

Willis ISD

CTE Programs of Study



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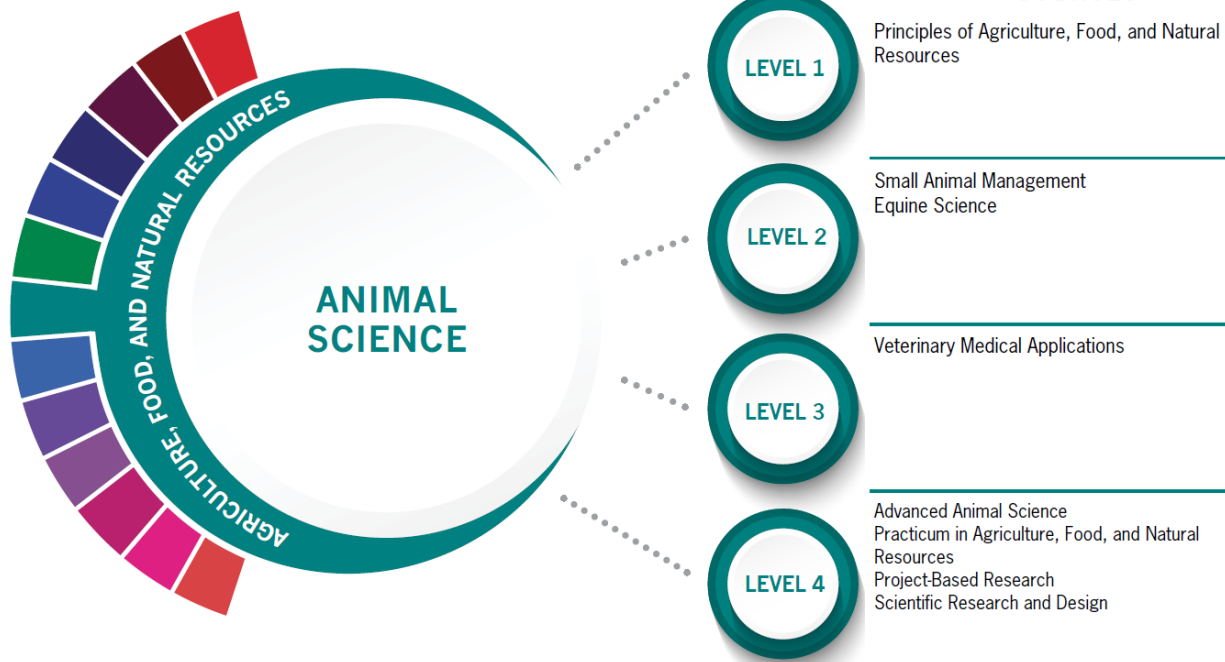
Additional CTE courses 46

A note on a CTE Programs of Study:

Students completing two or more courses for two or more credits within a program of study earn concentrator status for Perkins V federal accountability reporting.

Proposed Indicator: Students finishing three or more courses for four or more credits with one course from level 3 or 4 within a program of study earn completer status for federal accountability reporting.

CTE Programs of Study



POSTSECONDARY OPTIONS

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 from 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:
Texas FFA

**Work Based Learning
Activities:**
Agri-Science Fair
4H
Volunteer at a local farm
or veterinary office

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

Successful completion of the Animal Science program of study will fulfill requirements of the Business and Industry Endorsement.
Approved Statewide Program of Study - September 2019



COURSE INFORMATION

COURSE NAME	SERVICE ID	PRE REQS CO REQS	GRADE
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-10
Small Animal Management	13000400 (0.5 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Equine Science	13000500 (0.5 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Veterinary Medical Applications	13000600 (1 credit)	Equine Science, Small Animal Management	11-12
Advanced Animal Science	13000700 (1 credit)	PREQ: Biology and Chemistry or Integrated Physics and Chemistry (IPC); Algebra I and Geometry; and Small Animal Management, Equine Science	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits)	Veterinary Medical Applications	12
Project-Based Research	12701500 (1 credit)	Veterinary Medical Applications	12
Scientific Research and Design	13037200 (1 credit)	Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12

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

Amanda Brantley | Amanda.Brantley@tea.texas.gov

<https://tea.texas.gov/cte>



COURSES

LEVEL 1

Principles of Agriculture, Food, and Natural Resources

LEVEL 2

Wildlife, Fisheries, and Ecology Management
Forestry and Woodland Ecosystems

LEVEL 3

Range Ecology and Management

LEVEL 4

Practicum in Agriculture, Food, and Natural Resources
Project-Based Research
Scientific Research and Design

POSTSECONDARY OPTIONS

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		
Water Operators, Class D	Certified Water Technologist	Environmental Studies	Environmental/Environmental Health Engineering	
OSHA Hazardous Waste Operations and Emergency Response	Certified Environmental Scientist	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 from 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:
Attend summer leadership
events
Texas FFA

**Work Based Learning
Activities:**
Intern at a waste
treatment plant

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 a Business and Industry Endorsement.
Approved Statewide Program of Study - September 2019



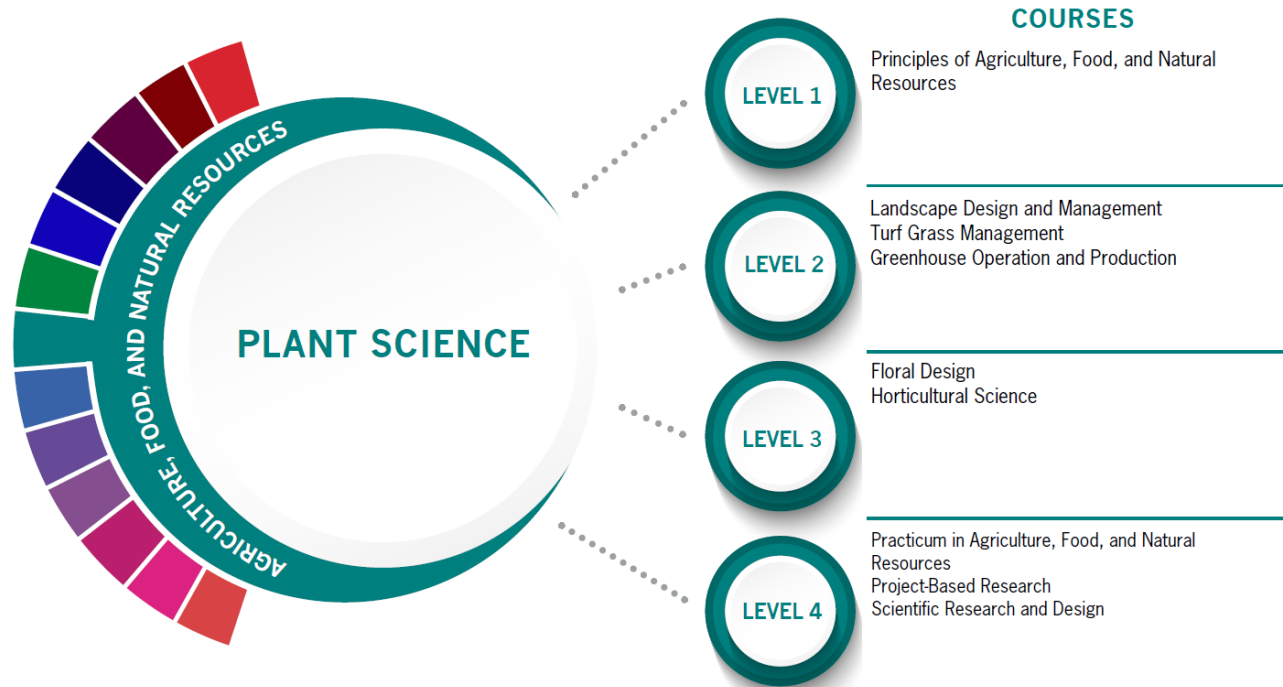
COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-10
Wildlife, Fisheries, and Ecology Management	13001500 (1 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Forestry and Woodland Ecosystems	13001700 (1 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Range Ecology and Management	13001600 (1 credit)	Wildlife, Fisheries, and Ecology Management or Forestry and Woodland Ecosystems	11-12
Project-Based Research	12701500 (1 credit)	3 credits in AFNR	12
Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, Integrated Physics, and Chemistry (IPC), or Physics	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits)	3 credits in ANFR	12

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

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POSTSECONDARY OPTIONS

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		
Commercial/ Noncommercial Pesticide Applicator	Certified Floral Designer	Ornamental Horticulture	Agronomy and Crop Science	
Texas State Floral Association Level One Floral Certification	Accredited Member of AIFD	Agricultural Business and Management, General		
Texas State Floral Association Level Two Floral Certification	Landscape Industry Certified Technician	Turf and Turfgrass Management		Farm/Farm and Ranch Management
Additional industry based certification information is available from 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:
Texas FFA

Work Based Learning Activities:
Work part-time at a florist;
start or work for a local landscaping business

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.
Approved Statewide Program of Study - September 2019



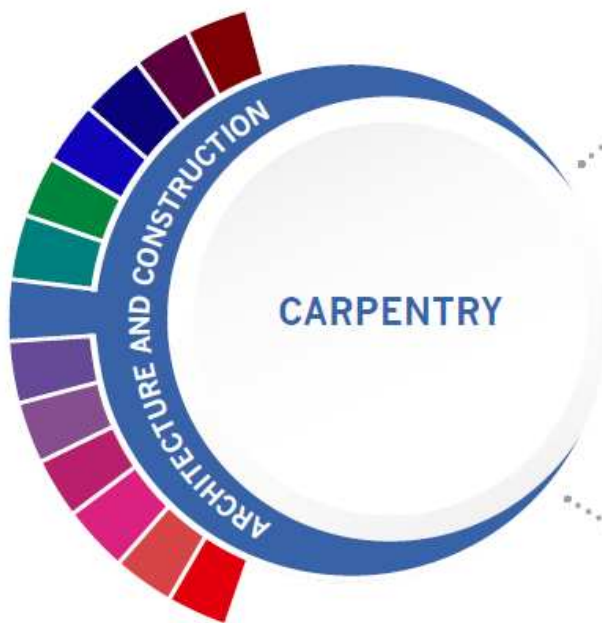
COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Agriculture, Food, and Natural Resources	13000200 (1 credit)	None	9-10
Floral Design	13001800 (1 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Landscape Design and Management	13001900 (.5 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Turf Grass Management	13001950 (.5 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Horticultural Science	13002000 (1 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Greenhouse Operation and Production	13002050 (1 credit)	Principles of Agriculture, Food, and Natural Resources	10-12
Project-Based Research	12701500 (1 credit)	3 credits in AFNR	12
Scientific Research and Design	13037200 (1 credit)	Biology, Chemistry, IPC, or Physics	11-12
Practicum in Agriculture, Food, and Natural Resources	13002500 (2 credits)	3 credits in AFNR	12

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

Amanda Brantley | Amanda.Brantley@tea.texas.gov

<https://tea.texas.gov/cte>



COURSES

LEVEL 1

Principles of Construction

LEVEL 2

Construction Technology I

LEVEL 3

Construction Technology II

LEVEL 4

Practicum in Construction Technology

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 from 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:
Shadow a carpenter or millwright.
SkillUSA

Work Based Learning Activities:
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. Approved Statewide Program of Study - September 2019



COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Construction	13004220 (1 credit)	None	9-12
Construction Technology I	13005100 (2 credits)	Principles of Construction	10-12
Construction Technology II	13005200 (2 credits)	Construction Technology I	11-12
Practicum in Construction Technology	13005250 (2 credits)	Construction Technology II	12

FOR ADDITIONAL INFORMATION ON THE ARCHITECTURE AND CONSTRUCTION CAREER CLUSTER, PLEASE CONTACT:

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<https://tea.texas.gov/cte>



COURSES

LEVEL 1

Principles of Arts, A/V Technology, and Communications

LEVEL 2

Audio/Video Production I/Lab
Digital Audio Technology

LEVEL 3

Audio Video Production II/Lab
Digital Audio Technology II

LEVEL 4

Practicum of Audio/Video Production
Practicum of Digital Audio Technology

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		Communications Technology/ Technician
Apple Logic Pro X	Commercial Audio Technician	Cinematography and Film/ Video Production		
Adobe Certified Associate Premiere Pro	Certified AM Directional Specialist	Radio and Television Broadcasting Technology/ Technician	Radio and Television	
Adobe Certified Associate Certifications	Certified Broadcast Radio Engineer	Music Technology	Agricultural Communication/ Journalism	

Additional industry based certification information is available from 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:
Shadow a production
team
SkillsUSA, TSA

**Work Based Learning
Activities:**
Intern at a local
television station or
video production
company

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 a Business and Industry Endorsement.
Approved Statewide Program of Study - September 2019



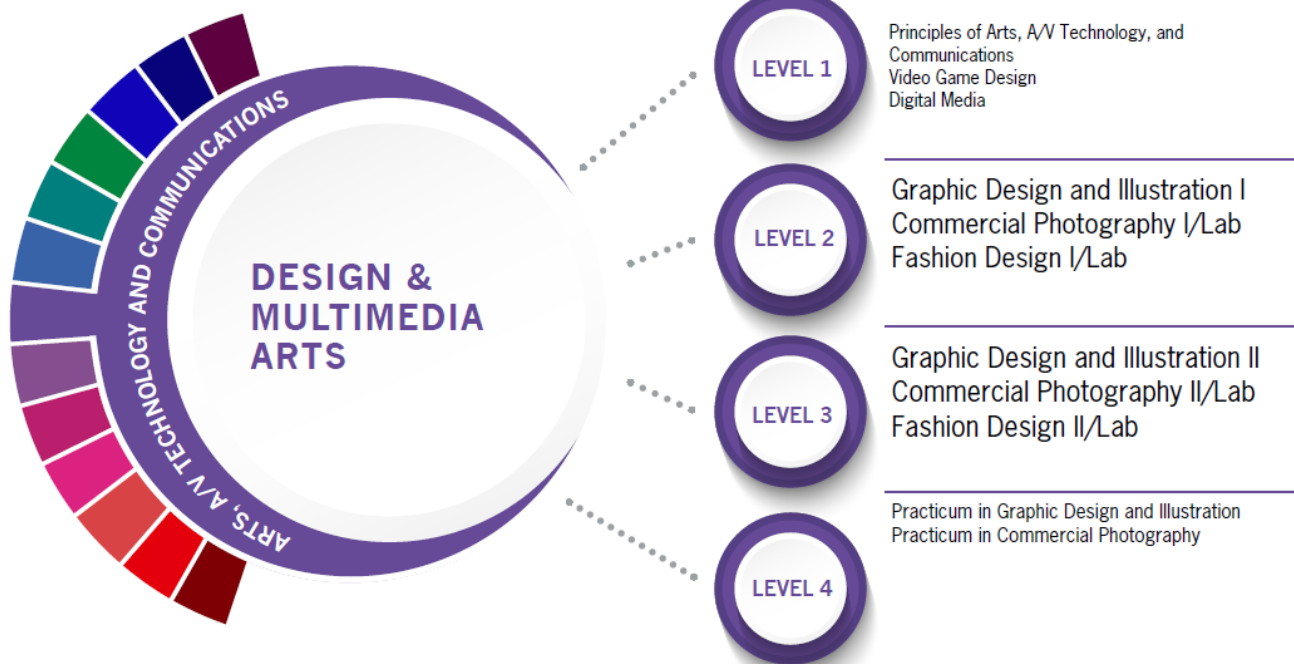
COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Arts,A/V Technology, and Communications	13008200 (1 credit)	None	9-10
Audio/Video Production I/Lab	13008500 (1 credit) 13008510 (2 credits)	Principles of Arts,A/V Technology, and Communications	10-12
Audio Video Production II/Lab	13008600 (1 credit) 13008610 (2 credits)	Audio/Video Production I	11-12
Practicum of Audio/Video Production	13008700 (2 credits)	Audio/Video Production II/Lab	12
Digital Audio Technology I	13009950 (1 credit)	None	9-12
Digital Audio Technology II	13009960 (1 credit)	Digital Audio Technology I	10-12
Practicum of Digital Audio Technology	TBD (2 credits)	Digital Audio Technology II	11-12

FOR ADDITIONAL INFORMATION ON THE ARTS, AUDIO/VISUAL TECHNOLOGY,
AND COMMUNICATIONS CAREER CLUSTER, PLEASE CONTACT:

Les Hudson | les.hudson@tea.texas.gov

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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		
Adobe Certified Expert Certifications	WOW Certified Web Designer Apprentice	Graphic Design		
Apple Logic Pro X	Adobe Suite Certifications	Game and Interactive Media Design		Intermedia/Multimedia

Additional industry based certification information is available from 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:
Join a website development or coding club.
SkillsUSA, TSA

Work Based Learning Activities:
Intern with a multimedia or animation studio.
Obtain a certificate 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 a Business and Industry Endorsement.
Approved Statewide Program of Study - September 2019



COURSE INFORMATION

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**FOR ADDITIONAL INFORMATION ON THE ARTS, AUDIO/VISUAL TECHNOLOGY,
AND COMMUNICATIONS CAREER CLUSTER, PLEASE CONTACT:**

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<https://tea.texas.gov/cte>



COURSES

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

Accounting I
Financial Mathematics

Accounting II

POSTSECONDARY OPTIONS

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		Business Administration
Certified Insurance Service Representative	Certified Income Specialist	Financial Planning and Services		Financial Planning
	Certified Public Accountant	Certified Income Specialist		
Additional industry based certification information is available from 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:
Business Professionals
of America (BPA), Future
Business Leaders of
America (FBLA), and
DECA

**Work Based Learning
Activities:**
Internship with local
accounting firm;
Microsoft Office Specialist
(MOS) certifications

The Accounting and Financial Services program of study teaches CTE concentrators 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. Approved Statewide Program of Study - September 2019



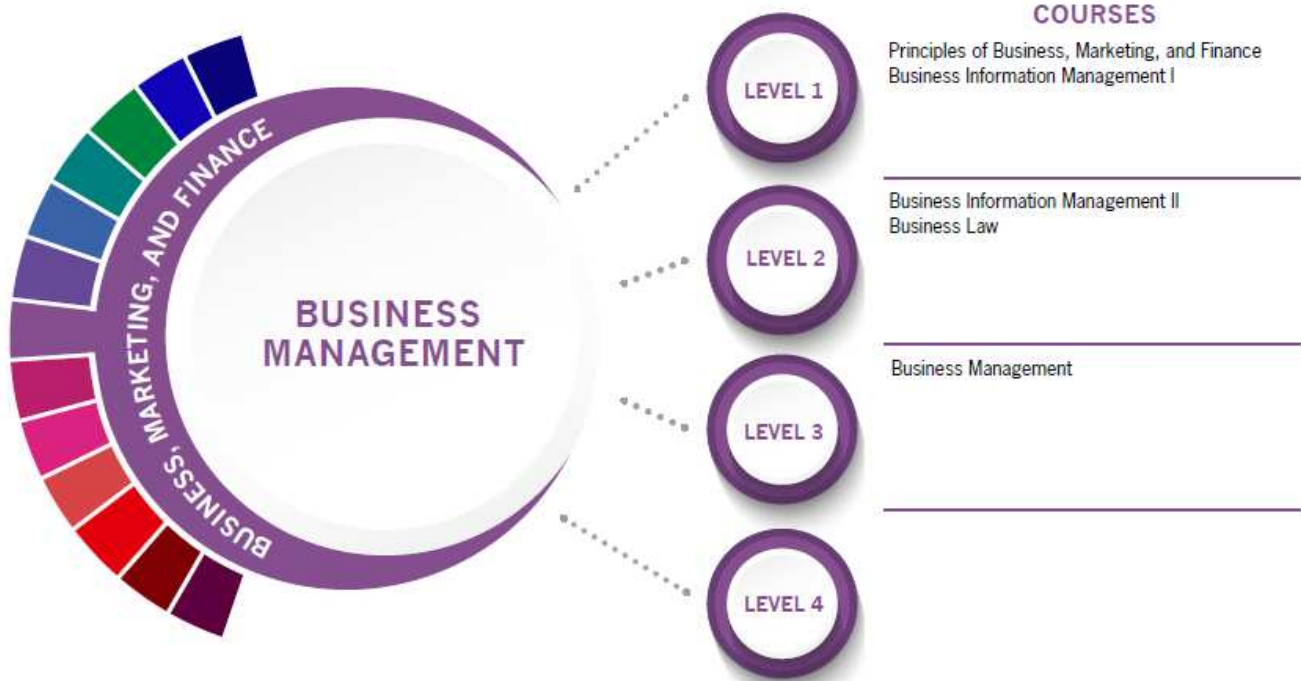
COURSE INFORMATION

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	13011400 (1 credit)	None	9-12
Financial Mathematics	13018000 (1 credit)	Algebra I	10-12
Accounting I	13016600 (1 credit)	None	10-12
Accounting II	13016700 (1 credit)	Accounting I	11-12

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

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<https://tea.texas.gov/cte>



POSTSECONDARY OPTIONS

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

Additional industry based certification information is available from the TEA CTE website.

For more information on postsecondary options for this program of study, visit TXCTE.org.

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:
Business Professionals of America (BPA), Future Business Leaders of America (FBLA), and DECA

Work Based Learning Activities:
Internship with local business or chamber of commerce;

The Business Management program of study teaches CTE concentrators 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.
Approved Statewide Program of Study - September 2019



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	13011400 (1 credit)	None	9-11
Business Information Management II	13011500 (1 credit)	Business Information Management I	10-12
Business Law	13011700 (1 credit)	None	11-12
Business Management	13012100 (1 credit)	None	11-12

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

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<https://tea.texas.gov/cte>



COURSES

Principles of Education and Training
Principles of Human Services

LEVEL 1

Child Development

LEVEL 2

Child Guidance

LEVEL 3

Project Based Research

LEVEL 4

POSTSECONDARY OPTIONS

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

Additional industry based certification information is available from 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:

Texas Association of
Future Educators; Family,
Career, & Community
Leaders of America

Work Based Learning Activities:

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 concentrators 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 satisfy the requirements for the Public Service Endorsement.
Approved Statewide Program of Study - September 2019



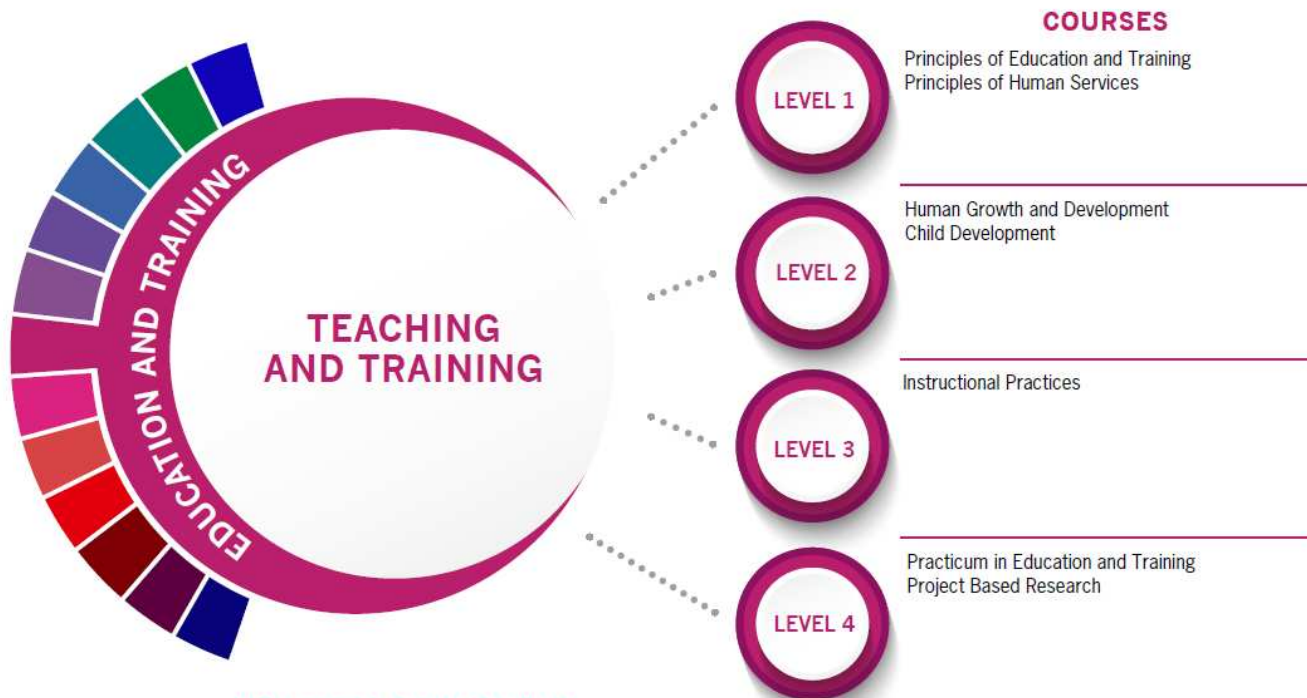
COURSE INFORMATION

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)	Principles of Education and Training or Principles of Human Services	10-12
Child Guidance	13024800 (2 credits)	Child Development	11-12
Project Based Research	12701500 (1 credit)	3 credits of Early Learning	11-12

FOR ADDITIONAL INFORMATION ON THE EDUCATION AND TRAINING CAREER CLUSTER, PLEASE CONTACT:

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<https://tea.texas.gov/cte>



POSTSECONDARY OPTIONS

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)		Educational Leadership and Administration, General
	Counselor, Professional	Special Education		
	Athletic Trainer	Health and Physical Education/Fitness	Social and Philosophical Foundations of Education	

Additional industry based certification information is available from 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:
Texas Association of
Future Educators, or
Family, Career and
Community Leaders of
America

**Work Based Learning
Activities:**
Teach a community
education class;
intern as a teaching
assistant or tutor; serve
as a camp counselor.

The Teaching and Training program of study prepares students for careers related to teaching, instruction, and creation of instructional and enrichment materials. The program of study introduces CTE concentrators 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.
Approved Statewide Program of Study - September 2019



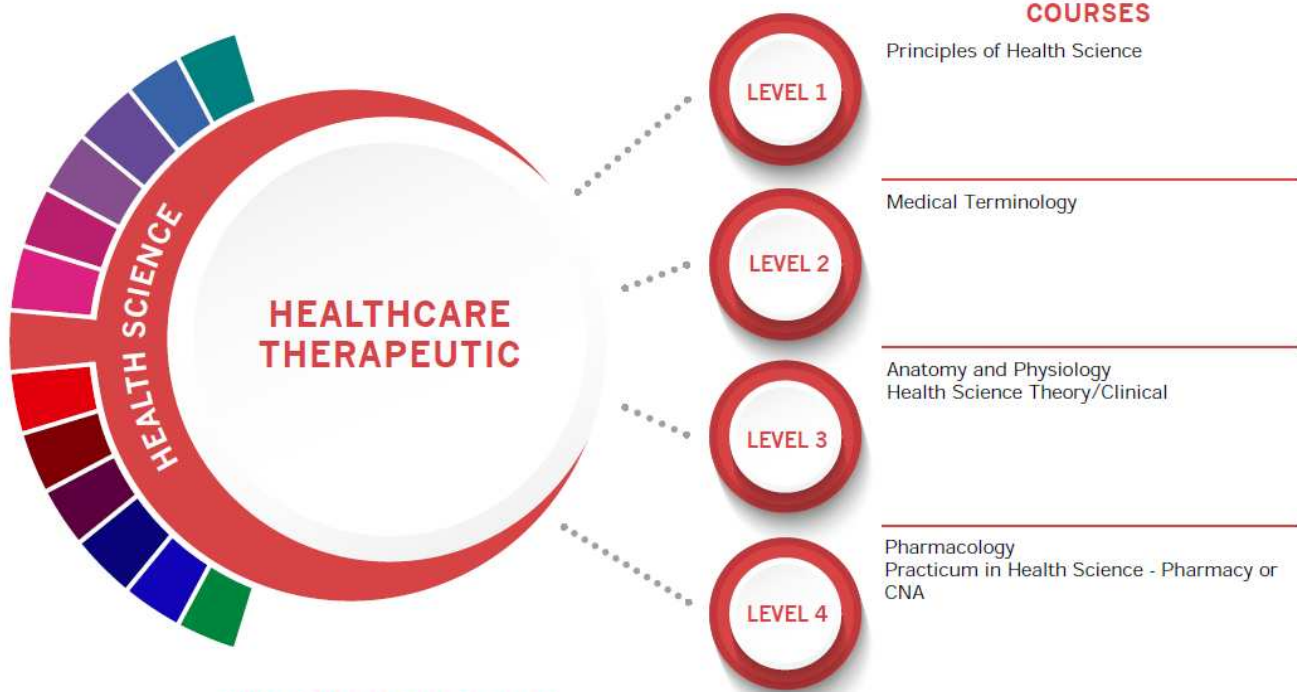
COURSE INFORMATION

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	9-10
Human Growth and Development	13014300 (1 credit)	Principles of Education and Training or Principles of Human Services	10-12
Child Development	13024700 (1 credit)	Principles of Education and Training or Principles of Human Services	10-12
Instructional Practices	13014400 (2 credits)	Human Growth and Development or Child Development	11-12
Practicum in Education and Training	13014500 (2 credits)	Instructional Practices	12
Project Based Research	12701500 (1 credit)	3 credits in Teaching and Training	11-12

FOR ADDITIONAL INFORMATION ON THE EDUCATION AND TRAINING CAREER CLUSTER, PLEASE CONTACT:

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POSTSECONDARY OPTIONS

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE	OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Registered Dental Assistant	Dental Assistant	Dental Hygienist		Dentist	Medical Assistants	\$29,598	8,862	30%
Certified Patient Care Technician	Surgical Technologist			Physician Assistant	Surgical Technologists	\$46,310	1,150	21%
Certified Nurse Aide/Assistant	Medical Assistant	Medical/ Clinical Assistant		Family and General Practitioners	Dental Hygienists	\$73,507	1,353	38%
Pharmacy Technician	Pharmacy Aides			Pharmacist	Physicians and Surgeons	\$213,071	1,151	30%
					Dental Assistants	\$34,840	4,422	31%
Additional industry based certification information is available from the TEA CTE website.					WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES			
For more information on postsecondary options for this program of study, visit TXCTE.org.					Exploration Activities: SkillsUSA Health Occupation Students of America (HOSA)	Work Based Learning Activities: 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 the Public Service Endorsement.
Approved Statewide Program of Study - September 2019

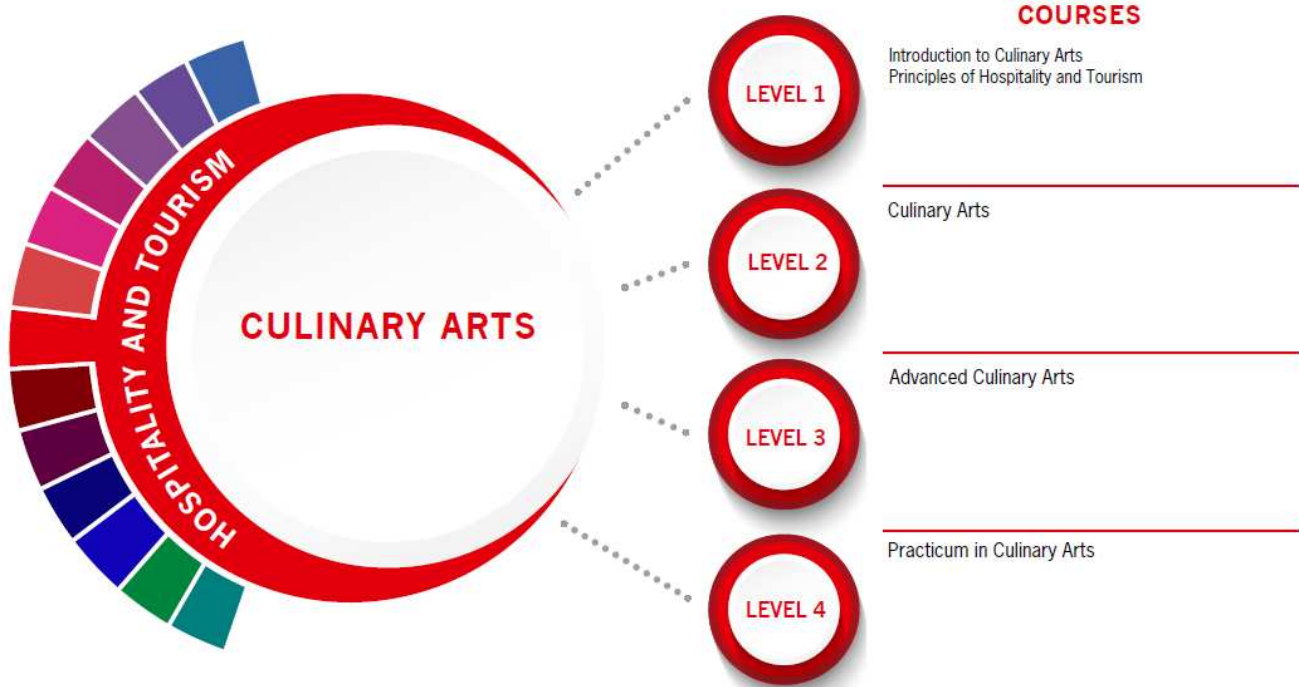


COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Health Science	13020200 (1 credit)	None	10
Medical Terminology	13020300 (1 credit)	None	9-12
Anatomy and Physiology	13020600 (1 credit)	Biology and a second science credit	11-12
Health Science Theory/Clinical	13020400 (1 credit) 13020410 (2 credits)	Principles of Health Science	11-12
Pharmacology	13020950 (1 credit)	Biology and Chemistry	11-12
Practicum in Health Science	13020500 (2 credits)	Health Science Theory and Biology	12

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

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POSTSECONDARY OPTIONS

HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE	OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Certified Fundamentals Cook	Certified Chef	Hotel and Restaurant Management			Food Service Managers	\$55,619	1,561	28%
Certified Fundamentals Pastry Cook	Foodservice Management Professional	Restaurant Culinary and Catering Management	Food Service Systems Administration/Management		Chef and Head Cooks	\$43,285	1,366	25%
ServSafe Manager	Comprehensive Food Safety	Hospitality Administration/Management, General			Food Science Technicians	\$34,382	236	11%
ManageFirst Professional	Certified Food and Beverage Executive	Culinary Arts/ Chef Training	Culinary Science and Food Service Management	Business Administration Management, General	Food and Beverage Managers	\$55,619	1,561	28%
Additional industry based certification information is available from the TEA CTE website.								
For more information on postsecondary options for this program of study, visit TXCTE.org.								
WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES								
Exploration Activities:					Work Based Learning Activities:			
Family, Career, 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 students 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.
Approved Statewide Program of Study - September 2019



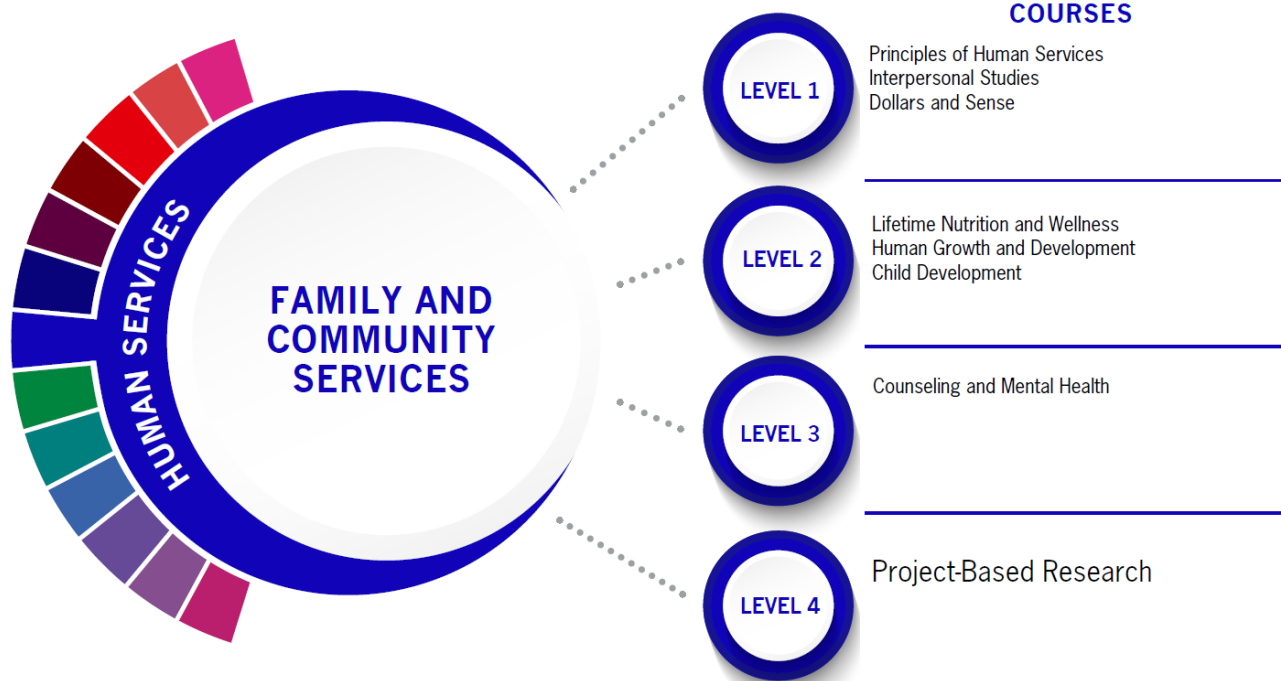
COURSE INFORMATION

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
Advanced Culinary Arts	13022650 (2 credits)	Culinary Arts	11-12
Practicum in Culinary Arts	13022700 (2 credits)	Advanced Culinary Arts	12

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

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POSTSECONDARY OPTIONS

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		
Certified Associate in Project Management	Community Health Services/ Liaison/ Counseling	Human Services/Sciences, General		Marriage and Family Therapy/ Counseling
	Distance Credentialed Counselor	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 from 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:
American Association of Family and Consumer Sciences, Family, Career and Community Leaders of America

Work Based Learning Activities:
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 concentrators 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.
Approved Statewide Program of Study - September 2019



COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITE (PREQ) COREQUISITE (CREQ)	GRADE
Principles of Human Services	13024200 (1 credit)	None	9-10
Lifetime Nutrition and Wellness	13024500 (.5 credit)	None	9-10
Interpersonal Studies	13024400 (.5 credit)	None	9-10
Dollars and Sense	13024300 (.5 credit)	None	10-12
Human Growth and Development	13014300 (1 credit)	None	10-12
Child Development	13024700 (1 credit)	None	10-12
Counseling and Mental Health	13024600 (1 credit)	2 credits from Family and Community Services	11-12
Project-Based Research	12701500 (1 credit)	3 credits from Family and Community Services	11-12

FOR ADDITIONAL INFORMATION ON THE HUMAN SERVICES CAREER CLUSTER, PLEASE CONTACT:

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COURSES

Principles of Information Technology

LEVEL 1

Computer Maintenance

LEVEL 2

Computer Technician Practicum

LEVEL 3

Practicum of Information Technology

LEVEL 4

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		
ERSI ArcGIS Desktop Entry	IBM Certified Database Associate - DB2 11 Fundamentals for z/OS	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	
CompTIA IT Fundamentals +	Oracle Linux 6 Advanced System Administration	Computer Systems Networking and Telecommunications		Information Technology
Additional industry based certification information is available from 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%
Information Technology - Computer Occupations, All Other	\$85,197	1,616	20%
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:

Join TSA
Job shadow a database administrator or computer hardware engineer

Worked Based Learning Activities:

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 a Business and Industry Endorsement.

Approved Statewide Program of Study - September 2019



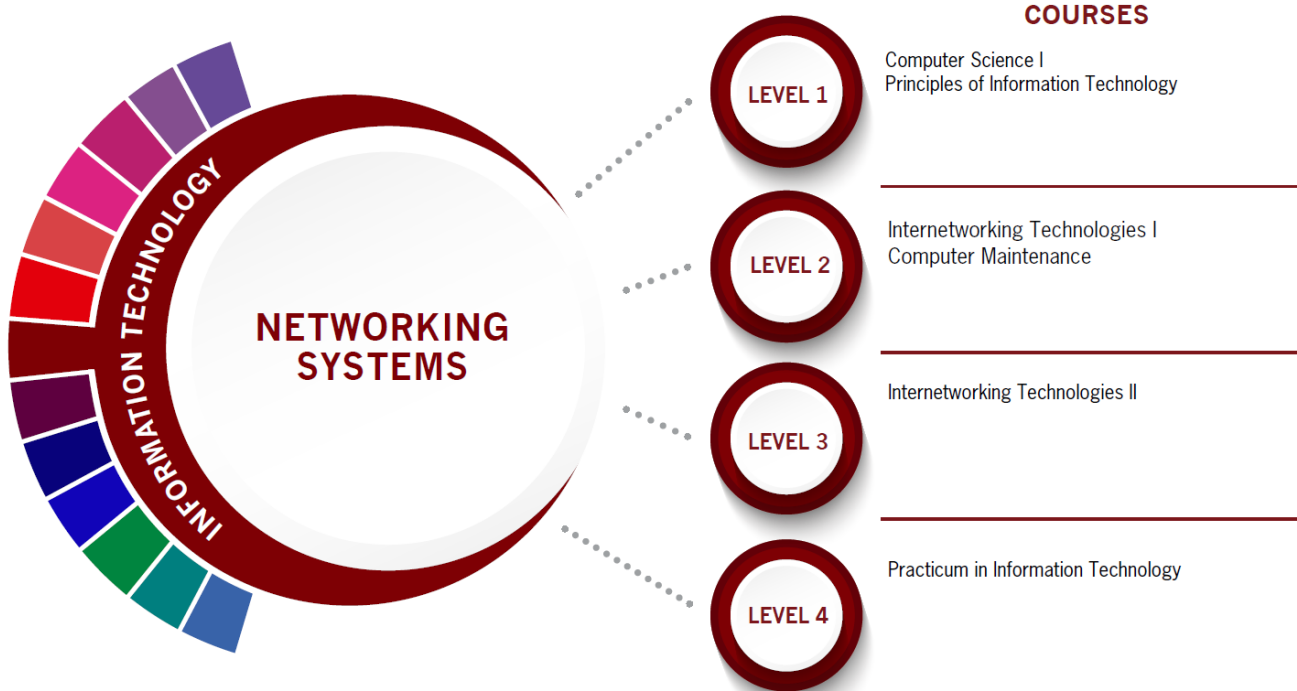
COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITE (PREQ) COREQUISITE (CREQ)	GRADE
Principles of Information Technology	13027200 (1 credit)	None	9-10
Computer Maintenance	13027300 (1 credit)	Principles of Information Technology	10-12
Computer Technician Practicum	13027500 (2 credits)	Computer Maintenance	11-12
Practicum in Information Technology	13028000 (2 credits)	Computer Technician Practicum	12

FOR ADDITIONAL INFORMATION ON THE THE INFORMATION TECHNOLOGY
CAREER CLUSTER, PLEASE CONTACT:

Laura Torres | laura.torres@tea.texas.gov

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HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE	OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Oracle Certified Associate Java SE 8	AEM 6 Business Practitioner	Computer and Information Sciences, General			Computer Network Architects	\$111,633	1,082	23%
Oracle Certified Database Associate	Intelligence Planner Certification Program	Computer Systems Networking and Telecommunications		Information Technology	Computer Systems Analysts	\$87,568	5,937	29%
Cisco Certified Entry Networking Technician (CCENT)	Cisco Certified Entry Networking Technician	Information Technology	Computer and Information Systems Security/ Information Assurance		Computer Network Support Specialists	\$68,037	1,824	19%
Associate of (ISC)2	Microsoft Networking Fundamentals	Network and System Administration/Adm inistrator	Computer Engineering, General		<div>WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES</div> <div>Exploration Activities: Join TSA Job shadow a computer network architect or support specialist</div> <div>Work Based Learning Activities: Earn an industry-based certification.</div>			
*Includes Level 1 and Level II Certificates								
For more information on postsecondary options for this program of study, visit TXCTE.org.								

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 a Business and Industry Endorsement. Approved Statewide Program of Study - September 2019



COURSE INFORMATION

COURSE NAME	SERVICE ID	PREQ: Prerequisite CREQ: Corequisite	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)	Principles of Information Technology	10-12
Computer Maintenance	13027300 (1 credit)	Principles of Information Technology	10-12
Internetworking Technologies II	N1302804 (1 credit)	Internetworking Technologies I	11-12
Practicum in Information Technology	13028000 (2 credits)	Internetworking Technologies II	12

FOR ADDITIONAL INFORMATION ON THE THE INFORMATION TECHNOLOGY
CAREER CLUSTER, PLEASE CONTACT:

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COURSES

LEVEL 1

Principles of Law, Public Safety, Corrections, and Security

LEVEL 2

Law Enforcement I

LEVEL 3

Law Enforcement II

LEVEL 4

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

POSTSECONDARY OPTIONS

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		
	Private Investigator/Security Guard	Criminal Justice/Police Science		
	Code Enforcement Officer	Corrections	Juvenile Corrections	
	Certified Law Enforcement Planner	Criminalistics and Criminal Science	Cyber/Computer Forensics and Counterterrorism	Natural Resources Law Enforcement and Protective Services

Additional industry based certification information is available from 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:
Texas Public Service Association;
criminal justice clubs

Work Based Learning Activities:
Attend court hearings and other legal procedures.

The Law Enforcement program of study teaches students about the development of, adherence to, and protection of various branches of law. Students may 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, 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 Law Enforcement, Investigations, Security, and Corrections program of study will fulfill requirements of the Public Service Endorsement. Approved Statewide Program of Study - September 2019

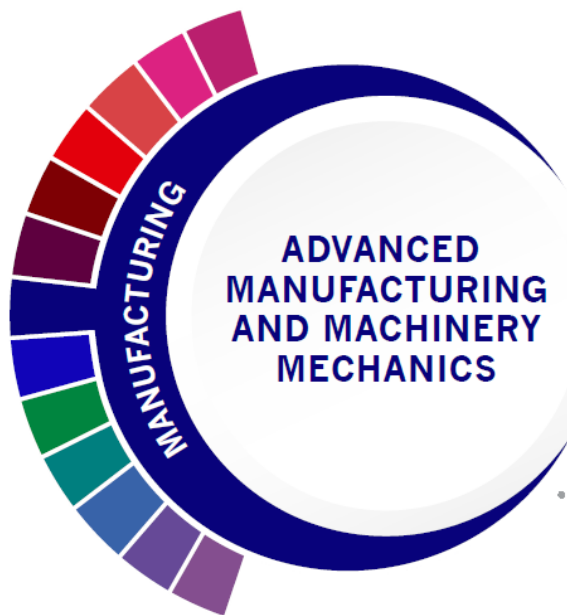


COURSE INFORMATION

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)	Principles of Law, Public Safety, Corrections, and Security	10-12
Law Enforcement II	13029400 (1 credit)	Law Enforcement I	11-12
Counseling and Mental Health	13024600 (1 credit)	Law Enforcement II	12
Forensic Science	13029500 (1 credit)	Biology and Chemistry	11-12
Practicum in Law, Public Safety, Corrections, and Security	13030100 (2 credits) 13030105 (3 credits)	Law Enforcement II	12

FOR ADDITIONAL INFORMATION ON THE LAW AND PUBLIC SERVICE
CAREER CLUSTER, PLEASE CONTACT:

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COURSES

Principles of Applied Engineering

LEVEL 1

Engineering Design and Presentation I
Robotics I

LEVEL 2

Robotics II

LEVEL 3

Practicum in Manufacturing

LEVEL 4

POSTSECONDARY OPTIONS

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	
Mastercam Associate Level Certification	PMMI Mechatronics: Programmable Logic Controllers 1	Robotics Technology/Technician	Engineering, General	
NCCER Industrial Maintenance Mechanic	Certified Quality Technician	Instrumentation Technology/Technician	Industrial Engineering	
NIMS Industrial Technology Maintenance - Maintenance Operations	Plant Maintenance Technologist	Industrial Mechanics and Maintenance Technology	Mechanical Engineering	

Additional industry based certification information is available from 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:
Participate in SkillsUSA and local STEM events

Work Based Learning Activities:
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. Students 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 Mechanics program of study will fulfill requirements of the Business and Industry Endorsement.
Approved Statewide Program of Study - September 2019



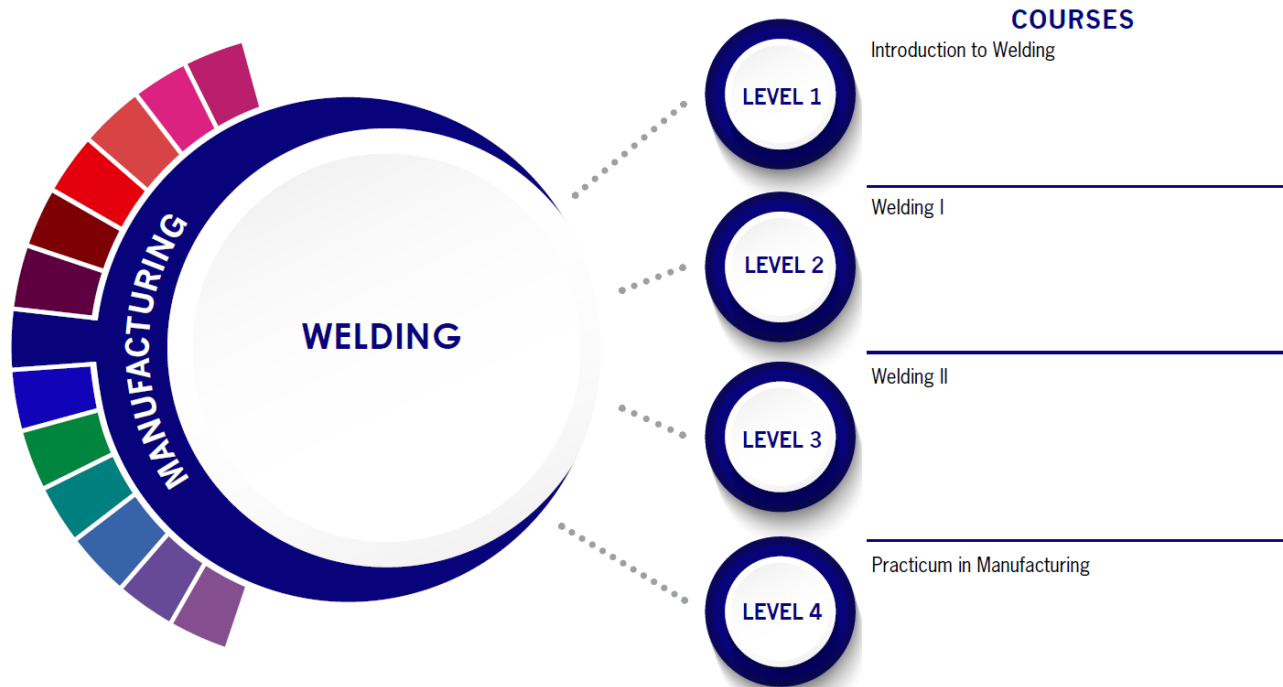
COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Applied Engineering	13036200 (1 credit)	None	9-10
Engineering Design and Presentation I	13036500 (1 credit)	Algebra I	10-12
Robotics I	13037000 (1 credit)	None	9-12
Robotics II	13037050 (1 credit)	Robotics I	10-12
Practicum in Manufacturing	13033000 (2 credits)	None	12

FOR ADDITIONAL INFORMATION ON THE MANUFACTURING CAREER CLUSTER, PLEASE CONTACT:

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POSTSECONDARY OPTIONS

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	Welding Technology/ Welder	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		
NCCER Welding, Level 1	Certified Environmental, Safety, and Health Trainer	Occupational Safety and Health Technology/ Technician	Environmental Health	
Additional industry based certification information is available from 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%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities: Participate and compete in SkillsUSA Job shadow a machinist	Work Based Learning Activities: Apprenticeship at a local business or industry American Welding Society
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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. Students 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.
Approved Statewide Program of Study - September 2019



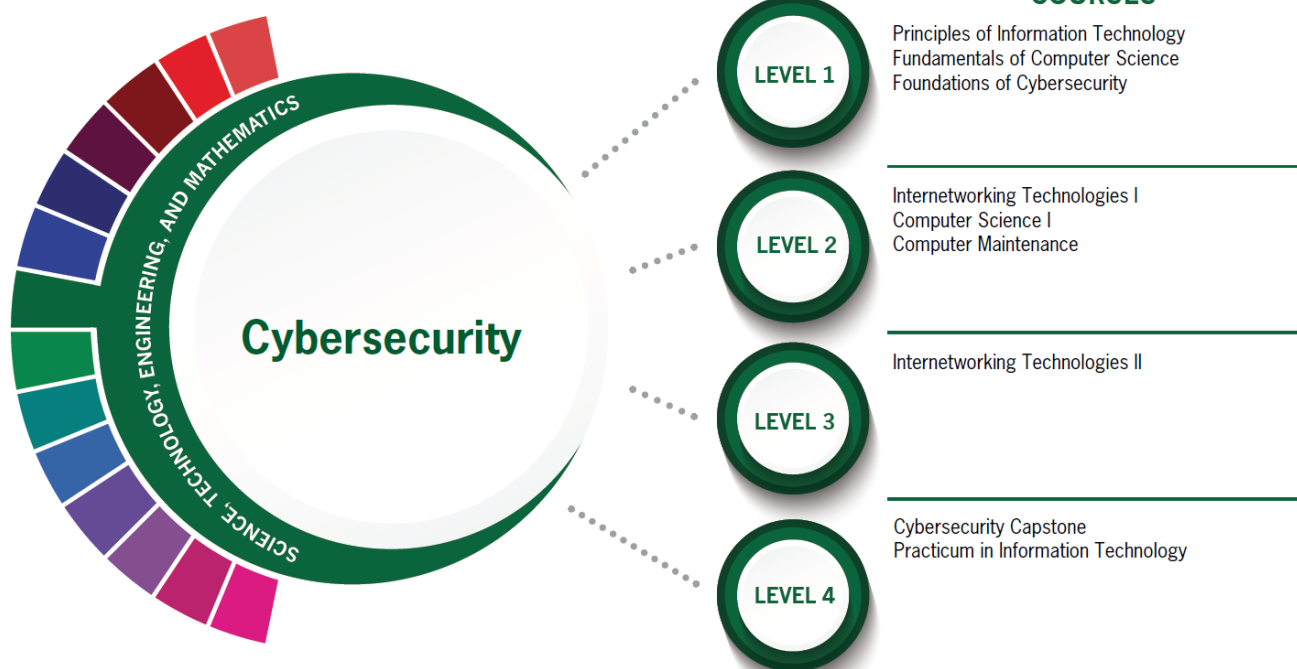
COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Introduction to Welding	13032250 (1 credit)	None	9-11
Welding I	13032300 (2 credit)	Introduction to Welding	10-12
Welding II	13032400 (2 credits)	Welding I	11-12
Practicum in Manufacturing	13033000 (2 credits)	Welding II	12

FOR ADDITIONAL INFORMATION ON THE MANUFACTURING CAREER CLUSTER, PLEASE CONTACT:

Amanda Brantley | Amanda.Brantley@tea.texas.gov

<https://tea.texas.gov/cte>



HIGH SCHOOL/ INDUSTRY CERTIFICATION	CERTIFICATE/ LICENSE*	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE	OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
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	Information Security Analysts	\$91,915	814	29%
Oracle Certified Database Associate	Certified Advanced Windows Forensic Examiner	Information Technology	Computer Systems Networking and Telecommunications	Information Technology	Network and Computer System Administrators	\$82,597	2,814	19%
Cisco Certified Entry Networking Technician (CCENT)	SAP Certified Technology Professional System Security Architect	Computer and Information Sciences, General			Computer Systems Analyst	\$87,568	5,937	29%
Associate of (ISC)2	Cisco Certified Network Professional Security Certification	Computer Science						
Additional industry based certification information is available from the TEA CTE Website								
For more information on postsecondary options for this program of study, visit TXCTE.org.								

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 a Business and Industry or STEM Endorsement.
Approved Statewide Program of Study - September 2019

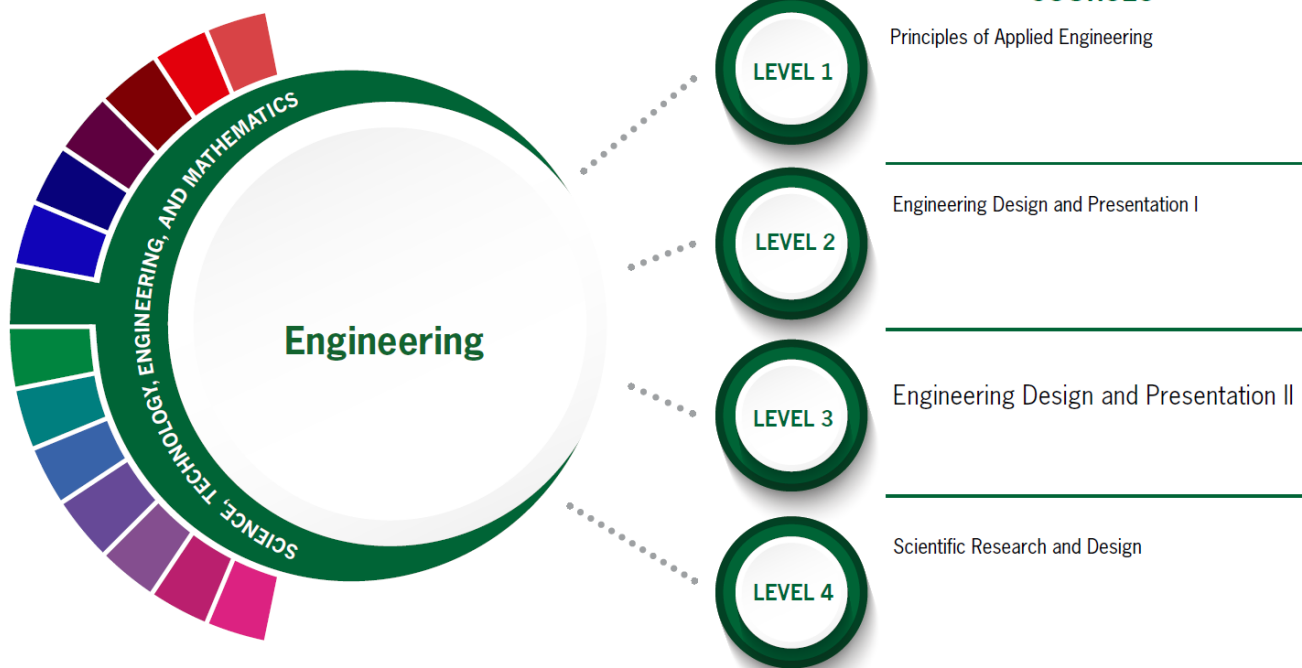


COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Information Technology	13027200 (1 credit)	None	9-10
Fundamentals of Computer Science	03580140 (.5 to 1 credit)	None	9-10
Foundations of Cybersecurity	03580850 (1 credit)	None	9-10
Internetworking Technologies I	N1302803 (1 credit)	Any credit from Level 1	10-12
Computer Maintenance	13027300 (1 credit)	Any credit from Level 1	10-12
Computer Science I	03580200 (.5 to 1 credits)	Algebra I and any credit from Level 1	10-12
Internetworking Technologies II	N1302804 (1 credit)	Internetworking Technologies I	11-12
Practicum in Information Technology	13028000 (2 credit)	Any 2 credits from the Cybersecurity cluster	12
Cybersecurity Capstone	03580855 (1credit)	Any 3 credits from the Cybersecurity cluster	12

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

<https://tea.texas.gov/cte>



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 from 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	\$91,707	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:
Participate in competitions like Skills USA

Career Preparation Activities:
Engineering internship
Job shadow a machinist

The Engineering program of study focuses on the design, development, and use of engines, machines, and structures. Students 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.

Approved Statewide Program of Study - September 2019



COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Applied Engineering	13036200 (1 credit)	None	9-10
Engineering Design & Presentation I	13036500 (1 credit)	Algebra I	9-12
Engineering Design and Presentation II	13036600 (2 credits)	Engineering Design & Presentation I and Geometry	10-12
Scientific Research & Design	13037200 (1 credit)	Biology, Chemistry, and IPC or Physics	11-12

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

<https://tea.texas.gov/cte>



COURSES

LEVEL 1

Fundamentals of Computer Science

LEVEL 2

Computer Science I

LEVEL 3

Computer Science II

LEVEL 4

Computer Science III
Practicum in Information Technology

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/Pro grammer General	Management Information Systems, General	
Oracle Certified Database Associate	Cloud Technology Associate Certification	Computer Software Engineer		
	AEM 6 Developer	Computer Science		
	Certified Software Analyst	Information Science/Studies		
*Includes Level I and Level II Certificates				
For more information on postsecondary options for this programs of study, visit TXCTE.org				

OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Computer Network Architect	\$111, 633	1,454	9%
Software Developer, Systems Software	\$103, 334	2985	25%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:

Join TSA
Participate in a coding club
at school.

Work Based Learning Activities:

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 a Business and Industry or STEM Endorsement.

Approved Statewide Program of Study -



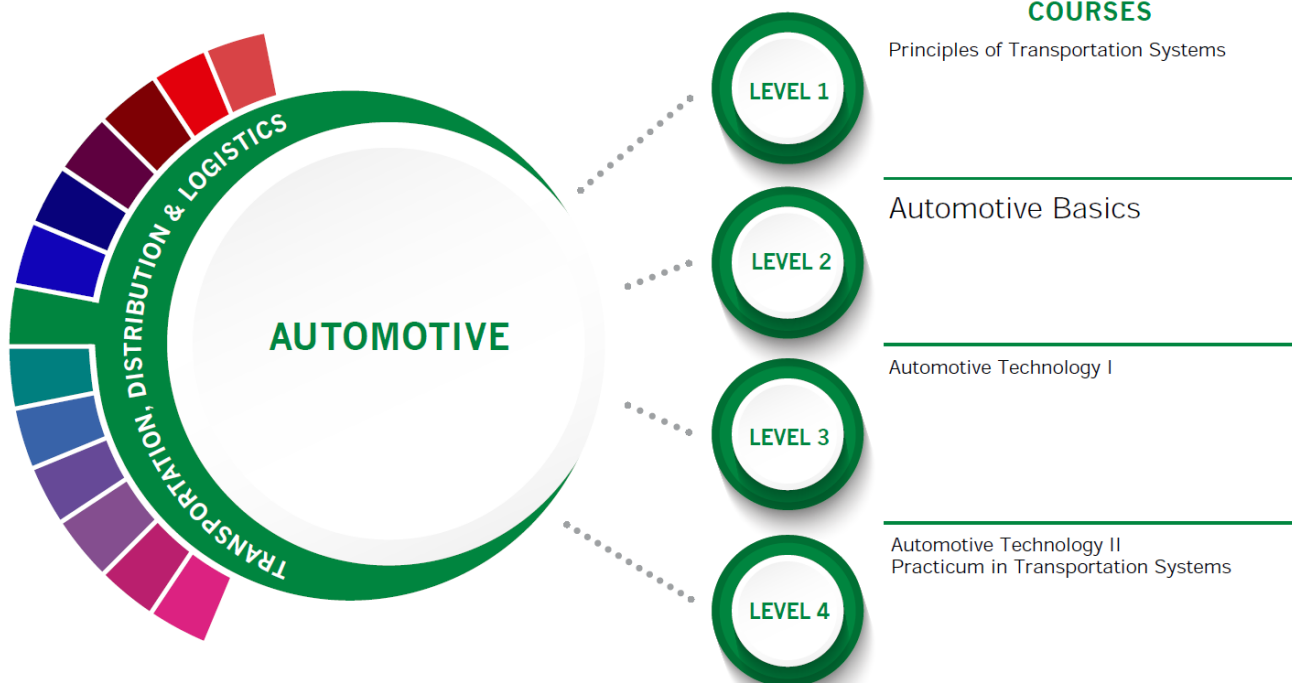
September 2019

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Fundamentals of Computer Science	03580140 (.5 to 1 credit)	None	9-10
Computer Science I	03580200 (.5 to 1 credit)	Algebra I	9-10
Computer Science II	03580300 (1 credit)	Computer Science I	10-12
Computer Science III	03580350 (1 credit)	Computer Science II	11-12
Practicum in Information Technology	13028000 (2 credit)	Any 3 credits from this cluster	12

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

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POSTSECONDARY OPTIONS

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		
	Collision Repair and Refinish			

Additional industry based certification information is available from 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	208	25%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:
SkillsUSA competition
Automotive Service Association

Work Based Learning Activities:
Work at a local automotive repair or body shop.

The Automotive program of study teaches students how to repair and refinish automobiles and service various types of vehicles. Students 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.
Approved Statewide Program of Study - September 2019



COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITES (PREQ) COREQUISITES (CREQ)	GRADE
Principles of Transportation Systems	13039250 (1 credit)	None	9-12
Automotive Basics	13039550 (1 credit)	None	9-10
Automotive Technology I: Maintenance and Light Repair	13039600 (2 credits)	None	10-12
Automotive Technology II	13039700 (2 credits)	Automotive Technology I: Maintenance and Light Repair	11-12
Practicum in Transportation Systems	13040450 (2 credits)	Automotive Technology II	12

FOR ADDITIONAL INFORMATION ON THE TRANSPORTATION, DISTRIBUTION,
AND LOGISTICS CAREER CLUSTER, PLEASE CONTACT:

Kevin Johnson | Kevin.Johnson@tea.texas.gov
<https://tea.texas.gov/cte>

Regional Program of Study—Cosmetology

Level 1 Course: Principles of Design and Color Theory	1 credit	13025050
Level 2 Course: Introduction to Cosmetology	1 credit	13025100
Level 3 Courses: Cosmetology I	2 credits	13025200
Cosmetology I/Cosmetology I Lab	3 credits	13025210
Level 4 Courses: Cosmetology II	2 credits	13025300
Cosmetology II/Cosmetology II Lab	3 credits	13025310

Industry-Based Certification: Cosmetology Operator License

Additional CTE Courses

Agricultural Mechanics and Metal Technologies

Agricultural Structures Design and Fabrication

Oil and Gas Production I

Fundamentals of Real Estate

Principles of Architecture

Architectural Design I

Web Communications

Web Design

Web Game Development



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