) 13009265 (3 credits)	PREQ: Commercial Photography l and Commercial Photography l Lab.	10-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12

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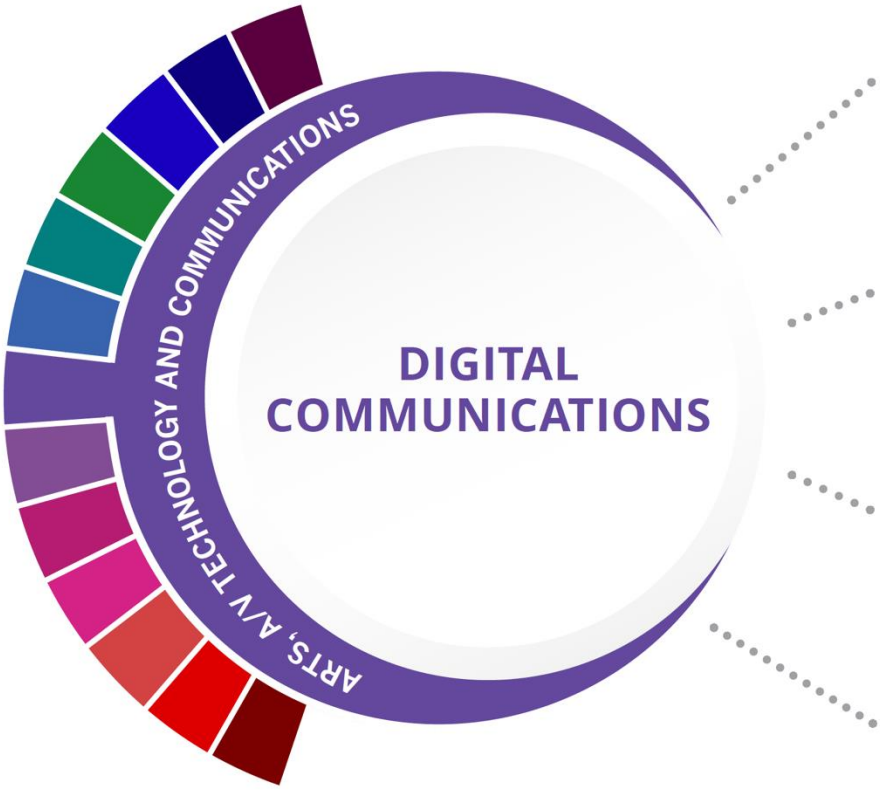

Level 1	Principles of Arts, A/V Technology, and Communications Professional Communications Web Communications Digital Communications in the 21st Century
Level 2	Audio/Video Production I/Lab Digital Audio Technology I
Level 3	Audio Video Production II/Lab Digital Audio Technology II
Level 4	Practicum of Audio/Video Production Practicum in Digital Audio Technology Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Apple Final Cut Pro X	Certified Video Engineer	Recording Arts Technology/ Technician	Recording Arts Technology/ Technician	Communications Technology/ Technician
Apple Logic Pro X	Commercial Audio Technician	Cinematography and Film/ Video Production	Cinematography and Film/ Video Production	Cinematography and Film/ Video Production
Adobe Certified Associate Premiere Pro	Certified AM Directional Specialist	Radio and Television Broadcasting Technology/ Technician	Radio and Television	Radio and Television
Adobe Certified Associate Certifications	Certified Broadcast Radio Engineer	Music Technology	Agricultural Communication/ Journalism	Agricultural Communication/ Journalism

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

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%

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

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.

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.

Successful completion of the Digital Communications program of study will fulfill requirements of the Business and Industry Endorsement. Revised - March 2022

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Arts, A/V Technology, and Communications	13008200 (1 credit)	None	9
Professional Communications	13009900 (.5 credits)	None	9-12
Web Communications	03580810 (.5 credits)	None	9
Digital Communications in the 21st Century	03580610 (1 credit)	None	9-12
Audio/Video Production I/Lab	13008500 (1 credit) 13008510 (2 credits)	None	10-12
Digital Audio Technology I	13009950 (1 credit)	None	9-12
Audio Video Production II/Lab	13008600 (1 credit) 13008610 (2 credits)	PREQ: Audio/Video Production I	10-12
Digital Audio Technology II	13009960 (1 credit)	PREQ: Digital Audio Technology I	10-12
Practicum in Audio/Video Production	13008700 (2 credits) 13008705 (3 credits) 13008710 (2 credits) 13008715 (3 credits)	PREQ: Audio/Video Production II/Lab	11-12
Practicum in Digital Audio Technology	N1300996 (2 credits)	PREQ: Digital Audio Technology I & Digital Audio Technology II	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
QuickBooks Certified User	Certified Management Accountant	Real Estate	Accounting	Financial Accounting
Microsoft Office Specialist or Expert - Excel	Certified Internal Auditor	Financial, General	Financial, General	Business Administration
Certified Insurance Service Representative	Certified Income Specialist	Financial Planning and Services]	Financial Planning and Services]	Financial Planning
	Certified Public Accountant	Certified Income Specialist	Certified Income Specialist	

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Business Professionals of America (BPA) Future Business Leaders of America (FBLA) DECA	Internship with local accounting firm Microsoft Office Specialist (MOS) certifications

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.

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.

Successful completion of the Accounting & Financial Services program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	9-11
Money Matters	13016200 (1 credit)	None	9-12
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	9-12
Accounting I	13016600 (1 credit)	None	10-12
Banking and Financial Services	13016300 (.5 credit)	None	10-12
Financial Mathematics	13018000 (1 credit)	PREQ: Algebra I	10-12
Accounting II	13016700 (1 credit)	PREQ: Accounting I	11-12
Financial Analysis	13016800 (1 credit)	PREQ: Accounting I	11-12
Insurance Operations	13016500 (1 credit)	None	10-12
Securities and Investments	13016400 (1 credit)	None	10-12
Practicum in Business Management	13012200 (2 credits) 13012205 (3 credits) 13012210 (2 credits) 13012215 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE / LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Microsoft Office Specialist or Expert- Excel	Certified Records Manager	Business Administration	Business Administration	Business Administration
Microsoft Office Specialist or Expert - Word	Certified Facility Manager	Business/ Commerce	Business/ Commerce	Business Management
Google Cloud Certified Professional – G-Suite	Certified Commercial Contracts Manager	Public Administration	Public Administration	Public Administration
Certified Associate in Project Management	Teradata 14 Basics/ Certified Technical Specialist	Business Management	Management Science	Management Science

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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%
Operations Research Analysts	$78,083	1,128	38%
Supervisors of Administrative Support Workers	$57,616	14,982	20%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Business Professional of America (BPA), Future Business Leaders of America (FBLA), and DECA	Internship with local business or chamber of commerce

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

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.

Successful completion of the Business Management program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	9-11
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	9-12
Business Law	13011700 (1 credit)	None	11-12
Virtual Business	13012000 (.5 credit)	None	10-12
Business Information Management II/Lab	13011500 (1 credit) 13011510 (2 credits)	PREQ: Business Information Management I	10-12
Business Management	13012100 (1 credit)	None	10-12
Global Business	13011800 (.5 credit)	None	10-12
Human Resources Management	13011900 (.5 credit)	None	11-12
Statistics and Business Decision Making	13016900 (1 credit)	PREQ: Algebra II	11-12
Practicum in Business Management	13012200 (2 credits) 13012205 (3 credits) 13012210 (2 credits) 13012215 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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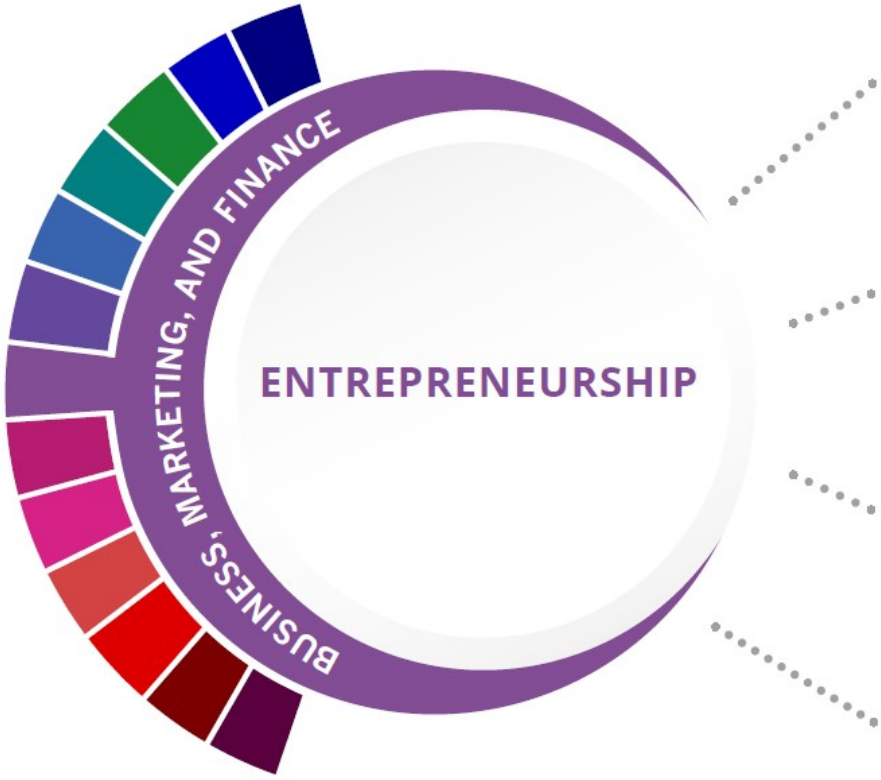

Level 1	Principles of Business, Marketing, and Finance Business Information Management I/Lab
Level 2	Entrepreneurship
Level 3	Mobile Application Development Entrepreneurship II
Level 4	Practicum in Business Management Practicum in Marketing Practicum in Entrepreneurship Project-Based Research Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Microsoft Office Expert - Excel	Certified Facility Manager	Business Administration and Management	Business Administration and Management	Business Administration and Management
Microsoft Office Expert - Word	Certified Management Accountant	Business/ Commerce	Business/ Commerce	Business/ Commerce
Entrepreneurship and Small Business	Certified Project Consultant	Public Administration	Public Administration	Public Administration
	Accredited Management Consultant	Business Management	Management Science	Management Science

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Business Professionals of America (BPA) Future Leaders of America (FBLA) DECA	Internship with local management consulting firm

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.

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.

Successful completion of the Entrepreneurship program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	9-11
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	9-12
Entrepreneurship	13034400 (1 credit)	None	10-12
Mobile Application Development	03580390 (1 credit)	PREQ: Algebra I	9-12
Entrepreneurship II	N1303423 (1 credit)	PREQ: Entrepreneurship	11-12
Practicum in Business Management	13012200 (2 credits) 13012205 (3 credits) 13012210 (2 credits) 13012215 (3 credits)	None	11-12
Practicum in Marketing	13034800 (2 credits) 13034805 (3 credits) 13034810 (2 credits) 13034815 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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

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Level 1	Principles of Business, Marketing, and Finance
Level 2	Fashion Marketing Sports and Entertainment Marketing Virtual Business Marketing
Level 3	Social Media Marketing Advertising Retail Management Sports and Entertainment Marketing II Statistics and Business Decision Making Fundamentals of Real Estate
Level 4	Advanced Marketing Practicum in Marketing Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE / LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Microsoft Office Specialist or Expert - Excel	Certified Product Manager	Marketing/ Marketing Management, General	Marketing/ Marketing Management, General	Marketing
Microsoft Office Specialist or Expert - Word	DMA Certified Marketing Professional	Consumer Merchandising/ Ret ailing Management	Business Administration	Business Administration
Google Analytics Individual Qualification	Certified Salesperson	International Marketing	Applied Economics	Applied Economics
Entrepreneurship and Small Business	Real Estate Appraiser	Business	Marketing Research	Advertising

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Business Professionals of America (BPA), Future Business Leaders of America (FBLA), and DECA	Internship with local marketing firm; shadow a real estate agent; operate a school store on campus

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

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.

Successful completion of the Marketing and Sales program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Business, Marketing, and Finance	13011200 (1 credit)	None	9-11
Fashion Marketing	13034300 (.5 credit)	None	9-12
Sports and Entertainment Marketing	13034600 (.5 credit)	None	9-12
Virtual Business	13012000 (.5 credit)	None	10-12
Marketing	N1303424 (1 credit)	None	10-12
Social Media Marketing	13034650 (.5 credit)	None	9-12
Advertising	13034200 (.5 credit)	None	9-12
Retail Management	N1303420 (1 credit)	None	10-12
Sports and Entertainment Marketing II	N1303422 (.5 credit)	PREQ: Sports and Entertainment Marketing	10-12
Statistics and Business Decision Making	13016900 (1 credit)	PREQ: Algebra II	11-12
Fundamentals of Real Estate	N1301120 (2 credits)	None	11-12
Advanced Marketing	13034700 (2 credits)	PREQ: One credit from the courses in the Marketing Career Cluster	11-12
Practicum in Marketing	13034800 (2 credits) 13034805 (3 credits) 13034810 (2 credits) 13034815 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

FOR ADDITIONAL INFORMATION ON THE BUSINESS, MARKETING, AND FINANCE CAREER CLUSTER, PLEASE CONTACT:
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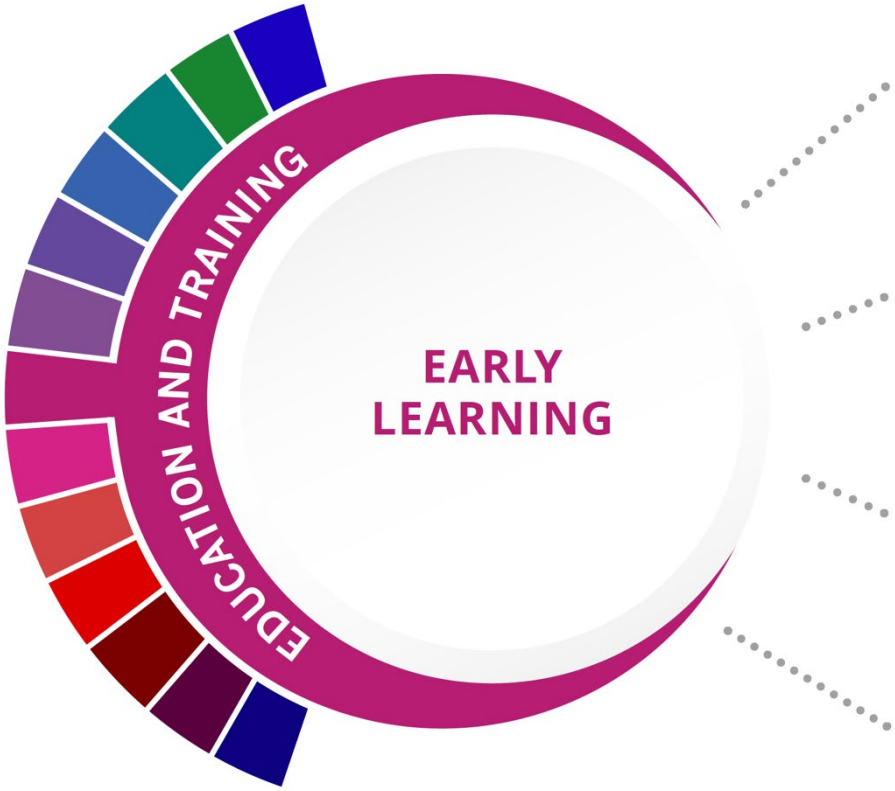

Level 1	Principles of Education and Training Principles of Human Services
Level 2	Child Development Child Development Associate Foundations
Level 3	Child Guidance
Level 4	Practicum in Early Learning Project Based Research Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Child Development Associate	Child Development Associate	Early Childhood Education and Teaching	Early Childhood Education and Teaching	Early Childhood Education and Teaching
	Texas Educator Certification Program	Multicultural Early Childhood Development	Multicultural Early Childhood Development	Multicultural Early Childhood Development
	County Librarian	Kindergarten/ Preschool Education and Training	Early Childhood	Educational, Instructional, and Curriculum Supervision
	Professional Counselor	Psychology/ Sociology	Psychology/ Sociology	Educational Leadership and Administration

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

Occupations	Median Wage	Annual Openings	% Growth
Kindergarten Teachers, except Special Education	$53,310	1,848	17%
Preschool Teachers	$27,851	4,330	17%
Special Education Teachers, Preschool	$55,670	148	27%
Elementary School Teachers	$54,140	13,121	16%
Education Administrators, Elementary and Secondary School	$79,830	2,407	16%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Texas Association of Future Educators; Family, Career, and Community Leaders of America	Teach a community education class; volunteer as a teaching assistant.

The Early Learning program of study focuses on early childhood education, which consists of instructing and supporting preschool and early elementary school students in activities that promote social, physical and intellectual growth as well as in basic elements of science, art, music, and literature. This program of study introduces CTE learners to tasks necessary for planning, directing, and coordinating activities for young children.

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.

Successful completion of the Early Learning program of study will fulfill requirements of the Public Service endorsement.
Revised - July 2020

Texas Education Agency

Updated 6/2022

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Education and Training	13014200 (1 credit)	None	9-10
Principles of Human Services	13024200 (1 credit)	None	9-12
Child Development	13024700 (1 credit)	None	10-12
Child Development Associate Foundations	N1300500 (1 credit)	None	10-12
Child Guidance	13024800 (2 credits)	None	10-12
Practicum in Early Learning	13014520 (2 credits) 13014525 (3 credits) 13014530 (2 credits) 13014535 (3 credits	Child Guidance	12
Project Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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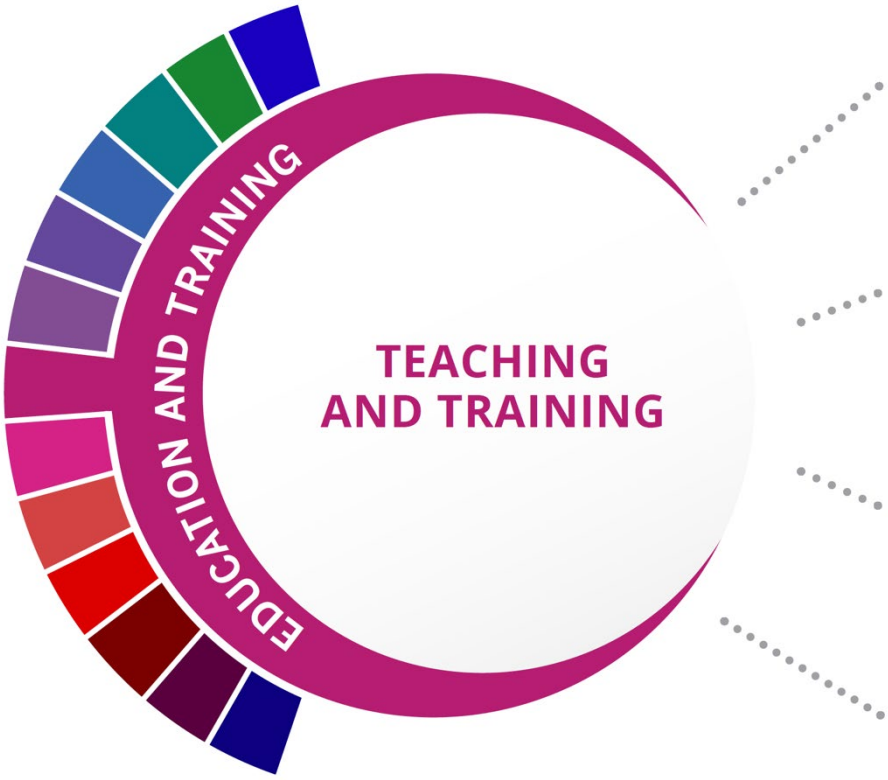
Updated 6/2022



Level 1	Principles of Education and Training Principles of Human Services
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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Educational Aide I	Texas Educator Certification Program	Teacher Education	Bilingual and Multilingual Education	Instruction and Learning
	Educational Instructional Technology	Education, General (or specific subject area)	Education, General (or specific subject area)	Educational Leadership and Administration, General
	Counselor, Professional	Special Education	Special Education	Special Education
	Athletic Trainer	Health and Physical Education/ Fitness	Health and Physical Education/ Fitness	Social and Philosophical Foundations of Education

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
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.

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.

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.

Successful completion of the Teaching and Training program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

Updated 6/2022

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Education and Training	13014200 (1 credit)	None	9-10
Principles of Human Services	13024200 (1 credit)	None	9-12
Human Growth and Development	13014300 (1 credit)	None	10-12
Child Development	13024700 (1 credit)	None	10-12
Communication and Technology in Education	N1300510 (1 credit)	None	10-12
Instructional Practices	13014400 (2 credits)	1 credit from Education and Training Career Cluster	11-12
Teaching Strategies for Special Populations	TBD	TBD	TBD
Practicum in Education and Training	13014500 (2 credits) 13014505 (3 credits) 13014510 (2 credits) 13014515 (3 credits)	PREQ: Instructional Practices	12
Project Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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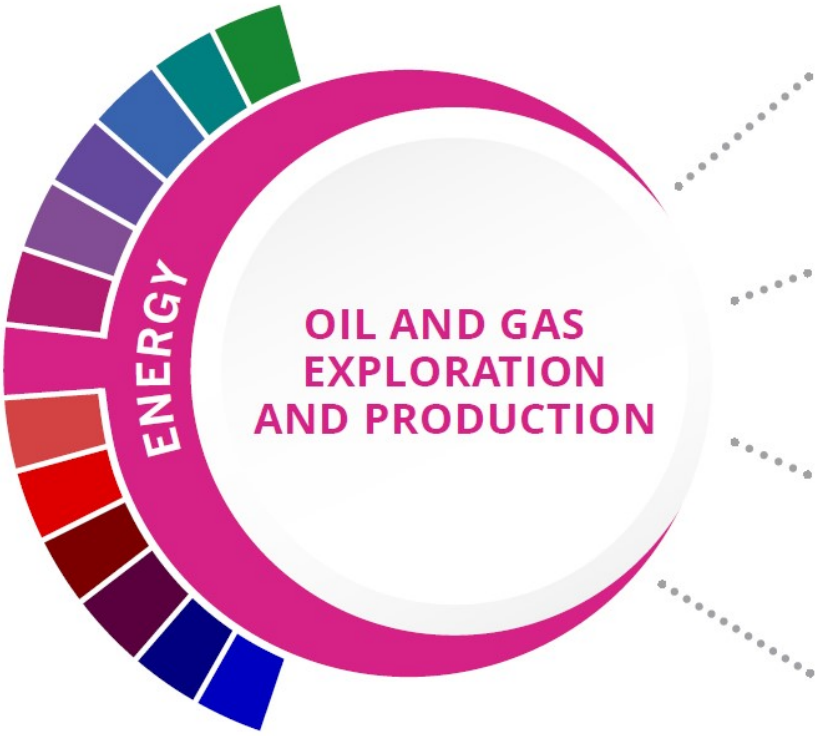

Level 1	Oil and Gas Production I/Lab Foundations of Energy
Level 2	Oil and Gas Production II/Lab Occupational Safety and Environmental Technology I
Level 3	Oil and Gas Production III Occupational Safety and Environmental Technology II Career Preparation
Level 4	Oil and Gas Production IV Project Based Research Applied Mathematics for Technical Professionals Practicum in Energy (TBD)

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
	Above Ground Storage Tanks Inspector Certification	Petroleum Engineering	Petroleum Engineering	Petroleum Engineering
	Pressure Vessels Inspector Certification	Chemical Engineering	Chemical Engineering	Chemical Engineering
	Piping Inspector Certification	Petroleum Technology/ Technician	Mechanical Engineering	Mechanical Engineering
	API QUTE – Qualification of Ultrasonic Testing Examiners	Industrial Mechanics and Maintenance Technology	Industrial Engineering	Industrial Engineering
**Includes Level I and Level II Certificates*				

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

Occupations	Median Wage	Annual Openings	% Growth
Extraction Workers- All Other	$44,616	145	25%
Extraction Workers	$34,570	1,000	7%
Drill Operators, Oil and Gas	$52,083	925	14%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Intern at an oil or gas company. American Petroleum Institute Certification	Read trade publications to understand economic and political issues

The Oil and Gas Exploration and Production program of study focuses on processing, refining, and distributing petroleum and gas. It introduces CTE learners to the process of regulating the flow of oil into pipelines, controlling pumping systems, and operating and maintaining machinery to generate electric power.

The Energy Career Cluster prepares individuals for careers in the designing, planning, maintaining, generating, transmission, and distribution of traditional and alternative energy.

Successful completion of the Oil and Gas Exploration and Production program of study will fulfill requirements of the Business and Industry Endorsement or STEM endorsement if math and science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Oil and Gas Production I/Lab	13001250 (1 credit) 13001255 (2 credits)	None	9-12
Foundations of Energy	13040503 (1 credit)	None	9-12
Oil and Gas Production II/Lab	13001260 (1 credit) 13001265 (2 credits)	PREQ: Oil and Gas Production I	10-12
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	9-12
Oil and Gas Production III	13040500 (1 credit)	PREQ: Oil and Gas Production II	11-12
Occupational Safety and Environmental Technology II	N1303681 (1 credit)	PREQ: OSET I	9-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12
Oil and Gas Production IV	13040501 (1 credit)	PREQ: Oil and Gas Production III	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Applied Mathematics for Technical Professionals	12701410 (1 credit)	None	11-12
Practicum in Energy	TBD	TBD	TBD

FOR ADDITIONAL INFORMATION ON THE ENERGY CAREER CLUSTER, PLEASE CONTACT:
Laura Torres | Laura.Torres@tea.texas.gov
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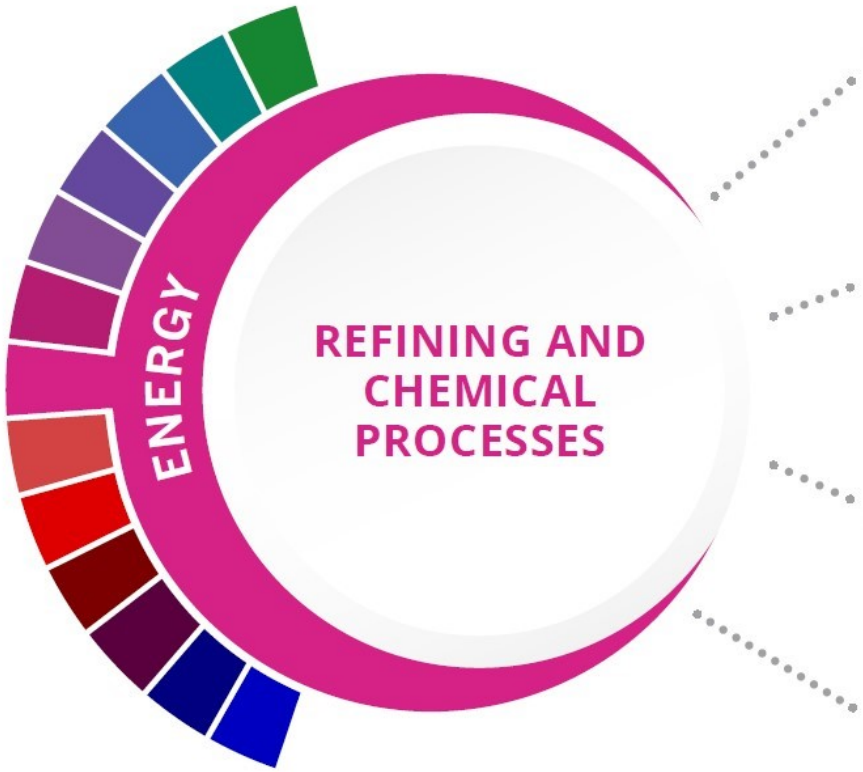

Level 1	Foundations of Energy
Level 2	Introduction to Process Technology Introduction to Instrumentation and Electrical
Level 3	Petrochemical Safety, Health, and Environment Advanced Instrument and Electrical (TBD)
Level 4	Project-Based Research Applied Mathematics for Technical Professionals Practicum in Energy (TBD)

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
MSSC Certified Production Technician (CPT)	Process Technology Certificate Level II	Process Technology	Business Administration and Management, General	Business Administration and Management, General
	Petroleum Energy Technology Certificate	Process Operating Technology	Business/ Commerce, General	Business/ Commerce, General
	Qualification of Ultrasonic Testing Examiners (Sizing)	Logistics, Material, and Supply Chain Management	Industrial Engineering	Industrial Engineering
	Certified Plant Supervisor	Petroleum Technology/ Technician	Petroleum Engineering	Petroleum Engineering

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

Occupations	Median Wage	Annual Openings	% Growth
Gas Plant Operators	$62,650	312	9%
Petroleum Pump System Operators, Refinery Operators, and Gaugers	$71,488	1,181	9%
Power Plant Operators	$71,635	309	9%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Tour a power plant or refinery	Explore student summer conferences.

The Refining and Chemical Processes program of study helps CTE learners discover how to monitor, adjust, and control different equipment housed in petrochemical plants and refineries. It introduces students to the computer technology and instrumentation used to operate a variety of equipment systems and industrial processes, helping students build the skills needed to operate these systems.

The Energy Career Cluster prepares individuals for careers in the designing, planning, maintaining, generating, transmission, and distribution of traditional and alternative energy.

Successful completion of the Refining and Chemical Processes program of study will fulfill requirements of the Business and Industry Endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Foundations of Energy	13040503 (1 credit)	None	9-12
Introduction to Process Technology	13040502 (1 credit)	None	11-12
Introduction to Instrumentation and Electrical	N1303900 (1 credit)	None	10-12
Petrochemical Safety, Health, and Environment	13040504 (1 credit)	None	11-12
Advanced Instrumentation and Electrical	TBD	TBD	TBD
Project-Based Research	12701500 (1 credit)	None	11-12
Applied Mathematics for Technical Professionals	12701410 (1 credit)	None	11-12
Practicum in Energy	TBD	TBD	TBD

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Personal Trainer	Physical Therapist Assistant	Kinesiology and Exercise Science	Kinesiology and Exercise Science	Exercise Physiology
	Physical Therapy Aides	Therapeutic Recreation/ Recreational Therapy	Therapeutic Recreation/ Recreational Therapy	Therapeutic Recreation/ Recreational Therapy
	Dietetic Technician	Athletic Training/ Trainer	Athletic Training/ Trainer	Athletic Training/ Trainer
			Dietitians and Nutritionists	Physical Therapist

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

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%
Dietitians and Nutritionists	$57,762	428	24%
Recreational Therapists	$45,906	74	24%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Health Occupation Students of America (HOSA)	Volunteer at a hospital or rehabilitation center; manage a school sports team

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.

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.

Successful completion of the Exercise Science and Wellness program of study will fulfill requirements of a Public Service endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

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COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Lifetime Nutrition and Wellness	13024500 (.5 credit)	None	9-12
Principles of Exercise and Wellness	N1303107 (1 credit)	None	9-10
Kinesiology I	N1302104 (1 credit)	None	9-10
Anatomy and Physiology	13020600 (1 credit)	PREQ: Biology and a second science credit	10-12
Kinesiology II	N1302124 (1 credit)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

FOR ADDITIONAL INFORMATION ON THE HEALTH SCIENCE CAREER CLUSTER, PLEASE CONTACT:
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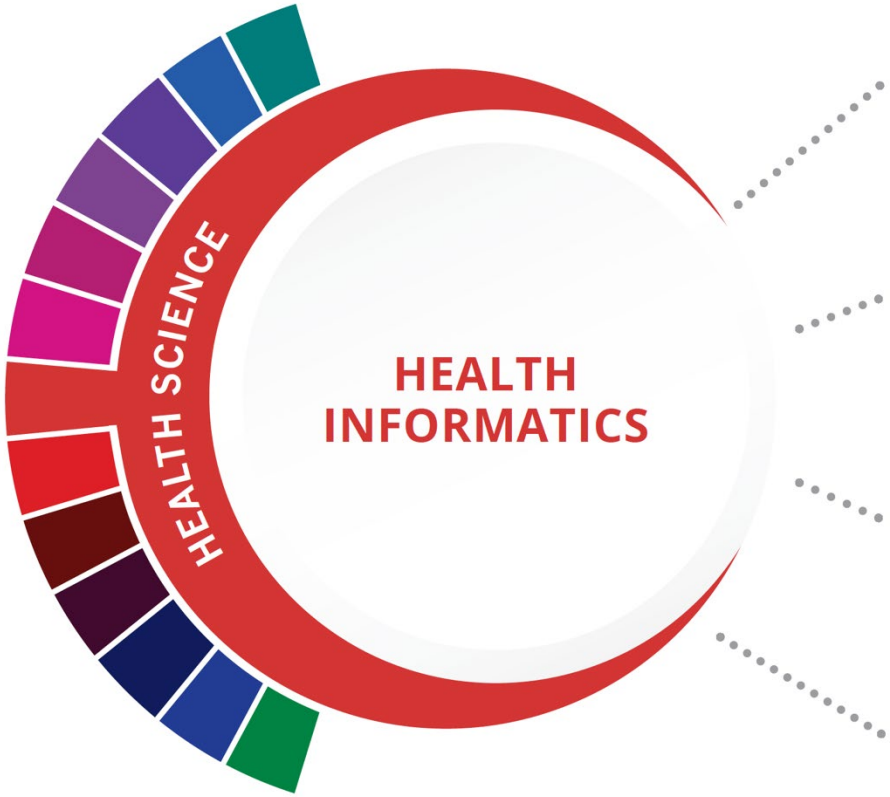

Level 1	Principles of Health Science Medical Terminology Principles of Health Informatics
Level 2	Business Information Management I/Lab Medical Intervention Evaluation and Research
Level 3	Health Informatics Healthcare Administration and Management
Level 4	Mathematics for Medical Professionals World Health Research Project-Based Research

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Coding Associate	Certified Professional in Informatics	Health Information/ Medical Records Technology/ Technician	Medical and Health Service Managers	Medical and Health Service Managers
Medical Coding and Billing Specialist	Medical Transcriptionist			

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

Occupations	Median Wage	Annual Openings	% Growth
Medical Records and Health Information Technicians	$35,922	1,588	24%
Medical and Health Service Managers	$93,995	2,562	29%
Billing and Posting Clerks	$35,485	5,775	25%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Health Occupations Students of America (HOSA)	Volunteer at a community wellness center, hospital, assisted living center, or nursing home

The Health Informatics program of study focuses on exposing students to the management and use of patient information in the healthcare field. Students may learn about and research recent modifications of computerized healthcare and the process of creating and maintaining hospital and patient records in accordance with regulatory requirements of the healthcare system. Students may also practice writing and interpreting medical reports.

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.

Successful completion of the Health Informatics program of study will fulfill requirements of a Public Service endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

Updated 6/2022

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Health Science	13020200 (1 credit)	None	9-10
Medical Terminology	13020300 (1 credit)	None	9-12
Principles of Health Informatics	N1302108 (1 credit)	None	9-12
Business Information Management I/Lab	13011400 (1 credit) 13011410 (2 credits)	None	9-12
Medical Intervention Evaluation and Research	N1302125 (1 credit)	None	10-11
Health Informatics	13020960 (1 credit)	Medical Terminology	11-12
Healthcare Administration and Management	13020962 (1 credit)	Medical Terminology	11-12
Mathematics for Medical Professionals	13020970 (1 credit)	PREQ: Geometry and Algebra II	11-12
World Health Research	13020900 (1 credit)	PREQ: Biology and Chemistry	11-12
Project-Based Research	12701500 (1 credit)	None	11-12

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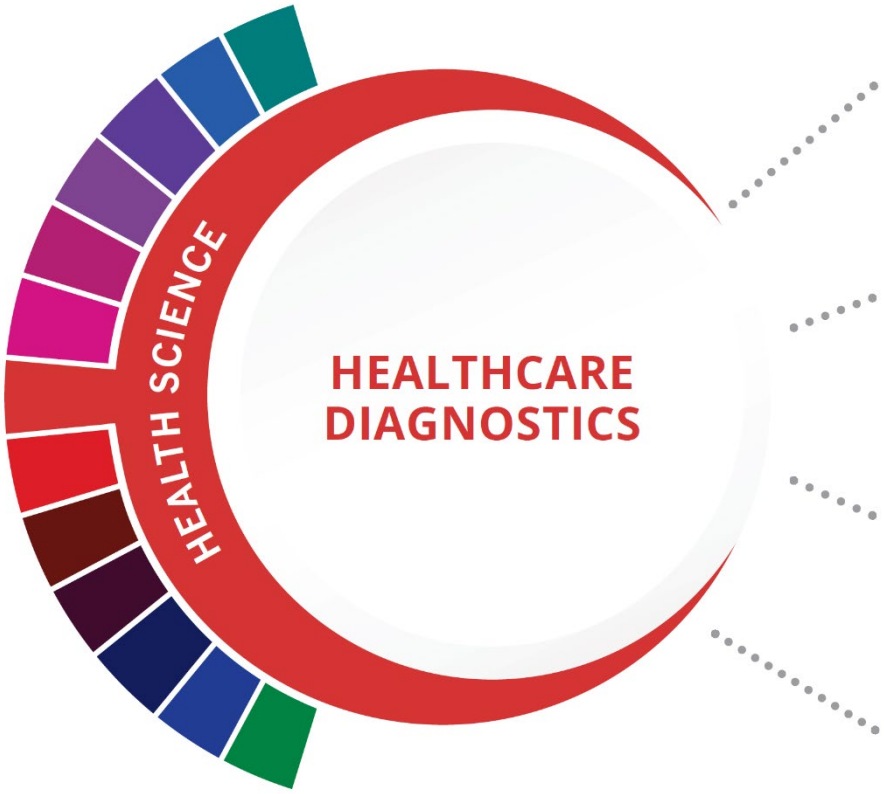

Level 1	Principles of Health Science Principles of Diagnostic Healthcare Introduction to Imaging Technology
Level 2	Medical Terminology Imaging Technology I
Level 3	Health Science Theory/Health Science Clinical Medical Microbiology Imaging Technology II (TBD)
Level 4	Anatomy and Physiology Pathophysiology Practicum in Health Science

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Limited Licensed Radiology Technologist	Medical Sonographer	Nuclear Medical Technology/ Technologist	Nuclear Medical Technology/ Technologist	Radiologist
EKG/ECG Technician	Radiologic Technologist	Magnetic Resonance Imaging (MRI) Technology/ Technician	Medical Radiologic Technology/ Science Radiation Therapist	Radiologic Technology/ Science - Radiographer
Medical Laboratory Technician				
Phlebotomy Technician				

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

Occupations	Median Wage	Annual Openings	% Growth
Diagnostic Medical Sonographers	$69,909	495	35%
Phlebotomists	$30,597	1442	36%
Nuclear Medicine Technologists	$75,962	91	13%
Radiologic Technologists	$55,494	1196	19%
Magnetic Resonance Imagine Technologists	$68,661	217	21%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Health Occupation Students of America (HOSA)	Clinical rotations at a community wellness center, hospital, assisted living, nursing home

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.

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.

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- July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Health Science	13020200 (1 credit)	None	9-10
Principles of Diagnostic Healthcare	N1302106 (1 credit)	None	9-10
Introduction to Imaging Technology	N1302102 (1 credit)	None	9-10
Medical Terminology	13020300 (1 credit)	None	9-12
Imaging Technology I	N1302123 (1 credit)	None	10-11
Health Science Theory/ Health Science Clinical	13020400 (1 credit) 13020410 (2 credits)	PREQ: Biology	10-12
Medical Microbiology	13020700 (1 credit)	PREQ: Biology and Chemistry	10-12
Imaging Technology II	TBD	TBD	TBD
Anatomy and Physiology	13020600 (1 credit)	PREQ: Biology and a second science credit	10-12
Pathophysiology	13020800	PREQ: Biology and Chemistry	10-12
Practicum in Health Science	13020500 (2 credits) 13020505 (3 credits) 13020510 (2 credits) 13020515 (3 credits)	PREQ: Health Science Theory and Biology	11-12

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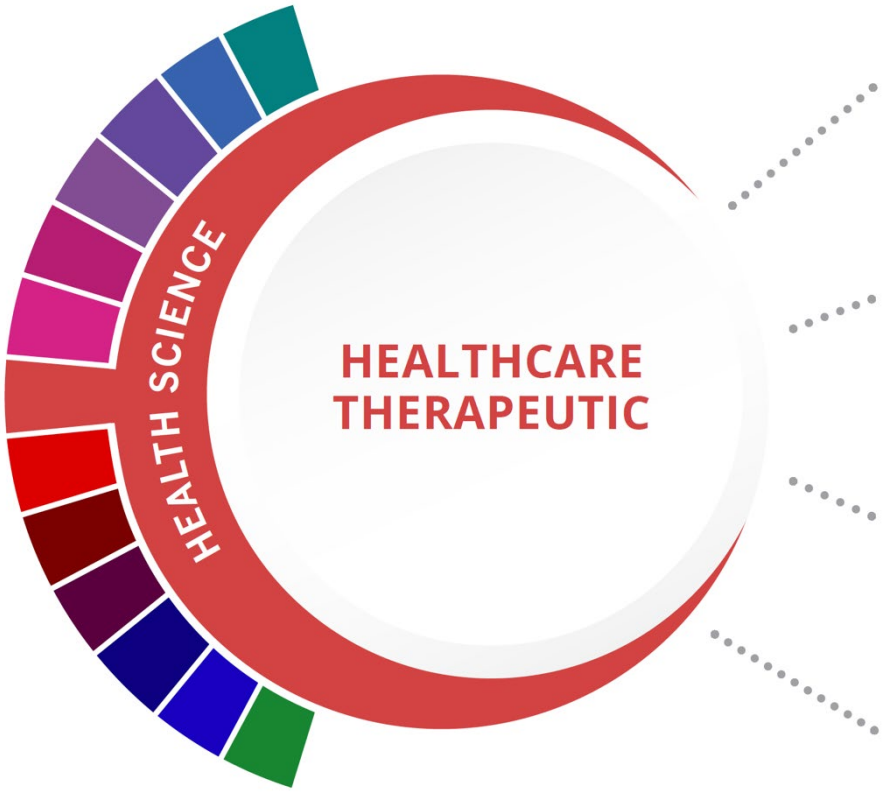

Level 1	Principles of Health Science Principles of Therapeutic Healthcare Introduction to Pharmacy Science Introduction to Dental Science
Level 2	Medical Terminology Dental Anatomy and Physiology Pharmacy I
Level 3	Anatomy and Physiology Health Science Theory/Health Science Clinical Medical Microbiology Pharmacy II Medical Assistant Dental Equipment and Procedures (TBD)
Level 4	Pathophysiology Pharmacology Practicum in Health Science

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Registered Dental Assistant	Dental Assistant	Dental Hygienist	Dental Hygienist	Dentist
Certified Patient Care Technician	Surgical Technologist	Medical/ Clinical Assistant		Physician Assistant
Certified Nurse Aide/Assistant	Medical Assistant			Family and General Practitioners
Pharmacy Technician	Pharmacy Aides			Pharmacist

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

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%
Dental Assistants	$34,840	4,422	31%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
SkillsUSA Health Occupation Students of America (HOSA)	Volunteer at a community wellness center, hospital, assisted living, or nursing home.

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.

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.

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 - July 2020

Texas Education Agency

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COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Health Science	13020200 (1 credit)	None	9-10
Principles of Therapeutic Healthcare	N1302110 (1 credit)	None	9-10
Introduction to Pharmacy Science	N1302103 (1 credit)	None	9-10
Introduction to Dental Science	N1302101 (1 credit)	None	9-11
Medical Terminology	13020300 (1 credit)	None	9-12
Dental Anatomy and Physiology	N1302122 (1 credit)	None	10-12
Pharmacy I	N1302127 (1 credit)	None	10-11
Anatomy and Physiology	13020600 (1 credit)	PREQ: Biology and a second science credit	10-12
Health Science Theory/ Health Science Clinical	13020400 (1 credit) 13020410 (2 credits)	PREQ: Biology	10-12
Medical Microbiology	13020700 (1 credit)	PREQ: Biology and Chemistry	10-12
Pharmacy II	13021030 (2 credits)	PREQ: Biology and Chemistry and Pharmacy I	11-12
Medical Assistant	13021015 (1 credit)	PREQ or CREQ: Anatomy and Physiology	11-12
Dental Equipment and Procedures	TBD	TBD	TBD
Pathophysiology	13020800 (1 credit)	PREQ: Biology and Chemistry	11-12

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COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Pharmacology	13020950 (1 credit)	PREQ: Biology and Chemistry	11-12
Practicum in Health Science	13020500 (2 credits) 13020505 (3 credits) 13020510 (2 credits) 13020515 (3 credits)	PREQ: Health Science Theory and Biology	11-12

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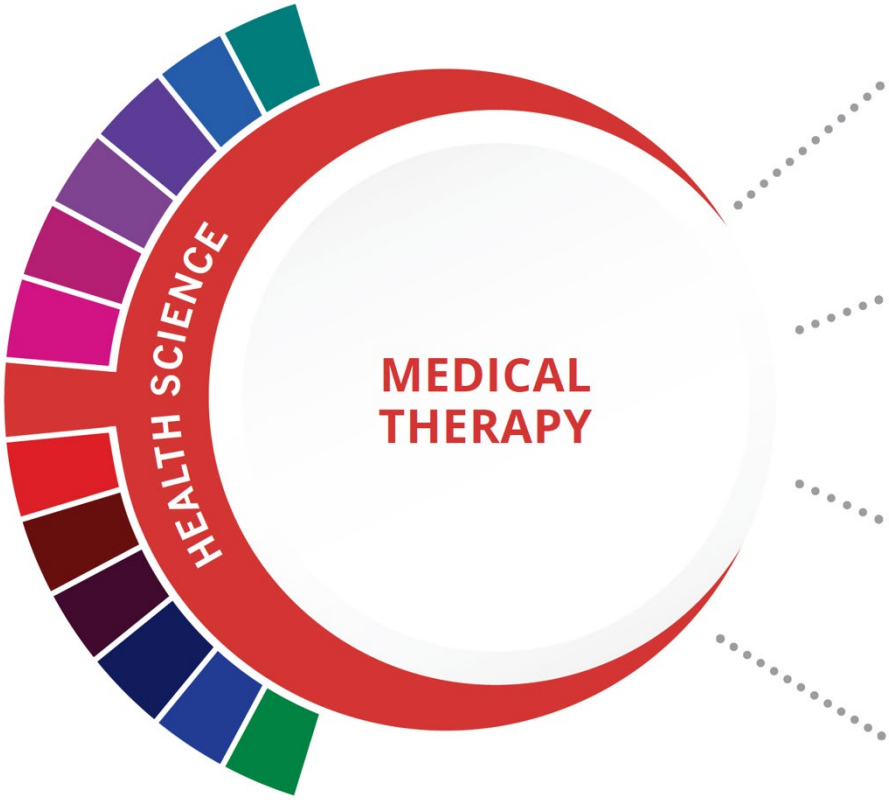

Level 1	Principles of Health Science Introduction to Speech Pathology and Audiology Principles of Allied Health
Level 2	Medical Terminology Speech and Language Development Allied Health Therapeutic Services
Level 3	Speech Communication Disorders Health Science Theory/Health Science Clinical Physical Therapy I Occupational Therapy I (TBD) Radiation Therapy I (TBD) Respiratory Therapy I
Level 4	Practicum in Health Science Occupational Therapy II (TBD) Physical Therapy II (TBD) Radiation Therapy II (TBD) Respiratory Therapy II (TBD)

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certification in Orthopedic Manual Therapy	Certified Respiratory Therapist	Occupational Therapy Assistant	Respiratory Therapists	Occupational Therapists
Limited Licensed Radiology Technologist	Certified Physical Therapy Assistant	Radiation Therapists		Speech Language Pathologist
		Respiratory Therapists		Physical Therapists
		Physical Therapy Assistant		

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

Occupations	Median Wage	Annual Openings	% Growth
Speech Language Pathologists	$73,070	1,068	25%
Respiratory Therapists	$57,429	830	20%
Occupational Therapists	$92,227	834	34%
Physical Therapy Assistants	$70,200	1,268	44%
Radiation Therapists	$70,658	101	23%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Health Occupation Students of America (HOSA)	Lab internship, Job shadow, Clinical rotations

The Medical Therapy program of study focuses on the study of biology and medicine in order to introduce students to the knowledge and skills necessary to be successful in the healthcare field in occupations such as, Respiratory, Occupational, Physical, or Speech Therapy. CTE learners may also practice patient care and communication.

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.

Successful completion of the Medical Therapy program of study will fulfill requirements of a Public Service or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

Updated 6/2022

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Health Science	13020200 (1 credit)	None	9-10
Introduction to Speech Pathology and Audiology	N1302100 (1 credit)	None	10-12
Principles of Allied Health	N1302105 (1 credit)	None	9-10
Medical Terminology	13020300 (1 credit)	None	9-12
Speech and Language Development	N1302098 (1 credit)	None	11-12
Allied Health Therapeutic Service	N1302120 (1 credit)	None	10-11
Speech Communication Disorders	N1302099 (1 credit)	None	11-12
Health Science Theory/ Health Science Clinical	13020400 (1 credit) 13020410 (2 credits)	PREQ: Biology	10-12
Physical Therapy I	N1302128 (1 credit)	None	10-12
Occupational Therapy I	TBD	TBD	TBD
Radiation Therapy I	TBD	TBD	TBD
Respiratory Therapy I	13021120 (1 credit)	1 credit from Health Science Career Cluster	11-12
Practicum in Health Science	13020500 (2 credits) 13020505 (3 credits) 13020510 (2 credits) 13020515 (3 credits)	PREQ: Health Science Theory and Biology	11-12
Occupational Therapy II	TBD	TBD	TBD
Physical Therapy II	TBD	TBD	TBD
Radiation Therapy II	TBD	TBD	TBD
Respiratory Therapy II	TBD	TBD	TBD

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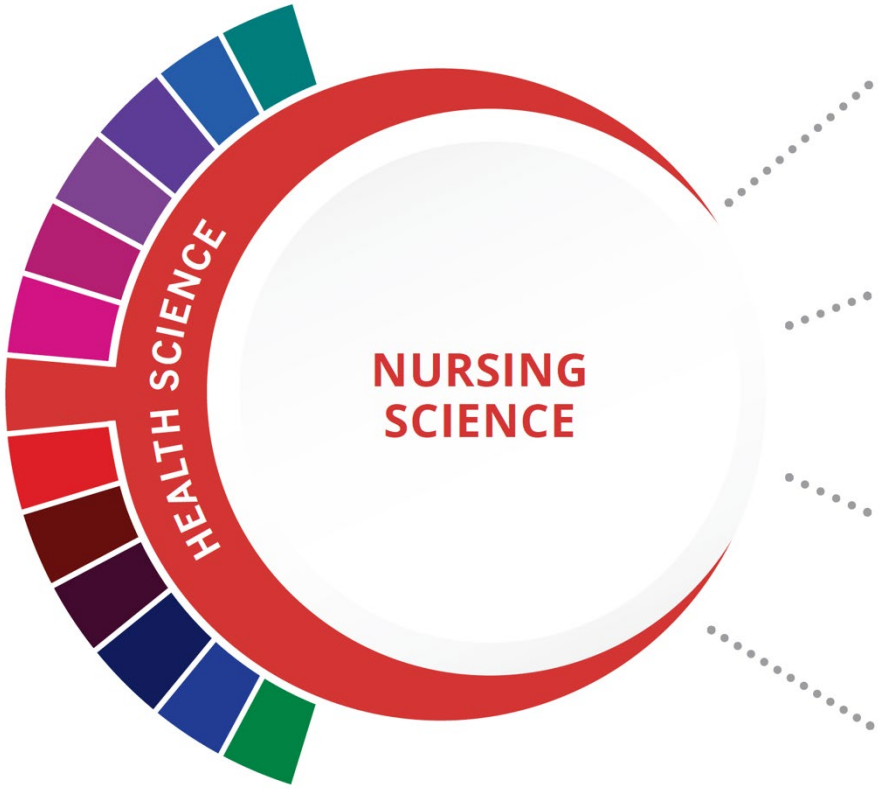

Level 1	Principles of Health Science Principles of Nursing
Level 2	Medical Terminology Science of Nursing
Level 3	Medical Microbiology Anatomy and Physiology Clinical Ethics Leadership and Management in Nursing
Level 4	Pathophysiology Pharmacology Practicum in Nursing (TBD)

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Medical Assistant	Licensed Vocational Nurse	Registered Nursing/ Registered Nurse	Informatics Nurse Specialists	Nurse Practitioner
Certified Nurse Aide/Assistant				Nursing Administration
Certified Patient Care Technician				Nurse Anesthetist

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

Occupations	Median Wage	Annual Openings	% Growth
Licensed Vocational Nurses	$45,178	7,186	21%
Registered Nurses	$68,682	17,493	26%
Nurse Practitioners	$107,827	977	50%
Nurse Anesthetists	$154,856	357	23%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Health Occupation Students of America (HOSA)	Volunteer at a community wellness center, hospital, assisted living center, or nursing home.

The Nursing Science program of study introduces students to the knowledge and skills related to patient care. CTE learners may learn about or practice caring for patients, routine procedures such as monitoring vital signs, development and implementation of care plans, maintenance of medical records, and disease or pain management. Students may focus on the healthcare system and research system designs and make recommended modifications.

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.

Successful completion of the Nursing Science program of study will fulfill requirements of a Public Service endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

Updated 6/2022

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Health Science	13020200 (1 credit)	None	9-10
Principles of Nursing Science	N1302109 (1 credit)	None	9-10
Medical Terminology	13020300 (1 credit)	None	9-12
Science of Nursing	N1302129 (1 credit)	None	10-12
Medical Microbiology	13020700 (1 credit)	PREQ: Biology and Chemistry	10-12
Anatomy and Physiology	13020600 (1 credit)	PREQ: Biology and a second science credit	10-12
Clinical Ethics	N1302121 (1 credit)	None	11-12
Leadership and Management in Nursing	13021225 (1 credit)	PREQ: Biology and Chemistry and 1 credit in a course from the Health Science Career Cluster	10-12
Pathophysiology	13020800 (1 credit)	PREQ: Biology and Chemistry	11-12
Pharmacology	13020950 (1 credit)	PREQ: Biology and Chemistry	11-12
Practicum in Nursing	TBD	TBD	TBD

FOR ADDITIONAL INFORMATION ON THE HEALTH SCIENCE CAREER CLUSTER, PLEASE CONTACT:

CTE@tea.texas.gov

https://tea.texas.gov/cte

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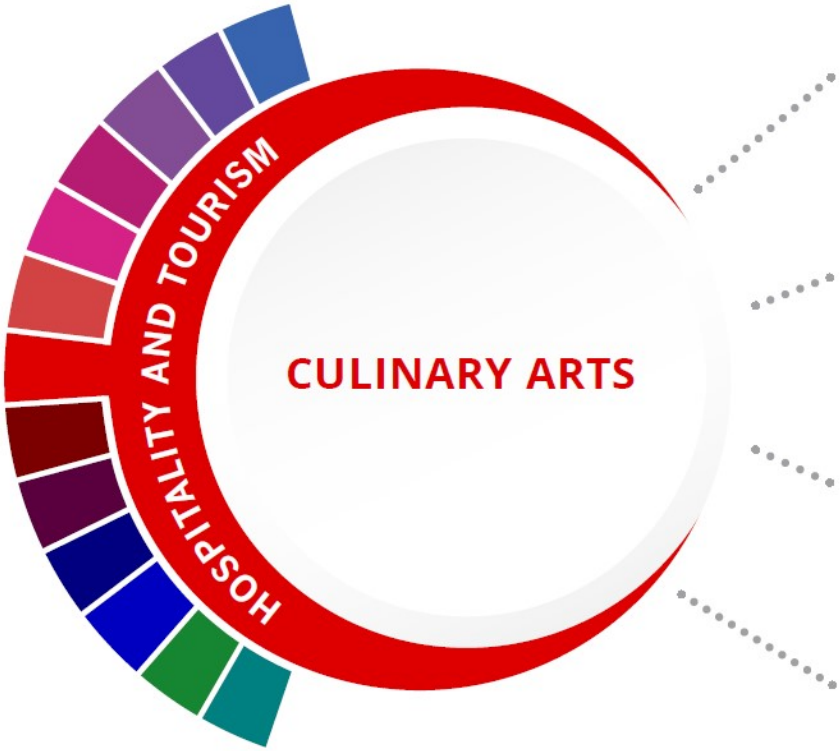
Updated 6/2022



Level 1	Introduction to Culinary Arts Principles of Hospitality and Tourism
Level 2	Culinary Arts Foundations of Restaurant Management
Level 3	Advanced Culinary Arts
Level 4	Food Science Practicum in Culinary Arts Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Fundamentals Cook	Certified Chef	Hotel and Restaurant Management	Hotel and Restaurant Management	Hotel and Restaurant Management
Certified Fundamentals Pastry Cook	Foodservice Management Professional	Restaurant Culinary and Catering Management	Food Service Systems Administration/ Management	Food Service Systems Administration/ Management
ServSafe Manager	Comprehensive Food Safety	Hospitality Administration/ Management, General	Hospitality Administration/ Management, General	Hospitality Administration/ Management, General
ManageFirst Professional	Certified Food and Beverage Executive	Culinary Arts/ Chef Training	Culinary Science and Food Service Management	Business Administration Management, General

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Family, Career, and Community Leaders of America (FCCLA), SkillsUSA, American Culinary Federation, Texas Restaurant Association	Plan a catering event or work for a catering company; participate in a cooking course; work in a restaurant; cook at home

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

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

Successful completion of the Culinary Arts program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Introduction to Culinary Arts	13022550 (1 credit)	None	9-12
Principles of Hospitality and Tourism	13022200 (1 credit)	None	9-12
Culinary Arts	13022600 (2 credits)	None	10-12
Foundations of Restaurant Management	N1302268 (1 credit)	None	10-12
Advanced Culinary Arts	13022650 (2 credits)	PREQ: Culinary Arts	10-12
Food Science	13023000 (1 credit)	PREQ: 3 units of Science, including Chemistry and Biology	11-12
Practicum in Culinary Arts	13022700 (2 credits) 13022705 (3 credits) 13022710 (2 credits) 13022715 (3 credits)	PREQ: Culinary Arts	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

FOR ADDITIONAL INFORMATION ON THE HOSPITALITY AND TOURISM CAREER CLUSTER, PLEASE CONTACT:
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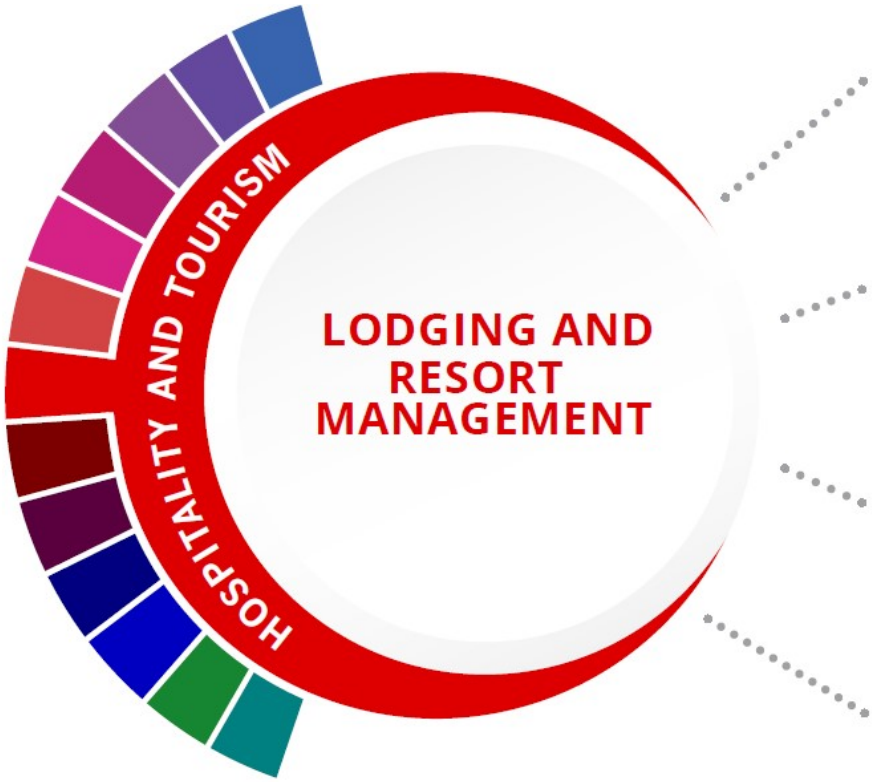

Level 1	Principles of Hospitality and Tourism
Level 2	Hotel Management Travel and Tourism Management
Level 3	Hospitality Services Introduction to Event and Meeting Planning
Level 4	Practicum in Hospitality Services Practicum in Event and Meeting Planning Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Hospitality & Tourism Management Professional	Certified Hospitality Supervisor	Hotel/Motel Administration/ Management	Hospitality Administration/ Management, Genera	Hospitality Administration/ Management, Genera
Certified Associate in Project Management	Certified Hotel Administrator	Business Administration and Management, General	Business Administration and Management, General	Business Administration and Management, General
Entrepreneurship and Small Business	Certification in Hotel Industry Analytics	Tourism and Travel Services Management	Hotel and Restaurant Management	Hospitality Administration
	Certified Guest Service Professional	Business Administration and Management	Marketing/ Management, General	Marketing/ Management, General

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

Occupations	Median Wage	Annual Openings	% Growth
General and Operations Managers	$107,640	18,679	20%
Lodging Managers	$48,381	396	19%
Administrative Services Managers	$96,138	2,277	21%
Meeting, Convention, and Event Planners	$47,446	1,083	21%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Family, Career, and Community Leaders of America (FCCLA), American Hotel and Lodging Association	Intern at a resort or lodging property; work at a hotel, summer camp or theme park;

The Lodging and Resort Management program of study introduces CTE learners to occupations and educational opportunities related to the logistical and operational management of lodging and resorts. This program of study also explores opportunities related to human resources, financial analysis, and marketing.

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

Successful completion of the Lodging and Resort Management program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Hospitality and Tourism	13022200 (1 credit)	None	9-12
Hotel Management	13022300 (1 credit)	None	10-12
Travel and Tourism Management	13022500 (1 credit)	None	10-12
Hospitality Services	13022800 (2 credits)	None	11-12
Introduction to Event and Meeting Planning	N1302269 (1 credit)	None	10-12
Practicum in Hospitality Services	13022900 (2 credits) 13022905 (3 credits) 13022910 (2 credits) 13022915 (3 credits)	None	11-12
Practicum in Event and Meeting Planning	N1302275 (2 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

FOR ADDITIONAL INFORMATION ON THE HOSPITALITY AND TOURISM CAREER CLUSTER, PLEASE CONTACT:
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Level 1	Principles of Hospitality and Tourism
Level 2	Travel and Tourism Management Entrepreneurship Sports and Entertainment Marketing
Level 3	Global Business Tourism Marketing Concepts and Applications
Level 4	Practicum in Hospitality Services Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Hospitality and Tourism Management Professional	Travel and Tourism Professional	Tourism Management	Tourism Management	Tourism Management
Entrepreneurship and Small Business	Certified Tourism Executive	Business Administration and Management, General	Business Administration and Management, General	Business Administration and Management, General
Certified Associate in Project Management	Communication Management Professional	Tourism and Travel Services Management	Tourism Management	Recreation and Resources Development
	Certified Marketing Analyst	Tourism and Travel Services Marketing	Sport Event and Tourism Management	Recreation, Park, and Tourism Sciences

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

Occupations	Median Wage	Annual Openings	% Growth
Advertising and Promotions Managers	$94,515	164	20%
Fundraisers	$54,850	875	21%
Market Research Analysts and Marketing Specialists	$70,349	4,664	40%
Marketing Managers	$144,269	1,297	32%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Family, Career, and Community Leaders of America (FCCLA), SkillsUSA, Texas Travel Industry Association	Work at a local tourist attraction, theme park, or summer camp; volunteer at a local community event (fair or rodeo)

The Travel, Tourism, and Attractions program of study introduces CTE learners to occupations and educational opportunities related to the marketing or sales of travel and tourism services. This program of study allows students to learn how to plan, direct, and coordinate marketing or business policies and programs, including identifying potential customers and determining demand and promotional strategies for products and services.

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

Successful completion of the Travel, Tourism, and Attractions program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Hospitality and Tourism	13022200 (1 credit)	None	9-12
Travel and Tourism Management	13022500 (1 credit)	None	10-12
Entrepreneurship	13034400 (1 credit)	None	10-12
Sports an Entertainment Marketing	13034600 (.5 credit)	None	9-12
Global Business	13011800 (.5 credit)	None	10-12
Tourism Marketing Concepts and Applications	N1302270 (1 credit)	None	10-12
Practicum in Hospitality Services	13022900 (2 credits) 13022905 (3 credits) 13022910 (2 credits) 13022915 (3 credits)	PREQ: Hospitality Services	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Community Health Worker	Human Development and Family Studies	Human Development and Family Studies	Human Development and Family Studies	Human Development and Family Studies
Certified Associate in Project Management	Community Health Services/ Liaison/ Counseling	Human Services/Sciences, General	Human Services/Sciences, General	Marriage and Family Therapy/ Counseling
	Distance Credentialed Counselor	Family and Consumer Sciences	Family and Consumer Sciences	Human Services/ Sciences
	Educator Certification in Family and Consumer Sciences	Community Health Services	Child and Family Services	Family Studies

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

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%
Mental Health and Substance Abuse and Behavioral Disorder Counselors	$42,120	576	39%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
American Association of Family and Consumer Sciences, Family, Career and Community Leaders of America	Volunteer at a community center; intern for a community non-profit organization

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.

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.

Successful completion of the Family and Community Services program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Human Services	13024200 (1 credit)	None	9-12
Professional Communications	13009900 (.5 credit)	None	9-12
Interpersonal Studies	13024400 (.5 credit)	None	9-12
Dollars and Sense	13024300 (.5 credit)	None	11-12
Principles of Community Services	N1302542 (1 credit)	None	9-10
Lifetime Nutrition and Wellness	13024500 (.5 credit)	None	9-12
Human Growth and Development	13014300 (1 credit)	None	10-12
Child Development	13024700 (1 credit)	None	10-12
Social and Community Services	N1302543 (1 credit)	None	10-12
Counseling and Mental Health	13024600 (1 credit)	None	11-12
Family and Community Services	13024900 (1 credit)	None	10-12
Practicum in Human Services	13025000 (2 credits) 13025005 (3 credits) 13025010 (2 credits) 13025015 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

FOR ADDITIONAL INFORMATION ON THE HUMAN SERVICES CAREER CLUSTER, PLEASE CONTACT:
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Level 1	Principles of Human Services
Level 2	Lifetime Nutrition and Wellness Human Growth and Development Interpersonal Studies
Level 3	Applied Nutrition and Dietetics
Level 4	Practicum in Human Services Practicum in Entrepreneurship Advanced Nutrition and Dietetics (TBD) Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Community Health Worker	Registered Dietitian	Nutrition Sciences	Nutrition Sciences	Nutrition Sciences
Entrepreneurship and Small Business	Counselor, Professional	Community Health Services/ Liaison/ Counseling	Mental Health Counseling/ Counselor	Community Health and Preventative Medicine
	Registered Dietitian Nutritionist	Health and Wellness, General	Nutrition	Nutrition
	Social Worker	Public Health	Human Nutrition and Foods	Exercise and Sports Nutrition

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

Occupations	Median Wage	Annual Openings	% Growth
Community Health Workers	$38,064	592	25%
Rehabilitation Counselors	$43,930	586	23$
Mental Health Counselors	$41,558	812	38%
Health Care Social Workers	$55,515	1,583	35%
Dietitians and Nutritionists	$57,762	428	24%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
American Association of Family and Consumer Sciences; Family, Career and Community Leaders of America	Job shadow a dietitian or nutritionist; work part-time at a counseling services center, health department or hospital

The Health and Wellness program of study introduces students to knowledge and skills related to promoting physical, emotional, social, and mental health and wellness. Students who choose this program of study may learn how to assist patients in planning for their health and wellness, respond to crises, and advise, provide education or counseling, or make referrals. CTE learners may also focus on addressing barriers to access health and wellness services.

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.

Successful completion of the Health and Wellness program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Human Services	13024200 (1 credit)	None	9-12
Lifetime Nutrition and Wellness	13024500 (.5 credit)	None	9-12
Human Growth and Development	13014300 (1 credit)	None	10-12
Interpersonal Studies	13024400 (.5 credit)	None	9-12
Applied Nutrition and Dietetics	N1302541 (1 credit)	None	10-12
Practicum in Human Services	13025000 (2 credits) 13025005 (3 credits) 13025010 (2 credits) 13025015 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Advanced Nutrition and Dietetics (TBD)	TBD	TBD	TBD
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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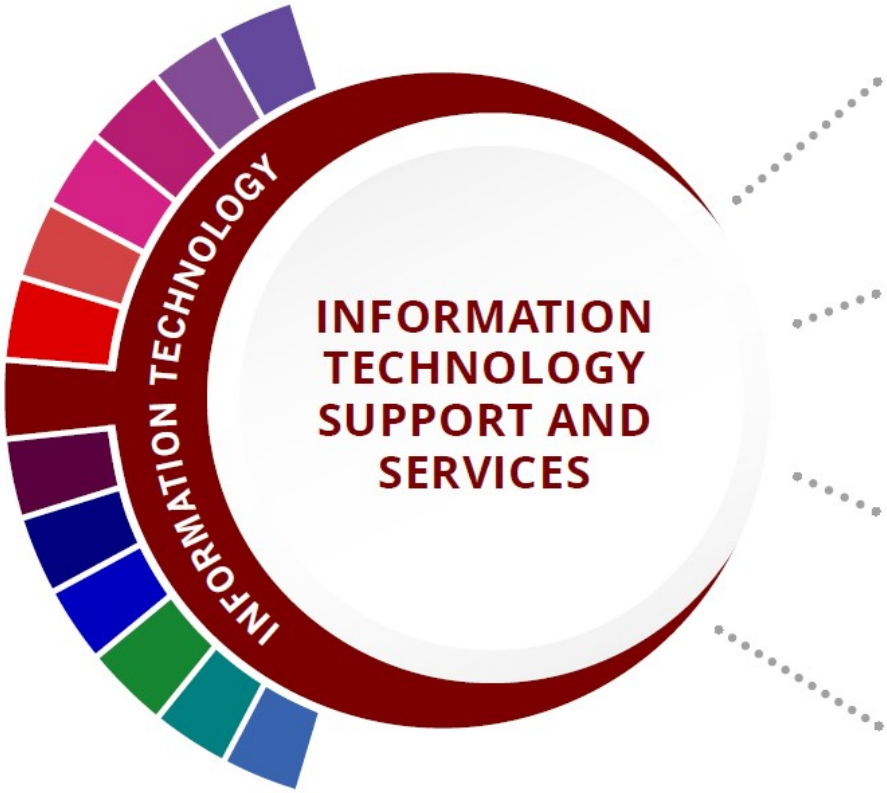

Level 1	Principles of Information Technology Geographic Information Systems
Level 2	Computer Maintenance/Lab Raster Based GIS
Level 3	Computer Technician Practicum Spatial Technology and Remote Sensing IT Troubleshooting (TBD)
Level 4	Computer Technician Practicum (2nd time) Practicum of Information Technology Practicum in Entrepreneurship Intendent Study in Technology Applications Independent Study in Evolving/Emerging Technologies Project-Based Research Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE / LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Microsoft Technology Associate Windows Operating System Fundamentals	IBM Certified Specialist - InfoSphere Optim for Distributed Systems Fundamentals	Computer and Information Sciences, General	Computer and Information Sciences, General	Computer and Information Sciences, General
ERSI ArcGIS Desktop Entry	IBM Certified Database Associate - DB2 11 Fundamentals for z/OS	Computer and Information Systems Security/ Information Assurance	Computer and Information Systems Security /Information Assurance	Computer Systems Analysis/ Analyst
CompTIA A+	HP ASE - ProLiant Server Solutions Integrator V2	Information Technology	Computer Engineering, General	Computer Engineering, General
CompTIA IT Fundamentals +	Oracle Linux 6 Advanced System Administration	Computer Systems Networking and Tele-communications	Computer Systems Networking and Tele-communications	Information Technology

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Join TSA Job shadow a database administrator or computer hardware engineer	Obtain a Certification

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.

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.

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 - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Information Technology	13027200 (1 credit)	None	9-10
Geographic Information Systems	N1302805 (1 credit)	None	10-12
Computer Maintenance/Lab	13027300 (1 credit) 13027310 (2 credits)	PREQ: Principles of Information Technology	10-12
Raster Based GIS	N1302806 (1 credit)	None	10-12
Computer Technician Practicum	13027500 (2 credits) 13027505 (3 credits)	None	10-12
Spatial Technology and Remote Sensing	N1302807 (1 credit)	None	10-12
IT Troubleshooting	TBD	TBD	TBD
Computer Technician Practicum (2nd time)	13027510 (2 credits) 13027515 (3 credits)	PREQ: Computer Technician Practicum	12
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	PREQ: A minimum of two high school information technology (IT) courses	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Independent Study in Technology Applications	03580900 (1 credit)	None	9-12
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	9-12
Project-Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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

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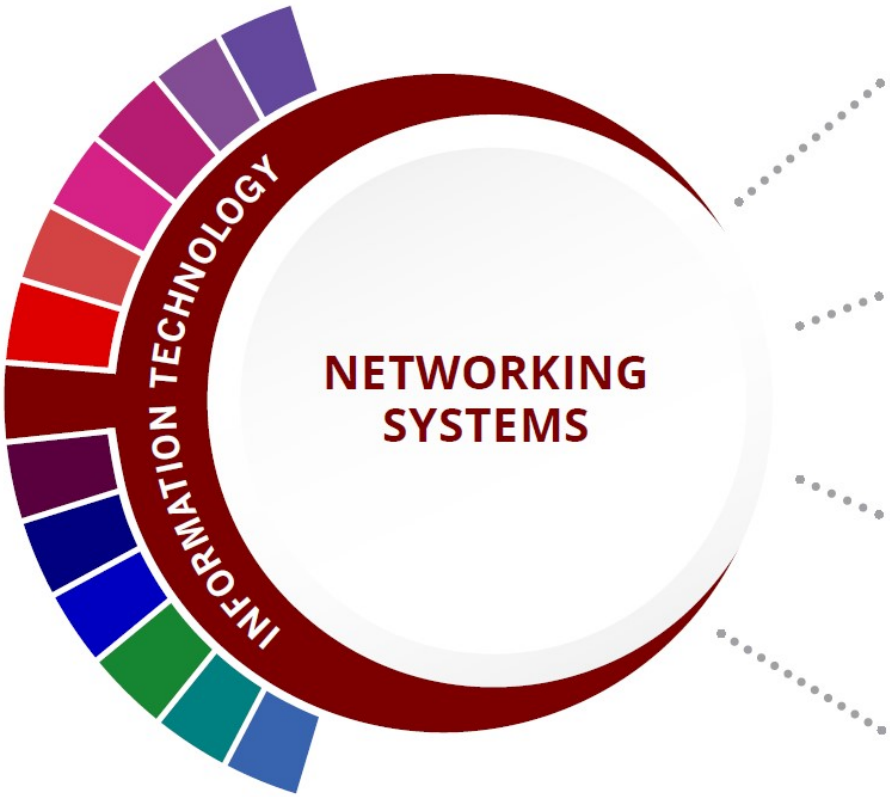

Level 1	Computer Science I Principles of Information Technology
Level 2	Internetworking Technologies I Computer Maintenance/Lab AP Computer Science Principles
Level 3	Internetworking Technologies II Networking/Lab Advanced Cloud Computing
Level 4	Practicum in Information Technology Practicum in Entrepreneurship Independent Study in Technology Applications Independent Study in Evolving/Emerging Technologies Project Based Research Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Oracle Certified Associate Java SE 8	AEM 6 Business Practitioner	Computer and Information Sciences, General	Computer and Information Sciences, General	Computer and Information Sciences, General
Oracle Certified Database Associate	Intelligence Planner Certification Program	Computer Systems Networking And Tele-communications	Computer Systems Networking And Tele-communications	Information Technology
Cisco Certified Entry Networking Technician (CCENT)	Cisco Certified Entry Networking Technician	Information Technology	Computer and Information Systems Security/ Information Assurance	Computer and Information Systems Security/ Information Assurance
Associate of (ISC)2	Microsoft Networking Fundamentals	Network and System Administration/ Administrator	Computer Engineering, General	Computer Engineering, General

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

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%

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 industry-based certification.

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.

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.

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 - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Computer Science I	03580200 (1 credit)	Algebra I	9-10
Principles of Information Technology	13027200 (1 credit)	None	9-10
Internetworking Technologies I	N1302803 (1 credit)	None	10-12
Computer Maintenance/Lab	13027300 (1 credit) 13027310 (2 credits)	PREQ: Principles of Information Technology	10-12
AP Computer Science Principles	A3580300 (1 credit)	Algebra I	9-12
Advanced Cloud Computing	N1302813 (1 credit)	None	10-12
Internetworking Technologies II	N1302804 (1 credit)	PREQ: Internetworking Technologies I	10-12
Networking/Lab	13027400 (1 credit) 13027410 (2 credits)	None	10-12
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	PREQ: Minimum of two high school information technology (IT) courses	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	10-12
Independent Study in Technology Applications	03580900 (1 credit)	None	9-12
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	9-12
Project Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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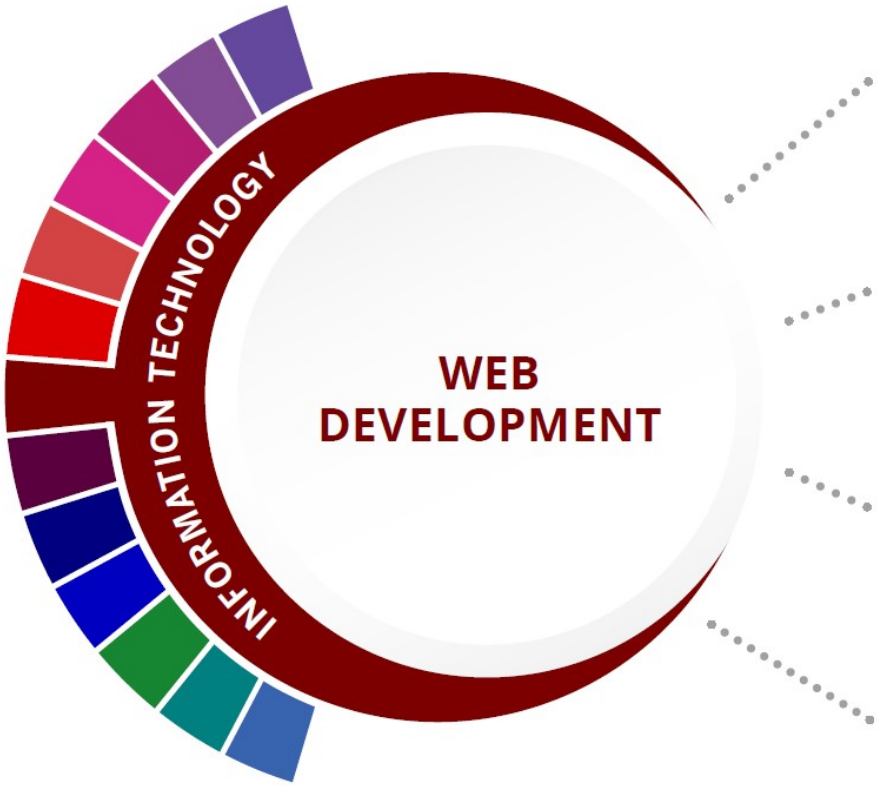

Level 1	Principles of Information Technology
Level 2	Web Communications Computer Science I Foundations of User Experience (UX)
Level 3	Web Design Web Game Development Advanced User Experience Design
Level 4	Practicum in Information Technology Practicum in Entrepreneurship Independent Study in Technology Applications Independent Study in Evolving/Emerging Technologies Project Based Research Career Preparation

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE / LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Oracle Certified Associate Java SE 8	AEM 6 Developer	Computer Programming/ Programmer, General	Web/ Multimedia Management and Webmaster	Computational Science
WD Certified Web Design Certification	Certified Webmaster Professional	Computer Science	Computer Science	Computer Science
Microsoft Technology Associate Introduction to Programming Certifications	Adobe Campaign Developer	Web Page, Digital/ Multimedia and Information Resources Design	Web Page, Digital/ Multimedia and Information Resources Design	Information Science/ Studies
	IBM Certified Solution Developer – Open Social	Computer Systems Networking and Tele-communications	Computer Systems Networking and Tele-communications	Computer Systems Networking and Tele-communications

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

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%

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	Get an Oracle or CISCO Certification

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.

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.

Successful completion of the Web Development program of study will fulfill requirements of the Business and Industry endorsement or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Information Technology	13027200 (1 credit)	None	9-12
Web Communications	03580810 (.5 credit)	None	9-12
Computer Science I	03580200 (1 credit)	None	9-12
Foundations of User Experience	N1302809 (1 credit)	None	10-12
Web Design	03580820 (1 credit)	None	9-12
Web Game Development	03580830 (1 credit)	None	9-12
Advanced User Experience Design	N1302814 (1 credit)	None	10-12
Practicum in Information Technology	13028000 (2 credit) 13028005 (3 credit) 13028010 (2 credit) 13028015 (3 credit)	PREQ: A minimum of two high school information technology (IT) courses	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Independent Study in Technology Applications	03580900 (1 credit)	None	9-12
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	9-12
Project Based Research	12701500 (1 credit)	None	11-12
Career Preparation	12701300 (2 credit) 12701305 (3 credit)	None	11-12

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Emergency Medical Technician - Basic	Emergency Medical Technician - Basic	Emergency Medical Technology/ Technician (EMT Paramedic)	Emergency Medical Technology/ Technician (EMT Paramedic)	
Emergency Telecommunicator	Fire Protection Personnel/ Firefighter	Fire Prevention and Safety Technology/ Technician	Natural Resources Law Enforcement and Protective Services	
Basic Structure Fire Protection Certification	Fire Protection System Contractor	Fire Science/ Firefighting		
	Fire Inspector			

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Attend local emergency awareness events, Texas Public Service Association	Volunteer at a hospital or a fire station

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.

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.

Successful completion of the Emergency Services program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Law, Public Safety, Corrections, and Security	13029200 (1 credit)	None	9-12
Disaster Response	N1303011 (1 credit)	None	9-12
Firefighter I	13029900 (2 credits)	None	10-12
Emergency Medical Technician - Basic	N1303015 (2 credits)	PREQ: Biology	11-12
Anatomy and Physiology	13020600 (1 credit)	PREQ: Biology and a second science credit;	10-12
National Security	13018800 (1 credit	None	10-12
Counseling and Mental Health	13024600 (1 credit)	None	11-12
Firefighter II	13030000 (3 credits)	PREQ: Firefighter I	11-12
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits) 13030110 (2 credits) 13030115 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12

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Level 1	Principles of Government and Public Administration
Level 2	Political Science I Federal Law Enforcement and Protective Services
Level 3	Planning and Governance Political Science II Dimensions of Diplomacy
Level 4	Public Management and Administration Revenue, Taxation, and Regulation Practicum in Local, State, and Federal Government

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
	Accountant, Certified Public	Accounting and Business/ Management	Accounting and Finance	Accounting
	Tax Professional/ Appraiser/ Assessor-Collector	Financial Mathematics	Financial Mathematics	Taxation
	Real Estate Broker/Sales Agent	Finance, General	Finance, General	Finance, General
	Real Estate Inspector	Real Estate	Real Estate	Real Estate

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

Occupations	Median Wage	Annual Openings	% Growth
Tax Examiners and Collectors, Revenue Agents	$47,445	307	9%
Financial Examiners	$76,731	412	27%
Appraisers and Assessors of Real Estate	$54,496	529	21%
Financial Analysts	$79,414	2,798	24%
Financial Specialists	$67,995	997	17%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Attend local council and board meetings, Texas Public Service Association	Intern with a legislator or city official; develop and present a solution for an identified problem

The Government and Public Administration program of study explores the occupations and educational opportunities associated with examining, evaluating, and investigating conformity with laws and regulations. This program of study will also explore the opportunities related to developing comprehensive plans and programs for use of land and physical facilities of jurisdictions, such as towns, cities, counties, and metropolitan areas.

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 protective agencies of fire and emergency services.

Successful completion of the Government and Public Administration program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Government and Public Administration	13018200 (1 credit)	None	9-11
Political Science I	13018300 (1 credit)	None	10-12
Federal Law Enforcement and Protective Services	13029800 (1 credit)	None	10-12
Planning and Governance	13018700 (1 credit)	None	10-12
Political Science II	13018400 (1 credit)	None	10-12
Dimensions of Diplomacy	N1301820 (1 credit)	None	11-12
Public Management and Administration	13018600 (1 credit)	None	10-12
Revenue, Taxation, and Regulation	13018500 (1 credit)	None	10-12
Practicum in Local, State, and Federal Government	13019000 (2 credits) 13019005 (3 credits) 13019010 (2 credits) 13019015 (3 credits)	None	11-12

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Non-Commissioned Security Officer Level II	Law Enforcement Officer	Criminal Justice/Safety Studies/Law Enforcement Administration	Criminal Justice/Safety Studies/Law Enforcement Administration	Criminal Justice/Safety Studies/Law Enforcement Administration
Emergency Telecommunicator	Private Investigator/ Security Guard	Criminal Justice/ Police Science	Criminal Justice/ Police Science	Natural Resources Law Enforcement and Protective Services
	Code Enforcement Officer	Corrections	Juvenile Corrections	
	Certified Law Enforcement Planner	Criminalistics and Criminal Science	Cyber/ Computer Forensics and Counterterrorism	

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Texas Public Service Association; criminal justice clubs	Attend court hearings and other legal procedures

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.

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

Successful completion of the Law and Public Service program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Law, Public Safety, Corrections, and Security	13029200 (1 credit)	None	9-12
Law Enforcement I	13029300 (1 credit)	None	10-12
Federal Law Enforcement and Protective Services	13029800 (1 credit)	None	10-12
Criminal Investigation	13029550 (1 credit)	None	10-12
Law Enforcement II	13029400 (1 credit)	None	10-12
Correctional Services	13029700 (1 credit)	None	10-12
Forensic Psychology	N1303012 (1 credit)	None	11-12
Counseling and Mental Health	13024600 (1 credit)	None	11-12
Forensic Science	13029500 (1 credit)	PREQ: Biology and Chemistry	11-12
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits) 13030110 (2 credits) 13030115 (3 credits)	None	11-12

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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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
	Attorney	Legal Assistant/ Paralegal	Legal Assistant/ Paralegal	Law
	Certified Paralegal			Intellectual Property Law
	Board Certification in Types of Law			Advanced Legal Research/ Studies, General
	Certified Legal Video Specialist			International Law and Legal Studies

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Attend court hearings and other legal procedures; Texas Public Service Association	Intern with a local attorney; script and conduct a mock trial

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.

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.

Successful completion of the Legal Studies program of study will fulfill requirements of the Public Service Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Law, Public Safety, Corrections, and Security	13029200 (1 credit)	None	9-12
Court Systems and Practices	13029600 (1 credit)	None	10-12
Business Law	13011700 (1 credit)	None	11-12
Political Science I	13018300 (1 credit)	None	10-12
Legal Research and Writing	N1303014 (1 credit)	None	10-12
Political Science II	13018400 (1 credit)	None	10-12
Advanced Legal Skills and Professions	N1303016 (1 credit)	None	11-12
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits) 13030110 (2 credits) 13030115 (3 credits)	None	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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

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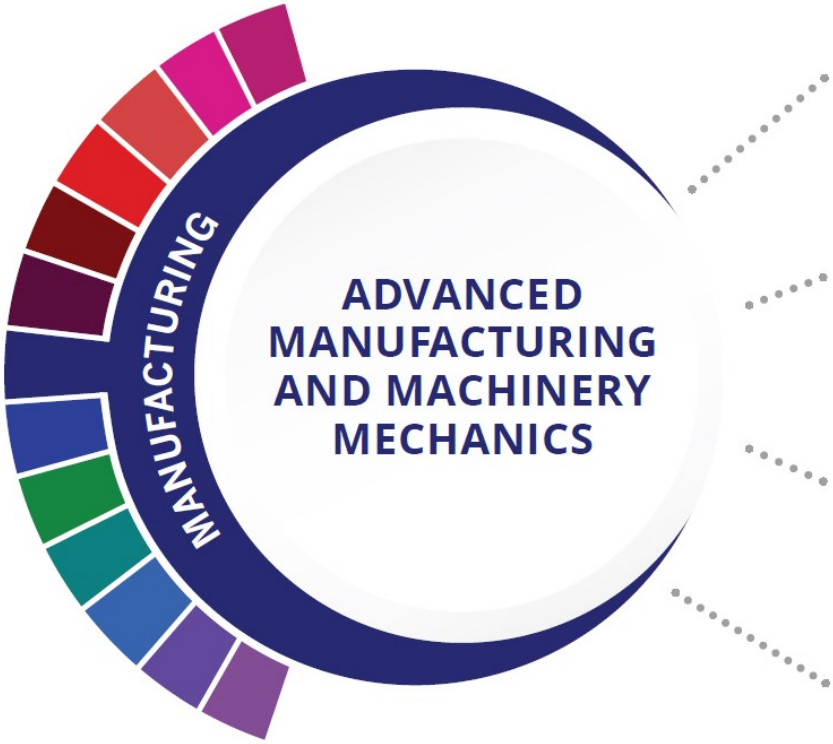

Level 1	Principles of Manufacturing Principles of Applied Engineering
Level 2	Occupational Safety and Environmental Technology I Robotics I Manufacturing Engineering Technology I Programmable Logic Controller I
Level 3	Engineering Design and Presentation I Manufacturing Engineering Technology II Robotics II Occupational Safety and Environmental Technology II Programmable Logic Controller II
Level 4	Practicum in Manufacturing Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
FANUC Robot Operator 1	Engineer, Professional	Electro-mechanical Engineering/ Technology	Electrical Engineering	Electrical Engineering
Mastercam Associate Level Certification	Certified Quality Technician	Certified Quality Technician	Industrial Engineering	Industrial Engineering
NCCER Industrial Maintenance Mechanic	Plant Maintenance Technologist	Industrial Mechanics and Maintenance Technology	Mechanical Engineering	Mechanical Engineering
NIMS Industrial Technology Maintenance - Maintenance Operations				

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Participate in SkillsUSA and local STEM events	Apprenticeship at a local business or industry American Welding Society

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.

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.

Successful completion of the Advanced Manufacturing and Machinery program of study will fulfill requirements of the Business and Industry or STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

08/2021

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Manufacturing	13032200 (1 credit)	None	9-12
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	9-12
Principles of Applied Engineering	13036200 (1 credit)	None	9-10
Engineering Design and Presentation I	13036500 (1 credit)	PREQ: Algebra I	10-12
Occupational Safety and Environmental Technology II	N1303681 (1 credit)	PREQ: OSET I	9-12
Manufacturing Engineering Technology I	13032900 (1 credit)	None	10-12
Robotics I	13037000 (1 credit)	None	9-10
Programmable Logic Controller I	N1303689 (1 credit)	None	10-12
Manufacturing Engineering Technology II	13032950 (1 credit)	PREQ: Manufacturing Engineering Technology I	11-12
Robotics II	13037050 (1 credit)	PREQ: Robotics I	10-12
Programmable Logic Controller II	N1303690 (1 credit)	None	11-12
Practicum in Manufacturing	13033000 (2 credits) 13033005 (3 credits) 13033010 (2 credits) 13033015 (3 credits)	None	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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CTE@tea.texas.gov
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Level 1	Blueprint Reading for Manufacturing Applications Principles of Manufacturing Principles of Applied Engineering
Level 2	Metal Fabrication and Machining I Diversified Manufacturing I Occupational Safety and Environmental Technology I
Level 3	Precision Metal Manufacturing I Metal Fabrication and Machining II Diversified Manufacturing II Occupational Safety and Environmental Technology II Computer Integrated Manufacturing (PLTW)
Level 4	Precision in Metal Manufacturing II/Lab Occupational Safety and Environmental Technology III Practicum in Manufacturing Practicum in Entrepreneurship

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
MSSC Certified Production Technician	Certified Welder or Welder Inspector	Welding Technology/ Welder	Welding Engineering Technology/ Technician	Welding Engineering Technology/ Technician
ISCET Associate-Level Certified Electronics Technician	Machining Level 1 - CNC Milling: Programming Setup & Operations	Machine Shop Technology/ Assistant	Biomedical Technology/ Technician	Occupational Health and Industrial Hygiene
Mastercam Professional Level Certification	Certified Welding Engineering	Operations Management and Supervision	Operations Management and Supervision	Operations Management and Supervision
NIMS Industrial Technology Maintenance - Basic Mechanical System	Certified Environmental, Safety, and Health Trainer	Occupational Safety and Health Technology/ Technician	Environmental Health	Environmental Health

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

Occupations	Median Wage	Annual Openings	% Growth
Mechanical Engineering Technicians	$57,117	453	9%
CNC Machine Operators	$39,250	1,319	12%
Aerospace Engineering and Operations Technicians	$60,757	114	9%
Electrical and Electronics Engineering Technicians	$60,382	1,439	9%
Industrial Engineering Technicians	$61,672	326	9%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Participate and compete in SkillsUSA Job shadow a machinist	Apprenticeship at a local business or industry American Welding Society

The Manufacturing Technology 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 set up and operate a variety of machine tools to produce precision parts and instruments. Students will also 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.

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.

Successful completion of the Manufacturing Technology program of study will fulfill requirements of the Business and Industry and STEM Endorsement if math and science requirements are met. Revised - March 2022

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Blueprint Reading for Manufacturing Applications	N1303684 (1 credit)	None	10-12
Principles of Manufacturing	13032200 (1 credit)	None	9-12
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	9-12
Principles of Applied Engineering	13036200 (1 credit)	None	9-10
Metal Fabrication and Machining I	13032700 (2 credits)	None	10-12
Diversified Manufacturing I	13032650 (1 credit)	None	10-12
Occupational Safety and Environmental Technology II	N1303681 (1 credit)	PREQ: OSET I	9-12
Precision Metal Manufacturing I	13032500 (2 credits)	None	10-12
Metal Fabrication and Machining II	13032800 (2 credits)	PREQ: Metal Fabrication and Machining I	11-12
Diversified Manufacturing II	13032660 (1 credit)	PREQ: Diversified Manufacturing I	11-12
Occupational Safety and Environmental Technology III	N1303682 (2 credits)	PREQ: OSET I and II	11-12
Computer Integrated Manufacturing (PLTW)	N1303748 (1 credit)	None	9-12
Precision Metal Manufacturing II/Lab	13032600 (2 credits) 13032610 (3 credits)	None	11-12
Practicum in Manufacturing	13033000 (2 credits) 13033005 (3 credits) 13033010 (2 credits) 13033015 (3 credits)	None	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12

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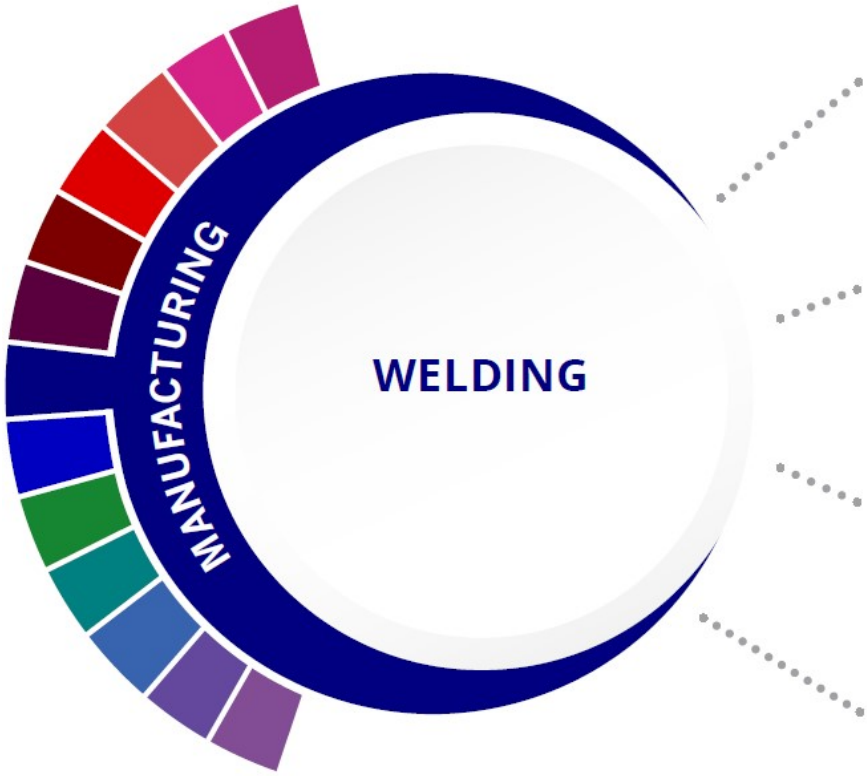

Level 1	Introduction to Welding
Level 2	Welding I Introduction to Film Interpretation of Weldments
Level 3	Welding II/Lab
Level 4	Practicum in Manufacturing Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
AWS Certified Welder, D1.1, D9.1	Certified Welder or Welder Inspector	Certified Welder or Welder Inspector	Welding Engineering Technology/ Technician	Welding Engineering Technology/ Technician
ASW SENSE Level 1	Machining Level 1 - CNC Milling: Programming Setup & Operations	Machine Shop Technology/ Assistant	Biomedical Technology/ Technician	Occupational Health and Industrial Hygiene
API 1104 Welding Certificate	Certified Welding Engineering	Operations Management and Supervision	Operations Management and Supervision	Operations Management and Supervision
NCCER Welding, Level 1	Certified Environmental, Safety, and Health Trainer	Occupational Safety and Health Technology/ Technician	Environmental Health	Environmental Health

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Participate and compete in SkillsUSA Job shadow a machinist	Apprenticeship at a local business or industry American Welding Society

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.

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.

Successful completion of the Manufacturing Technology program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Introduction to Welding	13032250 (1 credit)	None	9-12
Welding I	13032300 (2 credit)	None	10-12
Introduction to Film Interpretation of Weldments	N1303687 (1 credit)	None	10-12
Welding II/Lab	13032400 (2 credits) 13032410 (3 credits)	PREQ: Welding I	11-12
Practicum in Manufacturing	13033000 (2 credits) 13033005 (3 credits) 13033010 (2 credits) 13033015 (3 credits)	None	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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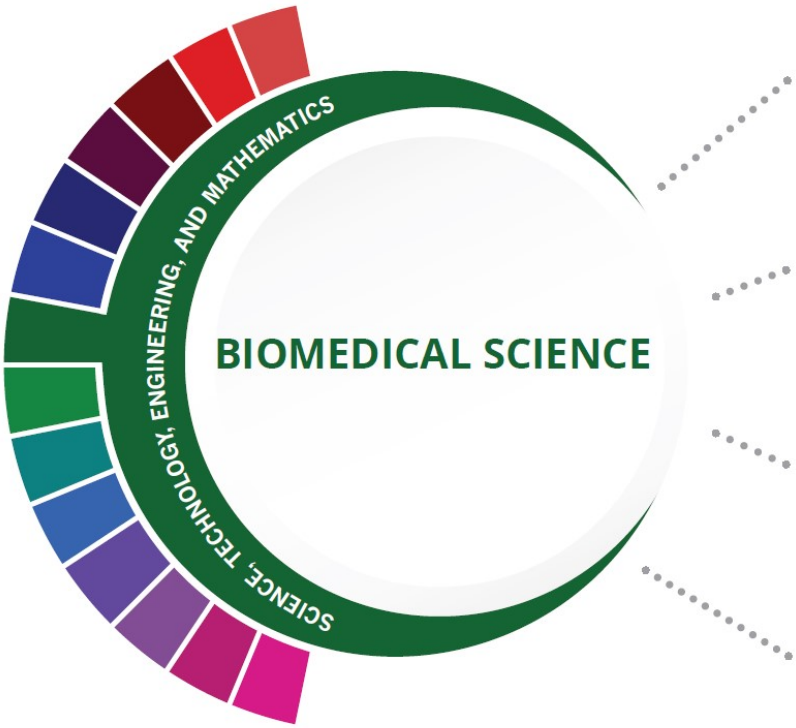

Level 1	Principles of Biosciences Principles of Biomedical Science (PLTW)
Level 2	Human Body Systems (PLTW) Biotechnology I
Level 3	Biotechnology II Medical Microbiology Medical Interventions (PLTW)
Level 4	Pathophysiology Biomedical Innovation (PLTW) Practicum in Science, Technology Scientific Research and Design

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Medical Laboratory Assistant	Medical and Clinical Laboratory Technologists	Histologic Technician	Biomedical Engineers	Genetic Counseling
Medical Laboratory Technician		Clinical Laboratory Science/ Medical Technology/ Technologist	Biomedical Engineers	Medical Scientists
			Clinical Laboratory Science/ Medical Technology/ Technologist	Epidemiology

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

Occupations	Median Wage	Annual Openings	% Growth
Medical and Laboratory Technicians	$37,981	1,159	28%
Biological Technicians	$42,931	452	17%
Forensic Science Technicians	$48,152	171	35%
Chemical Technicians	$49,733	672	10%
Medical and Clinical Laboratory Technologists	$58,760	1,166	25%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Health Occupations Students of America (HOSA)	Lab internship or shadow a healthcare or medical professional

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

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.

Successful completion of the Biomedical Science program of study will fulfill requirements of the Public Service or STEM endorsement if the math and science requirements are met.

Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Biosciences	13036300 (1 credit)	None	9-10
Principles of Biomedical Science (PLTW)	N1302092 (1 credit)	None	11-12
Human Body Systems (PLTW)	N1302093 (1 credit)	None	10-12
Biotechnology I	13036400 (1 credit)	PREQ: Biology	11-12
Biotechnology II	13036450 (1 credit)	PREQ: Biotechnology I and Chemistry and Biology	11-12
Medical Microbiology	13020700 (1 credit)	PREQ: Biology and Chemistry	10-12
Medical Interventions (PLTW)	N1302094 (1 credit)	None	10-12
Pathophysiology	13020800 (1 credit)	PREP: Biology and Chemistry	11-12
Biomedical Innovation (PLTW)	N1302095 (1 credit)	None	11-12
Practicum in Science, Technology, Engineering, and Math	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (3 credits)	PREQ: Algebra I and Geometry	12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics	11-12

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CAREER CLUSTER, PLEASE CONTACT:

Jennifer Bullock | Jennifer.Bullock@tea.texas.gov
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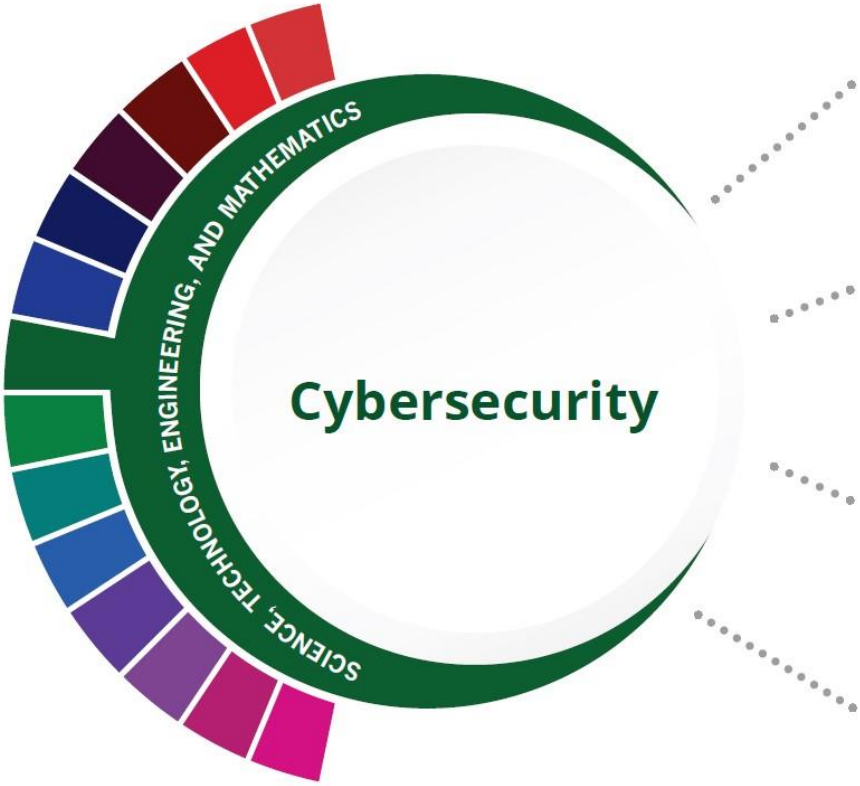

Level 1	Principles of Information Technology Fundamentals of Computer Science Foundations of Cybersecurity
Level 2	Internetworking Technologies I Computer Science I AP Computer Science Principles Computer Maintenance/Lab
Level 3	Engineering Applications of Computer Science Principles Networking/Lab Digital 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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Oracle Certified Associate Java SE 8	GIAC Reverse Engineering Malware	System Networking, and LAN/WAN Management	Computer Systems Networking and Telecommunications	Computer Systems Analysis/Analyst
Oracle Certified Database Associate	Certified Advanced Windows Forensic Examiner	Information Technology	Computer Systems Networking and Telecommunications	Information Technology
Cisco Certified Entry Networking Technician (CCENT)	SAP Certified Technology Professional System Security Architect	Computer and Information Sciences, General	Computer and Information Sciences, General	Computer and Information Sciences, General
CompTIA A+, Network+, Security+, and IT Fundamentals	Cisco Certified Network Professional Security Certification	Computer Science	Computer Science	Computer Science

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

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%

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 an industry based certification.

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.

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.

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 - March 2022

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Information Technology	13027200 (1 credit)	None	9-10
Fundamentals of Computer Science	03580140 (1 credit)	None	9-12
Foundations of Cybersecurity	03580850 (1 credit)	None	9-12
Internetworking Technologies I	N1302803 (1 credit)	None	10-12
Computer Science I	03580200 (1 credit)	PREQ: Algebra I	9-12
Computer Maintenance/Lab	13027300 (1 credit) 13027310 (2 credits)	PREQ: Principles of Information Technology	10-12
Engineering Applications of Computer Science Principles	N1303772 (1 credit)	None	10-12
Networking/Lab	13027400 (1 credit) 13027410 (2 credits)	None	10-12
Digital Forensics	03580360 (1 credit)	None	9-12
Internetworking Technologies II	N1302804 (1 credit)	PREQ: Internetworking Technologies I	11-12
AP Computer Science Principles	A3580300 (1 credit)	None	9-12
Discrete Mathematics for Computer Science	03580370 (1 credit)	PREQ: Algebra II	11-12
IB Computer Science Standard Level	I3580200 (2 credits)	None	9-12
AP Computer Science-MATH	A3580110 (1 credit)	None	9-12
AP Computer Science- LOTE	A3580120 (1 credit)	None	9-12

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Cybersecurity Capstone	03580855 (1 credit)	None	11-12
Practicum of Information Technology	13028000 (2 credit) 13028005 (3 credit) 13028010 (2 credit) 13028015 (3 credit)	PREQ: Two high school Information Technology courses	12
Practicum in Science, Technology, Engineering and Mathematics	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (3 credits)	PREQ: Algebra I and Geometry	12
Project-Based Research	12701500 (1 credit)	None	11-12
Independent Study in Technology Applications	03580900 (1 credit)	None	9-12
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	9-12
IB Computer Science Higher Level-MATH	I3580310 (1 credit)	None	9-12
IB Computer Science Higher Level- LOTE	I3580320 (1 credit)	None	9-12

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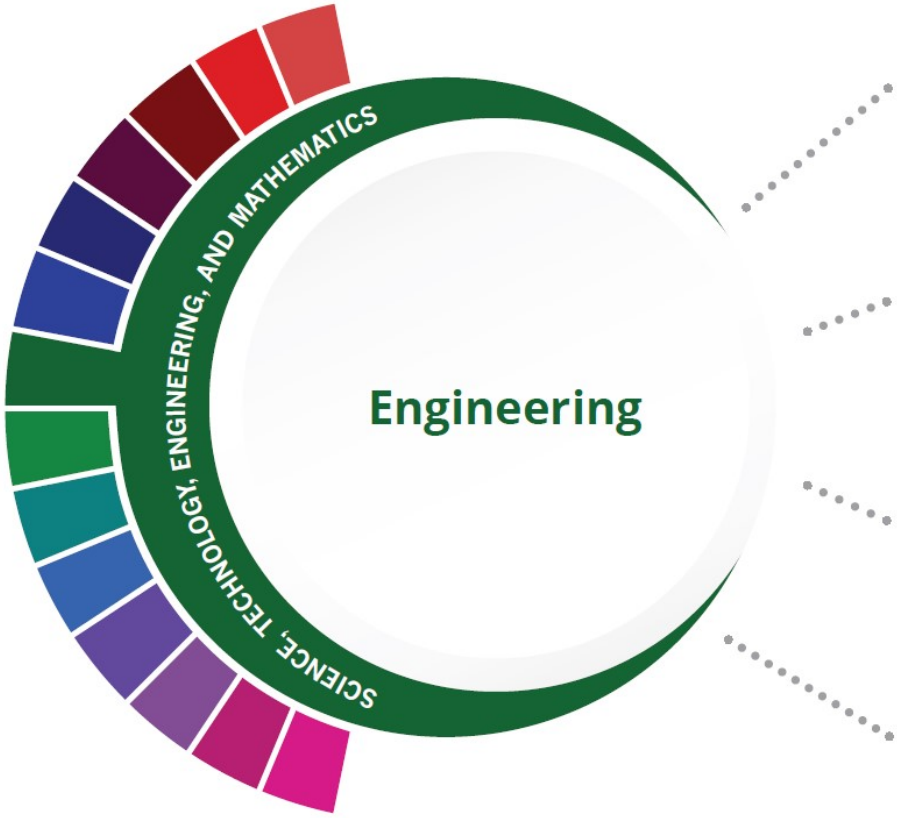

Level 1	Principles of Applied Engineering Computer Aided Drafting and Manufacturing (TBD) Introduction to Engineering Design (PLTW) Engineering Essentials (PLTW)
Level 2	Manufacturing Engineering Technology I
Level 3	Engineering and Design and Development (PLTW) Engineering Design and Presentation I Computer Integrated Manufacturing (PTLW) 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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Autodesk Certified Professional or User (ACU)-Inventor	Engineer, Professional	Electrical and Electronics Engineering	Electrical and Electronics Engineering	Electrical and Electronics Engineering
Certified SolidWorks Associate (CSWA)	Fluid Power Systems Designer	Drafting and Design Technology/ Technician, General	CAD/CADD Drafting and/or Design Technology/ Technician	Mechanical Engineering
Certified Engineering Technician-Audio Systems	Certified Biomedical Auditor	Engineering Technology	Bioengineering and Biomedical Engineering	Bioengineering and Biomedical Engineering
	Certified Cost Estimator/ Analyst		Construction Engineering Technology/ Technician	

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

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

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Participate in competitions like Skills USA	Engineering internship Job shadow a machinist

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.

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.

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 - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Applied Engineering	13036200 (1 credit)	None	9-10
Computer Aided Drafting for Manufacturing (TBD)	TBD	TBD	TBD
Introduction to Engineering Design (PLTW)	N1303742 (1 credit)	None	9-12
Engineering Essentials (PLTW)	N1303760 (1 credit)	None	9-10
Manufacturing Engineering Technology I	13032900 (1 credit)	None	10-12
Engineering Design and Development (PTLW)	N1303749 (1 credit)	None	9-12
Engineering Design and Presentation I	13036500 (1 credit)	PREQ: Algebra I	10-12
Computer Integrated Manufacturing (PLTW)	N1303748 (1 credit)	None	9-12
Aerospace Engineering (PLTW)	N1303745 (1 credit)	None	9-12
Digital Electronics	13037600 (1 credit)	PREQ: Algebra I and Geometry	10-12
Civil Engineering & Architecture (PLTW)	N1303747 (1 credit)	None	9-12
Engineering Science	13037500 (1 credit)	PREQ: Algebra I and Biology Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	10-12
Environmental Sustainability (PLTW)	N1303746 (1 credit)	None	9-12
Engineering Design & Problem Solving	13037300 (1 credit)	PREQ: Algebra I and Geometry	11-12
Engineering Design and Presentation II	13036600 (2 credits)	PREQ: Algebra I and Geometry	11-12
Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (2 credits)	PREQ: Algebra I and Geometry	12
Scientific Research & Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CAREER CLUSTER, PLEASE CONTACT:

Jennifer Bullock | Jennifer.Bullock@tea.texas.gov
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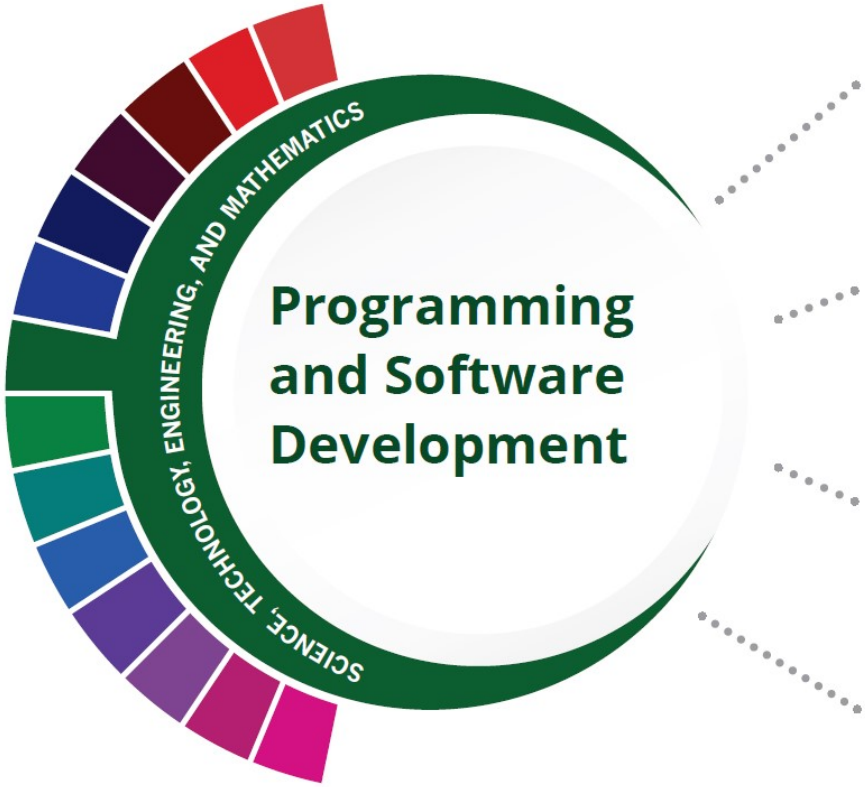

Level 1	Fundamentals of Computer Science
Level 2	AP Computer Science Principles Computer Science I Game Programming and Design
Level 3	Introduction to C# Programming Applications AP Computer Science A, MATH AP Computer Science A, LOTE Mobile Application Development Computer Science II IB Computer Science 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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Oracle Certified Association JAVA SE 8 Programmer	Certified Computing Professional	Computer Programming/ Programmer Genera	Management Information Systems, General	Computer Software Engineer
Oracle Certified Database Associate	Cloud Technology Associate Certification	Computer Software Engineer	Computer Software Engineer	Computer Science
Microsoft Technology Associate, Introduction to Programming Using Python, HTML or CSS	AEM 6 Developer	Computer Science	Computer Science	Information Science/ Studies
Microsoft Technology Associate, Introduction to Programming Using Java or Java Script	Certified Software Analyst	Certified Software Analyst	Information Science/ Studies	

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

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

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.

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.

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.

Successful completion of the Programming and Software Development program of study will fulfill requirements of the Business and Industry and STEM endorsement if the math and science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Fundamentals of Computer Science	03580140 (1 credit)	None	9-12
AP Computer Science Principles	A3580300 (1 credit)	None	9-12
Computer Science I	03580200 (1 credit)	PREQ: Algebra I	9-12
Game Programming and Design	03580380 (1 credit)	PREQ: Algebra I	9-12
Introduction to C# Programming Applications	N1302812 (1 credit)	None	11-12
AP Computer Science A, MATH, LOTE	A3580110 (MATH) (1 credit) A3580120 (LOTE) (1 credit)	None	9-12
Mobile Application Development	03580390 (1 credit)	PREQ: Algebra I	11-12
Computer Science II	03580300 (1 credit)	PREQ: Algebra I, Computer Science I, or Fundamentals of Computer Science	11-12
Advanced Cloud Computing	N1302813 (1 credit)	None	10-12
IB Computer Science Standard Level	I3580200 (2 credits)	None	9-12
Discrete Mathematics for Computer Science	03580370 (1 credit)	PREQ: Algebra	11-12
Computer Science III	03580350 (1 credit)	PREQ: Computer Science II, AP Computer Science A	12
IB Computer Science Higher Level MATH, LOTE	I3580310 (MATH) (1 credit) I3580320(LOTE) (1 credit)	None	9-12
Practicum in Information Technology	13028000 (2 credit) 13028005 (3 credit) 13028010 (2 credit) 13028015 (3 credit)	PREQ: Two high school information technology courses	12
Practicum in Audio/Video Production	13008700 (2 credit) 13008705 (3 credit) 13008710 (2 credit) 13008715 (3 credit)	PREQ: Audio/Video Production II Lab	11-12

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credit) 13037405 (3 credit) 13037410 (2 credit) 13037415 (3 credit)	PREQ: Algebra I and Geometry	12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credit) 12701305 (3 credit)	None	11-12
Independent Study in Technology Applications	03580900 (1 credit)	None	12
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	12

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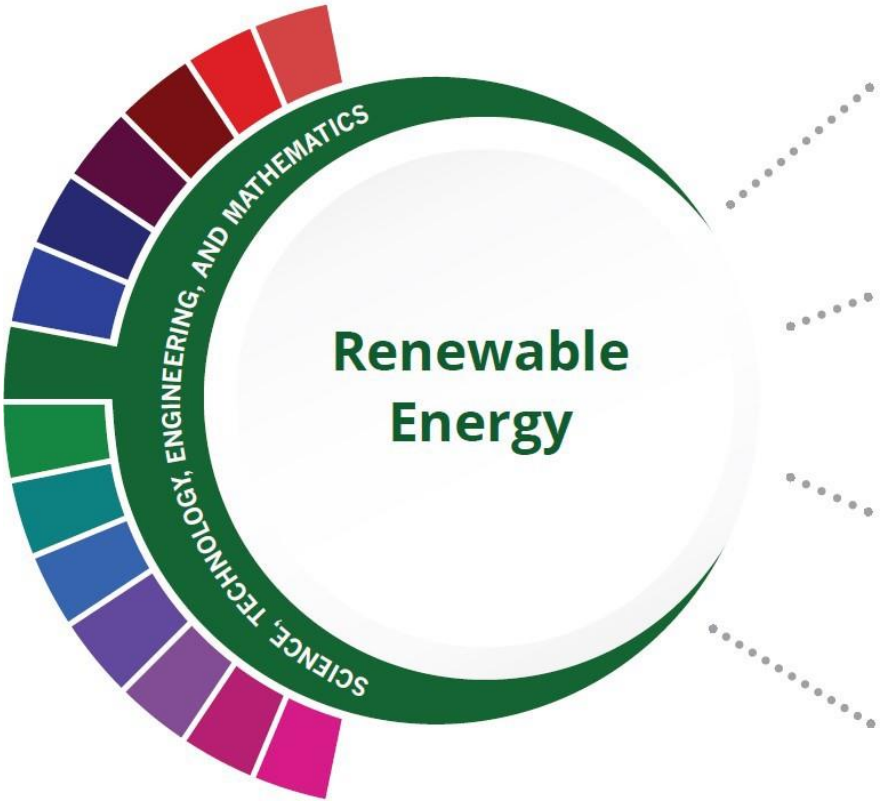

Level 1	Principles of Applied Engineering Foundations of Energy
Level 2	AC/DC Electronics Introduction to Renewable Energy (TBD)
Level 3	Energy and Natural Resources Technology/Lab Environmental Sustainability (PLTW) Solid State Electronics Scientific Research and Design
Level 4	Digital Electronics Engineering Design and Problem Solving Project-Based Research Applied Mathematics for Technical Professionals Practicum in STEM Practicum in Energy (TBD)

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
	Photovoltaic Installer-Level I Professional	Industrial Mechanics and Maintenance Technology	Surveying Engineering	Surveying Engineering
	Solar Photovoltaic Certification	Solar Energy/ Technology	Systems Engineering	Systems Engineering
	Small Wind Installer-Level I	Engineering, Mechanics	Engineering, Mechanics	Manufacturing Engineering
		Engineering, General	Engineering, General	Engineering, General
*Includes Level I and Level II Certificates				

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

Occupations	Median Wage	Annual Openings	% Growth
Wind Turbine Services Technician	$51,334	387	108%
Solar Photovoltaic Installer	$43,957	47	81%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Skills USA Science Club	Research four renewable energy companies and compare them.

The Renewable Energy program of study helps CTE learners discover to assemble, inspect, maintain, and repair different equipment required for renewable energy. It introduces students to solar photovoltaic equipment and wind turbines, the systems and processes used to maintain and manage these types of equipment, and helps students develop the skills needed to do so.

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.

Successful completion of the Renewable Energy program of study will fulfill requirements of the Business and Industry or STEM endorsement if the Math and Science requirements are met. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Applied Engineering	13036200 (1 credit)	None	9-12
Foundations of Energy	13040503 (1 credit)	None	9-12
AC/DC Electronics	13036800 (1 credit)	PREQ: Principles of Applied Engineering	10-12
Energy and Natural Resources Technology/Lab	13001100 (1 credit) 13001110 (2 credits)	PREQ: At least 1 credit from courses in Agriculture, Food and Natural Resources Cluster	10-12
Introduction to Renewable Energy	TBD	TBD	TBD
Environmental Sustainability (PTLW)	N1303746 (1 credit)	None	9-12
Solid State Electronics	13036900 (1 credit)	PREQ: AC/DC Electronics	11-12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics	11-12
Digital Electronics	13037600 (1 credit)	PREQ: Algebra I and Geometry	10-12
Engineering Design and Problem Solving	13037300 (1 credit)	PREQ: Algebra I and Geometry	11-12
Project-Based Research	12701500 (1 credit)	None	11-12
Applied Mathematics for Technical Professionals	1270410 (1 credit)	None	11-12
Practicum in STEM	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (3 credits)	PREQ: Algebra I and Geometry	12
Practicum in Energy	TBD	TBD	TBD

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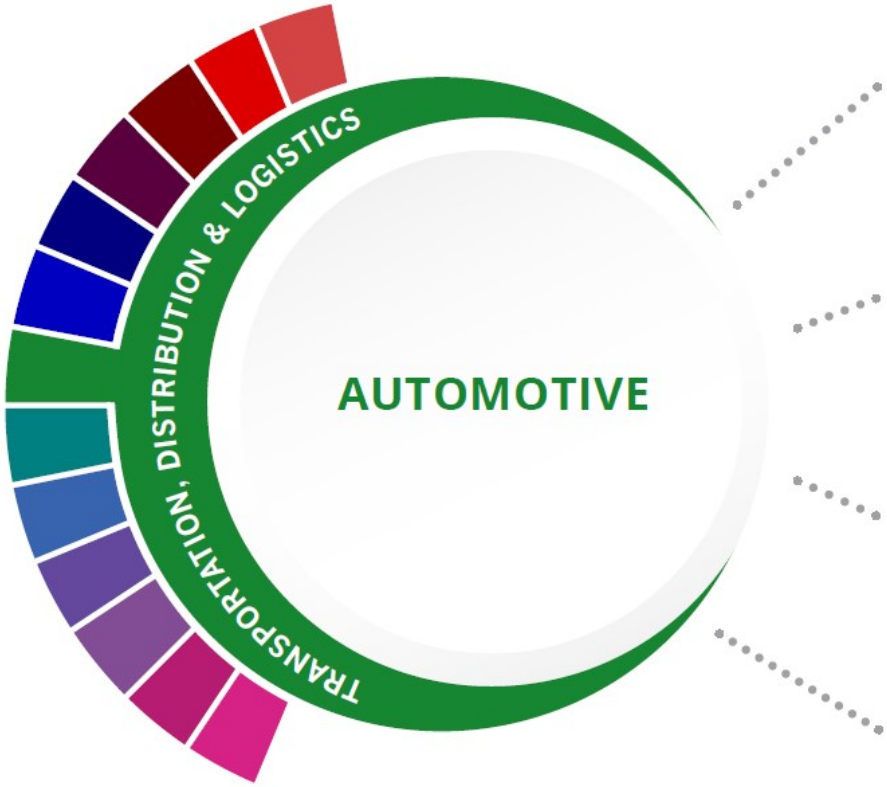

Level 1	Principles of Transportation Systems Small Engine Technology I Basic Collision Repair and Refinishing
Level 2	Automotive Basics Introduction to Transportation Technology Small Engine Technology II Collision Repair/Lab Occupational Safety and Environmental Technology I
Level 3	Automotive Technology 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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Automotive Service Excellence (ASE) Entry Level	Master Collision Repair and Refinishing Technician	Autobody/ Collision and Repair Technology/ Technician		Mechanical Engineering
Automotive Service Excellence (ASE) Professional Level	Automobile Technician: various systems and parts	Medium/Heavy Vehicle and Truck Technology/ Technician		
	Engine Machinist Technician	Mechanical Engineering/ Mechanical Technology/ Technician	Mechanical Engineering/ Mechanical Technology/ Technician	
	Collision Repair and Refinish			

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
SkillsUSA competition Automotive Service Association	Work at a local automotive repair or body shop.

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.

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.

Successful completion of the Automotive program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Transportation Systems	13039250 (1 credit)	None	9-12
Small Engine Technology I	13040000 (1 credit)	None	9-12
Basic Collision Repair and Refinishing	13039750 (1 credit)	None	9-12
Automotive Basics	13039550 (1 credit)	None	9-12
Introduction to Transportation Technology	13039270 (.5 credit)	None	9-10
Small Engine Technology II	13040100 (2 credits)	PREQ: Small Engine Technology I	10-12
Collision Repair/Lab	13039800 (2 credits) 13039810 (3 credits)	None	10-12
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	9-12
Automotive Technology I: Maintenance and Light Repair	13039600 (2 credits)	None	9-12
Energy and Power of Transportation Systems	13039300 (1 credit)	None	10-12
Paint and Refinishing/Lab	13039900 (2 credits) 13039910 (3 credits)	None	10-12
Automotive Technology II/Lab	13039700 (2 credits) 13039710 (3 credits)	PREQ: Automotive Technology I: Maintenance and Light Repair	11-12
Practicum in Transportation Systems	13040450 (2 credits) 13040455 (3 credits) 13040460 (2 credits) 13040465 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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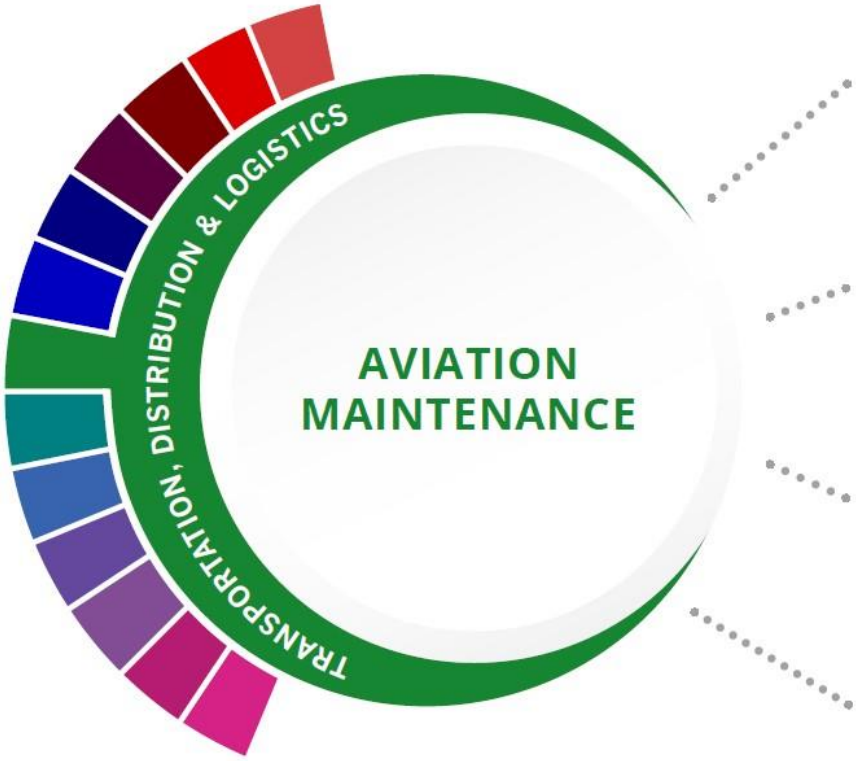

Level 1	Introduction to Aircraft Technology
Level 2	Occupational Safety and Environmental Technology I Aviation Maintenance (TBD)
Level 3	Aircraft Airframe Technology/Lab
Level 4	Aircraft Powerplant Technology/Lab Practicum in Transportation Systems Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Aerospace Manufacturing Certification	Avionics Electronics Technician	Avionics Maintenance Technology/ Technician	Airframe Mechanics and Aircraft Maintenance Technology/ Technician	
	Aircraft Electronics Technician	Aircraft Powerplant Technology/ Technician		
	Aerospace/ Aircraft Assembly Maintenance Certification	Airframe Mechanics and Aircraft Maintenance Technology/ Technician		

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

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

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

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.

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.

Successful completion of the Aviation Maintenance program of study will fulfill requirements of the Business and Industry Endorsement. Revised - March 2022

Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Introduction to Aircraft Technology	13039350 (1 credit)	None	9-12
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	9-12
Aviation Maintenance	TBD	TBD	TBD
Aircraft Airframe Technology/Lab	13039400 (2 credits) 13039410 (3 credits)	PREQ: Introduction to Aircraft Technology	10-12
Aircraft Powerplant Technology/Lab	13039500 (2 credits) 13039510 (3 credits)	PREQ: Introduction to Aircraft Technology	11-12
Practicum in Transportation Systems	13040450 (2 credits) 13040455 (3 credits) 13040460 (2 credits) 13040465 (3 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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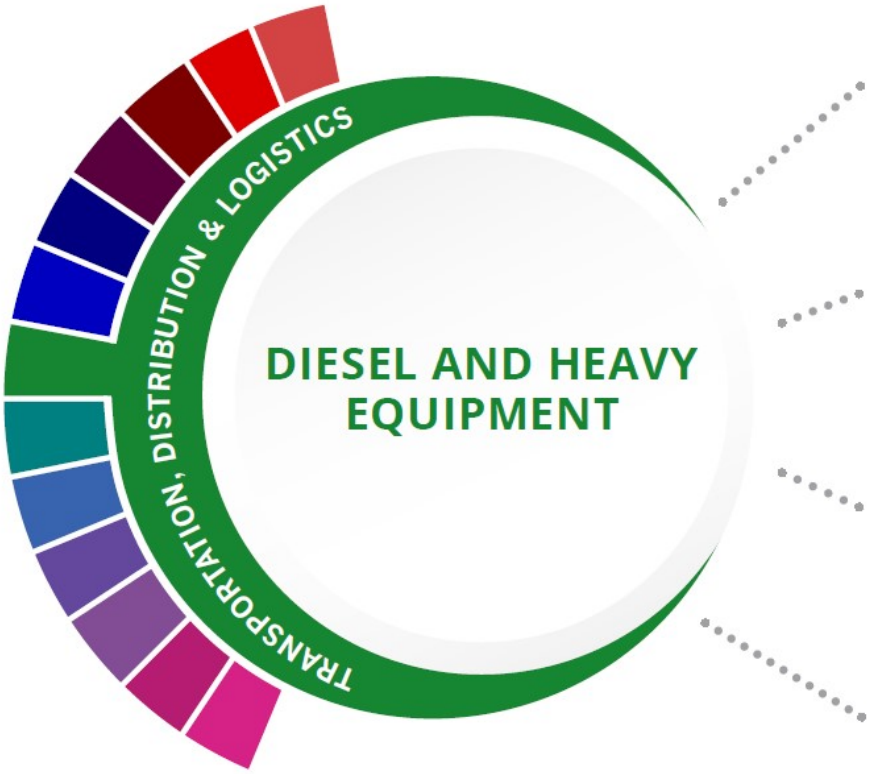


Level 1	Introduction to Transportation Technology Principles of Transportation Systems
Level 2	Diesel Equipment Technology I Occupational Safety and Environmental Technology I
Level 3	Diesel Equipment Technology II/Lab
Level 4	Practicum in Transportation Systems Practicum in Entrepreneurship Career Preparation I

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
ASE Medium/ Heavy Truck Technician, Brakes (T4)	Engine Machinist Technician	Diesel Mechanics Technology/ Technician		
ASE Medium/Heavy Truck Technician, Diesel Engines (T2)	Light Vehicle Diesel Engines	Diesel Mechanics Technology/ Technician		
ASE Medium/Heavy Truck Technician, Drive Train (T3) - Professional	Transit Bus Technician	Heavy Equipment Maintenance Technology/ Technician		
ASE Medium/ Heavy Truck Technician, Electrical/ Electronic Systems (T6)	Fluid Power Mechanic			

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
Participate in SkillsUSA	Volunteer or work part-time for a repair shop that works on engines

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.

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.

Successful completion of the Diesel and Heavy Equipment program of study will fulfill requirements of the Business and Industry Endorsement. Revised - July 2020

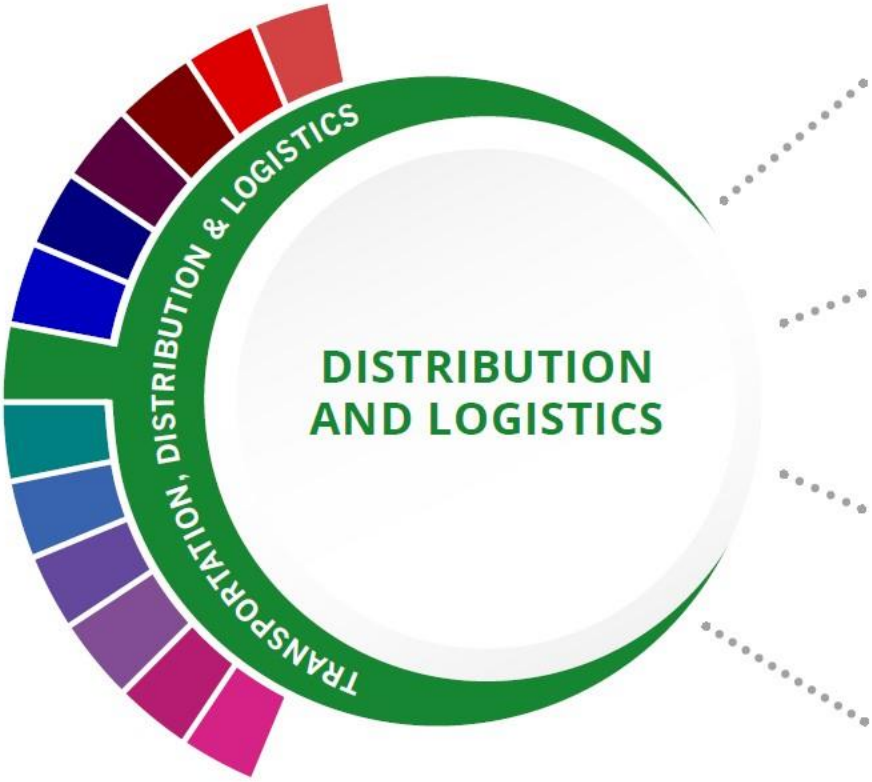
Texas Education Agency

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	Grade
Principles of Distribution and Logistics	13039260 (1 credit)	None	9-12
Management of Transportation Systems	13040200 (1 credit)	None	10-12
Concepts of Distributions and Logistics Technology	N1303800 (1 credit)	None	10-12
Occupational Safety and Environmental Technology I	N1303680 (1 credit)	None	9-12
Distribution and Logistics	13040300 (1 credit)	None	11-12
Raster-Based Geographic Information Systems	N1302806 (1 credit)	None	10-12
Logistics Engineering	N1303801 (1 credit)	PREQ/COREQ: Principles of Distribution & Logistics and Distribution & Logistics	11-12
Practicum in Distribution and Logistics	13040470 (2 credits) 13040475 (3 credits) 13040480 (2 credits) 13040485 (3 credits)	None	11-12
Practicum in Entrepreneurship	N1303425 (2 credits)	None	11-12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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

(District) offers career and technical education programs in (types of programs offered). Admission to these programs is based on (admission standards). It is the policy of (District) not to discriminate on the basis of race, color, national origin, sex or handicap in its vocational programs, services or activities as required by Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Education Amendments of 1972; and Section 504 of the Rehabilitation Act of 1973, as amended. It is the policy of (District) not to discriminate on the basis of race, color, national origin, sex, handicap, or age in its employment practices as required by Title VI of the Civil Rights Act of 1964, as amended; Title IX of the Education Amendments of 1972; the Age Discrimination Act of 1975, as amended; and Section 504 of the Rehabilitation Act of 1973, as amended. (District) will take steps to assure that lack of English language skills will not be a barrier to admission and participation in all educational and vocational programs. For information about your rights or grievance procedures, contact the Title IX Coordinator at (physical address of Coordinator) (email address of Title IX Coordinator), (phone number of Title IX Coordinator), and the Section 504 Coordinator at (physical address of Coordinator), (email address of Section 504 Coordinator), (phone number of Section 504 Coordinator)



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

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
MSSC Certified Logistics Technicians	Emergency Number Professional	Business Administration and Management, General	Business Administration and Management, General	Business Administration and Management, General
	SAP Certified Application Associate - Logistics Execution and Warehouse Management	Operations Management and Supervision	Operations Management and Supervision	Operations Management and Supervision
	Certified Billing and Coding Specialist	General Office Occupations and Clerical Services	Business/ Commerce, General	Public Administration
	Cargo Shipper's Agent	Business Administration and Management, General	Business Administration and Management, General	Business Administration and Management, General

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

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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:	Work Based Learning Activities:
SkillsUSA, FBA, FBLA, or Technology Student Association	Intern at a distribution or warehousing center.

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.

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.

Successful completion of the Distribution and Logistics program of study will fulfill requirements of the Business and Industry Endorsement. Revised - March 2022

Texas Education Agency

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