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.
3 credits

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: Technical Communications
Principles of professional technical communications for Computer Science and Information Systems majors. Topics include writing business communications, user manuals, press releases, literature reviews, and research abstracts. Persuasive oral communications and effective presentation techniques, to address a range of audiences, will also be covered. This course satisfies the upper-division writing requirement for CSE and ISE majors.
Prerequisites: WRT 102, CSE or ISE major, U3 or U4 standing
3 credits

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; lifecycle 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. This course is offered as both CSE 312 and ISE 312.
Prerequisites: U3 or U4 standing, one D.E.C. E course
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
ISE 320: Information Management
The course presents the relationship between information technology and the systems that use the technology. The emphasis is on business systems with a high information technology components (e.g. software developments, communications, financial management, etc.). Topics include infrastructure management, information management, security, and communications. Emphasis is given to case studies relating to information management.
Prerequisite: U2 Standing
3 credits

ISE 323: Human-Computer Interaction
A survey course designed to introduce students to Human-Computer Interaction and prepare them for further study in the specialized topics of their choice. Students will have the opportunity to delve deeper in the course through a course project, and through a two-three week special topic selected at the instructor's discretion.
Prerequisites: CSE 214 or CSE 230 or CSE 260 or ISE 208
3 credits

ISE 325: Computers and Sculpture
This multidisciplinary class surveys how computer science and computer technology are used in sculpture. Case studies with slides, videos, and software demonstrations illustrate a range of approaches of sculptors incorporating computers in their creative process. Various state-of-the art fabrication technologies are studied (with site visits if available on campus). Mathematical foundations are emphasized so students can recognize them when analyzing sculpture and choose the right tool when designing. In the weekly laboratory, these ideas are reinforced with projects using a range of available software and inexpensive construction materials, e.g., paper, cardboard, and foamcore. Prerequisites: CSE 110 or permission of instructor
Prerequisite: CSE 110 or permission of instructor
3 credits

ISE 326: 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 the instructor
3 credits

ISE 327: Introduction to Medical Imaging
An introduction to the mathematical, physical, and computational principles underlying modern medical imaging systems. Covers fundamentals of X-ray computer tomography, ultrasonic imaging, nuclear imaging, and magnetic resonance imaging (MRI), as well as more general concepts required for these, such as linear systems theory and the Fourier transform. Popular techniques for the visualization, segmentation, and analysis of medical image data are discussed, as well as applications of medical imaging, such as image-guided intervention. The course is appropriate for computer science, biomedical engineering, and electrical engineering majors.
Prerequisites: AMS 161 or MAT 127 or 132 or 142; AMS 210 or MAT 211
3 credits

ISE 328: 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 329: 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 330: 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.
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 B or 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