design and use. Students work on polishing their prose voice and learn how to apply different technical communication styles to different audiences and for different applications.

Prerequisite: Level 5 on the writing placement examination or WRT 102
3 credits

EST 305 Applications Software for Information Management
Introduction to the role of applications software in various types of organizations with emphasis on methods of formulating the requisite information flows to engender adequate communications, operation, and control. The importance of audit ability, maintainability, and recoverability in systems design is stressed. Provides background knowledge of basic techniques and elementary skills in representing system structure with application of the principles in practical case studies using spreadsheet and database software. Extensive interaction with applications software reinforces concepts presented.

Prerequisite: EST 100 or CSE 101
3 credits

EST 320-H Communication Technology Systems
Emphasizes basic science and engineering concepts underlying design and usage of modern telecommunications systems. Consideration of human factors and societal constraints on design and development of nascent technological systems. Includes the electromagnetic spectrum, analog and digital signals and resonance as well as societal considerations of government regulations, international competition, and environment.

Prerequisites: MAT 123; one D.E.C. category E course
3 credits

EST 325-H Technology in the Workplace
A study of automation and information technologies in both manufacturing and service industries. Considers how technology is changing the work and lives of everyone from production workers to executives. Case studies are used to understand how technology can improve quality and productivity and how incorrect use produces disappointing results.

Prerequisite: Completion of D.E.C. category E
3 credits

EST 330-H Natural Disasters: Societal Impacts and Technological Solutions
A study of the physical causes of natural disasters; their societal impact; development and development; the use of engineering, architecture, and regional planning to reduce vulnerability and loss; and the institutional mechanisms, both domestic and international, for providing cross-cultural technology transfer and post-disaster assistance. Case studies of disasters in a number of countries are included.

Prerequisites: U3 or U4 standing; one D.E.C. category E course
3 credits

EST 331 Professional Ethics and Intellectual Property
The study of ethical decisions confronting individuals and organizations in engineering and science. Related questions about moral conduct, character, ideals, and relationships of people and organizations involved in technical development are discussed.Ethics for engineers, computer scientists, and natural scientists are covered. Includes topics in intellectual property such as patents, trademarks, copyrights and copyright applications, licensing, and IP in cyberspace.

Prerequisite: U3 or U4 standing
3 credits

EST 391-H Technology Assessment
A multidisciplinary analysis of the environmental, economic, scientific, engineering, social, and ethical impacts of a technology and of policies for controlling them. Each class, often working with research teams and visiting area facilities, concentrates on topics such as plastics recycling, the future of the automobile, nuclear power, nanotechnology, space stations, virtual reality, biotechnology, smart weapons, and the Internet.

Prerequisites: PHY 132/134 or CHE 132 or BIO 201 or 202 or 203; MAT 127 or 132 or 142 or 171 or AMS 161
3 credits

EST 392-F Engineering and Managerial Economics
Applications of fundamental economics principles and systems analysis to problems of planning and design in manufacturing or service sectors of industry. Includes the time value of money, analysis of various types of cash flows, development of rate of return, and benefit-cost ratios in their use to evaluate competing investment programs. The role of depreciation and investment tax credits on the level of corporate taxation leading to the determination of after-tax rates of return.

Prerequisites: U3 or U4 standing in a CEAS major or economics major
3 credits

EST 393 Project Management
Lays the foundation for an understanding of project management principles. Project initiation, implementation, and conclusion are explored, and the software tools for implementation of project management are studied. Case studies are presented and discussed in each part of the course.

Prerequisite: EST 391
3 credits

EST 411-H Science, Technology, and Arms Control
A study of the application of scientific technology to national defense, covering nuclear weapons and delivery systems, chemical and biological weapons, conventional weapons systems, defense research and development, arms control and disarmament negotiations, and international technology transfer. This course is offered as both EST 411 and POL 411.

Prerequisites: U3 or U4 standing; one D.E.C. category E course
3 credits, S/U grading

EST 412 Intelligence Organizations, Technology, and Democracy
The role of intelligence organizations in decision making through analysis of agency practices in support of U.S. national security policy. The course also explores the role of intelligence agencies and practices in democratic societies. This course is offered as both EST 412 and POL 412.

Prerequisites: U3 or U4 standing; POL 101 and 102; one D.E.C. category E course
3 credits

EST 420 Seminar on Information-Age Society
The characteristics of and current trends in telecommunication technology. Science and engineering concepts are applied as students analyze case studies focusing on the migration of entertainment media into the digital era, computer-generated speech, interactive cable television, and other current technologies. Engineering technology design constraints, critical success factors, and ethics for a technological world are explored.

Prerequisite: EST 320
3 credits

EST 421 Starting the High-Technology Venture
Introduces engineering and applied science students to start-up and early development of a new high-technology venture. Turning a concept into a new venture. Identifying and evaluating product and market. Issues of feasibility, partners, prototypes.

Prerequisites: CEAS major; U4 standing
3 credits

EST 440 Interdisciplinary Research Methods
Uses scientific research and related engineering technology problem-solving as a framework for the synthesis of diverse disciplines studied by students in the first three undergraduate years. Provides students with experience in team problem-solving. Students develop a proposal for interdisciplinary research or project to be carried out in the final semester of study.

Prerequisites: EST 365 and TSM major
3 credits

EST 441 Interdisciplinary Senior Project
Students carry through to completion their own research, development or product evaluation project based on the proposal submitted and approved in EST 440. Requires practical steps including garnering faculty mentorship, creating a schedule, assembling resources, conducting research or working on prototype, and a final paper and presentation.

Prerequisite: EST 440
3 credits

EST 475 Undergraduate Teaching Practicum
Students assist the faculty in teaching by conducting recitation or laboratory sections that supplement a lecture course. The student receives regularly scheduled supervision from the faculty instructor. May be used as an open elective only and repeated once.

Prerequisites: U4 standing; a minimum g.p.a. of 3.00 in all Stony Brook courses and a grade of B or better in the course in which the student is to assist; permission of department
3 credits

EST 499 Research in Technology and Society
An independent research project with faculty supervision. Permission to register requires a B average in all engineering courses and the agreement of a faculty member to supervise the research. May be repeated, but only three credits of research electives (AMS 487, CSE 487, ESE 499, EMS 499, EST 499, ESE 487, MEC 499) may be counted toward engineering technical elective requirements.

Prerequisite: Permission of instructor
0-3 credits

EUR

European Studies

EUR 101-G Foundations of European Culture
This course presents students with the thinking from a variety of disciplines that influenced the development of the diverse national cultures of Europe. Students are exposed to a chronological representation of the major ways that classical Greek, Roman, Judeo-Christian, and Islamic cultures contributed to the making of individual national cultures and identities of the major countries of Europe.

3 credits

EUR 201-I Development of European Culture
An introduction to the important literary works that arose from major European cultural and intellectual movements and an examination of their continued influence on the modern world. Readings focus on central texts pertaining to core religious issues, the Renaissance, the Enlightenment, Romanticism, Realism, Modernism, and Post Modernism. Examples from the arts, including film, music, and theatre, are used to illustrate the influence of the literary works.

Prerequisite: Completion of D.E.C. category B
3 credits
EUR 390-I Special Topics in European Studies
Semester supplements to this Bulletin contain descriptions when the course is offered. May be repeated as the topic changes.
Prerequisite: U3 or U4 standing
Advisory Prerequisite: To be announced with the topic
3 credits

EUR 401 Senior Research Seminar in European Studies
Intensive investigation of specific topics within the European Studies concentrations. Students will develop their skills in selecting a relevant topic, problematizing it, conducting research and writing on it in a persuasive fashion, presenting their findings in the seminar, and submitting a written paper at least 20 pages in length.
Prerequisites: EUR 201; 15 additional credits in the major; U4 standing; European Studies major
3 credits

EUR 447 Directed Readings in European Studies
Independently supervised readings in selected topics in European Studies. May be repeated.
Prerequisite: Permission of instructor
1-6 credits

EUR 475 Undergraduate Teaching Practicum in European Studies I
Students aid instructors and students in European Studies courses in one or several of the following ways: leading discussions, helping students improve writing and research skills, and library research. Students meet regularly with the supervising instructor. Students may not serve as teaching assistants in the same course twice.
Prerequisites: U3 or U4 standing; permission of instructor and department; EUR major or minor
3 credits, S/U grading

EUR 476 Undergraduate Teaching Practicum in European Studies II
Students aid instructors and students in European Studies courses in one or several of the following ways: leading discussions, helping students improve writing and research skills, and library research. Students meet regularly with the supervising instructor. In EUR 476, students assume greater responsibility in areas such as leading discussions and analyzing results of tests that have already been graded. Students may not serve as teaching assistants in the same course twice.
Prerequisites: EUR 475; permission of instructor and department; EUR major or minor
3 credits, S/U grading

EUR 487 Independent Project in European Studies
The designing and carrying out of a research project selected by the student and arranged by the student and the instructor. May be repeated once.
Prerequisite: Permission of instructor
0-6 credits

EUR 488 Internship in European Studies
Participation in local, state, national, and international public and private agencies and organizations to apply and reinforce language and related skills and knowledge of social and cultural institutions. May be repeated up to a limit of 12 credits.
Prerequisites: Permission of instructor and department
0-6 credits, S/U grading

EUR 495 Senior Honors Project in European Studies
A one-semester project for seniors. Arranged in consultation with the department, the project involves writing a paper, under the close supervision of an appropriate instructor, on a suitable topic. Students who are candidates for honors take this course.
Prerequisites: Permission of instructor and department
3 credits

EXT Externships

EXT 288 Internship
Internships are work-learning arrangements. These supervised, career-related work experiences, combined with reflection that relates the work to academic study, help students “learn by doing.” A sponsored internship with an off-campus organization or on-campus agency gives students an opportunity to learn how to effectively apply their university studies to work in professional settings and explore untested areas of work experience. Internships must be sponsored by a faculty member. As with established guidelines for EXT 488 internship, a request for approval of the Career Center Internship Manager must be submitted no later than two days prior to the last day of the add period as scheduled in the academic calendar. Course is not repeatable.
Prerequisites: Minimum g.p.a. of 2.5; one prior semester of attendance at Stony Brook; completion of DRC A, first course; acceptance by a faculty sponsor; permission of appropriate department and the Career Center Internship Manager
0-6 credits, S/U grading

EXT 488 Internship
Participation in an off-campus or on-campus agency or organization that provides students the opportunity to learn to apply their university studies to areas of work experiences. Internships must be sponsored by a faculty member. Request for approval of the internship manager in the Career Center must be submitted no later than two days prior to the last day of the add period as scheduled in the academic calendar. Students may register for only one 488 course per semester. May be repeated up to a limit of 12 credits.
Prerequisites: Minimum g.p.a. of 2.50; U3 standing; one prior semester of attendance at Stony Brook; acceptance by faculty sponsor; permission of appropriate department and internship manager
0-6 credits, S/U grading

FLA Foreign Language Teacher Preparation

FLA 339 Methods and Materials in the Teaching of Foreign Languages
A review of methods and materials for the teaching of foreign languages and literatures in the secondary schools. Special attention is given to the problems and purposes of the teaching of foreign languages at the high school level.
Prerequisites: Admission to a Foreign Language Teacher Preparation program; C or higher in one 300-level foreign language course; C or higher in one 300-level literature course; minimum GPA of 2.75
Corequisite: FLA 449
3 credits

FLA 340 Curriculum Development and Micro-Teaching
A course designed to train future language teachers in the development of well-articulated programs in secondary schools. Students have the opportunity to enjoy clinical experiences in school settings. Special attention is given to lesson planning, classroom management, and portfolio development.
Prerequisites: C or higher in FLA 339; minimum g.p.a. of 2.75
Corequisite: FLA 450
3 credits

FLA 393 Introduction to Technology for Language Teaching
An introduction for potential teachers to how technologies are used for language learning and teaching. Technologies include audio, video, satellite, computer and internet. Students explore the interaction between second language acquisition, language pedagogical theory, and technology.
Prerequisite: FLA 339
3 credits

FLA 440 Foreign Language Aquisition Research
A study of recent trends in foreign language acquisition research. The focus is on classroom-based research: qualitative and quantitative research methodologies, variables in classroom-based learning research, analysis of research results. Students conduct classroom research studies, present their findings, and address applications of their findings to classroom teachers and learners of foreign languages.
Prerequisites: FLA 339; acceptance into a foreign language secondary teacher preparation program
3 credits

FLA 449 Field Experience, Grades 7-12
Observation, inquiry, and practice in foreign language education at the secondary level including 50 hours of documented visitations and observation at documented sites. Field experience writing logs are the basis for group discussion. Satisfactory/Unsatisfactory grading.
Prerequisites: Admission to a Foreign Language Teacher Preparation program; minimum GPA 2.75
Corequisite: FLA 339
1 credit, S/U grading

FLA 450 Field Experience, Grades 7-12
Observation, inquiry, and practice in foreign language education at the secondary level including 50 hours of documented visitations and observation at documented sites. Field experience writing logs are the basis for group discussion. Satisfactory/Unsatisfactory grading.
1 credit, S/U grading

FLA 451 Supervised Student Teaching: Middle School Level Grades 7-9
Prerequisite: Enrollment in the Foreign Language Teacher Preparation Program; permission of instructor
Corequisites: FLA 452 and 454
6 credits, S/U grading

FLA 452 Supervised Student Teaching: High School Grades 10-12
Prerequisites: Enrollment in the Foreign Language Teacher Preparation Program; permission of instructor
Corequisites: FLA 451 and 454
6 credits, S/U grading

FLA 454 Student Teaching Seminar
Seminar on problems encountered by student teachers and public school teachers at the secondary level in foreign language teaching. Study and analysis of the many aspects of the foreign language teaching profession, such as individualized teaching, testing, and professional organizations.
Prerequisite: C or higher in FLA 340
Corequisites: FLA 451 and 452
6 credits

FRN French

FRN 101 Intensive Elementary French
An intensive course covering the elementary French program (FRN 111, 112) in one semester. This course is designed for students who have no prior knowledge of the language. A student who has had two or more years of French in high school (or who has otherwise

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