

Lincoln University

Computer Science Course Descriptions

CSC 151 Computer Applications

3 credits

This course provides a hands-on introduction to the use of computer software in the areas of word processing, spreadsheets, and database management, presentation, and programming. The software used will be MS-Word, MS-Excel, MS-Access, and MS-Power point. Prerequisite: MAT 101 or higher

CSC152 Intro to Computer Programming

3 credits

This introductory programming course is designed for non-computer science majors. This course introduces students to principles of computer programming and problem solving. Students design, write and debug computer programs. They solve programming problems using procedural programming constructs such as loops, branching structures, and functions. No prior knowledge of programming is assumed but students are expected to have a working knowledge of personal computers and their applications. Prerequisites: MAT 101 or higher

CSC 158 Computer Programming I

4 credits

This course is the first course in a year-long sequence required for computer science majors. It introduces the student to principles of computer programming via a structured programming language. The students will write, test, and debug a wide variety of problems drawn from several disciplines. The course will also address program design and program style. Corequisite: MAT 110 or higher

CSC 159 Computer Programming II

4 credits

This course is a continuation of CSC 158. The students will use a structured programming language in problem solving. This course examines advanced features of programming languages. Topics include file processing, and object oriented and event-driven programming. And a preparation for CSC 254, this course will also include an introduction to data structures such as queues and stacks. Prerequisite: CSC 158, MAT 110 or higher

CSC 201 Web Programming

3 credits

This course is an introduction to web design with an emphasis on the scripting languages. Both server-side and client-side scripting will be studied. HTML programming is an integral part of the course. Topics include database processing for the web using SQL language and Internet security. Prerequisite: CSC 158

CSC 202 Computer Animation

3 credits

This course is a study of the art and science of computer animation. Both programming and utilization of animation software will be covered with an emphasis on the latter. The topics include NURBS and

Polygon modeling, rendering techniques, motion path, and introductory applications of mathematics and algorithms in computer gaming. Prerequisite: CSC 159

CSC 222 Introduction to Linux System

3 credits

This course is intended for students who want to learn Linux and will cover the command, desktop, and programming features built into Linux. It provides a solid beginning for general Linux users, programmers, and system administrators. Topics included: utilities, how to work in a command-line environment, how to use the vi editor, how to write shell scripts, the Linux file system and how to install and administer common Linux features. Prerequisite: CSC 159

CSC 254 Data Structures

4 credits

This course will focus on algorithms, analysis, and the use of basic and advanced data structures. Among the specific data structures covered are strings, stacks, records, linked lists, trees and graphs. Recursion will also be covered. Sequential and random files, hashing and indexed sequential access methods for files will be discussed. Finally, some standard computer science algorithms (sorting and searching) will be discussed. Prerequisite: CSC 159 CSC 290 Special Topics 3 credits Prerequisite: CSC 152 or CSC 158

CSC 353 Computer Organization and Assembly Language

3 credits

This course is intended as a first introduction to the ideas of computer architecture-both hardware and software. Assembly language programming is the central theme of the course. The attributes and operations of a macro assembler are discussed in some detail. Corequisite: CSC 254

CSC 354 Database Management

3 credits

This course will introduce students to the principles of single and multiple application of database systems. In addition, it will develop graphical and logical skills that are used to construct logical models of information handling systems. Topics include data independence and data redundancy, comparative survey of nomenclature, logical and physical views of data, data description languages and the database management system, relational, hierarchal, and network approaches, operations informational systems, security and integrity, data flow diagrams, data dictionaries, analysis response requirements, and immediate access diagrams. Prerequisite: CSC 254

CSC 355 Operating Systems

3 credits

An operating system is a program that acts as the link between the computer and its users. A well written operating system makes it easy and fun to use a computer. This course will introduce the student to the principles and concepts of operating systems design, discuss major issues of importance in the design, and show how different widely used operating systems have implemented the design ideas. In short, this course will teach what operating system does, how it may do it, and why there are different approaches. Prerequisite: CSC 254

CSC 356 Visual Programming**3 credits**

This course is a study of graphical-user-interface (GUI) and component-based programming. The course covers visual programming skills needed for modern software development. Topics will include event handling and event procedures, problem solving, business applications, game applications, database interface, and software design. Prerequisite: CSC 159

CSC 357 Computer Architecture**3 credits**

This course is intended to explore the interface between a computer's hardware and its software. The interface is often called computer architecture. Starting from the basic ideas of assembly language programming, this course will give the students an idea of where the software stops and the hardware begins, and what things can be done efficiently in hardware and how. Corequisite: CSC 254

CSC 359 Introduction to Computer Security**3 credits**

This course explores computer security, both in the abstract and in the context of real systems, including recognizing potential threats to confidentiality, integrity and availability, and developing familiarity with current security-related issues in computer science. Threats and vulnerabilities are assessed to determine the level of risk. Prerequisite: CSC 159

CSC 360 Information Assurance and Security**3 credits**

This course will study how to establish and maintain a practical cyber and information security program to protect key organizational assets. The aim is to develop an information security program that is aligned with organizational strategy and to evaluate and recommend information and security technologies to support the information security program. Discussion covers the integration of confidentiality, integrity, and availability into an organization's security program through the use of physical and logical security controls. Topics include data protection, telecommunications systems, applications, and emerging technologies. Prerequisites: CSC 354, CSC 359

CSC 452 Computer Graphics**3 credits**

This course develops and applies the mathematical theory of computer graphics. The theory includes rotation, translation, perspective projection, and curve and surface description. The course will use a structured programming language. In addition, it will use available commercial graphic packages. Prerequisites: CSC 254, MAT 120 or MAT 121, MAT 213

CSC 453 Compiler Construction**3 credits**

This course is intended to explore the principal ideas and techniques of compiler construction. Topics include lexical analyzers, parsers, error detection, code generation, symbol tables, and formal languages. Prerequisite: CSC 254

CSC 454 Software Engineering**3 credits**

This course will introduce the student to the principles and techniques involved in the generation of production quality software items. The emphasis will be on the specification, organization, implementation, testing, and documentation of software products. Prerequisite: CSC 254 148

CSC 457 Computer Networks**3 credits**

This course is an introduction to local area and long haul computer communication networks, analysis, design and implementation of network protocols. Prerequisite: CSC 159

CSC 458 Intro to Game Programming**3 credits**

This course is an introduction to the fundamental concepts of computer game programming. Students design and develop original games for PCs applying proven game design and software engineering principles. Prerequisites: CSC 202

CSC 460 Network Security and Privacy**3 credits**

This course will study the fundamental concepts of network security and its implementation. The aim is to assess and mitigate risk, evaluate and select appropriate technologies, and apply proper security safeguards. Prerequisite: CSC 457

CSC 490 2D Games Development Capstone**3 credits**

The Capstone Game Development course forms small teams in which students will contribute modeling, animation or programming skills to create 2D games for mobile, online, and social technology platforms. Students will gain a thorough understanding of the 2D game development process, through modeling of the environment and practices that are used in game studios. Prerequisite: CSC 458

CSC 491 3D Games Development Capstone**3 credits**

The Capstone Game Development course forms small teams in which students will contribute modeling, animation or programming skills to create 3D games. Students will gain a thorough understanding of the 3D game development process, through modeling of the environment and practices that are used in game studios. Prerequisite: CSC 490

CSC 495 Independent Study**1-4 credits**

Faculty supervised research CSC 498 Topics in Computer Science 3 credits This course will focus on involving students in independent projects dealing with current topics of current research interest in Computer Science. Students will be required to conduct a literature survey, carry out independent investigations projects, prepare a report, and defend their work in an oral presentation. Prerequisite: Senior Status