

Computer Science - Software Development (AS)

Associate in Science

Minimum of 62 credit hours

If you want to learn the fundamentals of computer science, Oklahoma City Community College offers an associate degree in science in computer science. You can select a program which will easily transfer to the University of Oklahoma or a number of other schools with similar patterns to continue your educational path toward a bachelor's degree in computer science. In this degree program, you'll take classes in software engineering including application development, web development, game development, robotics, data communications, computer security, telecommunications, computer networks and database management. OCCC provides a strong foundation in computer science and is a National Center of Academic Excellence in Information Assurance.

Course Sequence

Course ID	Course Name	Credits	Type	Min Gd
Suggested Freshman 1st Semester				
SCL 1001	SUCCESS IN COLLEGE AND LIFE	1	Life Skills	
CS 1143	BEGINNING PROGRAMMING	3	Major	C
ENGL 1113	ENGLISH COMPOSITION I	3	Gen Ed	
POLSC 1113	AMERICAN FEDERAL GOVERNMENT	3	Gen Ed	
MATH 1533	PRE CALCULUS AND ANALYTIC GEOMETRY	3	Gen Ed	
Suggested Freshman 2nd Semester				
CS 2163	JAVA	3	Major	C
ENGL 1213	ENGLISH COMPOSITION II	3	Gen Ed	
MATH 1613	TRIGONOMETRY	3	Gen Ed	
CHEM 1115	GENERAL CHEMISTRY I	OR	Gen Ed	
GEOL 1114	GENERAL GEOLOGY	OR	Gen Ed	
ASTR 1514	GENERAL ASTRONOMY WITH LAB	4-5	Gen Ed	
HIST 1483	U.S. HISTORY TO THE CIVIL WAR	OR	Gen Ed	
HIST 1493	U.S. HISTORY SINCE THE CIVIL WAR	3	Gen Ed	
Suggested Sophomore 1st Semester				
CS 2463	ADVANCED JAVA	3	Major	C
MATH 2104	CALCULUS AND ANALYTIC GEOMETRY I	4	Gen Ed	
HUM	HUMANITIES ELECTIVE	6	Gen Ed	
BUS 2033	BUSINESS COMMUNICATION	OR	Gen Ed	
COM 2213	INTRO TO PUBLIC SPEAKING	3	Gen Ed	
Suggested Sophomore 2nd Semester				
CS 2563	C#	3	Major	C
PHYS 2014	ENGINEERING PHYSICS I	4	Gen Ed	
MATH 2214	CALCULUS AND ANALYTIC GEOMETRY II	4	Gen Ed	
BIO 1114	GENERAL BIOLOGY (Non Majors)	OR	Gen Ed	
BIO 1204	HISTORY OF LIFE ON EARTH	4	Gen Ed	
ELEC	ELECTIVE	2	Gen Ed	

Course Grouping

Major Courses: (12 credit hours) Computer Science: CS 1143, CS 2163, CS 2463, CS 2563

General Education Courses: (47 credit hours)

Biology: BIO 1114 or BIO 1204

Chemistry: CHEM 1115 or GEOL 1114 or ASTR 1514

Communications: BUS 2033 or COM 2213

English: ENGL 1113, ENGL 1213

History: HIST 1483 or HIST 1493

Humanities: Six credit hours of Humanities electives - Advisement is required. One each from two of three categories: Artistic Forms, Western Civilization, and Non-Western Civilization.

Mathematics: MATH 1533, MATH 1613, MATH 2104, MATH 2214

Physics: PHYS 2014

Political Science: POLSC 1113

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

Support Courses: (2 credit hours)

Program Notes

Notes: This program is designed for students planning to continue their education at a four-year college or university. See the general section for information and requirements about University Parallel/Transfer Programs.

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

Degree Program Course Descriptions

ASTR 1514 - GENERAL ASTRONOMY WITH LAB

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

4 Credits This course will fulfill the general education requirement for Physical Science (with laboratory). The student will be introduced to modern astronomy. Concepts to be studied include the solar system, the sun and stars, galaxies (including the Milky Way Galaxy), and current theories of the origin, evolution, and fate of the universe. Laboratory exercises will explore basic physical principles related to Astronomy as well as activities with specific astronomical applications.

BIO 1114 - GENERAL BIOLOGY (Non Majors)

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

4 Credits An introductory lab-based course that is designed to provide non-biological science major with the necessary background needed to effectively understand scientific information. Students investigate the properties of life to include: organization, energy use, evolution, maintenance of homeostasis, reproduction, growth, and development. Ecological concepts are discussed which enables students to have a better understanding regarding the impact that humans have on the natural world. Laboratory work is an integral and required part of this course.

BIO 1204 - HISTORY OF LIFE ON EARTH

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

4 Credits This course includes a one hour lab and field experience. Students will demonstrate knowledge of biological systematics, paleontology, evolution, vertebrate anatomy, ecology, and several topics within geology. Students will apply these concepts to the origin and evolution of the major groups of living things on Earth.

BUS 2033 - BUSINESS COMMUNICATION

Prerequisites: ENGL 1113 or by evaluation. Criteria for evaluation is in division office.

3 Credits Business Communication is a survey course of communication skills needed in the business environment. Course content includes business writing such as e-mail, memos, letters, reports, employment

communication, and other types of digital media; delivering oral presentations; and developing interpersonal soft skills. Critical thinking and problem solving skills are emphasized. Development of these skills is integrated with the use of technology.

CHEM 1115 - GENERAL CHEMISTRY I

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 1513 or MATH 1533, or both MATH 0403 and High School Chemistry or CHEM 1123. A grade of 5

Credits This course is designed for science and engineering majors. The course covers nomenclature, atomic and molecular structure, stoichiometry, acid/base and other aqueous reactions, states of matter, phase changes, gas laws, and an introduction to thermochemistry. Laboratory experience is an integral part of the course.

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 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 2163 - JAVA

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

3 Credits Student will develop object-oriented Java applications and applets, which demonstrate comprehension of fundamental programming structures, object-oriented

programming, graphics, event handling, interface components, programming for the Internet, data structures, and exception handling.

CS 2463 - ADVANCED JAVA

Prerequisites: CS 2163

3 Credits Student will develop Java applications and applets, which demonstrate comprehension of advanced programming structures and practices, object-oriented programming, fundamental data structures (arrays, linked lists, stacks and queues), SWING, Java Beans, database programming (JDBC), and distributed computing (Sockets/RMI).

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.

ELEC - ELECTIVE

Prerequisites:

3 Credits Elective

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.

GEOL 1114 - GENERAL GEOLOGY

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

4 Credits Students will describe theories of the earth's formation, its composition and structure and the processes which change the earth's surface. Laboratory work and field trips are an integral part of the course.

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.

HUM - HUMANITIES ELECTIVE

Prerequisites:

3 Credits Humanities elective

MATH 1533 - PRE CALCULUS AND ANALYTIC GEOMETRY

Prerequisites: MATH 0403 or adequate math placement test score and ENGL 0203, adequate placement score, or by meeting determined placement measures

3 Credits This course is intended to serve students for whom Calculus and Analytic Geometry I is a requirement. Topics will include conic sections, systems of equations (both linear and nonlinear), and a general discussion of functions with emphasis on polynomial, rational, exponential, and logarithmic functions.

MATH 1613 - TRIGONOMETRY

Prerequisites: Pre or Corequisite: MATH 1513 or MATH 1533 or adequate math placement test score and ENGL 0203, adequate

placement score, or by meeting determined placement measures

3 Credits The student will evaluate trigonometric functions and their inverses, graph trigonometric functions, prove trigonometric identities, solve trigonometric equations, solve problems involving triangles and indirect measurement, use trigonometric forms of complex numbers, and identify and graph polar curves.

MATH 2104 - CALCULUS AND ANALYTIC GEOMETRY I

Prerequisites: MATH 1533 and MATH 1613 or adequate math placement test score.

4 Credits The student will compute, interpret and apply the basic concepts of limits, derivatives, and vectors to algebraic and transcendental functions and will solve applied problems that include rates of change, optimization, analysis of graphs, and geometry.

MATH 2214 - CALCULUS AND ANALYTIC GEOMETRY II

Prerequisites: MATH 2104 within the last year.

4 Credits The student will use integration techniques to find antiderivatives, compute definite integrals, and solve application problems that include volume, work and pressure; investigate the convergence of improper integrals and infinite series; use Taylor polynomials and Taylor Series to approximate, represent, and analyze functions; analyze functions of three variables and their contour plots; compute partial derivatives of multivariate functions.

PHYS 2014 - ENGINEERING PHYSICS I

Prerequisites: MATH 2104 (or at least 4 hours of calculus) within the last year or by evaluation. Prerequisite or Corequisite: MATH 2214

4 Credits This is a physics course designed primarily for pre-engineering, chemistry and physics majors. Students will demonstrate their understanding of concepts in mechanics, heat and sound by (1) developing qualitative and quantitative descriptions of physical phenomena, and (2) predicting the results of physical occurrences based on physics theory and laboratory experiments. Quantitative descriptions and predictions will incorporate methods of calculus where appropriate.

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.