

Database Certificate

Completion of this certificate, offered through the computer information systems program, will help to prepare students for future careers as database specialists or for one of many other information systems careers in which knowledge of database concepts, products and technologies is important. Students will be able to design and build personal databases using Access. The student will acquire a strong foundational knowledge in an object-oriented programming language (Visual Basic) and will work with Web-enabled databases, SQL and other database products, as well as attaining formal systems analysis and design skills.

(Major Code 5190; State CIP Code 11.0802)

- Gainful Employment - Database (<http://www.jccc.edu/information-systems/ge-voc-database.html>)
- Computing Sciences and Information Technology (<http://www.jccc.edu/computing-sciences-and-information-technology>)

Prerequisites for Required Courses

Prior to beginning the database certificate program, the student must take the following prerequisite or have taken an equivalent transfer course, or have passed the waiver test, or have obtained a waiver from the program administrator.

CPCA 105	Introduction to Personal Computers: Windows	1
or CPCA 106	Introduction to Personal Computers: Macintosh	

First Semester

Full Semester Course:

CS 134	Programming Fundamentals	4
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First Five Week Session:

CPCA 114	Databases I: MS Access*	1
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Second Five Week Session:

CPCA 115	Databases II: MS Access*	2
CWEB 101	Introduction to the Web using Internet Explorer*	1

Third Five Week Session:

CPCA 141	Internet I*	1
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Total Hours		9
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Second Semester

Full Semester Course:

CS 201	Concepts of Programming Algorithms using C#*	4
or CS 205	Concepts of Programming Algorithms using Java*	

First Five Week Session:

CPCA 138	Windows for Microcomputers*	1
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Second Five Week Session:

CWEB 136	Introduction to PHP*	1
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Third Five Week Session:

CWEB 146	PHP with MySQL*	1
CPCA 117	Databases III: MS Access*	1

Total Hours		8
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Third Semester

Full Semester Courses:

CIS 162	Database Programming*	4
CS 236	Object-Oriented Programming Using C#*	4
or CIS 244	Advanced Topics in C# I*	
or CIS 240	Advanced Topics in Java*	

Total Hours		8
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Fourth Semester

Full Semester Courses:

CIS 260	Database Management*	4
CIS 242	Introduction to System Design and Analysis*	3
Total Hours		7

Total Program Hours: 32

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 approval 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.