

# COMPUTER SCIENCE

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- MIS Software Applications Specialist Certificate ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/mis-software-applications-specialist-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/mis-software-applications-specialist-certificate/))
- Cloud Computing Certificate (Pending) ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/cloudcomputing-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/cloudcomputing-certificate/))
- Computer Science (MIS) Technology Certificate ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-mis-technology-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-mis-technology-certificate/))
- Computer Science AA Degree, Liberal Arts Major ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-aa/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-aa/))
- Computer Science Data Center OSA ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-data-center-osa/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-data-center-osa/))
- Computer Science Network & Security OSA ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-network-security-osa/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-network-security-osa/))
- Computer Science PC Hardware OSA ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-pc-hardware-osa/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-pc-hardware-osa/))
- Computer Science System Administrator OSA ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-system-administrator-osa/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/computer-science-system-administrator-osa/))
- Cybersecurity Certificate ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/cybersecurity-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/cybersecurity-certificate/))
- Data Center Certificate ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/data-center-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/data-center-certificate/))
- Management Information Systems (MIS) Emphasis AAS Degree ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/emphasis-management-information-systems-mis-aas/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/emphasis-management-information-systems-mis-aas/))
- Information Systems Support & Administration AAS Degree ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/information-systems-support-administration-aas/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/information-systems-support-administration-aas/))
- Management Information Systems (MIS) Certificate ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/management-information-systems-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/management-information-systems-certificate/))
- Networking and Information Security Certificate ([coursecatalog.tvcc.edu/pathways/business-technology/computer-science/networking-information-security-certificate/](http://coursecatalog.tvcc.edu/pathways/business-technology/computer-science/networking-information-security-certificate/))

**COSC-1336. Programming Fundamentals I. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Introduces the fundamental concepts of structured programming and provides a comprehensive introduction to programming for computer science and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. This course assumes computer literacy. (This course is included in the Field of Study Curriculum for Computer Science.) Lab fee.

**COSC-1337. Programming Fundamentals II. (3 Credits)**

(3-2-4) This course is taken for academic credit. (Prerequisite COSC 1336) Students will earn an A, B, C, D, F, or W. Focuses on the object-oriented programming paradigm, emphasizing the definition and use of classes along with fundamentals of object-oriented design. The course includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering processes. Students will apply techniques for testing and debugging software. (This course is included in the Field of Study Curriculum for Computer Science.) Lab fee.

**ACNT-1303. Introduction to Accounting I. (3 Credits)**

(3-3-0) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A study of analyzing, classifying, and recording business transactions in a manual and computerized environment. Emphasis on understanding the complete accounting cycle and preparing financial statements, bank reconciliations, and payroll.

**BCIS-1305. Business Computer Applications. (3 Credits)**

(3-2-4) CORE AREA 090 This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Students will study computer terminology, hardware, and software related to the business environment. The focus of this course is on business productivity software applications and professional behavior in computing, including word processing (as needed), spreadsheets, databases, presentation graphics, and business-oriented utilization of the Internet. Lab fee.

**BUSI-2301. Business Law. (3 Credits)**

(3-3-0) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. The course provides the student with foundational information about the U.S. legal system and dispute resolution, and their impact on business. The major content areas will include general principles of law, the relationship of business and the U.S. Constitution, state and federal legal systems, the relationship between law and ethics, contracts, sales, torts, agency law, intellectual property, and business law in the global context.

**IMED-1316. Web Design I. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Instruction in the fundamentals of HTML, Web page design and development. Lab fee.

**ITMT-1305. Configuring Advanced Windows Server Oper. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Advanced configuration tasks required to deploy, manage, and maintain a Window Server operating system infrastructure. Additional topics include fault tolerance, certificate services, and identity federation. Lab fee.

**ITMT-1357. Administering a Windows Server Operating System. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. A study of administrative tasks needed to maintain a Windows Server operating system including user and group management, network access and data security. Topics include how to implement, configure and manage Group Policy infrastructure, Group Policy objects (GPOs) using links, security groups, WMI filters, loopback processing, preference targeting and troubleshooting policy application. Lab fee.

**ITNW-1308. Implementing and Supporting Client Opera. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. The fundamentals of managing and configuring network clients. Lab fee.

**ITNW-1325. Fundamentals of Networking Technologies. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Instruction in networking technologies and their implementation. Topics include the OSI reference model, network protocols, transmission media, and networking hardware and software. Identify and use network transmission media; explain the OSI model; recognize the primary network topologies/protocols, identify their characteristics, and determine which would be most appropriate for a proposed network; identify the functions of a network operating system and distinguish between centralized, client/server, and peer-to-peer systems; and distinguish between local area networks (LANs) and wide area networks (WANs) and identify the components used to expand a LAN into a WAN. Lab fee.

**ITNW-1358. Network+. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Assists individuals in preparing for the Computing Technology Industry Association (CompTIA) Network+ certification exam and careers as a network professional. Lab fee.

**ITNW-2356. Designing a Network Directory Infrastructure. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Design, implement, and support a network directory infrastructure in a multi-domain environment. Lab fee.

**ITSC-1305. Introduction to PC Operating Systems. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Introduction to personal computer operating systems including installation, configuration, file management, memory and storage management, control of peripheral devices, and use of utilities. Lab fee.

**ITSC-1316. Linux Installation and Configuration. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Introduction to Linux operating system. Includes Linux installation, basic administration, utilities and commands, upgrading, networking, security and application installation. Emphasizes hands-on setup, administration and management of Linux. Lab fee.

**ITSC-1325. Personal Computer Hardware. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Topics address recently identified current events, skills knowledge, and/or attitudes and behaviors pertinent to the technology or occupation and relevant to the professional development of the student.

**ITSC-2335. Application Software Problem Solving. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Utilization of appropriate software to solve advanced problems and generate customized solutions. Lab fee.

**ITSE-1311. Beginning Web Programming. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Skill development in web programming including mark-up and scripting languages. Lab fee.

**ITSE-1346. Database Theory and Design. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Introduction to the analysis and utilization of data requirements and organization into normalized tables using the four normal forms of database design. Lab fee.

**ITSW-1304. Introduction to Spreadsheets. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Instruction in the concepts, procedures, and application of electronic spreadsheets. Lab fee.

**ITSW-1307. Introduction to Database. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Introduction of database theory and practical application. Includes techniques for planning, defining, and designing a database and procedures pertaining to queries, reports, control and security of the database. Hands on experience will be provided using appropriate application software. Lab fee.

**ITSE-1332. Introduction to Visual Basic Net Programming. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Introduction to Visual Basic.NET (VB.NET) including data types, control structures, functions, syntax, and semantics of the language, classes, class relationships and exception handling. Lab fee.

**ITSW-1381. Coop Education, Data Processing Technology/Technician. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Career related activities in the student's area of specialization are offered through a cooperative agreement between the college, the employer and student. Under supervision of the college and the employer, the student combines classroom learning with work experience. Lab fee.

**ITSY-1300. Fundamentals of Information Security. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. An introduction to information securing including vocabulary and terminology, ethics, the legal environment and risk management. Identification of exposures and vulnerabilities and appropriate countermeasures are addresses. The importance of appropriate planning, policies and controls are also discussed. Lab fee.

**ITSY-1342. Information Technology Security. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Instruction in security for network hardware, software, and data, including physical security; backup procedures; relevant tools, encryption; and protection from viruses. Lab fee.

**ITSY-2330. Intrusion Detection. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Computer information systems security monitoring, intrusion detection, and crisis management. Includes alarm management, signature configuration, sensor configuration, and troubleshooting components. Emphasizes identifying, resolving, and documenting network crises and activating the response team. Lab fee.

**ITSY-2359. Security Assessment and Auditing. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Comprehensive experience for the security curriculum. Synthesizes technical material covered in prior courses to monitor, audit, analyze, and revise computer and network security systems that ensure appropriate levels of protection are in place to assure regulatory compliance. Lab fee.

**ITSY-2342. Incident Response and Handling. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. In-depth coverage of incident response and incident handling, including identifying sources of attacks and security breaches; analyzing security logs; recovering the system to normal; performing postmortem analysis; and implementing and modifying security measures. Lab fee.

**ITSY-2301. Firewalls and Network Security. (3 Credits)**

This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Identify elements of firewall design, types of security threats and responses to security attacks. Use Best Practices to design, implement, and monitor network security plan. Examine security incident postmortem reporting and ongoing network security activities. Lab fee.

**POFI-2301. Word Processing. (3 Credits)**

(3-2-4) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Word processing software focusing on business applications. Lab fee.

**POFT-2312. Business Correspondence and Communication. (3 Credits)**

(3-3-0) This course is taken for academic credit. Students will earn an A, B, C, D, F, or W. Development of writing and presentation skills to produce effective business communications.

**What Computer Support Specialists Do (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-2>)**

Computer support specialists provide help and advice to computer users and organizations. These specialists either support computer networks or they provide technical assistance directly to computer users.

**Duties**

**Computer network support specialists** typically do the following:

- Test and evaluate existing network systems
- Perform regular maintenance to ensure that networks operate correctly
- Troubleshoot local area networks (LANs), wide area networks (WANs), and Internet systems

Computer network support specialists, also called *technical support specialists*, analyze, troubleshoot, and evaluate computer network problems. They play an important role in the routine maintenance of their organization's networks, such as performing file backups on the network. Maintenance can be performed daily, weekly, or monthly and is important to an organization's disaster recovery efforts. Solving an information technology (IT) problem promptly is important because organizations depend on their network systems. Network support specialists may assist computer users through phone, email, or in-person visits. They often work under network and computer systems administrators (<https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm>), who handle more complex tasks.

**Computer user support specialists** typically do the following:

- Pay attention to customers' descriptions of their computer problems
- Ask customers questions to properly diagnose the problem
- Walk customers through the recommended problem-solving steps
- Set up or repair computer equipment and related devices
- Train users to work with new computer hardware or software, such as printers, word-processing software, and email
- Provide other team members and managers in the organization with information about what gives customers the most trouble and about other concerns customers have

Computer user support specialists, also called *help-desk technicians*, usually provide technical help to non-IT computer users. They respond to phone and email requests for help. They can usually help users remotely, but they also may make site visits so that they can solve a problem in person.

Help-desk technicians may solve a range of problems that vary with the industry and the particular firm. Some technicians work for large software companies or for support service firms and must give instructions to business customers on how to use business-specific programs such as an electronic health records program used in hospitals or physicians' offices. Sometimes they work with other technicians to resolve problems.

Other help-desk technicians work in call centers, answering simpler questions from nonbusiness customers. They may walk customers through basic steps in re-establishing an Internet connection or troubleshooting household IT products such as Wi-Fi routers.

### **SUMMARY** (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-1>)

- Computer support specialists
- 2018 Median Pay: \$53,470 per year; \$25.70 per hour
- Typical Entry-Level Education: See How to Become One (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-4>)
- Work Experience in a Related Occupation: None
- On-the-job Training: None
- Number of Jobs, 2018: 863,100
- Job Outlook, 2018-28: 10% (Faster than average)
- Employment Change, 2018-28: 83,100

### **What Network and Computer Systems Administrators Do** (<https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm#tab-2>)

Network and computer systems administrators are responsible for the day-to-day operation of computer networks. Additional details. (<https://www.bls.gov/ooh/computer-and-information-technology/network-and-computer-systems-administrators.htm#tab-2>)

### **What Software Developers Do** (<https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm#tab-2>)

Software developers create the applications or systems that run on a computer or another device. Additional details. (<https://www.bls.gov/ooh/computer-and-information-technology/software-developers.htm#tab-2>).

### **What Information Security Analysts Do** (<https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm#tab-2>)

Information security analysts plan and carry out security measures to protect an organization's computer networks and systems. Additional details. (<https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm>)

### Work Environment (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-3>)

Most computer support specialists have full-time work schedules; however, many do not work typical 9-to-5 jobs. Because computer support is important for businesses, support services may need to be available 24 hours a day. As a result, many support specialists must work nights or weekends.

### Pay (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-5>)

The median annual wage for computer network support specialists was \$62,770 in May 2018.

The median annual wage for computer user support specialists was \$50,980 in May 2018.

### Job Outlook (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-6>)

Employment of computer support specialists is projected to grow 10 percent from 2018 to 2028, faster than the average for all occupations. More support services will be needed as organizations upgrade their computer equipment and software.

### State & Area Data (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-7>)

Explore resources for employment and wages by state and area for computer support specialists.

### Similar Occupations (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-8>)

Compare the job duties, education, job growth, and pay of computer support specialists with similar occupations.

### More Information, Including Links to O\*NET (<https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm#tab-9>)

Learn more about computer support specialists by visiting additional resources, including O\*NET, a source on key characteristics of workers and occupations.

### **SUGGESTED CITATION:**

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Computer Support Specialists, on the Internet at <https://www.bls.gov/ooh/computer-and-information-technology/computer-support-specialists.htm> (visited *March 03, 2020*).

TVCC has partnered with Career Coach (<https://tvcc.emsicc.com/?radius=&region=10%20Mile%20radius%20from%20Athens%2C%20TX>) for students to discover majors and in-demand careers and education based on your interests!

- Career Assessment Profiler
- Interactive Career Catalog
- Browse TVCC's Pathways



Some careers in this field will require a bachelor's degree.

- TVCC's AA degrees are fully transferable to public universities in Texas. See an academic advisor or TVCC's university transfer webpage (<https://www.tvcc.edu/Advisement/Category.aspx?z=72>) for more information on this transfer opportunity.
- Many of TVCC's AAS degrees lead to an online Bachelor of Applied Arts and Sciences (BAAS) degree with participating universities. See an academic advisor or the BAAS transfer website (<https://www.ntxccc.org/pathways/>) for more information on this transfer opportunity.

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