

Southern Utah University 2005-2006
Undergraduate Catalog
Course Descriptions

**Computer Science and Information
Systems Department**

**CSIS 1000 Introduction to Computer Applications
and the Internet (3)**

Designed to explore concepts of microcomputer systems. Concepts include: windows and general information, word processing, spreadsheets, database, presentations, and the Internet. Students will gain proficiency with the basic command structures of each application in an integrated office suite. Recommended computer keyboarding speed of at least 25 wpm. Fulfills general education--computer literacy requirement. (Fall, Spring, Summer)

**CSIS 1010 Electronic Commerce and the Global
Society (3)**

Designed to explore landscape of Electronic Commerce and its evolutionary process. Students examine the E-commerce process, real-world applications that reflect changes in the economy, how businesses are responding, and the latest technological developments, such as wireless technology. Fulfills general education--Interdisciplinary area. (Fall, Spring)

CSIS 1400 Fundamentals of Programming (3)

An introduction to computer programming using Java. Topics include: iterative and conditional behavior, subroutines, arrays, input/output and user interface mechanisms such as forms and controls. Emphasis is placed on developing simple interactive applications. Prerequisite: MATH 1010 or math ACT of 23 or higher. (Fall, Spring)

CSIS 1410 Object Oriented Programming (3)

An introduction to object oriented programming: the use of modularity, encapsulation, and abstraction to construct programs that are collections of interacting objects. Topics include: abstract data types, inheritance, recursion, program verification and documentation. Prerequisite: CSIS 1400 or previous exposure to computer programming. (Fall, Spring)

CSIS 2000 Web Development (3)

Designed to develop web pages using HTML and other web page authoring software programs. Students will create several web pages and publish them to a web server. Some advanced features will be introduced. Prerequisite: CSIS 1000 or instructor consent. (Fall)

CSIS 2050 Web Server Management (3)

Designed to develop skills necessary to effectively administer an Internet web server. Issues include: hardware and software configuration, user management, and security. Students will gain experience with different web server platforms including Apache, IIS, and Netscape Enterprise server. Recommended: CSIS 2000.

**CSIS 2420 Introduction to Algorithms and Data
Structures (3)**

Concepts and theory of data structures and algorithm analysis. Understanding basic data structures such as lists, stacks, queues, trees, graphs, and hash tables. Further exploration of object oriented programming and the

software development process. Prerequisite: A grade of C or better in CSIS 1410 (Fall)

CSIS 2500 Computer Applications (3)

This course covers advanced microcomputer applications including Word, Excel, PowerPoint, and integration of the applications. Topics include form letters, merging, desktop publishing, financial functions, amortization schedules, data tables, creating and querying a worksheet database, templates, embedded visuals, and importing clips. Prerequisite: CSIS 1000. (Fall)

CSIS 2600 Data Communications & Networking (3)

Designed as a telecommunications and networking foundation in network connectivity, data communication concepts and communication protocols. Students learn to analyze cost-benefits and to evaluate, select, and implement different communication options. (Fall, Spring)

CSIS 2620 Network Administration I (3)

Designed to develop practical skills necessary to effectively administer a multi-platform network in a working environment. Issues include: user, security, and printer management; implementation of directory structures; network documentation; file system management; and software distribution methods. Prerequisite: CSIS 1000 or equivalent and CSIS 2600. (Fall)

CSIS 2660 Network Service & Support (3)

Designed to prepare the student in technical support for network systems. Topics covered include hardware and storage configuration, network cabling, network troubleshooting and resolution, and disaster recovery. Must be major or minor in department. Recommended prerequisite: CSIS 2600. (Fall)

**CSIS 2810 Computer Organization and
Architecture (3)**

Understanding what computers are and how they work. Emphasis on understanding concepts and basic principles at many different layers of abstraction including: semiconductors, transistors, combinational and sequential logic circuits, processor architecture, instruction set architecture, assembly language and its relation to higher level languages. Prerequisite: MATH 1010 or math ACT (within the past two years) of 23 or higher. (Fall)

CSIS 2890 Internship (P/F) (1-6)

Instructor permission required (Fall, Spring)

**CSIS 3000 Advanced Algorithms and Data
Structures (3)**

This course is a survey of the most effective algorithms currently in use for a wide variety of problems and their usage in program design. Characteristics and performance of algorithms are studied. Advanced object oriented programming techniques are emphasized. Prerequisite: CSIS 2420 and MATH 1630. (Spring)

**CSIS 3050 Environments of Information Systems
(3)**

Introduces fundamental principles of information systems and their strategic use. Describes the role of information technology in organizations and business environments. Explains Web-based technologies, enterprise-level applications, managerial and decision support systems, and the implementation and management of IT. (Fall, Spring)

CSIS 3100 Systems Analysis & Design (3)

Practical introduction to major phases, activities, tools, and techniques of systems analysis, design, and development, emphasizing the role of systems analysts in organizations and dynamic, business environments. Students develop analytical, problem-solving, decision-making, and critical-thinking skills. (Spring)

CSIS 3150 C and C++ Programming (3)

An introduction to C and C++ for students with previous programming experience in Java. Topics include C and C++ syntax and constructs, the Standard Template Library, and advanced problem solving techniques in both languages. Prerequisite: CSIS 2420.

CSIS 3200 Database Design and Management (3)

Introduction to database management systems, database processing, data modeling, database design, development, and implementation. Contrasts alternative modeling approaches. Includes implementation of current DBMS tools and SQL. Prerequisite: CSIS 1000. (Fall)

CSIS 3400 Graphics Programming (3)

This course provides a solid introduction to modern computer graphics concepts and programming techniques. Topics include object modeling, 3D transformations, shading models, ray tracing, and advanced rendering techniques. Students will gain substantial experience in programming using the OpenGL library. Prerequisite: CSIS 2420. (Fall)

CSIS 3500 Advanced Computer Architecture (3)

A detailed look at the design and organization of modern computing systems. Emphasis on understanding contemporary RISC processors at the RTL level. Current issues in the industry are emphasized, for example: pipelined data paths advanced cache design, and instruction level parallelism. Prerequisites: CSIS 2810 and CSIS 2420. (Spring)

CSIS 3600 Operating Systems (3)

An introduction to fundamental concepts in the design, implementation, and usage of operating systems. Topics include: process management, main memory management, virtual memory, I/O and device drivers, file handling, and concurrency. Prerequisite: CSIS 2420. (Spring)

CSIS 3620 Network Administration II (3)

Designed to teach higher-level systems management features, including performance optimization, advanced printing, remote management, protocol support, and data maintenance. Students will install and configure network servers and services including DNS, DHCP, Web services, and security methods. Prerequisite: CSIS 2620. (Spring)

CSIS 3650 Network Security (3)

This course provides a fundamental understanding of network security principles and concepts regarding: security technologies and policies, attacks and countermeasures, intrusion detection systems, firewalls, physical security, disaster recovery, and more. A variety of projects are assigned to reinforce concepts. Prerequisite: CSIS 2600.

CSIS 3660 Network Design & Implementation (3)

Designed to develop the skills necessary to design and implement a fully functional network. Students will work through the design and implementation process, develop standards documents, provide detailed network diagrams, develop methods for user support, and document the network. Prerequisites: CSIS 2620. (Spring)

CSIS 3700 Computer Forensics (3)

This course involves intensive study of the prevention and detection of security violators and cyber criminals. Topics include an introduction to network security, intrusion detection, incident response, infrastructure protection, disaster recovery, continuity planning, software engineering, cyber-security, and computer crime investigation. Prerequisite: CSIS 2420.

CSIS 3990 Undergraduate Research (1-5)

Instructor permission required (Fall, Spring)

CSIS 4550 Programming Languages and Computation Theory (3)

An introduction to the theory of computation and its relationship to the design and implementation of programming languages. Topics include automata, formal languages, Turing machines, syntax, semantics, and the classic paradigms of object oriented, functional, and logic programming. Prerequisites: CSIS 3000 and MATH 1630. (Spring)

CSIS 4700 Internet Forensics and Cyber Security (3)

This course covers the concepts of computer system security models, networking security, and the layered protocol architectures, detection and prevention of intrusion and attack, digital evidence collection and evaluation, and the legal issues involved in computer forensic analysis. Prerequisites: CSIS 2420.

CSIS 4750 e-Business Systems (3)

Provides a general survey of key technological elements of electronic business and important business strategies essential to maintaining e-business infrastructures. Students will design and develop Web sites that have e-business capabilities. Prerequisites: CSIS 2000, CSIS 3050, and CSIS 3200.

CSIS 4800 CS Capstone Project (3)

An examination of systematic, disciplined and quantifiable approaches to the development, operation, and maintenance of software. This course offers a major programming project which provides an opportunity to apply much of the material the student has learned in previous computer science coursework. Prerequisites: CSIS 3000 and Senior standing. (Spring)

CSIS 4810 IS Capstone Project (3)

Provides opportunity to manage a major information systems development/enhancement project. Students apply what they have learned from various other courses to one project with an emphasis on enterprise-level project management. Prerequisite: Must be taken Senior year. (Spring)

CSIS 4830 Reading & Conferences (P/F) (1-3)

Instructor permission required (Fall, Spring)

CSIS 4850 Special Topics (1-4)

Instructor permission required (Fall, Spring)

CSIS 4890 Internship (P/F) (1-9)

Instructor permission required (Fall, Spring)

CSIS 4900 Methods in CS and IS Education (3)

This course examines the philosophy and methods of teaching computer science and information systems in the public school system. Course is designed to meet the

guidelines set by the Utah State Board of Education.
Prerequisites: CSIS 1410, CSIS 3200, and CSIS 2500.