

Computer Science - Cyber/Information Security (Certificate)

Certificate of Mastery

Minimum of 36 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 a certificate of mastery in Cyber Information Security from Oklahoma City Community College. This certificate program is designed to provide you with training in general security concepts, communications security, infrastructure security, cryptography and operational and organizational security. 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

| Course ID | Course Name | Credits | Type | Min Gd |
|---|--|---------|-------|--------|
| Suggested Freshman 1st Semester | | | | |
| CS 1103 | INTRODUCTION TO COMPUTERS AND APPLICATIONS | 3 | Major | C |
| CS 1143 | BEGINNING PROGRAMMING | 3 | Major | C |
| CS 1153 | INTRODUCTION TO COMPUTING TECHNOLOGIES | 3 | Major | C |
| CS 2713 | PRINCIPLES OF INFORMATION SECURITY | 3 | Major | C |
| CS 2723 | SECURE ELECTRONIC COMMERCE | 3 | Major | C |
| Suggested Freshman 2nd Semester | | | | |
| CS 1333 | DATABASE MANAGEMENT APPLICATIONS | OR | Major | C |
| CS 2173 | ORACLE | OR | Major | C |
| CS 2443 | SQL SERVER | 3 | Major | C |
| CS 1353 | COMPUTER OPERATING SYSTEMS | 3 | Major | C |
| CS 2183 | LINUX | 3 | Major | C |
| CS 2303 | NETWORKING TECHNOLOGIES | OR | Major | C |
| CS 2503 | NETWORK ADMINISTRATION | 3 | Major | C |
| CS 2743 | ENTERPRISE SECURITY MANAGEMENT | 3 | Major | C |
| Suggested Sophomore 1st Semester | | | | |
| CS 2763 | NETWORK SECURITY | 3 | Major | C |
| CS 2783 | CYBER FORENSICS | 3 | Major | C |

Course Grouping

Major Courses: (36 credit hours) Computer Science: CS1103, CS 1143, CS 1153, CS 1333 or CS 2173 or CS 2443, CS 1353, CS 2183, CS 2303 or CS 2503, CS 2713, CS 2723, CS 27436, CS 2763, CS 2783

General Education Courses: None

Life Skills Courses: None

Support Courses: None

Program Notes

Notes: A Certificate of Mastery program is designed to meet the needs of an individual who wants to enter the job market following the completion of the certificate.

Must have a grade of "C" or higher in all Computer Science courses.

Degree Program Course Descriptions

CS 1103 - INTRODUCTION TO COMPUTERS AND APPLICATIONS

Prerequisites: Math 0103 or adequate math placement test score; 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.

CS 1143 - BEGINNING PROGRAMMING

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; Math 0303 or adequate math placement test score 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.

CS 1153 - INTRODUCTION TO COMPUTING TECHNOLOGIES

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; Math 0103 or adequate math placement test score.

3 Credits Students will learn fundamental concepts of hardware and software prior to learning tools of support technicians. Topics will include the computer architecture, the instruction execution cycle, I/O and storage. In addition, students will learn basics of digital electronics, how to perform mathematical operations and conversions on multiple numbering systems, develop fundamental problem-solving skills for troubleshooting, and investigate career opportunities within the information technology industry.

CS 1333 - DATABASE MANAGEMENT APPLICATIONS

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; Math 0203 or adequate math placement test score.

3 Credits The student will use a selected database management program to create and edit database files. The student will also search, organize, and build reports, forms, and templates with the database files.

CS 1353 - COMPUTER OPERATING SYSTEMS

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; Math 0203 or adequate math placement test score, prerequisite or co-requisite 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.

CS 2173 - ORACLE

Prerequisites: Math 0303 or adequate math placement test score, 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.

CS 2183 - LINUX

Prerequisites: Math 0203 or adequate math placement test score, 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. A+ Certification Preparation Course.

CS 2303 - NETWORKING TECHNOLOGIES

Prerequisites: Math 0203 or adequate math placement test score, 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.

CS 2443 - SQL SERVER

Prerequisites: Math 0303 or adequate math placement test score, CS 1143 or by evaluation. § Criteria for evaluation is in division office.

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.

CS 2503 - NETWORK ADMINISTRATION

Prerequisites: CS 1353

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.

CS 2713 - PRINCIPLES OF INFORMATION SECURITY

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; Math 0203 or adequate math placement test score.

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.

CS 2723 - SECURE ELECTRONIC COMMERCE

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined

placement measures; Math 0203 or adequate math placement test score.

3 Credits Students will learn the fundamentals of secure electronic commerce technology, models and issues. This course includes principles and case studies of secure electronic commerce as well as an introduction to security architectures for secure electronic commerce. These include digital signatures, certificates, and public key infrastructure (PKI). Legal and national policy secure electronic commerce issues are included.

CS 2743 - ENTERPRISE SECURITY MANAGEMENT

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; Math 0203 or adequate math placement test score.

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 are security policy and plan development, contingency, continuity and disaster recovery planning, and incident handling and response.

CS 2763 - NETWORK SECURITY

Prerequisites: CS 2713 and (CS 2303 or CS 2503)

3 Credits Students will participate in a comprehensive study of current and developing communications systems and networks. These include host-based and network-based intrusion detection, anomaly and misuse detection, and network security appliances including firewalls and access control devices. Topics are covered with all networks in mind, including the Internet, PSTN, ATM, Frame Relay Networks, etc.

CS 2783 - CYBER FORENSICS

Prerequisites: Math 0203 or adequate math placement test score, CS 2713 and (CS 2723 or CS 2743 or CS 2763)

3 Credits Student 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.