Web Design & Development (WEB)

WEB 1400. Web Design I: Fundamentals (ALCS). 3 Hours.
For students pursuing a degree in Computer and Information Technology. Covers fundamental principles of front-end web design, including beginner's hands-on experience with HTML and CSS in planning, organizing, analysis, and designing websites. Introduces key foundation concepts such as Internet infrastructure, web page creation and publishing, wire framing, layout techniques, multimedia, content, color, typography, and accessibility. This course is designated as an Active Learning Community Service (ALCS) course. Students provide service in areas of public concern in a way that is mutually beneficial for both the student and community. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Demonstrate an understanding of the general workings of the Internet and infrastructure. 2. Use web authoring and design environment - tools, browsers, servers. 3. Apply current and past web markup & styling languages and their differences. 4. Compare careers within web design & development. 5. Apply the development process. 6. Use multimedia optimization and preparation. 7. Apply design principles to the web. 8. Apply user interaction and communication. Course fee required. FA, SP.

WEB 3200. Web Application Development I. 3 Hours.
For students pursuing an emphasis in Web Design & Development, or other students interested in writing applications for the modern web. Covers the fundamentals of three-tier web applications, including client-side code for modern browsers, server code using representative languages, and integration with database systems; also covers the protocols that connect these components and the environments in which they run. Dual listed with CS 3200 (students may only take one course for credit). **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Develop modern web applications using both client-side and server-side languages and technologies. 2. Integrate database technologies into the ecosystem of a web application at a fundamental level. 3. Deploy the environments and infrastructure required by web application servers and related systems. 4. Implement the architectures, protocols and standards necessary to interconnect the client-side and server-side components. Course fee required. Prerequisites: CS 1410 (Grade C- or higher); AND WEB 1400 (Grade C- or higher). FA, SP.

WEB 3400. Web Design II: Essentials (ALCS). 3 Hours.
For students pursuing a degree in Computer and Information Technology. Covers intermediate concepts of front-end web design and development, including essential hands-on experience with HTML, CSS, JavaScript, and other web publishing tools. Essential concepts such as domain and hosting infrastructure, modern web design frameworks & libraries, user interface and experience, e-commerce, web promotion, legal models, development environments, and interactivity are all examined. This course is designated as an Active Learning Community Service (ALCS) course. Students provide service in areas of public concern in a way that is mutually beneficial for both the student and community. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Use internet infrastructure, hosting, and tools. 2. Apply current web markup, styling, and scripting languages, and supporting front-end web technologies. 3. Implement commercial web site development and team implementation strategies. 4. Design for web accessibility. 5. Apply basic backend development practices. 6. Communicate a message through a rich user interface and experience. 7. Design for various web environments. 8. Improve online web promotion. 9. Know current web security, legal, social, and professional issues. Course fee required. Prerequisites: DES 1300 (Grade C- or higher); AND WEB 1400 (Grade C- or higher). FA, SP.

WEB 3450. Software Engineering. 3 Hours.
Students will take on a challenging team project. Students will also learn about the software lifecycle and its phases. Dual listed with CS 2450 (students may take only one course for credit). **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Explain software engineering knowledge and skills and of the professional standards necessary to begin practice as a software engineer. 2. Apply and compare appropriate theories, models, and techniques that provide a basis for problem identification and analysis, software design, development, implementation, verification, and documentation. 3. Construct reliable software artifacts, both individually and as part of a team. 4. Evaluate trade-offs in software engineering practices and determine appropriate balances in project decision making. 5. Employ new models, techniques, and technologies as they emerge and appreciate the necessity of such continuing professional development. Course fee required. Prerequisites: WEB 3200 (Grade C- or higher); AND WEB 3400 (Grade C- or higher). FA, SP.
WEB 3500. Tech Entrepreneurship. 3 Hours.
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 LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Demonstrate the ability to identify a problem, then analyze and prepare a solution essential to successful problem solving. 2. Exhibit the ability to synthesize multiple sources of information to solve problems, and use one's experiences and other sources of information to create new insights and generate better problem solving approaches. 3. Demonstrate the ability to create, think, design, and/or build prototype solutions for problems or product ideas. 4. Facilitate the constant change of technology by fostering intellectual curiosity and the ability to access information from diverse sources as well as relating knowledge to daily life and defining issues within larger contexts. 5. Demonstrate an awareness and an understanding of these issues as the apply to technology entrepreneurship by articulating and integrating relevant ethical, legal, social, and technical concerns into their projects and exhibiting an openness to ideas different from or in conflict with one's own, including assumptions, prejudices, and privileges. 6. Demonstrate the ability to function effectively in teams to accomplish stated goals. Using advanced knowledge skills in problem solving positive work ethic, effective use of technology, and understanding team-centric workplace culture, improved social behavior and competent professional skills to obtain and maintain successful employment within an organization, business, or other entity. 7. Demonstrate convincing technical communications skills, both orally and in writing by exhibiting the ability to be a useful team member, capable of working in groups on strategic problems. 8. Apply and understand technology entrepreneurship process elements including (a) opportunity assessment, (b) market research, (c) competitive assessment, (d) strategy development, (e) finance development, (f) risk assessment, (g) technology development, (h) web review, (i) launch, and (j) ongoing innovation. Course fee required. FA, SP.

WEB 3550. Online Marketing and SEO (ALCS). 3 Hours.
For students interested in Internet Marketing and Search Engine Optimization (SEO). Introduces key online marketing concepts such as target demographics, pay-per-click advertising, social media outreach, AB testing, re-targeting, keyword optimization, link building, site analytics, and industry standard methods/tools to increase online traffic, conversions, and site goals. This course is designated as an Active Learning Community Service (ALCS) course. Students provide service in areas of public concern in a way that is mutually beneficial for both the student and community. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Implement Internet Marketing Strategies through PPC, social media, content curation, blogging, retargeting, video, reviews, subscription based, Search Engine Algorithms, Onsite and Offsite SEO, and emerging techniques. 2. Use industry standards and practices. 3. Analyze and track data to measure and quantify web traffic, goals, and conversions. Course fee required. FA, SP.

WEB 4200. Web Application Development II. 3 Hours.
For students pursuing an emphasis in Web Design & Development, or other students interested in writing applications for the modern web. Covers advanced concepts and topics in client-side and server-side web application development. Students will be introduced to a variety of modern software frameworks, languages, architectural patterns, and techniques in order to create interactive, data-centric web applications. Dual listed with CS 4200 (students may only take one course for credit). **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Develop modern web applications using both client-side and server-side languages and technologies. 2. Assess the makeup of various client-side and server-side web application frameworks and their constituent components. 3. Create an interactive user experience using a client-side framework and interaction with a web service. 4. Implement the architectural and design patterns used by web application frameworks, and justify how they are used to produce maintainable and scalable web applications. Course fee required. Prerequisites: WEB 3200 (Grade C- or higher). SP.

For students pursuing a degree in Computer and Information Technology. Covers mastery-level web design and development practices. Hands-on experience developed using advanced technologies such as HTML, CSS, JavaScript, content management systems, advanced web frameworks & libraries, and other advanced front-end technologies. In-depth web topics are covered including: advanced design techniques, user interface and experience, interactivity, animation, and other web related concepts are covered. This course is designated as an Active Learning Community Service (ALCS) course. Students provide service in areas of public concern in a way that is mutually beneficial for both the student and community. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Develop, design, and implement industry standard & professional websites. 2. Create front end web scripting, styling, and structure. 3. Animate interactive web elements. 4. Develop various content management systems. 5. Create user interface, experience, and interaction design in relation to the web. 6. Use current libraries & framework systems. Course fee required. Prerequisites: DES 3500 (Grade C- or higher); AND WEB 3400 (Grade C- or higher). FA.
WEB 4600. Senior Project. 3 Hours.
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 LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Identify and plan a meaningful project, break down the project into workable items, and then attach timelines to project elements to ensure student/project work accountability. 2. Produce prototypes, designs, code, and user experiences as needed by the project or product or design using iterative processes and feedback to demonstrate continuous improvement overtime. 3. Identify and assemble necessary resources for the completion of project work. 4. Plan and implement all aspects of the instructor approved project. 5. Demonstrate the ability to function effectively in teams to accomplish stated goals. Students will demonstrate advanced knowledge skills in problem solving positive work ethic, effective use of technology, and understanding team-centric workplace culture. 6. Demonstrate convincing technical communications skills, both orally and in writing exhibiting the ability to be useful team members, capable of working in groups projects and also initiating self learning and independent work as is necessary for the approved project. 7. Demonstrate accountability and responsibility with development processes by submitting weekly project updates on hourly workload, meaningful project progress, iterative changes, new learning, and project challenges. Course fee required. Prerequisite: Senior standing. SP.

WEB 4900R. Independent Research. 1-3 Hours.
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 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. Offered by arrangement. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Analyze and solve web problems within a development environment. 2. Research new topics and emerging areas of the industry. 3. Communicate findings and research to instructors. Course fee required. Prerequisite: Instructor permission.

WEB 4920. Internship (ALPP). 3 Hours.
For students pursuing a degree in Computer and Information Technology. Designed to integrate Web Design & Development students into working environments that increase aptitude, skills, and networking. The internship setting will nurture a mentor learning relationship with the student, and assist them in preparation for after graduation. This course is designated as an Active Learning Professional Practice (ALPP) course. This course allows students to explore and apply content learned in the course in a professional experience away from the classroom. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Analyze and solve web problems from an employment environment. 2. Research new topics and emerging areas of the business. 3. Communicate findings and research to employers. Prerequisite: Instructor permission. FA, SP, SU.

WEB 4990. Special Topics in Web Development. 3 Hours.
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. Offered by arrangement. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Develop and build web or mobile systems using a specific software framework or methodology. 2. Extrapolate the specialized insights and practices of a specific development system to a wider field of practice. 3. Apply general purpose problem solving skills to a specific problem domain.