

Computer Science – Software Development Transferring to OU (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 Cyber Defense.

COURSE SEQUENCE

Course ID	Course Name	Credits	Type	Min GD
Term 1				
SCL 1001	Success in College and Life 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. Prerequisites: ENGL 0106 or adequate reading/writing assessment scores	1	Life Skills	
CS 1143	Beginning Programming 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. 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	Major	C
ENGL 1113	English Composition I 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. Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures	3	Gen Ed	
Term 2				
ENGL 1213	English Composition II 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. Prerequisites: ENGL 1103 or ENGL 1113 taken within the last year, with strong encouragement for immediate continuation.	3	Gen Ed	
CS 2163	Java 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. Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.	3	Major	C
Term 3				

CS 2463	Advanced Java	3*	Major	C
	Student will develop Java applications which demonstrate comprehension of advanced programming structures and practices, including object-oriented programming, fundamental data structures (arrays, vectors, linked lists, stacks, and queues), GUI applications using Swing and JavaFX, and concurrent computing using threads and semaphores. Prerequisites: CS 2163			
MATH 1533	Pre Calculus and Analytic Geometry	3	Gen Ed	
	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. Prerequisites: Adequate math placement OR co-enrollment in MATH 0531 and ENGL 0203, adequate placement score, or by meeting determined placement measures			
Term 4				
CS 2463	Advanced Java	*	Major	C
	Student will develop Java applications which demonstrate comprehension of advanced programming structures and practices, including object-oriented programming, fundamental data structures (arrays, vectors, linked lists, stacks, and queues), GUI applications using Swing and JavaFX, and concurrent computing using threads and semaphores. Prerequisites: CS 2163			
HIST 1483	U.S. History to 1877	OR	Gen Ed	
	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. Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures			
HIST 1493	U.S. History 1877 to Present	3	Gen Ed	
	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. Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures			
MATH 1613	Trigonometry	3	Gen Ed	
	The student will evaluate trigonometric functions and their inverses using both degree and radian measure; graph trigonometric functions and their transformations; identify properties of trigonometric functions; verify and apply trigonometric identities; solve trigonometric equations; solve problems involving right and oblique triangles, vectors, and indirect measurement; and identify and graph polar curves. Prerequisites: Pre or Corequisite: MATH 1483 or MATH 1533 or adequate math placement and ENGL 0203, adequate placement score, or by meeting determined placement measures			
Term 5				
MATH 2104	Calculus and Analytic Geometry I	4	Gen Ed	
	The student will compute, interpret, and apply the basic concepts of limits, differentiation, and integration to algebraic and transcendental functions and will solve applied problems that include rates of change, optimization, area, and total change in a function. Prerequisites: MATH 1533 and MATH 1613 or adequate math placement.			
CS 2563	C#	3*	Major	C
	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. Prerequisites: CS 2163			
Term 6				
POLSC 1113	American Federal Government	3	Gen Ed	
	A study of the principles, structure, processes and functions of the United States federal government. Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures			
BIO 1114	General Biology (Non Majors)	OR	Gen Ed	

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

BIO 1204	History of Life On Earth	4	Gen Ed
	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. Prerequisites: ENGL 0203 or adequate placement score or by meeting determined placement measures; MATH 0103 or adequate math placement.		
CS 2563	C#	*	Major C
	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. Prerequisites: CS 2163		
Term 7			
BUS 2033	Business Communication	OR	Gen Ed
	Business Communication is a survey course of communication skills needed in the business environment. Course content includes writing memoranda, letters, reports, resumes, and electronic messages; creating an analytical report; delivering oral presentations; and developing interpersonal skills. Critical thinking and problem solving skills are emphasized. Development of these skills is integrated with the use of technology. Prerequisites: ENGL 1113 or by evaluation. Criteria for evaluation is in division office.		
COM 2213	Intro to Public Speaking	3	Gen Ed
	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. Prerequisites: ENGL 0106 or adequate placement score		
MATH 2214	Calculus and Analytic Geometry II	4	Gen Ed
	The student will use integration techniques to find antiderivatives, use integrals to solve problems from geometry and physics, use vectors to solve problems in higher dimensions, test infinite series for convergence, approximate functions by using series, solve elementary first-order differential equations, and analyze functions of three variables and their contour plots. Prerequisites: MATH 2104 within the last year.		

Term 8

PHYS 2014	Engineering Physics I	4	Gen Ed
	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. Prerequisites: MATH 2104 (or at least 4 hours of calculus) within the last year or by evaluation. Prerequisite or Corequisite: MATH 2214		
SUPP ELEC	Support Elective	2	Support
	Support elective		
HUM	Humanities Elective	3	Gen Ed
	Humanities elective		

Term 9

CHEM 1115	General Chemistry I	OR	Gen Ed
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Credits: 4

BIOLOGICAL SCIENCE

BIO 1114 - General Biology (Non Majors)

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.

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

Credits: 4

BIO 1204 - History of Life On Earth

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.

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

Credits: 4

BUSINESS

BUS 2033 - Business Communication

Business Communication is a survey course of communication skills needed in the business environment. Course content includes writing memoranda, letters, reports, resumes, and electronic messages; creating an analytical report; delivering oral presentations; and developing interpersonal skills. Critical thinking and problem solving skills are emphasized. Development of these skills is integrated with the use of technology.

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

Credits: 3

CHEMISTRY

CHEM 1115 - General Chemistry I

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.

Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 1483 or MATH 1533, or both MATH 0313 and High School Chemistry or CHEM 1123.

Credits: 5

COMMUNICATIONS

COM 2213 - Intro to Public Speaking

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.

Prerequisites: ENGL 0106 or adequate placement score

Credits: 3

COMPUTER SCIENCE

CS 1143 - Beginning Programming

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.

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.

Credits: 3

CS 2163 - Java

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.

Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.

Credits: 3

CS 2463 - Advanced Java

Student will develop Java applications which demonstrate comprehension of advanced programming structures and practices, including object-oriented programming, fundamental data structures (arrays, vectors, linked lists, stacks, and queues), GUI applications using Swing and JavaFX, and concurrent computing using threads and semaphores.

Prerequisites: CS 2163

Credits: 3

CS 2563 - C#

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.

Prerequisites: CS 2163

Credits: 3

ELECTIVES

HUM - Humanities Elective

Humanities elective

Credits: 3

SUPP ELEC - Support Elective

Support elective

Credits: 3

ENGLISH

ENGL 1113 - English Composition I

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.

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

Credits: 3

ENGL 1213 - English Composition II

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.

Prerequisites: ENGL 1103 or ENGL 1113 taken within the last year, with strong encouragement for immediate continuation.

Credits: 3

GEOLOGY

GEOL 1114 - General Geology

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.

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

Credits: 4

HISTORY

HIST 1483 - U.S. History to 1877

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.

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

Credits: 3

HIST 1493 - U.S. History 1877 to Present

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.

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

Credits: 3

MATHEMATICS

MATH 1533 - Pre Calculus and Analytic Geometry

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.

Prerequisites: Adequate math placement OR co-enrollment in MATH 0531 and ENGL 0203, adequate placement score, or by meeting determined placement measures

Credits: 3

MATH 1613 - Trigonometry

The student will evaluate trigonometric functions and their inverses using both degree and radian measure; graph trigonometric functions and their transformations; identify properties of trigonometric functions; verify and apply trigonometric identities; solve trigonometric equations; solve problems involving right and oblique triangles, vectors, and indirect measurement; and identify and graph polar curves.

Prerequisites: Pre or Corequisite: MATH 1483 or MATH 1533 or adequate math placement and ENGL 0203, adequate placement score, or by meeting determined placement measures

Credits: 3

MATH 2104 - Calculus and Analytic Geometry I

The student will compute, interpret, and apply the basic concepts of limits, differentiation, and integration to algebraic and transcendental functions and will solve applied problems that include rates of change, optimization, area, and total change in a function.

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

Credits: 4

MATH 2214 - Calculus and Analytic Geometry II

The student will use integration techniques to find antiderivatives, use integrals to solve problems from geometry and physics, use vectors to solve problems in higher dimensions, test infinite series for convergence, approximate functions by using series, solve elementary first-order differential equations, and analyze functions of three variables and their contour plots.

Prerequisites: MATH 2104 within the last year.

Credits: 4

PHYSICS**PHYS 2014 - Engineering Physics I**

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.

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

Credits: 4

POLITICAL SCIENCE**POLSC 1113 - American Federal Government**

A study of the principles, structure, processes and functions of the United States federal government.

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

Credits: 3

SUCCESS IN COLLEGE AND LIFE**SCL 1001 - Success in College and Life**

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.

Prerequisites: ENGL 0106 or adequate reading/writing assessment scores

Credits: 1