

# Information Technology Career Cluster

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.

## Statewide Program of Study: Networking Systems

The Networking Systems program of study focuses on occupations and educational opportunities associated with designing and implementing computer and information networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. This program of study includes analysis of data processing challenges to implementing and improving computer systems.



## Secondary Courses for High School Credit

<b>Level 1</b>	<ul style="list-style-type: none"> <li>Principles of Information Technology</li> <li>Fundamentals of Computer Science</li> </ul>
<b>Level 2</b>	<ul style="list-style-type: none"> <li>Computer Science I</li> <li>Internetworking Technologies I (Cisco)</li> <li>Computer Maintenance</li> </ul>
<b>Level 3</b>	<ul style="list-style-type: none"> <li>Internetworking Technologies II (Cisco)</li> </ul>
<b>Level 4</b>	<ul style="list-style-type: none"> <li>Independent Study in Technology Applications</li> <li>Career and Technical Education Project-Based Capstone</li> </ul>

## Aligned Advanced Academic Courses

**Dual Credit** Dual credit offerings will vary by local education agency.

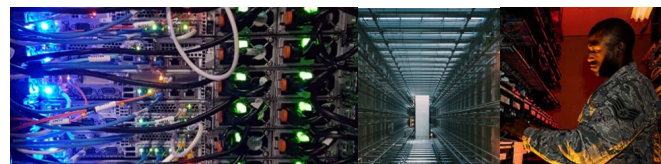
*Students should be advised to consider these course opportunities to enrich their preparation. AP or IB courses not listed under the Secondary Courses for High School Credit section of this framework document do not count towards concentrator/completer status for this program of study.*

## Work-Based Learning and Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>Intern at a local education, public service, or technology organization to develop skills in installing hardware and software</li> <li>Interview a network administrator to learn about their career path and what credentials they earned to be successful in their role</li> </ul>
<b>Expanded Learning Opportunities</b>	<ul style="list-style-type: none"> <li>Participate in a Hackathon</li> <li>Participate in SkillsUSA or TSA</li> </ul>

## Aligned Industry-Based Certifications

- Cisco 100-490 RSTech Supporting Cisco Routing and Switching Network Devices
- Cisco CCNA (200-301) Implementing and Administering Cisco Solutions
- Information Technology Specialist: Networking



## Example Postsecondary Opportunities

### Apprenticeships

- Network Engineer Apprenticeship

### Associate Degrees

- Computer Systems Networking and Telecommunications
- Network and System Administration

### Bachelor's Degrees

- Computer and Information Sciences
- Information Technology

### Master's, Doctoral, and Professional Degrees

- Computer Science
- Information Technology

### Additional Stackable IBCs/License

- Aruba Certified Mobility Associate (ACMA)



## Example Aligned Occupations

### Computer Network Support Specialists

Median Wage: \$65,646  
Annual Openings: 1,634  
10-Year Growth: 19%

### Computer Systems Analysts

Median Wage: \$101,716  
Annual Openings: 4,985  
10-Year Growth: 19%

### Network and Computer Systems Administrators

Median Wage: \$85,375  
Annual Openings: 2,900  
10-Year Growth: 20%

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024.



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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## Secondary Courses for High School Credit

### Level 1

- Principles of Information Technology
- Fundamentals of Computer Science

### Level 2

- Computer Science I
- AP Computer Science Principles
- Computer Maintenance

### Level 3

- Networking

### Level 4

- Independent Study in Technology Applications
- Practicum of Information Technology

## Aligned Advanced Academic Courses

### Dual Credit

Dual credit offerings will vary by local education agency.

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## Work-Based Learning and Expanded Learning Opportunities

### Work-Based Learning Activities

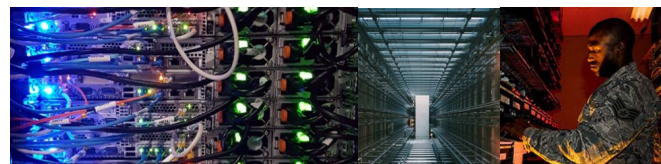
- Intern at a local education, public service, or technology organization to develop skills in installing hardware and software
- Interview a network administrator to learn about their career path and what credentials they earned to be successful in their role

### Expanded Learning Opportunities

- Participate in a Hackathon
- Participate in SkillsUSA or TSA

## Aligned Industry-Based Certifications

- CompTIA A+ Certification
- CompTIA IT Fundamentals+
- CompTIA Network+
- CompTIA Server+
- Information Technology Specialist: Networking
- Microsoft Azure Data Fundamentals



## Example Postsecondary Opportunities

### Apprenticeships

- Network Engineer Apprenticeship

### Associate Degrees

- Computer Systems Networking and Telecommunications
- Network and System Administration

### Bachelor's Degrees

- Computer and Information Sciences
- Information Technology

### Master's, Doctoral, and Professional Degrees

- Computer Science
- Information Technology



## Example Aligned Occupations

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## Statewide Program of Study: Web Development

The Web Development program of study focuses on occupational and educational opportunities associated with designing, creating, and modifying websites. It includes integration of websites with other computer applications and conversion of written, graphic, audio, and video components to compatible web formats using software designed to facilitate the creation of web and multimedia content.



## Secondary Courses for High School Credit

- |                |  |
|----------------|--|
| <b>Level 1</b> | <ul style="list-style-type: none"> <li>Principles of Information Technology</li> <li>Fundamentals of Computer Science</li> </ul> |
| <b>Level 2</b> | <ul style="list-style-type: none"> <li>Computer Science I</li> </ul>   |
| <b>Level 3</b> | <ul style="list-style-type: none"> <li>Web Design</li> </ul>   |
| <b>Level 4</b> | <ul style="list-style-type: none"> <li>Independent Study in Technology Applications</li> </ul>                                   |

## Aligned Advanced Academic Courses

<b>AP or IB</b>	<ul style="list-style-type: none"> <li>AP Computer Science A</li> <li>AP Computer Science Principles</li> <li>IB Computer Science SL</li> <li>IB Computer Science HL</li> </ul>
<b>Dual Credit</b>	Dual credit offerings will vary by local education agency.

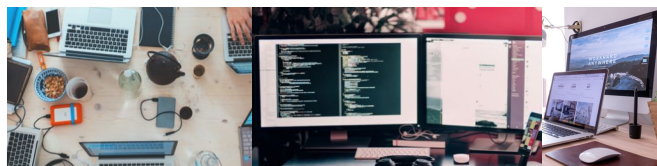
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## Work-Based Learning and Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>Intern at a nonprofit or small business to support developing or updating their website and digital media</li> <li>Shadow a web designer to learn about how they developed their digital design skills and what factors they consider when developing a website</li> </ul>
<b>Expanded Learning Opportunities</b>	<ul style="list-style-type: none"> <li>Create a website</li> <li>Participate in SkillsUSA or TSA</li> </ul>

## Aligned Industry-Based Certifications

- Information Technology Specialist: HTML and CSS



## Example Postsecondary Opportunities

### Associate Degrees

- Web Page, Digital/Multimedia and Information Resources Design
- Web/Multimedia Management



### Bachelor's Degrees

- Computer and Information Sciences
- Information Technology

### Master's, Doctoral, and Professional Degrees

- Computer and Information Sciences
- Computer Software Engineering

### Additional Stackable IBCs/License

- HTML Developer



## Example Aligned Occupations

### Web Developers

Median Wage: \$77,712  
Annual Openings: 1,170  
10-Year Growth: 24%

### Software Developers

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

### Computer and Information Systems Managers

Median Wage: \$155,593  
Annual Openings: 3,064  
10-Year Growth: 26%

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024.



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## Statewide Program of Study: Cybersecurity

The Cybersecurity program of study focuses on occupational and educational opportunities associated with planning, implementing, upgrading, or monitoring security measures for the protection of computer networks and information. This program of study includes responding to computer security breaches and viruses and administering network security measures.



## Secondary Courses for High School Credit

<b>Level 1</b>	<ul style="list-style-type: none"> <li>Principles of Information Technology</li> <li>Fundamentals of Computer Science</li> <li>Foundations of Cybersecurity</li> </ul>
<b>Level 2</b>	<ul style="list-style-type: none"> <li>Computer Science I</li> <li>Computer Maintenance</li> <li>AP Computer Science Principles</li> </ul>
<b>Level 3</b>	<ul style="list-style-type: none"> <li>Networking</li> </ul>
<b>Level 4</b>	<ul style="list-style-type: none"> <li>Independent Study in Technology Applications</li> <li>Cybersecurity Capstone</li> <li>Career and Technical Education Project-Based Capstone Cybersecurity</li> </ul>

## Aligned Advanced Academic Courses

<b>AP or IB</b>	<ul style="list-style-type: none"> <li>AP Computer Science Principles</li> <li>AP Computer Science A</li> </ul>
<b>Dual Credit</b>	Dual credit offerings will vary by local education agency.

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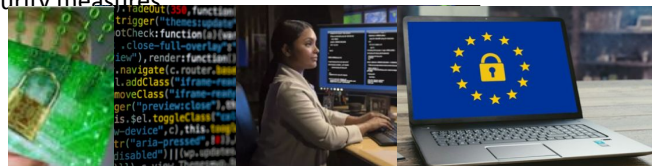
## Work-Based Learning and Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>Intern at a local bank, hospital, or government office to develop skills in implementing security measures</li> <li>Interview with an information security analyst to learn how they plan for, monitor, and upgrade security measures at their organization</li> </ul>
<b>Expanded Learning Opportunities</b>	<ul style="list-style-type: none"> <li>Participate in a Hackathon</li> <li>Participate in TSA or SkillsUSA</li> </ul>

## Aligned Industry-Based Certifications

- CompTIA A+ Certification
- CompTIA IT Fundamentals+
- CompTIA Network+
- Cybersecurity Fundamentals
- Information Technology Specialist: Networking

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



## Examples Postsecondary Opportunities

### Associate Degrees

- Computer and Information Systems Security
- Computer Programming

### Bachelor's Degrees

- Computer Science
- Computer Software Engineering

### Master's, Doctoral, and Professional Degrees

- Computer and Information Systems Security/Auditing/Information Assurance
- Computer Software Engineering

### Additional Stackable IBCs/License

- Certified Ethical Hacker (CEH)



## 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%

### Information Security Analysts

Median Wage: \$110,268  
Annual Openings: 1,719  
10-Year Growth: 49%

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024.



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## 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

<b>Level 1</b>	<ul style="list-style-type: none"> <li>Principles of Information Technology</li> <li>Fundamentals of Computer Science</li> </ul>
<b>Level 2</b>	<ul style="list-style-type: none"> <li>Computer Science I</li> <li>AP Computer Science Principles</li> </ul>
<b>Level 3</b>	<ul style="list-style-type: none"> <li>Mobile Application Development</li> <li>AP Computer Science A</li> <li>IB Computer Science Standard Level</li> <li>IB Computer Science Higher Level</li> </ul>
<b>Level 4</b>	<ul style="list-style-type: none"> <li>Computer Science III</li> <li>Independent Study in Technology Applications</li> </ul>

### Aligned Advanced Academic Courses

<b>AP or IB</b>	<ul style="list-style-type: none"> <li>AP Calculus AB</li> <li>AP Statistics</li> <li>IB Mathematics Applications and Interpretation SL</li> </ul>
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### Work-Based Learning and Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>Intern at a local IT company to develop skills in programming and coding</li> <li>Shadow a software developer to learn how they create and improve software to support efficient processes at their company</li> </ul>
<b>Expanded Learning Opportunities</b>	<ul style="list-style-type: none"> <li>Program and create a game</li> <li>Participate in SkillsUSA or TSA</li> </ul>

### Aligned Industry-Based Certifications

- C++ Certified Associate Programmer
- Certified Entry-Level Python Programmer (PCEP)
- CodeHS Python Level 1 Certification
- Information Technology Specialist: Java



## 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%

Data Source: TexasWages, Texas Workforce Commission. Retrieved 3/8/2024.



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