

**Level 1** Principles of Biomedical Science (PLTW)

Human Body Systems (PLTW)

**Level 2**

Medical Interventions (PLTW)

**Level 3**

Biomedical Innovation (PLTW)  
Practicum in Science, Technology, Engineering and Mathematics  
ISM - 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
FHS – COVID-19 Contact Tracing Certification John Hopkins University			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

# COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITS (PREQ) COREQUISITES (CREQ)	Grade
5410W Principles of Biomedical Science (PLTW - PBS)	N1302092 (1 credit)	None	9-11
5425W Human Body Systems (PLTW - HBS) May count as science credit	13020600 (1 credit)	PREQ: Biology and completed/concurrent Chemistry; Recommended PREQ: 1 course from Health Science or Biomedical	10-12
5415W Medical Interventions (PLTW - MI) May count as science credit	13020800 (1 credit)	PREQ: Biology, Chemistry; Principles of Biomed or Human Body Systems	11-12
5440W Biomedical Innovation (PLTW - BI)	N1302095 (1 credit)	PREQ: Principles of Biomed or Human Body Systems and Medical Interventions	12
0030 ISM - Scientific Research and Design	13037200 (1 credit)	PREQ: Biology, Chemistry, IPC, or Physics	11-12
5085 Practicum in STEM	13037400 (2 credits)	PREQ: Algebra I and Geometry Recommended PREQ: 1 course in Biomedical Science	12

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS  
BIOMEDICAL SCIENCE



<b>Level 1</b>	Foundations of Cybersecurity
<b>Level 2</b>	Computer Science I AP Computer Science Principles
<b>Level 3</b>	Networking Digital Forensics AP Computer Science A-Math/LOTE
<b>Level 4</b>	Practicum in STEM Independent Study in Evolving/Emerging Technologies ISM – Computer Science I and II

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

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	
<b>Exploration Activities:</b>	<b>Work Based Learning Activities:</b>
Compete in Cyber Patriots Job Shadow a computer system analyst or information security analyst.	Obtain an industry based certification.

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.

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.

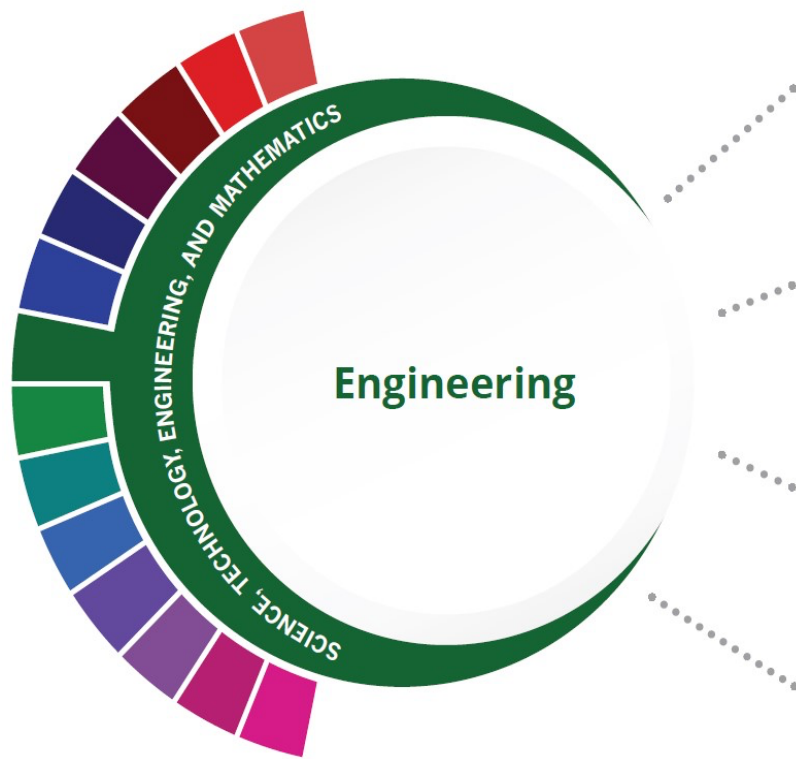
Successful completion of the Cybersecurity program of study will fulfill requirements of the Business and Industry or STEM endorsement if the math and science requirements are met. Revised - July 2020



# COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITS (PREQ) COREQUISITES (CREQ)	Grade
5204 Foundations of Cybersecurity	03580850 (1 credit)	None	9-12
0500 Computer Science I	03580200 (.5 to 1 credits)	PREQ: Algebra I	9-12
0515 Networking	13027400 (1 credit)	None	10-12
5203 Digital Forensics	03580360 (1 credit)	PREQ: Geometry and Computer Science I	11-12
0505 AP Computer Science Principles May count as world language credit	A3580300	PREQ: Geometry	9-12
0510 AP Computer Science MATH/LOTE May count as math and world language credit	A3580110 (1 credit) A3580120 (1 credit)	PREQ: Algebra II and Computer Science II	10-12
5085 Practicum in Science, Technology, Engineering and Mathematics	13037400 (2 credits)	PREQ: Algebra I and Geometry Recommended PREQ: 1 course from Cybersecurity	12
0610/0612 Independent Study in Evolving/Emerging Technologies I and II	03581500 (1 credit) 03581600 (1 credit)	PREQ: Computer Science I and Algebra II	10-12
0630 ISM Computer Science I 0640 ISM Computer Science II	<u>N1290309 (1 credit)</u> N1290313 (1 credit)	<u>PREQ: AP Computer Science</u> PREQ: ISM Computer Science I	<u>11-12</u> 12

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CAREER CLUSTER  
CYBERSECURITY



<b>Level 1</b>	Introduction to Engineering Design (PLTW) Robotics I
<b>Level 2</b>	Civil Engineering and Architecture (PLTW) Engineering Science (PLTW) SystemsGo Rocketry
<b>Level 3</b>	Aerospace Engineering (PLTW) Digital Electronics (PLTW)
<b>Level 4</b>	Engineering and Design and Development (PLTW) Practicum in STEM ISM - 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	

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, FIRST Tech Challenge (Robotics)	Engineering internship Job shadow a machinist

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](http://TXCTE.org).

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

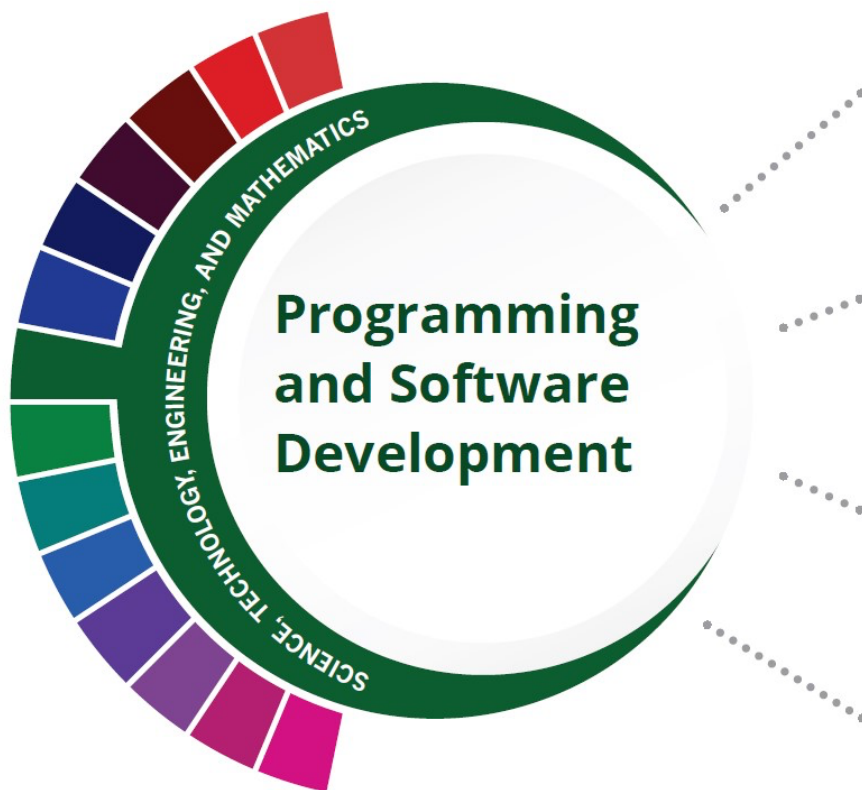




# COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITS (PREQ) COREQUISITES (CREQ)	Grade
5270 W Introduction to Engineering Design (PLTW - IED)	N1303742 (1 credit)	None	9-12
5272 Robotics I	1303700 (1 credit)	None	9-12
4900 W Engineering Science (PLTW - ES)	13037500 (1 credit)	PREQ: Algebra I, IED, and Biology Recommended PREQ: Geometry	10-12
5280 W Civil Engineering and Architecture (PLTW - CEA )	N1303747 (1 credit)	PREQ: Algebra I and IED	10-12
5290W Aerospace Engineering (PLTW - AE)	N1303745 (1 credit)	PREQ: Geometry, IED, and CEA or ES	11-12
5271 SystemsGo Rocketry	13036500 (1 credit)	PREQ: IED COREQ: Algebra II	10-12
3605W Digital Electronics (PLTW – DE)	13037600 (1 credit)	PREQ: Geometry, IED, and CEA or ES	11-12
5295W Engineering Design and Development (PTLW – EDD)	N1303749 (1 credit)	PREQ: IED, ES, and one additional PLTW	11-12
5085 Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credits)	PREQ: Algebra I and Geometry Recommended PREQ: 1 course from Engineering	12
0030 ISM - Scientific Research & Design	13037200 (1 credit)	PREQ: Biology, Chemistry, IPC, or Physics	11-12

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CAREER CLUSTER  
ENGINEERING



Computer Science I

## Level 1

Computer Science II  
AP Computer Science  
Principles

## Level 2

AP Computer Science A,  
MATH/LOTE

## Level 3

Computer Science III  
Practicum in Science,  
Technology, Engineering,  
and Mathematics  
Independent Study in  
Evolving/Emerging  
Technologies  
ISM in Computer Science I  
and II

## Level 4

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 General	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 JavaScript	Certified Software Analyst	Certified Software Analyst	Information Science/ Studies	

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:
Compete in UIL Computer Science Participate in coding club at school	Obtain an industry-based certification.

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.

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



# COURSE INFORMATION

COURSE NAME	SERVICE ID	PREREQUISITS (PREQ) COREQUISITES (CREQ)	Grade
0500 Computer Science I	03580200 (1 credit)	PREQ: Algebra I	9-12
0505 AP Computer Science Principles May count as a world language credit	A3580300 (1 credit)	PREQ: Geometry	9-12
0530 Computer Science II	03580300 (1 credit)	PREQ: Geometry and Computer Science I or Fund of Computer Science	9-12
0510 AP Computer Science A, MATH/LOTE May count as a math and world language credit	A3580110 (MATH) (1 credit) A3580120 (LOTE) (1 credit)	PREQ: Algebra II and Computer Science II	10-12
0535 Computer Science III	03580350 (1 credit)	PREQ: Pre-Cal, Computer Science II, And AP Computer Science A	11-12
5085 Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credit)	PREQ: Algebra I and Geometry Recommended PREQ: 1 course from Programming	12
0610/0612 Independent Study in Evolving/Emerging Technologies I and II	03581500 (1 credit) 03581600 (1 credit)	PREQ: Algebra II and Computer Science I	10 -12
0630 ISM Computer Science I 0640 ISM Computer Science II	<u>N1290309 (1 credit)</u> N1290313 (1 credit)	<u>PREQ: AP Computer Science</u> PREQ: ISM Computer Science I	<u>11-12</u> 12

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS CAREER CLUSTER  
PROGRAMMING AND SOFTWARE DEVELOPMENT