Microcomputer Programmer Analyst Certificate

The Microcomputer Programmer/Analyst Certificate provides a foundation in skills needed to analyze business problems and develop software solutions using current industry standard development tools. The certificate provides an academic credential reflecting enhanced job skills for those seeking advancement in their information services career or for individuals with a prior degree in another discipline seeking a career change.

Suggested/Sample Course Sequence

The sequence taken by the student may vary depending on prerequisites, course availability, and personal/ professional responsibilities.

(Major Code 5030; State CIP Code 11.0201)

- Gainful Employment - Microcomputer Program Analyst (http://www.jccc.edu/computing-sciences-and-information-technology/ge-voc-microprg.html)
- Computing Sciences and Information Technology (http://www.jccc.edu/computing-sciences-and-information-technology)

Prerequisite for Required Courses

Note: Prior to beginning the program, the student must take the following prerequisite, or have taken an equivalent transfer course, or have passed the waiver test (if applicable), or have obtained a waiver from the department.

CS 134	Programming Fundamentals	4

First Semester

CS 200	Concepts of Programming Algorithms Using C++* (NOTE: CS 200 students must take either CS 250 or CIS 235. CS 205 students must take CS 255)	4
or CS 205	Concepts of Programming Algorithms using Java*	
CS 210	Discrete Structures I*	3
CIS 162	Database Programming*	4
Total Hours		11

Second Semester

CIS 235	Object-Oriented Programming Using C++*	4
or CIS 240	Advanced Topics in Java*	
CIS 242	Introduction to System Design and Analysis*	3
CIS 204	UNIX Scripting and Utilities*	3
Total Hours		10

Third Semester

CS 250	Basic Data Structures using C++*	4
or CS 255	Basic Data Structures Using Java*	
CIS 275	Web-Enabled Database Programming*	4
CIS 260	Database Management*	4
Total Hours		12

Total Program Hours: 33

Courses

CIS 124 Introduction to Computer Concepts and Applications (3 Hours)
In this introductory, nontechnical computer course, students study computing concepts, terminology, issues and uses. Extensive hands-on experience with the microcomputer is provided using business applications and the operating system to reinforce the concepts. 3 hrs. lecture/wk.

CIS 138 Visual Basic .Net* (4 Hours)
Prerequisites: CIS 134 or CS 134

Upon successful completion of this course, students should be able to describe the Visual Basic programming environment, identifying the controls and objects available for creating .NET applications. Students should be able to define the basic terminology used by Visual Basic. They will create forms, draw the controls for each form, design menu bars, set form and control properties, write event and general procedures, and test and debug their applications. 3 hrs. lecture, 2 hrs. open lab/wk.

CIS 162 Database Programming* (4 Hours)
Prerequisites: CIS 134 or CS 134

This course covers the use of an interactive environment and programming language to create, maintain and manipulate databases using Access as the RDBMS. The use of a command-level database programming language to customize business systems and selectively retrieve information using single or multiple database tables also will be studied. 3 hrs. lecture, 2 hrs. open lab/wk.

CIS 201 Introduction to Information Systems* (3 Hours)
Prerequisites: ACCT 121

This course is an introduction to the use of computers in management, concepts of computer software, hardware, and systems analysis. Applications will include electronic spreadsheets, database management software, graphics and presentation tools, and other special purpose tools. Word processing tools will be used for most graded assignments. Programming will be studied in the context of spreadsheet macros. 3 hrs. lecture/wk.

CIS 201H HON: Introduction to Information Systems (1 Hour)
One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

CIS 204 UNIX Scripting and Utilities* (3 Hours)
Prerequisites: CIS 134 or CS 134

This course will cover the concepts and principles related to scripting for the multi-user, multi-tasking UNIX operating system and its utilities. Students will complete projects in UNIX ranging from using simple commands to writing shell scripts automating repetitive tasks. 3 hrs. lecture/wk.

CIS 208 Mobile Application Development* (4 Hours)
Prerequisites: CS 205

In this course, students will utilize effective design and structured programming techniques to build mobile applications. Topics will include designing interfaces for small screens and varied architectures, processing user events, retrieving and storing data, communicating via the Internet, and deploying applications. 3 hrs. lecture, 2 hrs open lab/wk.

CIS 235 Object-Oriented Programming Using C++* (4 Hours)
Prerequisites: CS 200

This course is intended to prepare students to apply the object-oriented programming paradigm to solve typical business problems. The student should work with container classes such as Linked Lists, Trees, Stacks and Queues as tools in their program solutions. Students will be building application-oriented objects using the concepts of inheritance, function overloading and polymorphism. Students will also apply techniques of dynamic memory to build arrays and objects that can adjust memory requirements at run time. Students will be exploring the object-oriented and I/O capabilities as well as the string processing capabilities of the object-oriented language. 3 hrs. lecture, 2 hrs. open lab/wk.

CIS 240 Advanced Topics in Java* (4 Hours)
Prerequisites: CS 205

At the completion of this course, the student should be able to create Java applications for implementation on the Internet and the personal computer. The student will complete projects using Java's built-in features. The course will include generics, input and output streams, serialization, exception handling, multithreading, client-server applications and graphical user interfaces. 3 hrs. lecture, 2 hrs. open lab/wk.

CIS 242 Introduction to System Design and Analysis* (3 Hours)
Prerequisites: CIS 138 or CS 200 or CS 201 or CS 205

Students will study the basic philosophy and techniques of developing and using business information systems. The emphasis will be on the human involvement necessary in systems design and implementation. The course will address the use of specific technical approaches available in information processing. 3 hrs. lecture/wk.

CIS 260 Database Management* (4 Hours)
Prerequisites: CS 200 or CS 201 or CS 205

At the completion of this course, students should be able to understand the characteristics and objectives of database management systems (DBMS). Topics include database environments, data modeling using the entity-relational model, normalization, logical and physical design, the Structured Query Language (SQL), data quality, database administration and related topics. Students will use a relational DBMS , employ associated tools and write programs to manipulate tables. 3 hrs. lecture, 2 hrs. open lab/wk.

CIS 264 Application Development and Programming* (4 Hours)
Prerequisites: CIS 242 and CIS 260 and CIS 235 or CIS 240 or CIS 244 or CS 236 or CS 255

This course helps students develop a significant software project while combining previously learned software development skills with contemporary technologies. Students should work within a team to communicate, plan and implement a software application. Proper interviewing and job searching techniques are also explored. 4 hrs. lecture/wk.

CIS 270 Information Systems Internship* (3 Hours)
Prerequisites: Department appoval and any of the following courses: CS 236 or CS 250 or CS 255 or CIS 235 or CIS 240 or CIS 244

Students will work in an approved training situation under instructional supervision. The internship is designed to give students the opportunity to use skills learned in computer science and information systems courses. Fifteen hours on-the-job training per week will be the usual workload for the student. To be eligible, students must have recently completed a course in the department.

CIS 275 Web-Enabled Database Programming* (4 Hours)
Prerequisites: CS 200 or CS 201 or CS 205

At the completion of this course, the student should be able to create dynamic Web pages containing information accessed from a database. The student will complete projects using Web technologies that interface with a database. The course will include graphics, graphical user interfaces, exception handling and event-driven programming. 3 hrs. lecture, 2 hrs. open lab/wk.

CIS 291 Independent Study* (1-7 Hour)
Prerequisites: 2.0 GPA minimum and department approval

Independent study is a directed, structured learning experience offered as an extension of the regular curriculum. It is intended to allow individual students to broaden their comprehension of the principles of and competencies associated with the discipline or program. Its purpose is to supplement existing courses with individualized, in-depth learning experiences. Such learning experiences may be undertaken independent of the traditional classroom setting, but will be appropriately directed and supervised by regular instructional staff. Total contact hours vary based on the learning experience.

CIS 292 Special Topics: (1-4 Hour)
This course periodically presents specialized topics in computer information systems that are not available in the regularly offered curriculum. Special Topics may be repeated for credit, but only on different topics. Total contact hours vary with topic.