COMPUTER SCIENCE

CSC-2
Fundamentals of Systems Analysis   **3.00 units**
CSU

Prerequisite: None.

Description: The course presents a systematic methodology for analyzing a business problem or opportunity, determining what role, if any, computer-based technologies can play in addressing the business need, articulating business requirements for the technology solution, specifying alternative approaches to acquiring the technology capabilities needed to address the business requirements, and specifying the requirements for the information systems solution in particular, in-house development, development from third-party providers, or purchased commercial-off-the-shelf packages. 54 hours lecture and 18 hours laboratory.(TBA option) (Same as CIS-2) (Letter Grade, or Pass/No Pass option.)

CSC-5
Programming Concepts and Methodology I:c++   **4.00 units**
(C-ID:COMP 122)   UC, CSU
Prerequisite: None.
Advisory: CIS-1A.

Description: Introduction to the discipline of computer science incorporating problem definitions, algorithm development, and structured programming logic for business, scientific and mathematical applications. The C++ language will be used for programming problems. 54 hours lecture and 54 hours laboratory. (Same as CIS-5) (Letter grade only)

CSC-7
Discrete Structures   **3.00 units**
(C-ID:COMP 152)   UC, CSU
Prerequisite: CIS/CSC-5.

Description: This course is an introduction to the discrete structures used in Computer Science with an emphasis on their applications. Topics covered include: Functions, Relations and Set; Basic Logic; Proof Techniques; Basics of Counting; Graphs and Trees; and Discrete Probability. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-7) (Letter grade only)

CSC-8
Programming Concepts: Python   **3.00 units**
Prerequisite: MAT-5 or MAT-12 or MAT-36.

Description: Introduction to the discipline of computer science incorporating problem definitions, algorithm development, and structured programming logic for business, scientific, and mathematical applications. The Python language will be used for programming projects. 54 hours lecture. (Letter grade only)

CSC-11
Computer Architecture and Organization: Assembly   **3.00 units**
(C-ID:COMP 142)   UC, CSU
Prerequisite: None.
Advisory: CIS/CSC-5.

Description: An introduction to microprocessor architecture and assembly language programming. The relationship between hardware and software will be examined in order to understand the interaction between a program and the total system. Mapping of statements and constructs in a high-level language onto sequences of machine instructions is studied as well as the internal representation of simple data types and structures. Numerical computation is performed, noting the various data representation errors and potential procedural errors. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-11) (Letter grade only)

CSC-12
Php Dynamic Web Site Programming   **3.00 units**
CSU

Prerequisite: None.
Advisory: CIS/CSC-5 and CIS-72A and CIS/CSC-14A

Description: Dynamic web site programming using PHP. Fundamentals of server-side web programming. Introduction to database-driven web sites, using PHP to access a database such as MySQL. Web applications such as user registration, content management, and e-commerce. This course is intended for students already familiar with the fundamentals of programming and HTML. 54 hours lecture and 18 hours laboratory. (TBA Option)(Same as CIS-12) (Letter Grade, or Pass/No Pass option.)

CSC-14A
Web Programming: Javascript **3.00 units**
CSU

Prerequisite: None.
Advisory: Previous programming experience and knowledge of HTML, CIS/CSC-5 and CIS-72A
Description: Fundamentals of JavaScript programming for the world wide web for students already familiar with the fundamentals of programming and HTML. Language features will include control structures, functions, arrays, JavaScript objects, browser objects and events. Web applications will include image rollovers, user interactivity, manipulating browser windows, form validation and processing, cookies, creating dynamic content, and Dynamic HTML programming. 54 hours lecture and 18 hours laboratory. (TBA Option) (Same as CIS-14A) (Letter Grade, or Pass/No Pass option.)

CSC-17A
Programming Concepts and Methodology II: C++ **3.00 units**
(C-ID:COMP 132) UC, CSU
Prerequisite: CIS-5 or CSC-5.
Description: The application of software engineering techniques to the design and development of large programs; data abstraction, structures, and associated algorithms. A comprehensive study of the syntax and semantics of the C++ language and the methodology of Object-Oriented program development. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-17A) (Letter grade only)

CSC-17B
C++ Programming: Advanced Objects **3.00 units**
UC, CSU

Prerequisite: None.
Advisory: CIS/CSC-17A.
Description: This is an advanced C++ programming course for students familiar with object-oriented programming that implements basic graphical user interfaces. An emphasis will be placed on advanced concepts associated with complex business and gaming applications that utilize exception handling, multithreading, multimedia, and database connectivity. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-17B) (Letter Grade, or Pass/No Pass option)

CSC-17C
C++ Programming: Data Structures **3.00 units**
UC, CSU

Prerequisite: None.
Advisory: CIS/CSC-17A.
Description: This course offers a thorough presentation of the essential principles and practices of data structures using the C++ programming language. The course emphasizes abstract data types, software engineering principles, lists, stacks, queues, trees, graphs, and the comparative analysis of algorithms. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-17C) (Letter Grade, or Pass/No Pass option)

CSC-18A
Java Programming: Objects **3.00 units**
UC, CSU

Prerequisite: None.
Advisory: CIS/CSC-5.
Description: An introduction to Java programming for students already experienced in the fundamentals of programming. An emphasis will be placed upon object- oriented programming. Other topics include graphical interface design and typical swing GUI components. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-18A) (Letter Grade, or Pass/No Pass option.)

CSC-18B
Java Programming: Advanced Objects **3.00 units**
UC, CSU

Prerequisite: None.
Advisory: CIS/CSC-18A.
Description: This is an advanced Java programming course for students familiar with object-oriented programming and utilization of basic graphical interface techniques. An emphasis will be placed on advanced concepts associated with Business, E-Commerce and Gaming applications that utilize exception handling, multithreading, multimedia, and database connectivity. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-18B) (Letter Grade, or Pass/No Pass option.)

CSC-18C
Java Programming: Data Structures   **3.00 units**
UC, CSU

Prerequisite: None.
Advisory: CIS/CSC-18A.
Description: This course is designed to be an advanced Java programming course for students familiar with object-oriented programming and database concepts. The major emphasis will be related to concepts of storing and retrieving data efficiently, which are the essential principles, and practices of data structures. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-18C) (Letter Grade, or Pass/No Pass option.)

CSC-20
Systems Analysis and Design   **3.00 units**
CSU

Prerequisite: CIS/CSC-2.
Advisory: CIS-62.
Description: Structured design techniques for the development and implementation of computerized business applications. Course includes project planning, analysis of current system, design of a new system, implementation, consideration of data base design and development; file organization, and modular programming techniques. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-20) (Letter Grade, or Pass/No Pass option.)

CSC-21
Introduction to Operating Systems   **3.00 units**
CSU

Prerequisite: CIS-1A.
Description: An introduction to operating system concepts, structure, functions, performance, and management is covered. A current operating system, such as Windows, Linux, or UNIX is used as a case study. File multi-processing, system security, device management, network operating systems, and utilities are introduced. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-21) (Letter Grade, or Pass/No Pass option.)

CSC-21A
Linux Operating System Administration   **3.00 units**
CSU

Prerequisite: None.
Advisory: CIS-1A or CIS-23.
Description: This course covers the fundamentals of the Linux operating system, system architecture, installation, command line functions, performance, and file systems. All major administrative responsibilities associated with this operating system are performed. These tasks shall include but not be limited to system installation, configuration, security, and backups for both client and server which might be found in a small business environment. This course aligns with the Linux Professional, LPI.org LPIC-1 Certification exam. 54 hours lecture. (Same as CIS-21A) (Letter Grade, or Pass/No Pass option.)

CSC-25
Information and Communication Technology Essentials   **4.00 units**
CSU

Prerequisite: None.
Advisory: CIS-1A.
Description: Introduction to the computer hardware and software skills needed to help meet the growing demand for entry-level ICT professionals. The fundamentals of computer hardware and software as well as advanced concepts such as security, networking, and the responsibilities of an ICT professional will be introduced. Preparation for the CompTIA A+ certification exams. 54 hours lecture and 54 hours laboratory. (Same as CSC-25) (Letter Grade, or Pass/No Pass option.)

CSC-27
Information and Network Security   **3.00 units**
CSU

Prerequisite: None.
Advisory: CIS-1A or CSC-25.
Description: An introduction to the fundamental principles and topics of Information Technology Security and Risk Management at the organizational level. It addresses hardware, software, processes, communications, applications, and policies and procedures with respect to organizational Cybersecurity and Risk Management. Preparation for the CompTIA Security+ certification exams. 54 hours lecture. (Same as CIS-27) (Letter grade only)

CSC-27A
Computer Forensics Fundamentals   **3.00 units**
CSU

Prerequisite: None.
Advisory: CIS-27.
Description: An introduction to the methods used to properly conduct a computer forensics investigation beginning with a discussion of ethics, while mapping to the objectives of the International Association of Computer Investigative Specialists (IACIS) certification. Topics covered include an overview of computer forensics as a profession; the computer investigation process; understanding operating systems boot processes and disk structures; data acquisition and analysis; technical writing; and a review of familiar computer forensics tools. 54 hours lecture and 18 hours laboratory. (Same as CIS-27A) (Letter grade only)

CSC-28A
Ms Access Programming   **3.00 units**
CSU

Prerequisite: None.
Advisory: CIS/CSC-5.
Description: Use of the data management program, MS Access, in writing command file programs to automate database management applications with the use of Visual Basic Applications variables, expressions, and functions. This course shows students how event driven programs operate. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-28A) (Letter Grade, or Pass/No Pass option.)

CSC-61
Introduction to Database Theory   **3.00 units**
CSU

Prerequisite: None.
Description: This course provides the students with an introduction to the core concepts in data and information management. It is centered around the core skills of identifying organizational information requirements, modeling them using conceptual data modeling techniques, converting the conceptual data models into relational data models and verifying its structural characteristics with normalization techniques, and implementing and utilizing a relational database using an industrial-strength database management system. The course will also include coverage of basic database administration tasks and key concepts of data quality and data security. In addition to developing database applications, the course helps the students understand how large-scale packaged systems are highly dependent on the use of Database Management Systems (DBMSs). Building on the transactional database understanding, the course provides an introduction to data and information management technologies that provide decision support capabilities under the broad business intelligence umbrella. 54 hours of lecture and 18 hours.(TBA Option) (Same as CIS-61) (Letter grade only)

CSC-62
Microsoft Access   **3.00 units**
Prerequisite: None.
Description: Provides a comprehensive introduction to the implementation of database management systems using Microsoft Access. Hands-on experience in modeling work problems and transforming them to a relational data model. Students will design data tables to efficiently store data. Students will be shown techniques for entering, changing, and deleting data using datasheets and forms. Students will learn to filter and modify data using queries and to output data using both forms and reports. Access macros will be applied to forms and reports. Students will be presented with database projects to reinforce lectures. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-62) (Letter grade only.)

CSC-63
Introduction to Structured Query Language (sql)   **3.00 units**
CSU

Prerequisite: None.
Description: This course provides an introduction to the relational database management system industry standard - Structured Query Language (SQL). Students will analyze, design, and implement database schema using the SQL programming language. SQL will be utilized to develop a database structure (DDL). The student will use SQL to create both Select and action queries(DML). Joins, Unions, Differences and sub-query statements will be covered. Both the Access and Oracle SQL statements will be covered. 54 hours lecture and 18 hours laboratory. (TBA option) (Same as CIS-63) (Letter grade only)