COMPUTER SCIENCE (CSCI)

CSCI 101 Intro/Microcomputer Appl 3 Credit Hours (2,2)
The study of a selection of contemporary microcomputer applications, including operating systems concepts, word processing, spreadsheets, database management systems, and the Internet and World Wide Web. Brief survey of other applications, such as presentation graphics, multimedia usage and desktop publishing. Does not apply toward credit in computer science major or minor.

CSCI 103 Survey of Computer Science 3 Credit Hours (3,0)
An introduction to the field of computer science for computer science, computer networking, and web development majors. Applications, history of computing, computer networks and the Internet, programming, hardware, theory of computation, algorithms, fundamental concepts in computing.

CSCI 105 Intro to Computer Programming 3 Credit Hours (2,2)
An introductory course in computer programming in a graphical development environment, intended for students with no prior computer programming experience. Arithmetic, control structures and simple data structures. Sound, graphics and animation techniques.
Prerequisite(s): MATH088 or equivalent/satisfactory score on SAT, ACT or Placement Exam

CSCI 106 Web Page Design & Development 3 Credit Hours (2,2)
Topics include planning a web site starting with domain name registration and selection of hosting service providers, creating web pages using HTML/XHTML and cascading style sheets; validating web pages; using web authoring tools such as Dreamweaver, publishing web pages to a remote web server, introductory web site design, including best practices for inserting graphics, page layout, building the web site navigation and user interface, integration of third-party and Web 2.0 tools and software, implementing web and accessibility standards, ethical and legal issues such as copyright and trademarks.
Prerequisite(s): None

CSCI 115 Introduction to Data Science 3 Credit Hours (2,2)
An introductory course in data science using the R programming language, intended for students with no prior computer programming experience. Basic probability and statistics, data analysis, data storage, data visualization, clustering, and classification.
Prerequisite(s): MATH111 or equivalent test score on SAT/ACT

CSCI 121 Principles of Programming 4 Credit Hours (4,0)
A broad-based introduction to computer programming, using the C++ programming language and basic operating system features as vehicles. Basic programming principles, including built-in and programmer-defined data, operators, functions and control structures. Introduction to classes and dynamic memory allocation. Text manipulation and parsing, binary files, and exception handling. C-style input and output. Applications will be drawn from across the discipline of computer science.
Prerequisite(s): CSCI105 and MATH102 (or equivalent math placement) with a grade of C or better in both classes

CSCI 131 Computer Prog Principles-Ind S 1 Credit Hour (1,0)
This course is designed to bridge the gap between transfer courses that are either 'not quite' CSCI121 or are in a different programming language than the current LSSU offerings of CSCI121 and CSCI201. Students may not receive credit for both CSCI121 and CSCI131.
Prerequisite(s): Permission of instructor

CSCI 163 Troubleshooting/Repair of PC's 3 Credit Hours (2,2)
A basic introduction to the architecture, installation, maintenance, troubleshooting and repair of personal computers. The student will learn elementary principles of electronics, magnetism and interference as they relate to computer repair and operation. The disassembly and upgrading of a personal computer will be covered in the laboratory as well as the use of diagnostic hardware and software.

CSCI 201 Data Structures and Algorithms 4 Credit Hours (4,0)
An introductory course in data structures and algorithms, with an emphasis on abstraction, implementation and analysis. Advanced class concepts, including operator overloading, Linked lists, stacks, queues, trees and binary trees. Separate compilation and third-party libraries. Application of various data structures to problems selected from the spectrum of computer science topics.
Prerequisite(s): CSCI121 with a grade of C or better and MATH111 (or equivalent math placement) with a grade of C or better

CSCI 211 Database Applications 4 Credit Hours (3,2)
An introductory course in database design and implementation, using microcomputer-based relational database software. Single and multi-table databases, forms and reports, query processing, data import and export, and database-related programming.
Prerequisite(s): CSCI105 with a grade of C or better

CSCI 221 Computer Networks 3 Credit Hours (2,2)
An introduction to the basic principles of computer networks and communication, exploring both the hardware necessary to support computer networks and the software needed to utilize those networks. Basic network topologies, network protocols, and local and wide-area networks.
Prerequisite(s): CSCI103 and CSCI105, both with a grade of C or higher

CSCI 248 Network Operating Systems I 3 Credit Hours (2,2)
An introduction to using and administering network operating systems. Students will also be introduced to virtualization of machines, as well as interaction between virtualized machines. Topics include: account setup, basic security, file and device sharing, and maintenance. Course topics will be presented in the context of different network operating systems.
Prerequisite(s): CSCI221 with a grade of C or better

CSCI 263 Managing Computer Security 3 Credit Hours (3,0)
This course investigates the various security protection and recovery techniques available for networks and personal computers including security policies, procedures, and requirements necessary for protecting the integrity of information stored on networks, workstations, and other computer systems. Other topics include discussions on disaster recovery planning, emergency response teams, threat assessment, detection and remediation of a threat, standards for establishing a security framework, and operations security and production controls.
Prerequisite(s): CSCI101 or CSCI103 with grade of C or better

CSCI 265 Int to Artificial Intelligence 3 Credit Hours (3,0)
An introduction to the techniques and tools used in artifical intelligence and machine intelligence, including problem solving, search, knowledge representation, logic, and inference.
Prerequisite(s): CSCI121 or EGNR265 and MATH111 or equivalent test score

CSCI 281 Intro to UNIX and Networking 3 Credit Hours (2,2)
An introduction to the UNIX operating system, shell scripting, and UNIX networking from the users perspective. Topics include basic and intermediate UNIX commands and file structure, regular expressions, BASH/CSH shell scripting, basic UNIX network setup, introduction to UNIX system daemons and networking services.
Prerequisite(s): CSCI221 with a grade of C or Better

CSCI 290 Ind Study: Computer Science 1-4 Credit Hours (1-4,0)
Special studies and/or research in computer science for individuals or small seminar groups. Course content to be arranged with instructor and with approval of the department head. This course may be repeated for a maximum of eight credits.
Prerequisite(s): Sophomore standing or higher

CSCI 291 Computer Science Project 4 Credit Hours (4,0)
This is a hands-on course where the student is assigned a project at a corporate site. The student is expected to spend at least 8 - 10 hours a week on the project. Topics for the project may include creating a substantial Web site, designing and implementing an application system for a user, modifying and updating an existing software system, or other related projects. The projects will vary each semester.
Prerequisite(s): CSCI201 with a grade of C or better

CSCI 292 Computer Networking Project 4 Credit Hours (4,0)
This is a hands-on course where the student is assigned a project in a corporate network setting. The projects will vary each semester to allow students to implement their knowledge to create and maintain a real-world network system. Activities could include the wiring of the network, installing and maintaining users, installing and repairing workstations, maintaining a Novell or Microsoft network, monitoring an NDS tree, and other similar activities. The student is expected to spend at least 8 - 10 hours per week on the project including hours on site, doing research, and writing weekly report logs.
Prerequisite(s): CSCI106, CSCI211, and CSCI221, all with a grade of C or better

CSCI 321 Computer Graphics 3 Credit Hours
An introduction to the generation of graphical images by computer. Survey of common graphics devices. Generation of lines and curves. Representation of two-dimensional objects. Techniques for area filling. Scaling, rotation and translation in two dimensions. Rendering three-dimensional objects by projections. Scaling, rotating and translation in three dimensions. Hidden line and hidden surface detection and removal. (3,0) 3 Alternate Years
Prerequisite(s): CSCI201, and either MATH112 or MATH151, all with a minimum grade of C

CSCI 323 Routers and Switches 3 Credit Hours (2,2)
Principles of Wide Area Networks, IP and TCP, routers, routing protocols and configurations, virtual LANs, network management, subnetting, design of LANs and WANs, and security issues. Students completing this course will be prepared to take the CCENT and CCNA certification exams.
Prerequisite(s): CSCI221 with a grade of C or better

CSCI 327 Web App Design & Development 3 Credit Hours (2,2)
An introduction to the design and development of dynamic web applications using PHP, MySQL and Java Script. Accessing MySQL using PHP, form handling, dynamic web application, publish dynamic web application on a server.
Prerequisite(s): CSCI106, CSCI121 and CSCI211 with grade of C or better

CSCI 341 Discrete Structures Comp Sci 4 Credit Hours (4,0)
Formal logic and proof techniques; recursion, recurrence relations and combinational methods; analysis of algorithms; algebraic structures; trees and graphs; Boolean algebra and computer logic; models of computation and formal languages. Emphasis will be on applications to computer science.
Prerequisite(s): CSCI121 with a grade of C or better, and either MATH112 or MATH151 with a grade of C or better

CSCI 342 Adv Programming Techniques 4 Credit Hours (4,0)
Advanced data structures including general trees and graphs. Advanced programming techniques, including: divide and conquer, dynamic programming, greedy algorithms, graph algorithms, balanced trees. Emphasis will also be placed on the software development process, debugging and testing methodologies.
Prerequisite(s): CSCI201 with a grade of C or better

CSCI 348 Network Operating Systems II 3 Credit Hours (2,2)
A continuation of using and administering network operating systems. Students will also be introduced to virtualization of servers, as well as interaction between virtualized machines. Topics include: file system and network service management, remote access, security, printing, and disaster recovery. Course topics will be presented in the context of different network operating systems.
Prerequisite(s): CSCI248 with a grade of C or better

CSCI 351 App Interface Development 3 Credit Hours (3,0)
Introduction to the development of graphical applications for a variety of platforms, including desktop systems, smart phones, tablets and others; user interface design, events and event management, data and resource management; developing for and deploying to multiple types of platforms.
Prerequisite(s): CSCI121 with a grade of C or better

CSCI 371 Multi-Platform App Development 3 Credit Hours (3,0)
A comparison of programming languages and methodologies for the development of applications and programs. Focus will be on differences in programming languages, the strengths and weaknesses of them, differing language implementations, and deployment across multiple platforms. The course will cover choosing a language and methodology based on the task, as well as developing code for a multi-platform vs uni-platform application with emphasis on a common codebase for the application.
Prerequisite(s): CSCI121 and either CSCI281 or CSCI201 all with a grade of C or better

CSCI 411 Data Analytics 3 Credit Hours (3,0)
The study of extracting knowledge and patterns from data. This course will introduce students to tools and techniques required for data collection and integration, pattern discovery, data analysis, evaluation, and visualization.
Prerequisite(s): CSCI201, CSCI211, and a course in statistics, each with a minimum grade of C

CSCI 412 Unix Network Administration 3 Credit Hours (2,2)
Network administration how to and issues for Linux. Installation of Linux networked system, maintenance and upgrade of a Linux installation, security issues, common scripting languages, system admin tasks, NFS, and mail systems; other UNIXes.
Prerequisite(s): CSCI221 and CSCI281, both with a grade of C or better

CSCI 415 Computer Org Architecture 3 Credit Hours (3,0)
A hardware-orientated introduction to the structure of modern computer systems, emphasizing the role of, and interrelationships between, the various components. The evolution of modern computer systems. Memory organization, peripheral devices and their connectivity. Instruction sets, arithmetic and central processing unit structure. Control unit organization and operation. Alternative computer architectures. Parallel computing for both SMP and MIMD models.
Prerequisite(s): CSCI201 and either CSCI351 or CSCI371 with a grade of C or better

CSCI 418 Senior Project I 3 Credit Hours (1,4)
This course is the first part of the two-part sequence CSCI418/CSCI419. The student will begin a two-semester capstone experience that will include one of the following: a software project; a network implementation; a co-operative education position with an external company; or a research project. The experience must include the fulfillment of customer-generated requirements. The projects/experiences will vary each year to allow students to experience work in a real-world environment. Students in CSCI418 must take CSCI419 the following semester.
Prerequisite(s): CSCI291 or CSCI292 with a "C" or better and permission of instructor

CSCI 419 Senior Project II 3 Credit Hours (1,4)
The second of a two-part sequence, CSCI419 provides students with the skills necessary for completion of their two-semester capstone experience that will include one of the following: a software project; a network implementation; a cooperative education opportunity with an external company; or a research project. The experience must include the fulfillment of customer-generated requirements. The projects/experiences will vary each year to allow students to experience work in a real-world environment. Students in CSCI418 must take CSCI419 the following semester.
Prerequisite(s): CSCI418 with a C or better and permission of the instructor

CSCI 422 Network and Computer Security 3 Credit Hours (2,2)
An advanced look at common computer and network exploitation techniques in use today. Course emphasis is on how exploits work (both from the exploiters perspective as well as the software faults that allow these exploits to exist), what can be done with the exploits, as well as mitigation and solution techniques for containing the damage to administered systems.
Prerequisite(s): CSCI412

CSCI 434 Operating Systems Concepts 3 Credit Hours (3,0)
Definition and historical development of operating systems. Characteristics of batch, interactive and multiprogramming systems. File systems, processor and memory management. Communication, concurrency, deadlock, protection, parallel and distributed systems. Case studies of modern operating systems.
Prerequisite(s): CSCI201 with a minimum grade of C

CSCI 490 Ind Res Topics Computer Sci 1-4 Credit Hours (1-4,0)
Special studies and/or research in computer science for individuals or small seminar groups. Course content to be arranged with instructor and with approval of the deparment head. This course may be repeated for a maximum of nine credits.
Prerequisite(s): Junior standing or higher