SUGGESTED COURSE PATHWAY

LEVEL 1
Computer Science I

LEVEL 2
AP Computer Science Principles

LEVEL 3
Computer Science II
AP Computer Science A

LEVEL 4
Career Preparation I and Extended Career Preparation
Computer Science III Honors

Above courses are not tied to grade levels.

COURSE INFORMATION

COURSE NO.	COURSE NAME	GRADE	PREREQUISITES	CERTIFICATIONS
401001	Computer Science I	9 - 10	Algebra I	N/A
403701	AP Computer Science Principles	9 - 10	None	N/A
402001	Computer Science II	10 - 12	Computer Science I, Algebra I	N/A
401051	AP Computer Science A	11 - 12	Algebra II or concurrent enrollment in Algebra II	N/A
553801	Career Preparation I and Extended Career Preparation	11 - 12	16 years of age	N/A
403531	Computer Science III Honors	11 - 12	Computer Science II or AP Computer Science A	N/A

The Programming and Software Development program of study explores the occupations and education opportunities associated wtih 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.

Meets the requirements of the Public Service or STEM Endorsement.

COURSE DESCRIPTIONS

401001 FULL YEAR

Computer Science I

Grades: 9 - 10

Prerequisite: Algebra I

Credit: 1.0

BPA

Computer Science I is an introduction to the automated processing of information, including computer programming. Students will apply their mathematical and logical reasoning to solve problems in the field of computer science. 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. Students will also explore various aspects of digital citizenship, including those affecting both users and programmers. The learning in this course equips students to read and write small programs using Java programming language in response to a given problem or scenario. Successful completion of this course will prepare students for a cohesive course sequence in computer science. No previous coding/programming experience is required.

403701 FULL YEAR

AP Computer Science Principles

Grades: 9 - 10

Prerequisite: None

Credit: 1.0

BPA

AP Computer Science Principles is an introduction to the complete field of computer science. Studies include exploring the technology's impact on society, analyzing and visualizing trends in data, and developing computational artifacts related to their interests. Students will broaden their understanding of computer science for use in a diversity of interests, majors and careers. Programming is only one component of this course and taught at an introductory level using JavaScript. No previous coding/programming experience is required. This course prepares students to take the Advanced Placement (AP) Computer Science Principles exam to possibly earn college credit.

402001 FULL YEAR

Computer Science II

Grades: 10 - 12

Prerequisite: Computer Science I, Algebra I

Credit: 1.0 (elective credit)

BPA

This course continues to build student learning from Computer Science I. The learning in this course equips students to read and write complex programs using Java programming language. Students apply algebraic and logical reasoning acquired in mathematics to develop robust programming solutions. Upon completion of this course, the student will have created software such as an interactive program and/or an animated graphics display.

401051 FULL YEAR

AP Computer Science A

Grades: 11 - 12

Prerequisite: Algebra II or concurrent enrollment in Algebra II

Credit: 2.0 (math credit)

BPA

This course serves as an introduction to computers and the study of managing and processing information. Students apply algebraic and logical reasoning acquired in mathematics to develop robust programming solutions. The emphasis is on solving real world problems by means of computer programming (software engineering). Students will thoroughly learn the Java programming language and apply those skills in exploring how computers work. Some topics covered include object-oriented techniques, file management, data structures, classes, objects, graphics, debugging, hardware components, and social implications. This course prepares students to take the Advanced Placement Computer Science A exam to possibly earn college credit. Note: One of two credits counts toward GPA

COURSE DESCRIPTIONS

553801
FULL YEAR

Career Preparation I and Extended Career Preparation

Grades: 11 - 12

Prerequisite: 16 years of age

Credit: 3.0

This course provides opportunities for students to participate in a work-based learning experience that combines classroom instruction with paid business and industry employment experiences. Classroom experiences include: job acquisition, career progression, financial success, business/entrepreneurial applications, occupational safety and health and relevant news topics. Professional portfolios will be created with material supporting an educational/career plan for the future. Students will earn 3.0 credits for successful completion of this course which includes one class period per school day on campus and two class periods per school day allocated for early release for off campus work experience.

403531
FULL YEAR

Computer Science III Honors

Grades: 11 - 12

Prerequisite: Computer Science II or AP Computer Science A

Credit: 1.0 (elective credit)

This course has four main goals: develop advanced software engineering skills in the Java programming language; teach advanced data structures such as linked lists, trees, classes, and data files; expose students to the development and analysis of classic computer algorithms such as sorting, searching, recursion, and numerical analysis; recognize the ethical and social implication of computer use. Students will develop major software projects over topics such as databases, sorting, business applications, and graphics.

POSTSECONDARY OPTIONS

CERTIFICATE/ LICENSE	ASSOCIATE'S DEGREE	BACHELOR'S DEGREE	MASTER'S/ DOCTORAL PROFESSIONAL DEGREE
Certified Computing Professional	Computer Programming/ Programmer General	Management Information Systems, General	
Cloud Technology Associate Certification	Computer Software Engineer		
AEM 6 Developer	Computer Science		
Certified Software Analyst	Information Science/Studies		

WORKFORCE/CAREER OPTIONS

OCCUPATIONS	MEDIAN WAGE	ANNUAL OPENINGS	% GROWTH
Computer Network Architect	$111, 633	1,454	9%
Software Developer, Systems Software	$103, 334	2,985	25%

Postsecondary, workforce, and career options data provided by Texas Education Agency (TEA).