

## 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

Course ID	Course Name	Credits	Type	Min Gd
<b>Suggested Freshman 1st Semester</b>				
SCL 1001	SUCCESS IN COLLEGE AND LIFE	1	Life Skills	
CS 1103	INTRODUCTION TO COMPUTERS AND APPLICATIONS	3	Gen Ed	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
ENGL 1113	ENGLISH COMPOSITION I	3	Gen Ed	
<b>Suggested Freshman 2nd Semester</b>				
CS 1353	COMPUTER OPERATING SYSTEMS	3	Major	C
CS 2723	SECURE ELECTRONIC COMMERCE	3	Major	C
ENGL 1213	ENGLISH COMPOSITION II	OR	Gen Ed	
COM 1123	INTERPERSONAL COMMUNICATIONS	OR	Gen Ed	
COM 2213	INTRO TO PUBLIC SPEAKING	3	Gen Ed	
MATH 1503	CONTEMPORARY MATHEMATICS	OR	Gen Ed	
MATH 1513	COLLEGE ALGEBRA FOR BUSINESS, LIFE SCIENCES AND SOCIAL SCIENCES	3	Gen Ed	
CS	COMPUTER SCIENCE ELECTIVE	3	Major	C
<b>Suggested Sophomore 1st Semester</b>				
CS 1333	DATABASE MANAGEMENT APPLICATIONS	OR	Major	C
CS 2173	ORACLE	OR	Major	C
CS 2443	SQL SERVER	3	Major	C
CS 2183	LINUX	3	Major	
CS 2303	NETWORKING TECHNOLOGIES	OR	Major	C
CS 2503	NETWORK ADMINISTRATION	3	Major	C
CS 2743	ENTERPRISE SECURITY MANAGEMENT	3	Major	C
POLSC 1113	AMERICAN FEDERAL GOVERNMENT	3	Gen Ed	
<b>Suggested Sophomore 2nd Semester</b>				
CS 2763	NETWORK SECURITY	3	Major	C
CS 2783	CYBER FORENSICS	3	Major	C
HIST 1483	U.S. HISTORY TO THE CIVIL WAR	OR	Gen Ed	
HIST 1493	U.S. HISTORY SINCE THE CIVIL WAR	3	Gen Ed	
CS	COMPUTER SCIENCE ELECTIVE	6	Major	C

### Course Grouping

Major Courses: (42 credit hours) Computer Science: 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 2743, CS 2763, CS 2783, Nine hours of Computer Science Electives

General Education Courses: (18 credit hours)

Communications: ENGL 1213 or COM 1123 or COM 2213

Computer Science: CS 1103

English: ENGL 1113

Mathematics: MATH 1503 or MATH 1513

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.

## Degree Program Course Descriptions

### 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 - COMPUTER SCIENCE ELECTIVE

*Prerequisites:*

3 Credits Computer Science elective

### 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.

## **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 students 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 THE CIVIL WAR**

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

3 Credits After analyzing events in American history from 1400 to 1870 in such areas as revolution, geographic and social mobility, political reform, government precedents and war, the student will be able to identify patterns of present day mobility, describe governmental operations in his society and

help resolve conflict in society based on the students search for change, precedents, and conflict in the American past.

## **HIST 1493 - U.S. HISTORY SINCE THE CIVIL WAR**

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

3 Credits After analyzing events in American history from 1870 to the present in such areas as political reform, industrialization, urbanization, ethnic acculturation and war, the student will be able to identify meaningful changes in his society, identify equal rights in that society, and help resolve conflict in this society based on the students search for change, equal rights and conflicts in the American past.

## **MATH 1503 - CONTEMPORARY MATHEMATICS**

*Prerequisites: MATH 0403 or adequate math placement test score. Pre or Co-requisite ENGL 1113 or ENGL 1103*

3 Credits A study of the mathematics needed for critical evaluation of quantitative information and arguments (including logic, critical appraisal of graphs and tables); use of simple mathematical models, and an introduction to elementary statistics.

## **MATH 1513 - COLLEGE ALGEBRA FOR BUSINESS, LIFE SCIENCES AND SOCIAL SCIENCES**

*Prerequisites: MATH 0403 or adequate math placement test score; 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, exponential, and logarithmic functions; the ability to solve systems of equations by utilizing matrices and determinants; and the ability to solve practical problems using algebra.

## **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.