Computer Information Technology Courses

**CIT 1001 - FYE: Computer & Information Technology** - FA - SP

First Year Experience seminar course designed to help freshman students interested in computing adapt to college life and become integrated into Dixie State University and the Computer and Information Technology department. Students will refine academic skills, create and foster social networks, learn about college resources, explore the different options available within the CIT department, and learn about career opportunities in Computing. Multiple listed with all other sections of First Year Experience (all 1001 courses, ENGR 1000). Students may only take one FYE course for credit. 1.000 Credit hours 2.000 Lab hours

**CS 1030 - Problem Solving with Computers** - Offered based upon sufficient student need

For any student interested in how computers are used to solve problems. This course will introduce the use of computers in problem solving including problem decomposition and algorithm construction. Students will be required to complete simple programming projects. Course fee required. 3.000 Credit hours 3.000 Lecture hours

**CS 1400 - Fundamentals of Programming** - FA - SP - SU

Required of all students pursuing Computer and Information Technology degrees. Open to all students with a general interest in computer programming. Covers structured programming techniques and the syntax of a high level programming language through completion of programming projects of increasing difficulty. Course fee required. 3.000 Credit hours 3.000 Lecture hours

**CS 1410 - Object Oriented Programming** - FA - SP

Required of all students pursuing Computer and Information Technology degrees, open to all students with a general interest in computer programming. Introduces object oriented programming techniques through completion of programming projects of increasing difficulty. Course fee required. Prerequisite: CS 1400 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 2420 - Introduction to Algorithms and Data Structures** - FA - SP

Required of students pursuing a Computer Science or Information Technology degree or emphasis, open to any student with a strong interest in computer programming. Covers the design and use of common data structures, lists, stacks, queues, trees, hash tables, and graphs through completion of several challenging programming projects. Introduces computational complexity and algorithm analysis. Course fee required. Prerequisite: CS 1410 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 2450 - Software Engineering** - SP

Required of students pursuing a Computer Science degree or emphasis, open to any student with a strong interest in computer programming. Covers current software engineering theory and practice through completion of a challenging team project. Dual listed with IT 4450 (students may take only one course for credit). Course fee required. Prerequisite: CS 2420 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours
**CS 2810 - Computer Organization and Architecture - FA - SP**

Required of students pursuing a Computer Science degree or emphasis, open to any student with a strong interest in computer programming. Covers digital hardware design and systems programming, including numeric representations, digital logic, processor architecture, instruction sets, assembly language, and other low-level programming topics. Course fee required. Prerequisite: CS 1410 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3000 - Internet Publishing & Design - FA - SP**

For students pursuing degrees in Computer Science or Computer Information Technology. Covers Internet publishing and design principles and concepts, including interface design, PHP scripting, intermediate and advanced HTML (Hypertext Markup Language) techniques, Cascading Style Sheets, XML (Extensible Markup Language), JavaScript, QuickTime Virtual Reality (QTVR), and other advanced web publishing tools. Dual listed with WEB 3000 (students may take only one course for credit). Course fee required. Prerequisite: CS 2420 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3005 - Programming in C++ - FA**

For students pursuing degrees in Computer Science and Computer and Information Technologies, or any student with a strong interest in computer programming. Covers syntax and semantics of C++ programming language through completion of hands-on projects. The student must already be fluent in some other programming language. Course fee required. Prerequisite: CS 1410 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3010 - Android Development - SP**

For students pursuing degrees in Computer Science, or other students interested in writing applications for modern "Smart" phones or tablets running the Android operating system. Course fee required. Prerequisites: CS 2420 (Grade C- or higher) AND CS 3005 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3020 - Mobile Application Development: iOS - FA**

For students pursuing degrees in Computer Science, or other students interested in writing applications for modern mobile devices using Apple's iOS operating system. Prerequisites: CS 2420 (Grade C- or higher); AND CS 3005 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3100 - Interactive Multimedia - FA - SP**

For students pursuing degrees in Computer Science or Computer Information Technology. Covers interactive multimedia application development. Introduces hardware and software use to integrate text, sound, graphics, animation, and video into rich-content multimedia projects through the use of various computer-based disciplines, including graphic design, digital video, interface elements, and light OOP-structured scripting. Successful students will be able to develop professionally designed interactive multimedia interfaces with rich content. Dual listed with WEB 3100 (students may take only one course for credit). Course fee required. Prerequisite: CS 2420 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3310 - Discrete Mathematics - FA**

For students pursuing degrees in Computer Science, or other students interested in counting theory and applications. Covers mathematical reasoning, combinatorial analysis, sets, permutations, relations, computational complexity, and Boolean logic through homework and programming assignments. Course fee required. Prerequisite: MATH 1210 (Grade C- or higher); AND CS 1410 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours
**CS 3400 - Operating Systems** - SP

Can be used to fulfill a requirement for students pursuing a degree or emphasis in Computer Science, and open to other students. Covers operating systems design and implementation, including processes and threads, synchronization, virtual memory, and file systems. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher); AND CS 3005 (Grade C- or higher). (Even years) 3.000 Credit hours 3.000 Lecture hours

**CS 3410 - Distributed Systems** - FA

Can be used to fulfill a requirement for students pursuing a degree or emphasis in Computer Science, and open to other students. Covers design and implementation of network applications, including message passing, concurrency, synchronization, scalability, and partial failure. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3440 - Software Practices** - SP

For students pursuing degrees in Computer Science, or other students interested in gaining experience in software development practices. Covers practical usage of software development tools, source code control, software debugging, third party libraries and frameworks, and effective team work. Course fee required. Prerequisite: CS 3005 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3500 - Application Development** - FA

For students pursuing degrees in Computer Science or Computer Information Technology, or others with an interest in graphical interface design and implementation. Covers the theory and practice of constructing easy to use interfaces through programming graphical environment projects in a variety of languages and platforms. Course fee required. Prerequisite: CS 3005 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3510 - Advanced Algorithms/Data Structures** - SP

Required of students pursuing a Computer Science degree or emphasis. Covers the analysis and design of algorithms and data structures, including graphs, greedy algorithms, divide and conquer algorithms, and dynamic programming. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher); AND CS 3310 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3520 - Programming Languages** - FA

Required of students pursuing a Computer Science degree or emphasis. Covers the principles and concepts that characterize high-level computer programming languages, including function and data abstraction, and imperative, functional, logic and object-oriented programming techniques. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**CS 3530 - Computational Theory** - FA

Required of students pursuing a Computer Science degree or emphasis. Covers the theory of computation, including finite-state automata, pushdown automata, Turing machines, and equivalent formalisms. Also introduces complexity theory. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher); and CS 3310 (can be concurrently enrolled). 3.000 Credit hours 3.000 Lecture hours
CS 3600 - Graphics Programming - SP

Required of students pursuing a Computer Science degree or emphasis, and open to other interested students. Covers 2-D and 3-D model creation, transformation, and various rendering techniques through completion of programming assignments. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 3005 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

CS 4000 - Dynamic Web Development - FA - SP

For students pursuing a Computer Science degree or Computer and Information Technology emphasis. Covers dynamic web development using PHP, and MySQL, including basic scripts and functions, variables, form processing, server side includes, web database integration, database design, database driven web sites, security, and web management systems with an emphasis on Web application. Dual listed with WEB 4000 (students may take only one course for credit). Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND WEB 1400 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

CS 4010 - Interactive Web Development - SP

For students pursuing a degree in Computer Science or Computer Information Technology. Also open to other interested students. Covers client-side JavaScript web development, including form validation, interactive web page development, DOM manipulation, client-side applications, and interaction with server-side applications. Dual listed with WEB 4010 (students may take only one course for credit). Prerequisites: CS 2420 (Grade C- or higher); AND WEB 1400 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

CS 4300 - Artificial Intelligence - FA

Required of students pursuing a Computer Science degree or emphasis. Introduces the broad field of artificial intelligence in computer software followed by specific applications in computer gaming strategies. Students will complete programming assignments. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher); AND CS 3005 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

CS 4307 - Database Design & Management - FA - SP

Required of students pursuing a Computer Science degree or emphasis. Covers administration of database management systems, logical database design, implementation of database designs, and application development using a DBMS. Students will design, manage, and implement databases and applications that use databases. Course fee required. Dual listed with IT 4300 (students may take only one course for credit). Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

CS 4550 - Compilers - SP

Required of students pursuing a Computer Science degree or emphasis. Covers compiler design and implementation, including lexical analysis, parsing, symbol table management, and generating code through challenging programming assignments. Course fee required. Prerequisites: CS 2420 (Grade C- or higher); AND CS 2810 (Grade C- or higher); AND CS 3005 (Grade C- or higher). 3.000 Credit hours 2.000 Lab hours

CS 4600 - Senior Project - SP

Required of students pursuing a Computer Science degree or emphasis. Students will complete an aggressive programming project of software engineering. Course fee required. Prerequisite: Senior status. 3.000 Credit hours 3.000 Lecture hours
**CS 4920R - Internship - Offered by arrangement**

Internship course in Computer Science and Software Development. Course fee required. Variable credit 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Prerequisite: Instructor permission. 1.000 TO 3.000 Credit hours 3.000 TO 9.000 Other hours

**CS 4990 - Sem in Computer Science - Offered by arrangement**

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students need some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other nontraditional instruction methods. Repeatable for credit as topics vary, up to 6 credits. Course fee required. Prerequisite: Advanced standing. 3.000 Credit hours 3.000 Lecture hours

**CS 4991R - Competitive Programming - FA - SP**

For students interested in competing in programming contests. Covers problem analysis and classification, and efficient implementation of solutions. Repeatable up to 6 times for 3 credits. Prerequisite: CS 1400 (Grade C- or higher). 0.500 Credit hours 0.500 Lecture hours

**CS 4992 - Seminar in Computer Science**

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other nontraditional instruction methods. Note that this course in an elective and does not fulfill general education or program requirements. Fees may be required for some seminar courses and instructor permission will be optional at the request of the instructor. 0.500 TO 3.000 Credit hours 0.500 TO 3.000 Lecture hours

**DES 1300 - Communication Design - FA - SP**

For students pursuing a degree in Computer and Information Technology. Explores the elements of design from which advertising, computer graphics, and graphic arts are structured by building awareness and skill in creating designs, using the concepts of composition, proportion, alignment, contrasts, white space, typography, eye movement, and element control, emphasizing the value of these concepts to communicate ideas. Course fee required. 3.000 Credit hours 3.000 Lecture hours

**DES 1610 - Screen Printing - Offered based upon sufficient student need**

For students interested in the screen printing industry on the commercial level. Includes hands-on experiences for printing on various substrates using photographically/mechanically generated stencils, reproducing images with computers for positive reproduction, and multi-color screen printing on fabric. Instruction includes the use of vector image editing software. Course fee required. 3.000 Credit hours 3.000 Lecture hours

**DES 2500 - Computer Illustration - FA - SP**

For students pursuing a degree in Computer and Information Technology. Covers intermediate design and illustration concepts and techniques. Prepares students to create original artwork usable in multimedia, Internet publishing, or desktop publishing. Course fee required. Prerequisite: DES 1300 (Grade C- or higher).
**DES 2600 - Creative Imaging - FA - SP**

For students pursuing a degree in Computer and Information Technology. Hands-on introduction to computer photo-manipulation and designing graphics on the computer, emphasizing tools and techniques used for editing and retouching photographs and creating original images with photo-like qualities for use in advertising, web publishing, and interactive multimedia projects. Assignments require access to specific programs on either Macintosh or Windows platforms. 3.000 Credit hours 3.000 Lecture hours

**DES 2710 - Typography - FA - SP**

Study of basic layout, lettering, type design, identification of styles, and typographic history. Students learn how to use type as a basic element of graphic communication, how the use of different typefaces visually communicate a desired effect, and fundamental terminology of type specification. Consists of lectures, quizzes, and ongoing typographically-related projects intended to be of portfolio-quality. Dual listed with ART 2710 (students may take only one course for credit). Course fee required. Prerequisite: DES 2500 (Grade C- or higher). 3.000 Credit hours 6.000 Other hours

**DES 2800 - Digital Publishing - FA - SP**

For students pursuing a degree in Computer and Information Technology. A hands-on introduction to page-layout software and publishing for print and multi-media. Students will learn to create multi-page documents including text and images, edit those documents and prepare them for publication. Course fee required. Prerequisite: DES 1300 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**DES 3200 - Portfolio Preparation - Offered by arrangement**

For students pursuing a degree in Computer and Information Technology. Students solve design problems by designing for commercial media, including proper typography and type as a graphic element, including project management. Course fee required. Prerequisites: DES 2600 (Grade C- or higher); AND DES 3620 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**DES 3300 - Intro to Digital Video Editing - SP**

For students pursuing a degree in Computer and Information Technology. Introduces essentials of editing video and audio with computers, including TV/video production applications, multimedia authoring, and/or Internet video streaming. Also includes digitizing video and audio from analogue or digital sources, selecting footage from source clips, constructing transitions, titling, creating and using alpha channel or other matte techniques, plus other special effects. Course fee required. Prerequisites: DES 2500 (Grade C- or higher); AND DES 2600 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**DES 3600 - 3-D Visualization - FA**

For students pursuing an emphasis in Visual Technologies; also open to other interested students. Introduces three-dimensional modeling and rendering techniques on the computer, including various modeling processes, defining and applying textures, assembling scenes, and rendering images, which are applicable to realistic package and product designs, as well as exciting graphics for desktop or Internet publishing projects. Assignments require access to specific programs on either Macintosh or Windows platforms. Course fee required. Prerequisites: DES 2500 (Grade C- or higher); AND DES 2600 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**DES 3650 - 3-D Animation - SP**
For students pursuing a degree in Computer and Information Technology. Companion course to DES 3600, covers aspects of 3D animation design, story boarding, character development, and animation rendering of 3D models suitable for broadcast or composite video use. Maya 3D software will be used to create multiple short animation projects individually and in teams. Includes rigid/soft body animation solvers, dynamic particles, deformation and effects fields, IK/FK rigging, and multi-frame rendering output, use of key frames, ease in/ease out controls, the timeline, realistic modeling techniques, set lighting, shadows, multi-layer surfacing, photorealistic rendering, and video formats for final output. Course fee required. Prerequisites: DES 3600 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**DES 3710 - Advanced Typography - FA**

Covers typography as a functional and experimental medium and typeface design. Students develop typographic solutions that explore verbal/visual messages in designs for publication through design problem-solving for a diverse range of specifications, including audience, client needs, and budget constraints, using traditional and digital tools. Dual listed with ART 3710. Student may only take one course for credit. Course fee required. Prerequisite: DES 2710 or ART 2710 (Grade C- or higher). 3.000 Credit hours 6.000 Other hours

**DES 3780 - Prepress & Print Production - SP**

Overview of desktop publishing and digital imaging on the prepress industry. Topics include input and output, correct creation of digital files, data storage, proofing methods, and relevant terminology/communication with prepress and printing professionals. Also acquaints students with the variety of jobs offered in the field, file evaluation, and much more. Field trips to printers and other prepress service providers reinforce lectures/projects. Course fee required. Dual listed with ART 3780 (students may take only one course for credit). Prerequisite: DES 2500 (Grade C- or higher) and DES 2600 (Grade C- or higher). 3.000 Credit hours 6.000 Other hours

**DES 3800 - Corporate Identity - FA**

For students pursuing a degree in Computer and Information Technology. Explores the history, psychology and purpose of corporate identity programs and the role of communication design in the current corporate environment by analyzing, investigating, and reporting on current company corporate objectives and target markets and then designing a sound multifaceted identity program. Course fee required. Prerequisite: DES 2500 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**DES 4600 - Senior Project - SP**

For students pursuing a degree in Computer and Information Technology. Emphasizes application of skills to commercial projects through design of or contribution to various private sector or university internet projects, print, and multimedia projects. Includes portfolio development. Course fee required. Prerequisite: Senior standing. 3.000 Credit hours 3.000 Lecture hours

**DES 4650 - Publication Design - SP**

For students pursuing a degree in Computer and Information Technology. Explores creative, functional, and aesthetic aspects of editorial design with emphasis on page layout. Students will focus on the significance of consistency and thematic continuity, developing aesthetic awareness, and integrating design principles. Students will refine and further develop visual judgment in the arrangement of type and images to effectively convey visual messages. Dual listed with ART 4650. Students may only take one course for credit. Course fee required. Prerequisites: DES 2600 AND DES 2800 (Grade C- or higher) AND DES 2710 OR ART 2710 (Grade C- or higher). 3.000 Credit hours 6.000 Other hours

**DES 4900R - Independent Research - Offered by arrangement**
For students pursuing an emphasis in Digital Design with advanced standing who wish to pursue a specific focus of study related to their degree emphasis and/or research interest not otherwise available in the current Digital Design curriculum. Students are closely supervised by appropriate faculty in the design and successful completion of the course. The course is dependent upon a formal contractual arrangement with the faculty member that is submitted at the beginning of the semester in which coursework is undertaken, and is contingent upon the department chair's approval. Students meet with the faculty mentor each week and provide progress reports for feedback. Students are required to meet the university requirement of 45 hours of work per credit. Variable credit 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Course fee required. Prerequisite: Instructor permission. 1.000 TO 3.000 Credit hours 1.000 TO 3.000 Other hours

**DES 4920R - Internship**  - Offered by arrangement

Internship course in Digital Design. Course fee required. Variable credit 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Prerequisite: Instructor permission. 1.000 TO 3.000 Credit hours 1.000 TO 3.000 Other hours

**DES 4990 - Seminar in Digital Design**  - Offered by arrangement

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students need some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other nontraditional instruction methods. Repeatable for credit as topics vary, up to 6 credits. Course fee required. Prerequisite: Advanced standing. 3.000 Credit hours 3.000 Lecture hours

**IT 1100 - Introduction to Unix/Linux**  - FA - SP

Required of all Computer and Information Technology majors, and open to students with a general interest in computer operating systems. Introduces operating system concepts, including file systems, process management, user management, and security. Students will install and configure LINUX and MAC OSX. Course fee required. 3.000 Credit hours 3.000 Lecture hours

**IT 1200 - A+ Computer Hardware/Windows OS**  - FA - SP

This course covers installation, repair and maintenance of computer hardware. It also discusses installation, repair and maintenance of the Microsoft Windows operating system. This course prepares the student to take the CompTIA A+ certification exams. Dual listed with CJ 2500 (students may take only one course for credit). Course fee required. 3.000 Credit hours 3.000 Lecture hours

**IT 2400 - Intro to Networking**  - FA - SP

Required of all Computer Science and Computer and Information Technology majors, and open to students with a general interest in computer networking. Introduces fundamental concepts of computer networks, including physical, transport, and application layers through completion of assignments predicting and measuring the behavior of computer networks under various conditions. Course fee required. Prerequisite: IT 1100 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**IT 3100 - Systems Design and Administration I**  - FA

Required of Computer and Information Technology majors and students with an emphasis in Information Technology. Covers system administration topics for managing Internet facing services, including DNS, SMTP, and HTTP. Students will install, configure, and test services in a server environment. Course fee required. Prerequisites: CS 1400 (Grade C- or higher); AND IT 2400 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours
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<th>Course Code</th>
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<tr>
<td>IT 3110</td>
<td><strong>Systems Design and Administration II</strong> - SP</td>
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<td>Required of students pursuing an emphasis in Information Technology, and open to Computer &amp; Information Technology and Computer Science students. A continuation of IT 3100, course covers administration topics for managing local network services, including file sharing and user profile sharing in heterogeneous computer networks. Students will install, configure, and test services in a server environment. Course fee required. Prerequisite: IT 3100 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 3150</td>
<td><strong>Windows Servers</strong> - SP</td>
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<td>Students will learn Window's server management techniques to support a small to medium-sized business. Topics covered will include DHCP, DNS, IT, Windows Roles, Workgroups, Active Directory, and Domain Management. File and printer sharing will also be discussed. Course fee required. Prerequisites: IT 1200 and IT 2400 (both Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 4200</td>
<td><strong>Advanced Web Delivery</strong> - FA</td>
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<td>Required of students pursuing an Information Technology emphasis, and open to other interested students. Covers advanced web server configuration, management, and optimization necessary to provide web application delivery environments. Course fee required. Prerequisite: IT 3100 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 4300</td>
<td><strong>Database Design &amp; Management</strong> - FA</td>
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<td>Required of students pursuing an Information Technology emphasis. Covers administration of database management systems, logical database design, implementation of database designs, and application development using a DBMS. Students will design, manage, and implement databases and applications that use databases. Dual listed with CS 4307 (students may take only one course for credit). Course fee required. Prerequisites: CS 1400 (Grade C- or higher); AND IT 1100 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 4400</td>
<td><strong>Network Design &amp; Management</strong> - FA</td>
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<td>Required of students pursuing an Information Technology emphasis. Covers the design, management, and monitoring of a network. Hands-on configuration experience of layers 1, 2, and 3 will be given on both LAN and WAN levels. The successful student will be prepared to successfully complete the CCNA exam. Course fee required. Prerequisite: IT 2400 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 4500</td>
<td><strong>Information Security</strong> - SP</td>
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<td>Required of students pursuing an Information Technology emphasis. Reviews current security exploits, vulnerabilities, and counter measures. Covers general security models and architectures, encryption and forensics. Course fee required. Prerequisites: CS 1400 (Grade C- or higher); AND IT 3100 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 4600</td>
<td><strong>Senior Project</strong> - SP</td>
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<td>Required of students pursuing an Information Technology emphasis. Students will complete an aggressive information technology project. Course fee required. Prerequisite: Senior status. 3.000 Credit hours 3.000 Lecture hours</td>
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<td>IT 4920R</td>
<td><strong>Internship</strong> - Offered by arrangement</td>
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Internship course in Information Technology. Course fee required. Variable credit 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Prerequisite: Instructor permission. 1.000 TO 3.000 Credit hours 3.000 TO 9.000 Other hours

**IT 4990 - Seminar in Information Technology** - Offered by arrangement

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students need some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other nontraditional instruction methods. Repeatable for credit as topics vary, up to 12 credits. Course fee required. Prerequisite: Advanced standing. 3.000 Credit hours 3.000 Lecture hours

**IT 4991 - Seminar in Information Technology**

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students request some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This seminar course provides a variable credit context for these purposes. As requirements, this seminar course must first be pre-approved by the department chair; second, it must provide at least nine contact hours of lab or lecture for each credit offered; and third, it must include some academic project or paper (i.e., credit is not given for attendance alone). This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other nontraditional instruction methods. Note that this course in an elective and does not fulfill general education or program requirements. Fees may be required for some seminar courses and instructor permission will be optional at the request of the instructor. 0.500 TO 3.000 Credit hours 0.500 TO 3.000 Lecture hours

**WEB 1400 - Intro to Internet Development** - FA - SP

For students pursuing a degree in Computer and Information Technology. Hands-on experience in Internet development, including fundamental web development skills including writing HTML and CSS code, planning and organizing web sites, storyboarding, Internet development environments, and creating and organizing graphics for multiple types of online use. Also examines competitive online markets, technical issues, legal framework, as well as production issues associated with Internet development. Course fee required. 3.000 Credit hours 3.000 Lecture hours

**WEB 3000 - Internet Publish & Design** - FA - SP

For students pursuing a degree in Computer and Information Technology. Covers Internet publishing and design principles, including interface design, PHP scripting, intermediate and advanced HTML (Hypertext Markup Language) techniques, Cascading Style Sheets, XML (Extensible Markup Language), JavaScript, QuickTime Virtual Reality (QTVR), and other advanced web publishing tools. Dual listed with CS 3000 (students may take only one course for credit). Course fee required. Prerequisites: CS 1400 (Grade C- or higher); AND WEB 1400 (Grade C- or higher); AND DES 2500 (Grade C- or higher); AND DES 2600 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

**WEB 3100 - Interactive Multimedia** - FA - SP

For students pursuing a degree in Computer and Information Technology. Introduces hardware and software used to integrate text, sound, graphics, animation, and video into rich-content multimedia projects using various computer-based disciplines, including graphic design, digital video, interface elements, and light OOP-structured scripting. Successful students will be able to develop professionally designed interactive multimedia interfaces with rich content. Assignments require access to specific programs on either Macintosh or Windows platforms. Dual listed with CS 3100 (students may take only one course for credit). Course fee required. Prerequisites: CS 1400 (Grade C- or higher); AND DES 2500 (Grade C- or higher); AND DES 2600
WEB 3500 - Electronic Commerce - FA - SP

For students pursuing a Computer & Information Technology degree. Also open to other interested students. Covers concepts and principles of electronic commerce from an interdisciplinary approach, including computer sciences, marketing, consumer behavior, finance, economics, and information systems. Specifics include electronic commerce process steps, Internet infrastructure, demographics, marketing and market research, advertising, promotion, strategy development, financing, competitive analysis, technical development, Web site review, launch, and on-going innovation. Course fee required. 3.000 Credit hours 3.000 Lecture hours

WEB 3550 - Internet & eCommerce Marketing - FA - SP

For students pursuing a Computer & Information Technology degree. Also open to interested students. Covers impact of new technologies and Internet expansion on marketing and advertising information intensive products and services on the Internet, particularly targeting and reaching customers. Course fee required. 3.000 Credit hours 3.000 Lecture hours

WEB 4000 - Dynamic Web Development - FA - SP

For students pursuing a degree in Computer and Information Technology. Covers dynamic web development using PHP and MySQL, including basic scripts and functions, variables, form processing, server side includes, web database integration, database design, database driven web sites, security, and web management systems. Dual listed with CS 4000 (students may take only one course for credit). Course fee required. Prerequisite: WEB 3000 (Grade C- or higher) and IT 4300 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

WEB 4010 - Interactive Web Development - FA

For students pursuing a degree in Computer and Information Technology. Also open to other interested students. Covers client-side JavaScript web development, including form validation, interactive web page development, DOM manipulation, client-side applications, and interaction with server-side applications. Dual listed with CS 4010 (students may take only one course for credit). Course fee required. Prerequisites: CS 1410 (Grade C- or higher); AND WEB 3000 (Grade C- or higher). 3.000 Credit hours 3.000 Lecture hours

WEB 4600 - Senior Project - SP

For students pursuing a degree in Computer and Information Technology. Emphasizes application of skills to commercial projects through design of or contribution to various private sector or university internet projects, print, and multimedia projects. Includes portfolio development. Course fee required. Prerequisite: Senior standing. 3.000 Credit hours 3.000 Lecture hours

WEB 4900R - Independent Research - Offered by arrangement

For students pursuing an emphasis in Web Design and Development with advanced standing who wish to pursue a specific focus of study related to their degree emphasis and/or research interest not otherwise available in the current Web Design and Development curriculum. Students are closely supervised by appropriate faculty in the design and successful completion of the course. The course is dependent upon a formal contractual arrangement with the faculty member that is submitted at the beginning of the semester in which coursework is undertaken, and is contingent upon the department chair's approval. Students meet with the faculty mentor each week and provide progress reports for feedback. Students are required to meet the university requirement of 45 hours of work per credit. Variable credit 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Course fee required. Prerequisite: Instructor permission. 1.000 TO 3.000
WEB 4920R - Internship - Offered by arrangement

Internship course in Web Design and Development. Course fee required. Variable credit 1.0 - 3.0. Repeatable up to 3 credits subject to graduation restrictions. Prerequisite: Instructor permission. 1.000 TO 3.000 Credit hours 1.000 TO 3.000 Other hours

WEB 4990 - Seminar in Web Development - Offered by arrangement

For students wishing instruction that is not available through other regularly scheduled courses in this discipline. Occasionally, either students need some type of non-traditional instruction, or an unanticipated opportunity for instruction presents itself. This course may include standard lectures, travel and field trips, guest speakers, laboratory exercises, or other nontraditional instruction methods. Repeatable for credit as topics vary, up to 6 credits. Course fee required. Prerequisite: Advanced standing. 3.000 Credit hours 3.000 Lecture hours