Computer Science - Cyber/Information Security (AAS)

Associate in Applied Science

Minimum of 61 credit hours

Keeping national secrets safe as well as protecting individuals and companies from criminals who seek to steal identities and destroy documents is becoming more important every day. You could enter the in-demand profession of cyber security specialist with an associate degree in Cyber Information Security from Oklahoma City Community College. This program requires that you complete CompTIA A+ certification preparation training. Because of the increasing threats to computerized data and information, the need for cyber information security specialists is at an all-time high. These cyber information security specialists protect computer users from hackers and electronic fraud, viruses and worms and more. Oklahoma City Community College has been recognized as a National Center of Academic Excellence in Information Assurance (CAE2Y) by the Department of Homeland Security and the National Security Agency.

Course Sequence

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Course Grouping

Major Courses: (42 credit hours) Computer Science: CS 1143 (C), CS 1153 (C), CS 1353 (C), CS 1413 (C), CS 2153 (C), CS 2183 (C), CS 2303 (C), CS 1333 (C) or CS 2173 (C) or CS 2443 (C), CS 2503 (C), CS 2713 (C), CS 2723 (C), CS 2743 (C), CS 2763 (C), CS 2783 (C)

General Education Courses: (18 credit hours)
Communications: ENGL 1213 or COM 1123 or COM 2213
Computer Science: CS 1103 (C)
English: ENGL 1113
Mathematics: MATH 1483
History: HIST 1483 or HIST 1493
Political Science: POLSC 1113
Life Skills Courses: (1 credit hour) Life Skills: SCL 1001
Support Courses: None

Program Notes

Notes: This Technical and Occupational program is designed to prepare students to enter the job force following completion. See Technical and Occupational Programs in the general information section of the catalog.

Must have a grade of "C" or higher in all Computer Science courses.
COM 1123 - Interpersonal Communications
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures.
3 Credits The student will be able to identify why certain things happen as they do when two or more individuals come together to communicate for a specific purpose. The student must attest to his or her ability to understand the principles of interpersonal communication with emphasis on dyads, small groups, analysis of communication models and nonverbal communication, applying understanding to the major types of interpersonal communication problems in the work environment and in daily human relations.

COM 2213 - Intro to Public Speaking
Prerequisites: ENGL 0106 or adequate placement score.
3 Credits Given the principles of effective listening and speaking, the student will assimilate those skills into his or her physical and psychological worlds. After being exposed to public, business and professional speaking, the student will apply the principles of invention, organization, style, and delivery through practical exercises and will use the principles of rhetorical criticism in discussing speeches delivered in class.

CS 1103 - Introduction to Computers and Applications
Prerequisites: MATH 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures.
3 Credits This hands-on course affords students a basic understanding of computers and their application. Upon completion of this course, the student will be able to demonstrate the ability to use a computer operating system, an office suite, productivity tools, as well as the Internet at an introductory level. Advanced Standing is available. This course satisfies the computer proficiency requirement.

CS 1143 - Beginning Programming
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0313 or adequate math placement or by evaluation. § Criteria for evaluation is in division office.
3 Credits Designed for Computer Science majors, this course affords students a basic understanding of computer programming. Students will utilize accepted programming concepts and perform number system conversions and arithmetic. In addition, they will design and code structured modular programs using design tools such as hierarchy charts, flowcharts, and pseudocode. This course satisfies the computer proficiency requirement.

CS 1153 - Introduction to Computing Technologies
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0103 or adequate math placement.
3 Credits Students will learn fundamental concepts of computing technologies. Topics will include computer hardware, operating systems, application software, networking, information security and privacy, information systems, program development, database management systems, social aspect of computing technologies, and cloud computing. This course satisfies the computer proficiency requirement.

CS 1333 - Database Management Applications
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.
3 Credits The student will learn relational database concepts, sound database design and development techniques, and SQL commands. Topics include how to create and modify database tables; retrieve data from database tables; use subqueries to retrieve data; use table constraints, sequences, indexes, synonyms, views and functions; create users and assign privileges to users; create printable reports through SQL*Plus commands; practice SQL statement tuning. This course satisfies the computer proficiency requirement.

CS 1353 - Computer Operating Systems
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement; prerequisite or corequisite CS 1103.
3 Credits Students will learn the following important areas through a combination of lectures and hands-on projects: installing, maintaining and optimizing Windows operating systems, troubleshooting Windows and applications, connecting to and setting up a network, Windows resources on a network, computer security strategies, mobile devices, and client-side virtualization. A+ Certification Preparation Course. This course satisfies the computer proficiency requirement.

CS 1413 - Computer Hardware
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement; prerequisite or corequisite CS 1103.
3 Credits Students will learn the following through class lectures and hands-on projects: identification, configuration, maintenance, troubleshooting, and repair of PC hardware including mainboards, BIOS, processors, memory, storage devices, peripherals, and printers. Other IT-related issues such as networks, safety and environmental concerns, customer relations, and professionalism are also presented. A+ Certification Preparation Course. This course satisfies the computer proficiency requirement.

CS 2153 - Supporting Windows Operating Systems
Prerequisites: MATH 0203 or adequate math placement, CS 1353 or by evaluation. § Criteria for evaluation is in division office.
3 Credits Students will learn the procedures for installing, configuring and maintaining a Windows Operating System in a business environment. Real-world examples and interactive activities are used to reinforce key concepts such as: managing files and folders, printers, storage devices and display devices; desktop user environments; user profiles and networking. Preparatory course for certification through Microsoft. This course satisfies the computer proficiency requirement.

CS 2173 - Oracle
Prerequisites: MATH 0313 or adequate math placement, CS 1143.
3 Credits Using Oracle as a platform, students will learn relational database concepts, sound database design and development techniques, and SQL commands. Topics include how to create and modify database tables; retrieve data from database tables; use subqueries to retrieve data; use table constraints, sequences, indexes, synonyms, views and functions; create users and assign privileges to users; create printable reports through SQL*Plus commands; practice SQL statement tuning. This course satisfies the computer proficiency requirement.

CS 2183 - Linux
Prerequisites: MATH 0203 or adequate math placement, CS 1103 or by evaluation. § Criteria for evaluation is in division office.
3 Credits This course is an introduction to the Linux operating system for users. It is designed for those with a DOS/Windows operating system background with little or no knowledge of Linux. Topics include the development of Linux; basic Linux operating system concepts; a comparison of Linux to MS Windows; frequently used Linux programs and utilities, shells, editors, and tools; X window GUI and applications; Linux and the internet; setting up Apache web server software; basic HTML and CGI programming for Linux; use of virtual machine software to create virtual machines of guest operating system on top of host operating system. Linux+ Certification

Oklahoma City Community College
CS 2303 - Networking Technologies  
**Prerequisites:** MATH 0203 or adequate math placement, co-requisite CS 1103 or by evaluation.  
3 Credits  
Students will learn how to install, configure, and troubleshoot basic networking hardware, protocols, and services and to describe the features and functions of networking components. A foundational knowledge in the important areas of media and topologies, protocols and standards, network implementation, and network support will be developed using a combination of lectures and interactive assignments. Network + Certification Preparation Course. This course satisfies the computer proficiency requirement.

CS 2443 - SQL Server  
**Prerequisites:** MATH 0313 or adequate math placement, CS 1143 or by evaluation.  
3 Credits  
Students will learn terms, concepts and features needed to work with most relational databases. Using SQL Server databases and tools, they will learn concepts on how to design a database, retrieve data from and manipulate data in a database. They will also learn SQL programming and will be able to work with database features that will include views, stored procedures, functions, triggers and others. This course satisfies the computer proficiency requirement.

CS 2503 - Network Administration  
**Prerequisites:** CS 1553  
3 Credits  
The students will use a network operating system to create and manage a local area network. The topics to be covered include creating and administering user and group accounts, managing network resources and administering permissions for files and folders, setting up and administering the printing environment, using the auditing functions, backing up and restoring files and folders. Preparatory course for certification through Microsoft. This course satisfies the computer proficiency requirement.

CS 2713 - Principles of Information Security  
**Prerequisites:** ENGL 0203, appropriate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement; CS 1353  
3 Credits  
Students will complete a comprehensive overview of network security, with an introduction to a variety of security problems faced by the computing industry. This course is mapped to the CompTIA Security+ Certification Exam. The course covers topics in general security concepts, communication security, infrastructure security, cryptography basics, and operational/organizational security. This course satisfies the computer proficiency requirement.

CS 2723 - Secure Electronic Commerce  
**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.  
3 Credits  
Students will learn the fundamentals of secure electronic commerce technology, models and issues. This course includes principles and hands-on labs for secure electronic commerce. These include securing web sites and web applications, maintaining PCI DSS Compliance for E-commerce websites, performing web site vulnerability and security assessments, securing mobile communications, and securing personal and business communications. Legal and national policy issues related to secure electronic commerce are included. This course satisfies the computer proficiency requirement.

CS 2743 - Enterprise Security Management  
**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.  
3 Credits  
Students will learn the managerial aspects of computer security and risk management for enterprises. Topics include accreditation, procurement, extension and operation principles for secure enterprise information systems. Additional topics include security policy and plan development, contingency, continuity and disaster recovery planning, and incident handling and response. This course satisfies the computer proficiency requirement.

CS 2763 - Network Security  
**Prerequisites:** MATH 0203 or adequate math placement, CS 1353 and Co-requisite: CS 2303 or CS 2503  
3 Credits  
Students will learn topics related to network vulnerabilities and defense. Topics include network and computer attacks, ethical hacking, pen testing, desktop and server vulnerabilities, securing embedded systems, web server security, wireless security, cryptography, and network protection systems. This course satisfies the computer proficiency requirement.

CS 2783 - Cyber Forensics  
**Prerequisites:** MATH 0203 or adequate math placement, CS 1353 and (CS 2713 or CS 2723 or CS 2743 or CS 2763)  
3 Credits  
Students will learn the procedures for the identification, preservation and extraction of electronic evidence. Topics include auditing and investigation of network and host intrusions, and forensic tools and resources for systems administrators and information system security officers. This course satisfies the computer proficiency requirement.

ENGL 1113 - English Composition I  
**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures.  
3 Credits  
The student will write well-developed compositions which demonstrate the principles of unity, coherence, and organization and which contain specific details and vivid language. The student will locate library material and incorporate researched materials into compositions.

ENGL 1213 - English Composition II  
**Prerequisites:** ENGL 1103 or ENGL 1113 taken within the last year, with strong encouragement for immediate continuation.  
3 Credits  
In this advanced writing course, students will create essays that explore and evaluate a variety of issues and perspectives suggested by fiction, poetry, drama, essays, and other types of cultural texts. Students will refine and augment the writing techniques they learned in ENGL 1113 or ENGL 1103 to develop well-reasoned, well-structured arguments in a clear, fluid, and engaging prose style.

HIST 1483 - U.S. History to 1877  
**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures.  
3 Credits  
After analyzing events in American history from 1400 to 1877 in such areas as revolution, geographic and social mobility, political reform, government precedents and war, students will be able to identify patterns of present day mobility, describe governmental operations in their society and help resolve conflict in society based on the student’s search for change, precedents, and conflict in the American past. A general education requirement.

HIST 1493 - U.S. History 1877 to Present  
**Prerequisites:** ENGL 0203, adequate placement score, or by meeting determined placement measures.  
3 Credits  
After analyzing events in American history from 1877 to the present in such areas as geographic and social mobility, political reform, government precedents and war, students will be able to identify patterns of present day mobility, describe governmental operations in their society and help resolve conflict in society based on the student’s search for change, precedents, and conflict in the American past. A general education requirement.
MATH 1483 - Functions and Modeling*
Prerequisites: MATH 0313 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures
3 Credits  The student will demonstrate:
an understanding of the general concepts
of relation and function and specifically
of polynomial, rational, exponential and
logarithmic functions; the ability to solve
systems of equations by utilizing matrices
and determinants; and, the ability to solve
practical problems using algebraic and digital
techniques. *Pending OSRHE approval

POLSC 1113 - American Federal
Government
Prerequisites: ENGL 0203, adequate
placement score, or by meeting determined
placement measures
3 Credits  A study of the principles, structure,
processes and functions of the United States
federal government.

SCL 1001 - Success in College and
Life
Prerequisites: ENGL 0106 or adequate
reading/writing assessment scores
1 Credit  Students will learn best practices
for academic, career, and personal success.
Students will discover their individual
strengths, interests, and values to create
a personalized plan; select and utilize
resources that are applicable to their growth
and success; and engage as active and
responsible members of the academic
community. This course should be taken
during a student's first semester of college
work at Oklahoma City Community College
and is a required course in degree plans to
satisfy the Life Skills requirement.