Computer Science - Computer Programming (AAS)

Associate in Applied Science

Minimum of 61 credit hours

Computers, today, literally run the world. Or, at least their programmers do. If you're interested in computer science and the behind-the-scenes roles of programmers, you can work toward an associate degree in applied science with a computer programming option at Oklahoma City Community College. OCCC provides a strong foundation in computer science and is a National Center of Academic Excellence in Information Assurance.

Course Sequence

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| Suggested Freshman 2nd Semester | | | | |
| CS 2173  | Oracle                                           | OR      | Major      | C      |
| CS 2443  | SQL Server                                       | 3       | Major      | C      |
| CS 2163  | Java                                             | 3       | Major      | C      |
| CS 2623  | Server-Side Programming                          | 3       | Major      | C      |
| CS 2183  | Linux                                            | 3       | Major      | C      |
| ENGL 1213| English Composition II                           | OR      | Gen Ed     |        |
| ENGL 1233| Technical Writing for the Workplace              | OR      | Gen Ed     |        |
| COM 1123 | Interpersonal Communications                     | OR      | Gen Ed     |        |
| COM 2213 | Intro to Public Speaking                         | 3       | Gen Ed     |        |

| Suggested Sophomore 1st Semester | | | | |
| CS 2113  | Computer Based Information Systems                | 3       | Major      | C      |
| CS 2463  | Visual Basic                                      | 3       | Major      | C      |
| CS 2463  | Advanced Java                                     | 3       | Major      | C      |
| CS 2513  | Client-Side Programming                           | 3       | Major      | C      |
| POLSC 1113| American Federal Government                      | 3       | Gen Ed     |        |

| Suggested Sophomore 2nd Semester | | | | |
| CS 2363  | C++                                              | 3       | Major      | C      |
| CS 2563  | C#                                               | 3       | Major      | C      |
| CS      | Computer Science Elective                        | 6       | Support    | C      |
| HIST 1483| U.S. History to 1877                            | OR      | Gen Ed     |        |
| HIST 1493| U.S. History 1877 to Present                     | 3       | Gen Ed     |        |

Course Grouping

Major Courses (36 credit hours) Computer Science: CS 1143 (C), CS 2113 (C), CS 2163 (C), CS 2173 (C), or CS 2443 (C), CS 2363 (C), CS 2413 (C), CS 2453 (C), CS 2463 (C), CS 2513 (C), CS 2563 (C), CS 2623 (C), CS 2183 (C)

General Education Courses: (18 credit hours)

Communications: ENGL 1213 or ENGL 1233 or COM 1123 or COM 2213

Computer Science: CS 1103 (C)

English: ENGL 1113

History: HIST 1483 or HIST 1493

Mathematics: MATH 1483

Political Science: POLSC 1113

Life Skills Courses: (1 credit hour) Life Skills: SCL 1001

Support Courses: (6 credit hours) Computer Science electives (C)

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 - Computer Science Elective
3 Credits Computer Science elective

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 2113 - Computer Based Information Systems
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.
3 Credits Covers theory and practice for the design and use of computer-based information systems in organizations, with a focus on the relational database. Student projects will include designing and implementing relational database applications and designing a web page. This course satisfies the computer proficiency requirement.

CS 2163 - Java
Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.
3 Credits Covers Java and its application to client/server environments. Emphasizes the Java language and object-oriented development of Java as a platform. 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 Preparation Course. This course satisfies the computer proficiency requirement.

CS 2363 - C++
Prerequisites: CS 2163
3 Credits This course is a continuation of the study of object-oriented programming covered in CS 2163 Java. Students will use C++ to write programs that demonstrate comprehension of the advanced object-oriented features of the C++ language and of common data structures. Topics include pointer manipulation, overloaded operators, friends, exception handling, templates, linked lists, stacks, queues, trees, and time complexity associated with sorts and searches. This course satisfies the computer proficiency requirement.

CS 2413 - Web Site Development
Prerequisites: MATH 0203 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures.
3 Credits Students will develop the skills needed to create a web site for personal or professional use. Design considerations will include accessibility standards, navigation techniques, audience needs, browser/platform concerns, and connection speeds. HTML, CSS along with a combination of other current technologies will be utilized for topics such as: building, formatting, enhancing, and publishing pages; maintaining a web site; manipulating graphics; creating printer and mobile versions; and incorporating JavaScript at an introductory level. This course satisfies the computer proficiency requirement.

CS 2443 - SQL Server
Prerequisites: MATH 0313 or adequate math placement; 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. This course satisfies the computer proficiency requirement.

**CS 2453 - Visual Basic**  
**Prerequisites:** MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.  
3 Credits  The students will use Visual Basic to create object-oriented, event-driven programs. This course teaches the students to handle the visual interface and also learn programming concepts that include objects, decisions, loops, dialog boxes, arrays, menus, subs, functions, files, simple data access and various other programming topics as they apply to Visual Basic. This course satisfies the computer proficiency requirement.

**CS 2463 - Advanced Java**  
**Prerequisites:** CS 2163  
3 Credits  Students will develop Java applications and applets, which demonstrate comprehension of advanced programming structures and practices, object-oriented programming, fundamental data structures (arrays, liked lists, stacks and queues), SWING, Java Beans, database programming (JDBC), and distributed computing (Sockets/ RMI). This course satisfies the computer proficiency requirement.

**CS 2513 - Client-Side Programming**  
**Prerequisites:** MATH 0313 or adequate math placement, CS 2413 and CS 1143 or by evaluation. § Criteria for evaluation is in division office.  
3 Credits  Students will create dynamic web applications using client-side programming. A combination of current scripting/programming languages and web page authoring software will be utilized for topics such as: using the Document Object Model, coding event handlers, validating user input, manipulating graphics, and creating interactive web pages. This course satisfies the computer proficiency requirement.

**CS 2563 - C#**  
**Prerequisites:** CS 2163  
3 Credits  Students will develop C# programs using the .NET framework that demonstrate comprehension of language syntax, fundamental program structures, object-oriented programming, windows applications, web applications, and database applications. Students will use ADO.NET, XML, ASP.NET, SOAP, and REST to create their applications. This course satisfies the computer proficiency requirement.

**CS 2623 - Server-Side Programming**  
**Prerequisites:** MATH 0313 or adequate math placement, CS 1143 and CS 2413 or by evaluation. § Criteria for evaluation is in division office.  
3 Credits  Students will create interactive and dynamic web applications using server-side programming. A combination of current scripting/programming languages and web page authoring software will be used for topics such as maintaining state, processing data from the user, creating cookies, and interacting with databases. 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 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.

**ENGL 1233 - Technical Writing for the Workplace**  
**Prerequisites:** ENGL 1113 or ENGL 1103; MATH 0203 College Prep Math II or adequate Math Placement Test Score  
3 Credits  This course will expose students to technical communication and will allow students to practice professional methods of writing in the workplace. In addition to constructing technical documents appropriate for use in professional and job-related environments, students will learn about rhetorical methods for presenting technical information in ethical and formal prose designed for clear and effective communication with employers and colleagues. This course will equip the student with written and oral communication skills necessary for sharing information and discussing content in professional settings; developing an awareness of technical genres; utilizing technological platforms for constructing documents; using visuals and graphics professionally; writing professional correspondence; constructing reports; designing project proposals; and composing instructions. This course satisfies the computer proficiency 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 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.