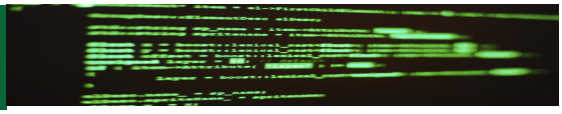
Science, Technology, Engineering, and Mathematics Career Cluster

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.

Programming and Software Development

Statewide Program of Study



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.

Secondary Courses for High School Credit

Level 1

- Fundamentals of Computer Science

Level 2

- AP Computer Science Principles
- Computer Science I
- Game Programming and Design

Level 3

- Introduction to C# Programming Applications
- AP Computer Science A, MATH
- AP Computer Science A, LOTE
- Mobile Application Development
- Computer Science II
- IB Computer Science Standard Level
- Discrete Mathematics for Computer Science
- Advanced Cloud Computing

Level 4

- Computer Science III
- IB Computer Science Higher Level, LOTE
- IB Computer Science Higher Level, MATH
- Practicum in Information Technology
- Practicum in Audio/Video Production
- Practicum in Science, Technology, Engineering, and Mathematics
- Practicum in Entrepreneurship
- Career Preparation I
- Independent Study in Technology Applications
- Independent Study in Evolving/Emerging Technologies

Postsecondary Opportunities

Associates Degrees

- Computer Programming/Programmer General
- Computer Software Engineer
- Computer Science
- Certified Software Analyst

Bachelor's Degrees

- Management Information Systems, General
- Computer Software Engineer
- Computer Science
- Information Science/ Studies

Master's, Doctoral, and Professional Degrees

- Computer Software Engineer
- Computer Science
- Information Science/ Studies

Work-Based Learning and Expanded Learning Opportunities

Exploration Activities	Work-Based Learning Activities
• Join TSA • Participate in coding club at school	• Obtain an industry-based certification

Industry-Based Certifications

- Apple App Development with Swift
- C++ Certified Associate Programmer
- Certified Entry-Level Python Programmer (PCEP)
- Certified Professional Programmer
- Certified User Programmer
- CompTIA Linux+
- CodeHS Python Level 1 Certification
- Information Technology Specialist: Java
- Information Technology Specialist: JavaScript
- Microsoft Azure AI Fundamentals
- Microsoft Azure Data Fundamentals
  Oracle Certified Associate Java SE 8 Programmer
- Oracle Database SQL Certified Associate

Aligned Occupations

Occupations	Median Wage	Annual Openings	% Growth
Software Developer, Systems Software	$103,334	2,985	25%
Software Developers, Application	$104,499	6,311	30%
Computer Programmers	$79,893	1,454	9%

Successful completion of the Programming and Software Development program of study will fulfill requirements of the Business and Industry endorsement and STEM endorsement if the math and science requirements are met. Revised – August 2022

Texas Education Agency

Programming and Software Development Course Information

Level 1

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Fundamentals of Computer Science	03580140 (1 credit)	None	None

Level 2

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
AP Computer Science Principles	A3580300 (1 credit)	None	None
Computer Science I	03580200 (1 credit)	Algebra I	None
Game Programming and Design	03580380 (1 credit)	Algebra I	None

Level 3

COURSE NAME	SERVICE ID	PREREQUISITES	COREQUISITES
Introduction to C# Programming Applications	N1302812 (1 credit)	None	None
AP Computer Science A, MATH, LOTE	A3580110 (1 credit) A3580120 (1 credit)	None	None
Mobile Application Development	03580390 (1 credit)	Algebra I	None
Computer Science II	03580300 (1 credit)	Algebra I, Computer Science I, or Fundamentals of Computer Science	None
IB Computer Science Standard Level	I3580200 (2 credits)	None	None
Discrete Mathematics for Computer Science	03580370 (1 credit)	Algebra I	None
Advanced Cloud Computing	N1302813 (1 credit)	None	None

Level 4

Course Name	Service ID	PREREQUISITES	COREQUISITES
Computer Science III	03580350 (1 credit)	Computer Science II, AP Computer Science A	None
IB Computer Science Higher Level, MATH, LOTE	I3580320 (1 credit) I3580310 (1 credit)	None	None
Practicum in Information Technology	13028000 (2 credits) 13028005 (3 credits) 13028010 (2 credits) 13028015 (3 credits)	Two high school Information Technology courses	None

See next page for additional Level 4 courses

Programming and Software Development
Course Information

Level 4 Continued

Course Name	Service ID	PREREQUISITES	COREQUISITES
Practicum in Audio/Video Production	13008700 (2 credits) 13008705 (3 credits) 13008710 (2 credits) 13008715 (3 credits)	Audio/Video Production II Lab	None
Practicum in Science, Technology, Engineering, and Mathematics	13037400 (2 credits) 13037405 (3 credits) 13037410 (2 credits) 13037415 (3 credits)	Algebra I and Geometry	None
Practicum in Entrepreneurship	N1303425 (2 credits)	None	None
Career Preparation I	12701300 (2 credits) 12701305 (3 credits)	None	None
Independent Study in Technology Applications	03580900 (1 credit)	None	None
Independent Study in Evolving/Emerging Technologies	03581500 (1 credit)	None	None

FOR ADDITIONAL INFORMATION ON THE SCIENCE, TECHNOLOGY, ENGINEEERING, AND MATHEMATICS CAREER CLUSTER,
PLEASE CONTACT: CTE@tea.texas.gov
https://tea.texas.gov/cte

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Further nondiscrimination information can be found at Notification of Nondiscrimination in Career and Technical Education Programs.