ꙮOklahoma City Community College

ꙮComputer Science – Web Development (Certificate)

Certificate of Mastery

Minimum of 27 credit hours

Creating and maintaining websites has become big business – which means big opportunity for you in this growing career field. A web presence is used by businesses to get their message across to prospective clients and customers, to reach the largest audience, to advertise products and services, to provide support and to network socially.

Most companies and organizations now have a presence on the World Wide Web and are in need of highly skilled, trained web designers and developers who can continually keep the content and design of those sites fresh, interesting and accessible.

OCCC provides a strong foundation in computer science and web-related topics that are essential to those pursuing a career in this area. The Certificate of Mastery in Web Development is a course of study designed to teach you the technical elements of web site creation including database, security, programming, client-side scripting, and server-side scripting. It's a quick turn-around program that can get you out-the-door and into the job market, or you can return to college and build on what you've learned by applying your credits to an associate degree or additional certificate program.

ꙮCOURSE SEQUENCE

Course ID	Course Name	Credits	Type	Min GD
Term 1				
CS 1103	Introduction to Computers and Applications	3	Major	C
	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. **Prerequisites:** MATH 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures			
CS 1143	Beginning Programming	3	Major	C
	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.			
Term 2				
CS 2413	Web Site Development	3	Major	C
	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. **Prerequisites:** MATH 0203 or adequate math placement. ENGL 0203, adequate placement score, or by meeting determined placement measures.			
CS 2163	Java	OR	Major	C

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.

CS 2453	Visual Basic	3	Major	C

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

Term 3

CS 1333	Database Management Applications	OR	Major	C

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

CS 2173	Oracle	OR	Major	C

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. **Prerequisites:** MATH 0313 or adequate math placement, CS 1143.

CS 2443	SQL Server	3	Major	C

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. **Prerequisites:** CS 1143 or CS 1543

CS 2513	Client-Side Programming	3	Major	C

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. **Prerequisites:** MATH 0313 or adequate math placement, CS 2413 and CS 1143 or by evaluation. § Criteria for evaluation is in division office.

Term 4

CS 2183	Linux	3	Major	C

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.**Prerequisites:** MATH 0203 or adequate math placement, CS 1103 or by evaluation. § Criteria for evaluation is in division office.

CS 2723	Web Security	3	Major	C

Students will learn the fundamentals of secure electronic commerce technology, models and issues. This course includes principles and hands-on labs for secure electronic commerce. These include securing web sites and web applications, maintaining PCI DSS Compliance for E-commerce websites, performing web site vulnerability and security assessments, securing mobile communications, and securing personal and business communications. Legal and national policy issues related to secure electronic commerce are included. **Prerequisites:** MATH 0203 or adequate math placement; CS 1103

Term 5

CS 2623	Server-Side Programming	3	Major	C

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.**Prerequisites:** MATH 0313 or adequate math placement, CS 1143 and CS 2413 or by evaluation. § Criteria for evaluation is in division office.

⌐COURSE GROUPING

Major Courses: (27 Credit Hours) Computer Science: CS 1103 (C), CS 1143 (C), CS 1333 (C) or CS 2173 (C) or CS 2443 (C), CS 2163 (C) or CS 2453 (C), CS 2183 (C), CS 2413(C), CS 2513 (C), CS 2623 (C), CS 2723 (C)
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.

⌐COURSE DESCRIPTIONS

COMPUTER SCIENCE

CS 1103 - Introduction to Computers and Applications

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.
Prerequisites: MATH 0103 or adequate math placement; ENGL 0203, adequate placement score, or by meeting determined placement measures
Credits: 3

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 1333 - Database Management Applications

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.
Prerequisites: ENGL 0203, adequate placement score, or by meeting determined placement measures; MATH 0203 or adequate math placement.
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 2173 - Oracle

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.
Prerequisites: MATH 0313 or adequate math placement, CS 1143.
Credits: 3

CS 2183 - Linux

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.
Prerequisites: MATH 0203 or adequate math placement, CS 1103 or by evaluation. § Criteria for evaluation is in division office.
Credits: 3

CS 2413 - Web Site Development

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.
Prerequisites: MATH 0203 or adequate math placement. ENGL 0203, adequate placement score, or by meeting determined placement measures.
Credits: 3

CS 2443 - SQL Server

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.
Prerequisites: CS 1143 or CS 1543
Credits: 3

CS 2453 - Visual Basic

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.
Prerequisites: MATH 0313 or adequate math placement, CS 1143 or by evaluation. § Criteria for evaluation is in division office.
Credits: 3

CS 2513 - Client-Side Programming

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.
Prerequisites: MATH 0313 or adequate math placement, CS 2413 and CS 1143 or by evaluation. § Criteria for evaluation is in division office.
Credits: 3

CS 2623 - Server-Side Programming

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.
Prerequisites: MATH 0313 or adequate math placement, CS 1143 and CS 2413 or by evaluation. § Criteria for evaluation is in division office.
Credits: 3

CS 2723 - Web Security

Students will learn the fundamentals of secure electronic commerce technology, models and issues. This course includes principles and hands-on labs for secure electronic commerce. These include securing web sites and web applications, maintaining PCI DSS Compliance for E-commerce websites, performing web site vulnerability and security assessments, securing mobile communications, and securing personal and business communications. Legal and national policy issues related

to secure electronic commerce are included.
Prerequisites: MATH 0203 or adequate math placement; CS 1103
Credits: 3