ISE

Information Systems

ISE 102: Introduction to Web Design and Programming
An introduction to the design of Web pages, specifically the development of browser and device independent HTML, with an emphasis on the XHTML standards. Includes the use of style sheets (CSS) and tools for page layout and verification. HTML is presented as a mark-up language, exploring the rules of HTML elements and attributes. Students learn the separation of page viewing information from the HTML through CSS style sheets as well as the use of block layout without using HTML tables. Addresses HTML display properties including text, color, image, and graphic elements as well as approaches to HTML validation and techniques.
Advisory Prerequisite: CSE 101 or basic computer skills
3 credits

ISE 108: Introduction to Programming
Introduces computer programming at a level suitable for those with no prior programming experiences, including liberal arts and humanities majors. Programming exercises involve state-of-the-art visual applications. Topics include problem-solving techniques, object-oriented design, and programming concepts such as conditionals, iteration, arrays, and modularity.

ISE 208: Intermediate Programming
Teaches programming and system design techniques with an emphasis on applications to business. Topics include object-oriented design techniques, testing and debugging, data structures, recursion, and exception-handling. Uses the Java programming language.
Prerequisite: ISE 108
3 credits

ISE 215: Foundations of Computer Science
Introduction to the logical and mathematical foundations of computer science. Topics include functions, relations, and sets; recursion and functional programming; elementary logic; and mathematical induction and other proof techniques.
Prerequisite: AMS 151 or MAT 125 or MAT 131
3 credits

ISE 300: Writing in Information Systems
See Requirements for the Information Systems Major, Upper-Division Writing Requirement.
Prerequisites: WRT 102; U3 or U4; ISE major
1 credit

ISE 301 - H: History of Computing
A study of the history of computational devices from the early ages through the end of the 20th century. Topics include needs for computation in ancient times, development of computational models and devices through the 1800's and early 1900's, World War II and the development of the first modern computer, and early uses in business. Creation of programming languages and the microchip. Societal changes in computer usage due to the microcomputer, emergence of the Internet, the World Wide Web, and mobile computing. Legal and social impacts of modern computing. Cannot be used as a technical elective for the CSE major or minor. This course is offered as both CSE 301 and ISE 301.
Prerequisite: U2 standing or higher
Advisory Prerequisite: one course in computing
3 credits

ISE 302: Professional Ethics for Computer Science
Familiarizes students with professional practice in Information Technology. Enables them to identify ethical conflicts, their responsibilities and options, and to think through the implications of possible solutions to ethical conflicts.
Prerequisites: CSE 219 or CSE 260 or ISE 305
1 credit

ISE 305: Database Design and Practice
The design of database applications including Entity-Relationship data modeling, the relational data model, the SQL database query language, application development, and database administration. Students will complete a project that includes designing a database application and implementing it using database development tools.
Prerequisite: ISE 208 or CSE 214 or CSE 230
3 credits

ISE 308: Software Engineering
Introduces the basic concepts and modern tools and techniques of software engineering. Emphasizes the development of reliable and maintainable software via system requirements and specifications, software design methodologies including object-oriented design, implementation, integration, and testing; software project management; life-cycle documentation; software maintenance; and consideration of human factor issues. This course is offered as both CSE 308 and ISE 308.
Prerequisite: CSE 219 or ISE 305
3 credits

ISE 311: Systems Administration
This course covers practical techniques to manage information systems, also known as IT Systems Administration. Students will learn how to install computers for assorted hardware and software platforms (Windows, Unix/Linux, OS-X). Install networking equipment and configure it. Install server software on several systems (e.g. web, database, mail) and configure it. Secure the network, hosts, and services, and apply system patches. Set up redundant computing services, virtual machines/services, and hardware so that services can survive some hardware/software failures. Evaluate the performance, reliability, and security of the overall system.
Prerequisites: CSE 214 or CSE 230 or CSE 260 or ISE 208
3 credits

ISE 312: Legal, Social, and Ethical Issues in Information Systems
This course deals with the impact of computers on us as individuals and on our society. Rapid changes in computing technology and in our use of that technology have changed the way we work, play, and interact with other people. These changes have created a flood of new social and legal issues that demand critical examination. For example, technologies such as Gmail, Facebook, MySpace, along with music sharing sites and wikis create new social, ethical, and legal issues.
3 credits

ISE 315: Database Transaction Processing Systems
Theory and practice of design for applications involving transactional access to a database. Transaction design, schema design, restart and recovery, journaling, concurrency control, distributed databases. Student groups perform design and implementation of significant database application. This course is offered as both CSE 315 and ISE 315.
Prerequisite: CSE or ISE 305
3 credits

ISE 320: Information Management
This course presents the relationship between information technology and the systems that use the technology. The emphasis is on business systems with a high...
ISE 332: Introduction to Visualization
Visualization of scientific, engineering, medical, and business data sets. Mechanisms to acquire sampled, computed, or synthetic data and methods to transform symbolic into the visual. Topics include classic visualization process; visual perception; volume and surface visualization; methods for visualizing sampled, simulated, and geometric objects; and visualization systems. Emphasis on applications and case studies. This course is offered as both CSE 332 and ISE 332.
Prerequisites: CSE 219 or CSE 260; MAT 211 or AMS 210

3 credits

ISE 334: Introduction to Multimedia Systems
Survey of technologies available for user interfaces. Discussion of hypertext; voice, music, and video together with tools and models for capturing, editing, presenting, and combining them. Capabilities and characteristics of a range of peripheral devices including devices based on posture, gesture, head movement, and touch. Case studies of academic and commercial multimedia systems including virtual reality systems. Students participate in laboratory exercises and build a multimedia project. This course is offered as both CSE 334 and ISE 334.
Prerequisites: CSE or ISE major
3 credits

ISE 340: Design of Computer Games
Fundamental ideas underlying the design of games, which occurs before the programming stage. How games function to create experiences, including rule design, play mechanics, game balancing, social game interaction and the integration of visual, audio, tactile and textual elements into the total game experience. Game design documentation and play testing. Students will design their own game during the semester.
Advisory Prerequisite: Basic Computer Skills
3 credits

ISE 364: Advanced Multimedia Techniques
Digital media production techniques for high-bandwidth applications such as electronic magazine illustration, broadcast television, and motion picture special effects. Students explore techniques such as 3D modeling and character animation, video compositing, and high-resolution image processing in a state-of-the-art multimedia computing laboratory. High-capacity multimedia storage, high-speed networks, and new technologies such as DVD, HDTV, and broadband will be reviewed. This course is offered as both CSE 364 and ISE 364.
Prerequisites: CSE/ISE 334 and permission of instructor
3 credits

ISE 378: Introduction to Robotics
Introduces basic concepts in robotics including coordinate transformation, kinematics, dynamics, Laplace transforms, equations of motion, feedback and feedforward control, and trajectory planning. Covers simple and complex sensors (such as cameras), hybrid and behavior based control and path planning. Concepts are illustrated through laboratories using the LEGO Robot Kit.
Prerequisites: AMS 161 or MAT 127 or 132 or 142; AMS 210 or MAT 211 or MEC 262
3 credits

ISE 390: Special Topics in Information Systems
Lecture or seminar course on a current topic in information systems. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated as the topic changes, but cannot be used more than twice to satisfy ISE major requirements.
Prerequisites: ISE or CSE major; U3 or U4 standing
3 credits

ISE 391: Special Topics in Information Systems
Lecture or seminar course on a current topic in information systems. Semester supplements to this Bulletin contain specific description when course is offered. May be repeated as the topic changes, but cannot be used more than twice to satisfy ISE major requirements.
3 credits

ISE 475: Undergraduate Teaching Practicum
Students assist faculty by conducting a recitation or laboratory section that supplements a lecture course. The student receives regularly scheduled supervision from the faculty advisor. May be used as an open elective only and repeated once.
Prerequisites: U4 standing as an undergraduate CEAS major; a minimum g.p.a. of 3.00 in all Stony Brook courses; grade of
Bor better in the course in which the student is to assist; or permission of department

3 credits

**ISE 487: Research in Information Systems**
An independent research project with faculty supervision. Only three credits of research electives (AMS 487, BME 499, CSE 487, ESE 499, ESM 499, EST 499, ISE 487, MEC 499) may be counted toward technical elective requirements. May not be taken for more than six credits.

*Prerequisites: Permission of instructor and department

0-6 credits

**ISE 488: Information Systems Internship**
Participation in local, state, national, or international private enterprises, public agencies, or nonprofit institutions. Students are required to submit a written proposal, progress reports, and a final report on their experience to the client and to the department. May be repeated up to a limit of 12 credits but only 3 credits of CSE or ISE 488 may be used as an elective to satisfy ISE major requirements.

*Prerequisites: ISE major; U3 or U4 standing; permission of faculty sponsor and department

3 credits, S/U grading