



Information Technology Career Cluster

The Information Technology (IT) Career Cluster focuses on building linkages in IT occupations for entry level, technical, and professional careers related to the design, development, support, and management of hardware, software, multimedia, and systems integration services.

Statewide Program of Study: Programming and Software Development

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.



Secondary Courses for High School Credit

Level 1	- Principles of Information Technology - Fundamentals of Computer Science
Level 2	- Computer Science I - Game Programming and Design - AP Computer Science Principles - Entrepreneurship I
Level 3	- Computer Science II - Introduction to C# Programming Applications - Discrete Mathematics for Computer Science - Mobile Application Development - Advanced Cloud Computing - AP Computer Science A - IB Computer Science Standard Level - IB Computer Science Higher Level
Level 4	- Computer Science III - Independent Study In Technology Applications - Independent Study in Evolving/Emerging Technologies - Practicum in Entrepreneurship - Practicum in Audio/Video Production - Practicum in Audio/Video Production + Extended Practicum in Audio/Video Production - Practicum in Information Technology - Practicum in Information Technology + Extended Practicum in Information Technology - Practicum in Science, Technology, Engineering, and Mathematics - Practicum in Science, Technology, Engineering, and Mathematics + Extended Practicum in Science, Technology, Engineering, and Mathematics - Career Preparation for Programs of Study - Career Preparation for Programs of Study + Extended Career Preparation - Scientific Research and Design - Career and Technical Education Project-Based Capstone

Aligned Advanced Academic Courses

AP or IB	AP Calculus AB AP Statistics IB Mathematics Applications and Interpretation SL
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Dual Credit Dual credit offerings will vary by Local Education Agency.

Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses not listed under the Secondary Courses for High School Credit section of this framework document do not count towards Concentrator/Completer status for this program of study.

Work-Based Learning and Expanded Learning Opportunities

Work-Based Learning Activities	- Intern at a local IT company to develop skills in programming and coding - Shadow a software developer to learn how they create and improve software to support efficient processes at their company
Expanded Learning Opportunities	- Program and create a game - Participate in TSA or SkillsUSA

Aligned Industry-Based Certifications

- Apple App Development with Swift
- C++ Certified Associate Programmer
- Certified Entry-Level Python Programmer (PCEP)
- Certified Professional Programmer
- Certified User: Programmer
- CodeHS Python Level 1 Certification
- CompTIA IT Fundamentals+
- CompTIA Linux+
- 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
- CompTIA A+ Certification
- CompTIA Server+

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



Example Postsecondary Opportunities

Apprenticeships

- Computer Programmer

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/Licensures

- AWS Certified Developer Associate



Example Aligned Occupations

Computer User Support Specialists

Median Wage: \$48,099
Annual Openings: 8,412
10-Year Growth: 26%

Software Developers

Median Wage: \$103,194
Annual Openings: 15,634
10-Year Growth: 55%

Computer Programmers

Median Wage: \$76,120
Annual Openings: 1,467
10-Year Growth: 15%

Data Source: Lightcast™. (2022). Occupation Table. Retrieved 9/27/2022.



For more information visit:
<https://tea.texas.gov/academics/college-career-and-military-prep/career-and-technical-education/programs-of-study-additional-resources>



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Statewide Program of Study: Programming and Software Development

Course Information

Level 1

Course	Prerequisites Corequisites	Career Clusters
Principles of Information Technology* 13027200 (1 credit)	Prerequisites: None Corequisites: None	
Fundamentals of Computer Science* 03580140 (1 credit)	Prerequisites: None Corequisites: None	

Level 2

Course	Prerequisites Corequisites	Career Clusters
Computer Science I* 03580200 (1 credit)	Prerequisites: Algebra I or Corequisites: Algebra I	
Game Programming and Design 03580380 (1 credit)	Prerequisites: Algebra Corequisites: None	
AP Computer Science Principles* A3580300 (1 credit)	Prerequisites: None Corequisites: None	
Entrepreneurship I (1 credit)	Prerequisites: None Corequisites: None	

Level 3

Course	Prerequisites Corequisites	Career Clusters
Computer Science II 03580300 (1 credit)	Prerequisites: Algebra I and either Computer Science I or Fundamentals of Computer Science Corequisites: None	
Introduction to C# Programming Applications N1302812 (1 credit)	Prerequisites: None Corequisites: None	
Discrete Mathematics for Computer Science* 03580370 (1 credit)	Prerequisites: Algebra II Corequisites: None	
Mobile Application Development 03580390 (1 credit)	Prerequisites: Algebra I Corequisites: None	
Advanced Cloud Computing* N1302813 (1 credit)	Prerequisites: None Corequisites: None	
AP Computer Science A* A3580110 (1 math credit) A3580120 (1 LOTE credit)	Prerequisites: None Corequisites: None	

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* Indicates course is included in more than one program of study.

For additional information on the **Information Technology Career Cluster**, contact cte@tea.texas.gov or visit <https://tea.texas.gov/cte>



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Course Information

Level 3

Course	Prerequisites Corequisites	Career Clusters
IB Computer Science Standard Level* I3580200 (2 credits)	Prerequisites: None Corequisites: None	
IB Computer Science Higher Level* I3580310 (1 math credit) I3580320 (1 LOTE credit)	Prerequisites: None Corequisites: None	

Level 4

Course	Prerequisites Corequisites	Career Clusters
Computer Science III* 03580350 (1 credit)	Prerequisites: Computer Science II, Advanced Placement (AP) Computer Science A, or International Baccalaureate (IB) Computer Science Standard Level or IB Computer Science Higher Level. Corequisites: None	
Independent Study In Technology Applications First Time Taken: 03580900 (1 credit) Second Time Taken: 03581000 (1 credit)	Prerequisites: None Corequisites: None	
Independent Study in Evolving/Emerging Technologies First Time Taken: 03581500 (1 credit) Second Time Taken: 03581600 (1 credit)	Prerequisites: None Corequisites: None	
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Course Information

Level 4

Course	Prerequisites Corequisites	Career Clusters
Practicum in Entrepreneurship N1303425 (2 credits)	Prerequisites: None Corequisites: None	
Practicum in Audio/Video Production First Time Taken: 13008700 (2 credits) Second Time Taken: 13008710 (2 credits)	Prerequisites: Audio/Video Production II and Audio/Video Production II Lab Corequisites: None	
Practicum in Audio/Video Production + Extended Practicum in Audio/Video Production First Time Taken: 13008705 (3 credits) Second Time Taken: 13008715 (3 credits)	Prerequisites: Audio/Video Production II and Audio/Video Production II Lab Corequisites: None	
Practicum in Information Technology* First Time Taken: 13028000 (2 credits) Second Time Taken: 13028010 (2 credits)	Prerequisites: A minimum of two high school information technology (IT) courses Corequisites: None	
Practicum in Information Technology + Extended Practicum in Information Technology* First Time Taken: 13028005 (3 credits) Second Time Taken: 13028015 (3 credits)	Prerequisites: Minimum of two high school information technology (IT) courses Corequisites: None	
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Level 4

Course	Prerequisites Corequisites	Career Clusters
Practicum in Science, Technology, Engineering, and Mathematics First Time Taken: 13037400 (2 credits) Second Time Taken: 13037410 (2 credits)	Prerequisites: Algebra I and Geometry Corequisites: None	   
Practicum in Science, Technology, Engineering, and Mathematics + Extended Practicum in Science, Technology, Engineering, and Mathematics First Time Taken: 13037405 (3 credits) Second Time Taken: 13037415 (3 credits)	Prerequisites: Algebra I and Geometry Corequisites: None	   
Career Preparation for Programs of Study (2 credits)	Prerequisites: at least one Level 2 or higher Career and Technical Education course Corequisites: None	           
Career Preparation for Programs of Study + Extended Career Preparation (3 credits)	Prerequisites: at least one Level 2 or higher Career and Technical Education course Corequisites: Career Preparation For Programs of Study	           
Scientific Research and Design 13037200 (1 credit)	Prerequisites: Biology, Chemistry, Integrated Physics and Chemistry (IPC), or Physics. Corequisites: None	       
Career and Technical Education Project-Based Capstone (1 credit)	Prerequisites: None Corequisites: None	       

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