



Information Technology

The Information Technology (IT) career cluster focuses on the design, development, support, and management of hardware, software, multimedia, and systems integration services. This career cluster includes occupations ranging from Software Developer and Programmer to Cybersecurity Specialists and Network Analysts.



Program of Study: **Programming & Software Development** (Dual Credit Option)

The Programming and Software Development program of study focuses on occupational and educational opportunities associated with researching, designing, developing, testing, and 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 includes creating, modifying, and testing the codes, forms, and script that allow computer applications to run.

Courses

	Dual Credit Pathway	KHS Pathway
9th Grade	Fundamentals of Computer Science Game Programming and Design	Fundamentals of Computer Science
10th Grade	AP Computer Science Principles	Game Programming and Design
11th Grade	Computer Science I (San Jacinto College Course) Computer Science II (San Jacinto College Course)	Mobile App Development
12th Grade	Practicum in STEM - Programming	Practicum in STEM - Programming

Aligned Advanced Academic Course(s)

- AP Calculus
- AP Statistics

Work-Based Learning/Expanded Learning Opportunities

Work-Based Learning Activities	<ul style="list-style-type: none"> • Earn industry certification • Work on industry projects
Expanded Learning Opportunities	Texas Technology Students Association (TSA)

Aligned Industry-Based Certifications

- Certified User: Programmer
- Oracle Certified Associate Java SE 8 Programmer



Example Postsecondary Opportunities

Apprenticeships

- Computer Programmer Apprenticeship

Associate Degrees

- Computer Programming
- Web Page, Digital/Multimedia and Information Resources Design

Bachelor's Degrees

- Data Science
- Computer Engineering

Master's, Doctoral, and Professional Degrees

- Management Science
- Computer Software Engineering

Additional Stackable IBCs/License

- AWS Certified Developer Associate

Example Aligned Occupations

Computer User Support Specialists

Median Wage: \$51,411
Annual Openings: 5,757
10-Year Growth: 21%

Software Developers

Median Wage: \$111,705
Annual Openings: 15,324
10-Year Growth: 36%

Computer Programmers

Median Wage: \$87,997
Annual Openings: 1,176
10-Year Growth: 4%

Successful completion of this program of study will fulfill requirements of the STEM Endorsement if the math and science requirements are met or the Business & Industry endorsement.

Approved Statewide Program of Study. C. E. King High School – 2024-25



Programming and Software Development Course Information

Level 1

Fundamentals of Computer Science

03580140

Grade: 9-10

Credit: 1

Fundamentals of Computer Science is intended as a first course for those students just beginning the study of computer science. Students will learn about the computing tools that are used every day. Students will foster their creativity and innovation through opportunities to design, implement, and present solutions to real-world problems. Students will collaborate and use computer science concepts to access, analyze, and evaluate information needed to solve problems. Students will learn the problem-solving and reasoning skills that are the foundation of computer science. 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 and concepts.

Level 2

AP Computer Science Principles

A3580300

Grade: 9-12

Credit: 1

GPA: 6.0

Recommended Prerequisite: Algebra I *Advanced Placement Test offered*

Computer science is everywhere, from smartphones and video games to music, medicine, and much more. AP Computer Science Principles (AP CSP) can help students understand how computing and technology influence the world around them. Learn how to creatively address real-world issues while using the same tools and processes that artists, writers, computer scientists, and engineers use to bring ideas to life. If you have big ideas and an interest in using technology and creativity to realize those ideas and solve problems, computer science is for you. AP Computer Science Principles can lead to 49 college majors and 130 career areas.

AP Computer Science Principles explores the fundamentals of computing, including problem solving, working with data, understanding the internet, cybersecurity and programming. It will broaden students' understanding of computer science for use in a diversity of majors and careers.

Students must have knowledge of basic algebra, experience in problem solving and competence with written communication.

Computer Science I (San Jacinto College Course)

03580200

Grade: 11-12

Credit: 1

Prerequisite: Algebra I

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.

Game Programming and Design

03580380

Grade: 9-12

Credit: 1

Prerequisite: Algebra I

Game Programming and Design will foster student creativity and innovation by presenting students with 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 gaming problems. Through data analysis, students will include the identification of task requirements, plan search strategies, and use programming concepts to access, analyze, and evaluate information needed to design games. By acquiring programming 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.



Programming and Software Development Course Information

Level 3

Computer Science II (San Jacinto College Course)

03580300

Grade: 11-12

Credit: 1

Prerequisite: Algebra I and Fundamentals of Computer Science or Computer Science I

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.

Mobile App Development

03580390

Grade: 11-12

Credit: 1

Prerequisite: Algebra I

Mobile Application Development will foster students' creativity and innovation by presenting opportunities to design, implement, and deliver meaningful projects using mobile computing devices. Students will collaborate with one another, their instructor, and various electronic communities to solve problems presented throughout the course. Through data analysis, students will identify task requirements, plan search strategies, and use software development concepts to access, analyze, and evaluate information needed to program mobile devices. By using software design 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 mobile application development through the study of development platforms, programming languages, and software design standards.

Level 4

Practicum in Science, Technology, Engineering, and Math - Programming

13037400

Grade: 12

Credit: 2

Prerequisite: Algebra I and Geometry; two IT Career Cluster Courses

This practicum in Science, Technology, Engineering, and Mathematics is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience. Although periods should be adhered to in order to provide students with experience, completion of skill sets may be demonstrated throughout the practicum; thus, units do not have to be delivered.

Industry Based Certification: Certified User: Programmer and/or Oracle Certified Associate Java SE 8 Programmer