

course once for credit provided that the student is experiencing different aspects of the industry and demonstrating proficiency in additional and more advanced knowledge and skills.

Recommended Sequence of Courses (Prerequisites noted in course descriptions)

To complete the Program of Study, students must earn four credits in the Program of Study and one of the credits must be an Advanced Level course.

Entry Level Courses	Advanced Courses
Principles of Applied Engineering	Aerospace Engineering
Introduction to Engineering Design	Digital Electronics
	Engineering Science
	Practicum in STEM



Programming and Software Development

Business & Industry or STEM Endorsement

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 allows computer applications to run.

To complete the Program of Study, students must earn four credits in the Program of Study and one of the credits must be an Advanced Level course.

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 Association JAVA SE 8 Programmer	Certified Computing Professional	Computer Programming/Programmer General	Management Information Systems, General		Computer Network Architect	\$111,633	1,454	9%
Oracle Certified Database Associate	Cloud Technology Associate Certification	Computer Software Engineer			Software Developer, Systems Software	\$103,334	2985	25%
	AEM 6 Developer	Computer Science						
	Certified Software Analyst	Information Science/Studies						
*Includes Level I and Level II Certificates					WORK BASED LEARNING AND EXPANDED LEARNING OPPORTUNITIES			
For more information on postsecondary options for this programs of study, visit TXCTE.org					Exploration Activities:	Work Based Learning Activities:		
					Join TSA Participate in a coding club at school.	Obtain an industry based certification.		

Courses in this Program of Study

COMPUTER SCIENCE I

Course # 07222205

Prerequisite: Algebra I

Recommended Grade Placement 9-12

1 CREDIT

Students will access, analyze, and evaluate all types of information in ways that are computable in order to solve problems that range in scope from computing a speeding ticket to instructing a robot to dance, from designing interactive, intelligent fashion garments to creating a mobile app game. Students are exposed to the vast and diverse world of computer science, working collaboratively and individually on projects and learning a variety of programming languages, both graphical and text-based, to use in implementing their solutions. This is the first in the sequence of computer science courses offered for students in the computer science program of study, STEM endorsement. This is an advanced academic course and is weighted in the GPA. *This course receives weighted GPA credit. Check Appendix A for the weight.*

COMPUTER SCIENCE AP (approved by State Board of Education for math credit)

Course # 07222206

Prerequisite: Algebra I

Recommended Grade Placement 9-12

1 CREDIT

This course is a college-level course equivalent of a first semester computer science course in college. Students will learn and apply computer science concepts to write computer programs in the Java programming language and to prepare for the AP Computer Science A exam in May. Students should be comfortable with algebraic functions and concepts including the use of functional notation such as $f(x) = x + 2$ and $f(x) = g(h(x))$, should be successful working independently, be prepared to spend 3-5 hours per week outside of the classroom working on programming assignments and accept the challenge of preparing for an AP exam. This is the second in the sequence of computer science courses offered for students in the computer science program of study, STEM endorsement. This is an advanced academic course and is weighted in the GPA. Students enrolling in Advanced Placement courses will be required to take the Advanced Placement or Mock AP exams for each course in order to receive credit. *This course receives weighted credit for GPA calculation. Check Appendix A for weight.*

COMPUTER SCIENCE II

Course # 07222220

Prerequisite: Computer Science I and Algebra I

Recommended Grade Placement 10-12

1 CREDIT

This is the second in the sequence of computer science courses offered. Students will continue their learning of more advanced computer science concepts including object-oriented programming in the Java programming language. Students will learn much of the same information as contained in AP Computer Science A but without preparing for the AP exam. This is the second in the sequence of computer science courses offered for students in the computer science program of study, STEM endorsement. *This course receives weighted credit for GPA calculation.*

COMPUTER SCIENCE III

Course # 07222230

Prerequisite: Computer Science II or AP Computer Science A

Recommended Grade Placement 10-12

1 CREDIT

This is the third in the sequence of computer science courses offered. Students will learn additional data structures for storing and retrieving data including Sets, Maps, Lists, Stacks, Queues and Trees, and explore the advantages/disadvantages of each. Students will explore how technology impacts our lives by exploring current computer science topics such as artificial intelligence, cybersecurity and nanotechnology. In addition, students will choose computing topics of interest to research. This is the third in the sequence of computer science courses offered for students in the computer science program of study, STEM endorsement. *This course receives weighted credit for GPA calculation.*

Recommended Sequence of Courses (Prerequisites noted in course descriptions)

To complete the Program of Study, students must earn four credits in the Program of Study and one of the credits must be an Advanced Level course.

Entry Level Courses	Advanced Courses
Computer Science I	Computer Science II Computer Science III AP Computer Science