INFORMATION TECHNOLOGY

- CYBERSECURITY
- INFORMATION TECHNOLOGY SUPPORT AND SERVICES
- NETWORKING SYSTEMS
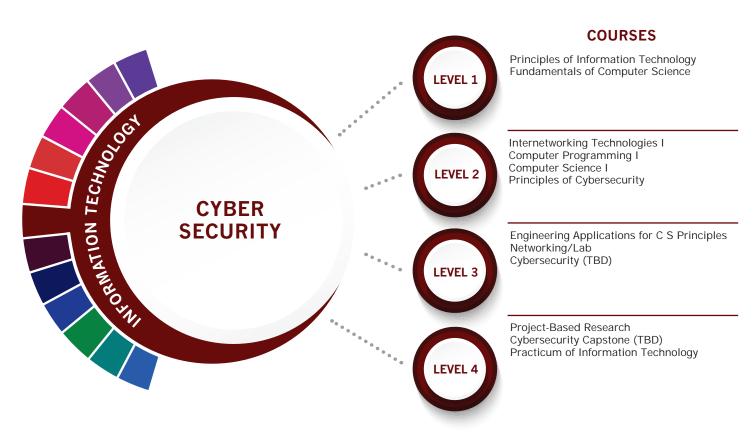- PROGRAMMING AND SOFTWARE DEVELOPMENT
- WEB DEVELOPMENT

Local Implementation Considerations:

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.

CYBER SECURITY

COURSES

INFORMATION TECHNOLOGY

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/ Manager	Computer Systems Networking and Telecommunications	Computer Systems Analysis/ Analyst
Oracle Certified Database Associate	Certified Advanced Windows Forensic Examiner	Information Technology	Cyber/Computer Forensics and Counterterrorism	Information Technology
Cisco Certified Entry Networking Technician (CCENT)	SAP Certified Technology Professional - System Security Architect	Computer and Information Sciences, General		
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.

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:
Job shadow a computer system analyst or information security analyst

Career Preparation:
Obtain an Oracle or Cisco Certification

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

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.
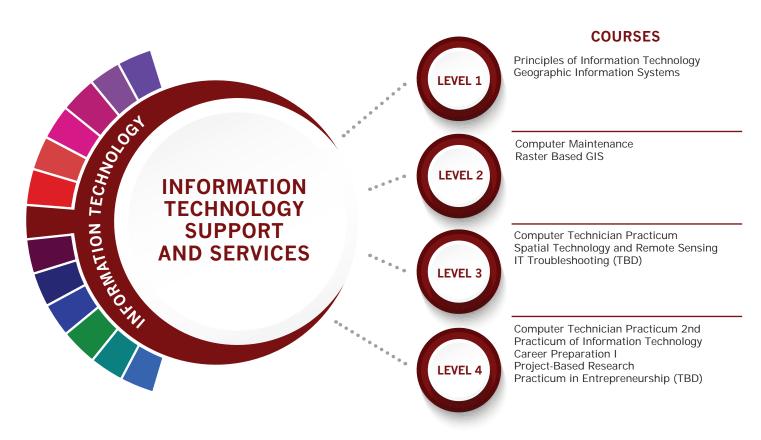
Successful completion of the Cyber Security program of study will fulfill requirements of a Business and Industry Endorsement.   Program of Study Draft for Public Comment June 2019

TEA Texas Education Agency®

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITE (PREQ) COREQUISITE (CREQ) RECOMMENDED PREREQUISITES (RPREQ) RECOMMENDED COREQUISITE (CPREQ)	GRADE
Principles of Informaton Technology	13027200	None	9-10
Fundamentals of Computer Science	03580140	None	9-12
Interworking Technologies I	N1302803	Principles of Information Technology	10-12
Computer Programming I	13027600	RPREQ: Principles of Information Technology and Algebra I	10-12
Computer Science I	03580200	Algebra I	9-10
Principles of Cybersecurity	N1302810	None	9-12
Engineering Applications of Computer Science Principles	N1303772	None	10-12
Networking/Lab	13027400 (1 credit) 13027410 (2 credits)	RPREQ: Principles of Information Technology, Computer Maintenance, and Computer Maintenance Lab CREQ: Networking	10-12
Cybersecurity	TBD	TBD	TBD
Project-Based Research	12701500	None	11-12
Cybersecurity Capstone	TBD	TBD	TBD
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits)	PREQ: A minimum of two high school information technology (IT) courses	12

INFORMATION TECHNOLOGY SUPPORT AND SERVICES

COURSES

LEVEL 1
Principles of Information Technology
Geographic Information Systems

LEVEL 2
Computer Maintenance
Raster Based GIS

LEVEL 3
Computer Technician Practicum
Spatial Technology and Remote Sensing
IT Troubleshooting (TBD)

LEVEL 4
Computer Technician Practicum 2nd
Practicum of Information Technology
Career Preparation I
Project-Based Research
Practicum in Entrepreneurship (TBD)

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:
Job shadow a database administrator or computer hardware engineer

Career Preparation:
Obtain an Oracle or Cisco 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.
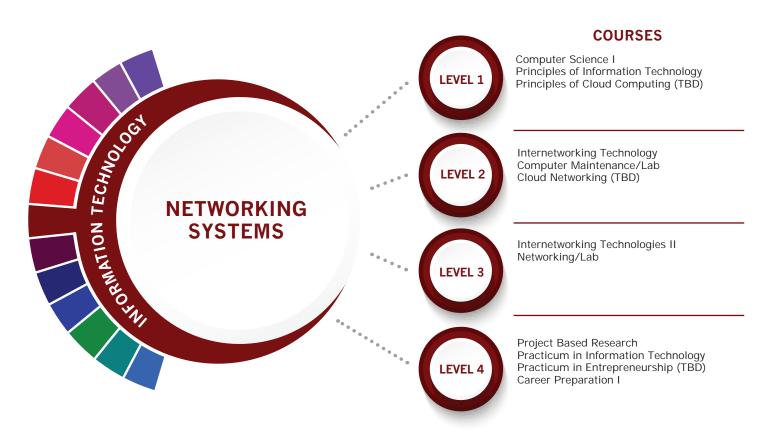
Successful completion of the Information Technology Support and Services program of study will fulfill requirements of a Business and Industry Endorsement.

Program of Study Draft for Public Comment June 2019

TEA Texas Education Agency®

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITE (PREQ) COREQUISITE (CREQ) RECOMMENDED PREREQUISITES (RPREQ) RECOMMENDED COREQUISITE (CPREQ)	GRADE
Principles of Information Technology	13027200	None	9-10
Geographic Information Systems	N1302805	RPREQ: Principles of Art, A/V Technology, Principles of Information Technology, or Principles of Technology	10-12
Computer Maintenance	13027300 (1 credit) 130227310 (2 credits)	RPREQ: Principles of Information Technology CPREQ: Computer Maintenance Lab	10-12
Raster Based GIS	N1302806	RPREQ: Geographic Information Systems	10-12
Computer Technician Practicum	13027500 (2 credits) 13027505 (3 credits)	RPREQ: Principles of Information Technologies, Computer Maintenance, and Computer Maintenance Lab	10-12
Spatial Technology and Remote Sensing	N1302807	RPREQ: Geographic Information Systems and Raster-Based GIS	10-`12
IT Troubleshooting	TBD	TBD	TBD
Computer Technician Practicum II	13027510 (2 credits) 13027515 (3 credits)	Computer Technician Practicum I	12
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits)	PREQ: A minimum of two high school information technology (IT) courses	12
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12
Project-Based Research	12701500	CREQ: Spatial Technology and Remote Sensing	11-12
Practicum in Entrepreneurship	TBD	TBD	TBD

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

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NETWORKING SYSTEMS

INFORMATION TECHNOLOGY

COURSES

LEVEL 1
Computer Science I
Principles of Information Technology
Principles of Cloud Computing (TBD)

LEVEL 2
Internetworking Technology
Computer Maintenance/Lab
Cloud Networking (TBD)

LEVEL 3
Internetworking Technologies II
Networking/Lab

LEVEL 4
Project Based Research
Practicum in Information Technology
Practicum in Entrepreneurship (TBD)
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		
Oracle Certified Database Associate	Intelligence Planner Certification Program	Computer Systems Networking and Telecommunications		Information Technology
Cisco Certified Entry Networking Technician (CCENT)	Cisco Certified Entry Networking Technician	Information Technology	Computer and Information Systems Security/ Information Assurance	
Associate of (ISC)2	Microsoft Networking Fundamentals	Network and System Administration /Administrator	Computer Engineering, General	
*Includes Level 1 and Level II Certificates				
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: Job shadow a computer network architect or support specialist

Career Preparation: Obtain an Oracle or Cisco 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.
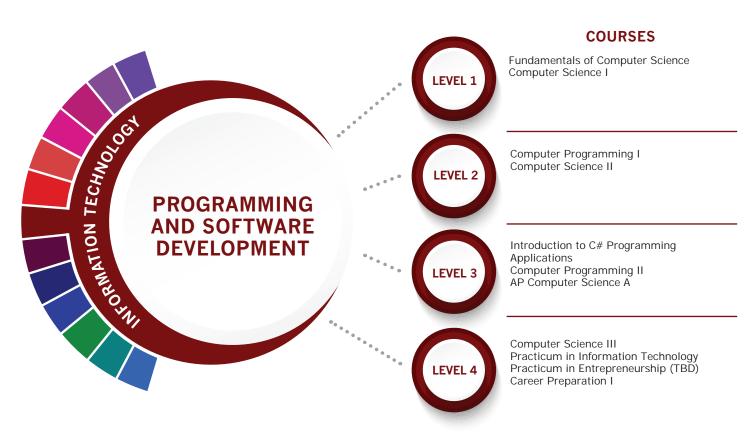
Successful completion of the Networking Systems program of study will fulfill requirements of a Business and Industry Endorsement.

Program of Study Draft for Public Comment June 2019

TEA Texas Education Agency®

COURSE INFORMATION

COURSE NAME	SERVICE ID	PRE REQS CO REQS REC REQS	GRADE
Computer Science I	03580200	Algebra I	9-10
Principles of Information Technology	13027200	None	9-10
Principles of Cloud Computing	TBD	TBD	TBD
Internetworking Technology I	N1302803	None	10-12
Computer Maintenance	13027300 (1 credit) 13027310 (2 credits)	RPREQ: Principles of Information Technology. CREQ: Computer Maintenance Lab	10-12
Cloud Networking (TBD)	TBD	TBD	TBD
Internetworking Technologies II	N1302804	PREQ: Internetworking Technologies I	10-12
Networking	13027400 (1 credit) 13027410 (2 credits)	RPREQ: Principles of Information Technology, Computer Maintenance, and Computer Maintenance Lab CREQ: Networking	10-12
Project Based Research	12701500	None	11-12
Practicum in Information Technology	13028005	PREQ: Minimum of two high school information technology (IT) courses CREQ: Practicum in Information Technology	12
Practicum in Entrepreneurship (TBD)	TBD	TBD	TBD
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	11-12

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PROGRAMMING AND SOFTWARE DEVELOPMENT

INFORMATION TECHNOLOGY

COURSES

LEVEL 1
Fundamentals of Computer Science
Computer Science I

LEVEL 2
Computer Programming I
Computer Science II

LEVEL 3
Introduction to C# Programming
Applications
Computer Programming II
AP Computer Science A

LEVEL 4
Computer Science III
Practicum in Information Technology
Practicum in Entrepreneurship (TBD)
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 Programmer	Certified Computing Professional	Computer Programming/ Programmer, General	Management Information Systems, General	
Oracle Certified Database Associate	Cloud Technology Associate Certification	Computer Software Engineering		
Cisco Certified Entry Networking Technician (CCENT)	AEM 6 Developer	Computer Science		
Associate of (ISC)2	Certified Software Analyst	Information Science/Studies		

*Includes Level 1 and Level II Certificates

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	1,454	9%
Software Developers, Systems Software	$103,334	2,985	25%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities: Join a coding or computer programming club at school

Career Preparation: Get an Oracle or Cisco Certification

The Programming and Software Development program of study explores the occupations and educational 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 computing 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 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.
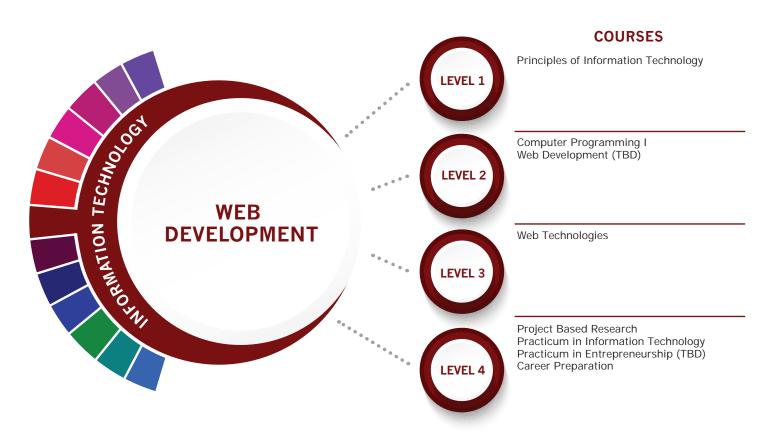
Successful completion of the Programming and Software Development program of study will fulfill requirements of a Business and Industry Endorsement.
Program of Study Draft for Public Comment June 2019

TEA Texas Education Agency®

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITE (PREQ) COREQUISITE (CREQ) RECOMMENDED PREREQUISITES (RPREQ) RECOMMENDED COREQUISITE (CPREQ)	GRADE
Fundamentals of Computer Science	03580140	None	9-10
Computer Science I	03580200	Algebra I	9-12
Computer Programming I	13027600	RPREQ: Principles of Information Technology and Algebra I	10-12
Computer Science II	0358300	Algebra I, Computer Science I, or Fundamentals of Computer Science	11-12
Introduction to C# Programming Applications	N1302812	RPREQ: Algebra I and Geometry	11-12
Computer Programming II	1302770	RPREQ: Principles of Information Technology and Computer Programming I	11-12
AP Computer Science A	A3580100	Computer Science II	11-12
Computer Science III	03580350	Computer Science II, AP Computer Science A, or IB Computer Science	11-12
Practicum in Information Technology	13028000	PREQ: A minimum of two high school information technology (IT) courses	12
Practicum of Entrepreneurship (TBD)	TBD	TBD	TBD
Career Preparation I	12701300	None	11-12

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WEB DEVELOPMENT

INFORMATION TECHNOLOGY

COURSES

LEVEL 1

Principles of Information Technology

LEVEL 2

Computer Programming I
Web Development (TBD)

LEVEL 3

Web Technologies

LEVEL 4

Project Based Research
Practicum in Information Technology
Practicum in Entrepreneurship (TBD)
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		
Microsoft Technology Associate Introduction to Programming Certifications	Adobe Campaign Developer	Web Page, Digital/Multimedia and Information Resources Design		Information Science/ Studies
App Development with Swift Certification Level 1	IBM Certified Solution Developer - OpenSocial	Computer Systems Networking and Telecommunications		
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
Computer Network Architects	$111,633	1,079	39%
Web Administrators, Computer Occupations	$85,197	1,616	20%

WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES

Exploration Activities:
Join a coding or computer programming club
Create a web page

Career Preparation:
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 a Business and Industry Endorsement.
Program of Study Draft for Public Comment June 2019

TEA Texas Education Agency®

COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITE (PREQ) COREQUISITE (CREQ) RECOMMENDED PREREQUISITES (RPREQ) RECOMMENDED COREQUISITE (CPREQ)	GRADE
Principles of Information Technology	13027200	PREQ: None	9-10
Computer Programming I	13027600	RPREQ: Principles of Information Technology and Algebra I	10-12
Web Development	TBD	TBD	TBD
Web Technologies	13027900	RPREQ: Principles of Information Technologies	10-12
Project Based Research	12701500	None	11-12
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits)	(PREQ): A minimum of two high school information technology (IT) courses	12
Practicum in Entrepreneurship	TBD	TBD	TBD
Career Preparation	12701300 12701305	None	11-12

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