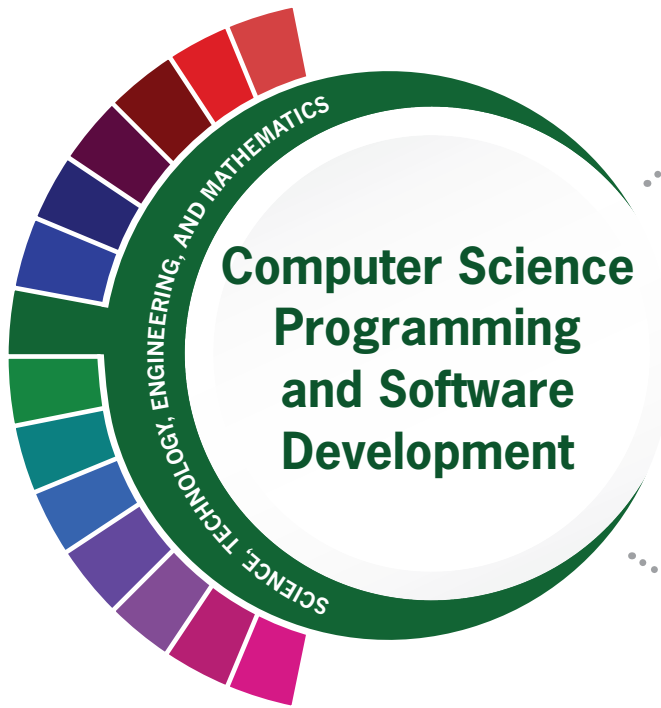


## COURSES



AP Computer Science Principles #7104

OR

Onramps Computer Science #7320



Computer Science I Pre-AP #7110



AP Computer Science A 1 (2CR) #7214 & #5970

OR

Computer Science 2 H #7210



Computer Science 3 H/DC #7310

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	
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	
<b>Exploration Activities:</b>	<b>Work Based Learning Activities:</b>
Join TSA Participate in a coding club at school.	Obtain an industry based certification.

The programming and Software Development program of study explores the occupations and education opportunities associated with researching, designing, developing, and testing operating systems-level software, compilers, and network distribution software for medical, industrial, military, communications, aerospace, business, scientific, and general computer applications. This program of study may also include exploration into creating, modifying, and testing the codes, forms, and script that allow computer applications to run



The Science, Technology, Engineering, and Mathematics (STEM) Career Cluster focuses on planning, managing, and providing, scientific research and professional and technical services, including laboratory and testing services, and research and development services.

Successful completion of the Programming and Software Development program of study will fulfill requirements of a Business and Industry or STEM Endorsement.



# Science, Technology, Engineering & Mathematics

## STEM Endorsement



Science,  
Technology,  
Engineering &  
Mathematics

### Computer Science - Programming and Software Development

(It is recommended students follow the program of study sequence level 1-4 as outlined by TEA.)

#### AP Computer Science Principles (9-12) #7104

AP Computer Science Principles offers a multidisciplinary approach to teaching the underlying principles of computation. The course will introduce students to the creative aspects of programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts. AP Computer Science Principles also gives students the opportunity to use current technologies to create computational artifacts for both self-expression and problem solving. Together, these aspects of the course make up a rigorous and rich curriculum that aims to broaden participation in computer science. The technology applications curriculum emphasizes the skills and qualities set by International Society for Technology in Education standards for students: empowered learner, digital citizen, knowledge constructor, innovative designer, computational

PR: None SEM:2 CR: 1

#### Onramps Computer Science #7320

(Harlan, Jay, Warren, Stevens, Brennan only)

Thriving in Our Digital World is a new dual enrollment course that teaches computer science principles, a set of core ideas that shapes the landscape of computer science and its impact on our society. In addition to learning about the magic and beauty of computing, students will acquire essential Texas College and Career Readiness skills, applying critical thinking, problem solving, and communication within a project-based learning framework. Students will experience high-quality curriculum designed by the faculty at The University of Texas at Austin. Students can earn three hours of UT credit with feedback and assessment provided by UT course staff.

PR: Algebra I SEM:2 CR: 1

#### Computer Science 1 Advanced (9-12) #7110

Computer Science I will foster students' creativity and innovation by presenting opportunities to design, implement, and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor, and various electronic communities to solve the problems presented throughout the course. Through data analysis, students will identify task requirements, plan search strategies, and use computer science concepts to access, analyze, and evaluate information needed to solve problems. By using computer science knowledge and skills that support the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create solutions, and evaluate the results. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect. Students will gain an understanding of the principles of computer science through the study of technology operations, systems, and concepts. The technology applications curriculum emphasizes the skills and qualities set by International Society for Technology in Education standards for students: empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and global collaborator.

PR: Algebra 1 SEM: 2 CR: 1

#### AP Computer Science A 1 (10-12) #7214 & #5970

CS2 extends student knowledge from CS1. The AP Computer Science A course is equivalent to a first-semester, college-level course in computer science. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data (data structures), approaches to processing data (algorithms), analysis of potential solutions, and the ethical and social implications of computing. The course emphasizes object-oriented and imperative problem solving and design using the Java language. These techniques represent proven approaches for developing solutions that can scale up from small, simple problems to large, complex problems. The AP Computer Science A course curriculum is compatible with many CS1 courses in colleges and universities. Students will have opportunity to earn college credit through Advanced Placement exam administered by College Board. The curriculum emphasizes the skills and qualities set by International Society for Technology in Education standards for students: empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and global collaborator.

PR: Algebra 1 AND CS1 OR Fundamentals SEM: 2 CR: 2

#### Computer Science 2 H (10-12) #7212

Computer Science II will foster students' creativity and innovation by presenting opportunities to design, implement, and present meaningful programs through a variety of media. Students will collaborate with one another, their instructor, and various electronic communities to solve the problems presented throughout the course. Through data analysis, students will identify task requirements, plan search strategies, and use computer science concepts to access, analyze, and evaluate information needed to solve problems. By using computer science knowledge and skills that support the work of individuals and groups in solving problems, students will select the technology appropriate for the task, synthesize knowledge, create solutions, and evaluate the results. Students will learn digital citizenship by researching current laws and regulations and by practicing integrity and respect. Students will gain an understanding of computer science through the study of technology operations, systems, and concepts.

PR: Algebra I & either Computer Science I or Fundamentals of Computer Science SEM: 2 CR: 1

#### Computer Science 3 H (11-12) #7310

CS3 H extends student knowledge from the previous years of study. Students produce independent projects through in depth study of selected topics based on Computer Science coursework, student interest, and hardware and software resources. Students will create program solutions, develop choice and iterative algorithms, and understand object-oriented design concepts of inner classes, outer classes, and anonymous classes. The student is expected to write programs and communicate with proper programming style as well as work in software design teams. The technology applications curriculum emphasizes the skills and qualities set by International Society for Technology in Education standards for students: empowered learner, digital citizen, knowledge constructor, innovative designer, computational thinker, creative communicator, and global collaborator.

PR: Computer Science 2 SEM:2 CR: 1