475. Introduction to Operations Research
Winter. 4(4-0) MTH 215, CFS 120. Interepartmental with and administered by the Agricultural Engineering Department. Methodology and basics of operations research; formulation and analysis of probabilistic models of inventory, waiting line, and reliability processes; random process simulation and network planning models.

490. Special Topics in Systems Science
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 12 credits. Approval of department. Exposition of special topics in systems science.

495. Independent Study
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 3 credits in STS 495 and EE 495 combined. Approval of department. Independent study of a topic in systems science of particular interest to the student.

499. Undergraduate Research
Fall, Winter, Spring, Summer. 1 to 3 credits. May re-enroll for a maximum of 9 credits in STS 499 and EE 499 combined. Approval of department. Independent undergraduate research in contemporary areas of systems science.

801. Special Problems
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 8 credits. Approval of department.

810. Introduction to Linear System Theory
Fall. 3(3-0) MTH 214. Interdepartmental with the Department of Computer Science and Social Science (College of). A first course in system theory for students from a range of disciplines. Mathematical representation of system variables, transform and state space. Emphasis on development of analysis, introduction to control theory, applications to physical, economic and social systems.

811. System Methodology and Simulation
Winter. 3(3-0) 810, STT 441. Interdepartmental with the Computer Science Department and Social Science (College of). Problem definition, design of abstract models for system design and control, simulation of systems described by differential and difference equations, generation of random variables, simulation of discrete object stochastic systems, simulation languages, applications to physical, economic, and social systems.

813. System Project
Spring. 3(1-0) 811. Interdepartmental with the Computer Science Department and Social Science (College of). Individual or team application of simulation methods to system design and/or management.

820. System Dynamics and Control
Spring. 4(4-0) MTH 215; knowledge of matrices and Laplace transforms. Fundamentals of continuous and discrete dynamic control systems; feedback principles; transform and state variable design techniques; introduction to optimal control design.

826. Linear Concepts in Systems Science
Fall. 4(4-0) State-space and frequency domain models of interconnected systems; solution of continuous and discrete-time linear systems; response characteristics; stability.
260. Engineering Drawing
Fall, Winter, Spring. 3(0-6)
The development of the ability to communicate graphically, pictorially, and orally. Orthographic projection, freehand sketching, oral reports and creative problem solving techniques are employed to enhance learning.

267. Architectural Drafting I
Fall, Winter, Spring. 3(0-6)
House construction detailing. Analysis and drawing of typical standard details.

270. Computer Graphics
Spring. 3(3-0) 190 or 161; CPS 110 or 120; or approval of department.
Use of computer controlled display systems for the solution of multidimensional problems.

300. Technology and Utilization of Energy
Winter. 3(3-0) Initial course in any sequence of courses in the Department of Natural Science. Interdepartmental with and administered by the Mechanical Engineering Department.
Problems of energy technology and its impact: energy sources, conversion, waste and environmental effects, future outlook for mankind.

322. Interior Lighting Design
Fall, Spring. 3(2-2) HED 213, approval of department. Interdepartmental with and administered by the Department of Human Environment and Design.
The basic principles and practices of interior design lighting, light control, distribution, quality and quantity of light as it affects man's near environment.

364. Architectural Drafting II
Winter. 3(0-6) 267.
Functional and standard procedure in the layout of floor plans in traditional and modern houses. Rendered plot plan and required details.

395. House Planning
Fall, Winter, Spring. 3(1-4)
Elementary house architecture. Drawing plans from sketches. Kitchen planning, house styles, elements of design, financing, heating, lighting.

396. Architectural Perspective Drawing
Fall. 3(0-6) Any engineering graphics course.
One-point and two-point perspective, revolved plan and measuring line methods. Pencil rendering, problems in shade and shadows. House model to scale, optional.

390. Value Engineering
Fall, Winter. 4(3-2) ME 380.
The basis of value engineering is function, value, and a group of special techniques developed to aid in isolating and identifying problems created by our complex society and technology.

401. Technology Assessment
Spring. 3(0-6) Seniors or approval of department. Interdepartmental with the Natural Science Department. Sociotechnical evaluation of impact of proposed technologies on economic, political, and cultural aspects of society. Identification of technical strategies and social goals. Techniques of assessment.

410. Systems Methodology
Winter. 3(3-0) IDC 301, MTH 113, CPS 110 or 120, Interdepartmental with and administered by Systems Science.
The systems approach in multidisciplinary large scale problem solving. The development of useful systems analysis tools; systems design; feasibility study; computer simulation for feasibility evaluation.

411. Systems Project
Spring. 3(3-0) 410. Interdepartmental with and administered by Systems Science.
Completion of a systems study initiated in 410. The project should involve the design of hardware, simulation of a solution to an interdisciplinary problem, or development of a solution concept.

463. Architectural Drafting III
Spring. 3(0-6) 394 or 395.
Traditional and modern elevations. One- and two-point rendered perspective. Functional plans drawn in 394 or 395 required.

480. Special Problems
Fall, Winter, Spring. Summer. 1 to 4 credits. May re-enroll for a maximum of 8 credits. Approval of department.

ENGLISH

College of Arts and Letters

091. English for Foreign Students—Structures
Fall, Winter, Spring, Summer. Zero credits. [3(5-0)] English language proficiency examination. Explication and intensive practice of basic grammatical structures of English. Students are tested and then placed in small groups, from beginning to advanced, depending on their need.

092. English for Foreign Students—Speaking and Listening
Fall, Winter, Spring, Summer. Zero credits. [3(5-0)] English language proficiency examination. Intensive speaking and listening practice of spoken English in small groups (determined by proficiency). For beginners, practice is largely drill. Advanced groups use drill, films, discussion, and practical conversations.

093. English for Foreign Students—Language Laboratory
Fall, Winter, Spring, Summer. Zero credits. [3(5-0)] English language proficiency examination. Language laboratory practice in small groups (determined by proficiency). Beginners review and supplement 091, 092. Advanced groups use carefully prepared lectures, speeches, and presentations to practice structures and vocabulary.

094. English for Foreign Students—Reading
Fall, Winter, Spring, Summer. Zero credits. [3(5-0)] English language proficiency examination. Intensive and extensive reading in small groups (determined by proficiency). Beginners emphasize vocabulary development and practice in basic structures. Advanced classes include reading skills, wider reading, and specialized vocabulary.

095. English for Foreign Students—Writing
(Fall, Winter, Spring. Summer. Zero credits. [3(5-0)] English language proficiency examination. Frequent controlled and free writing in small groups to reduce errors and practice using structures and vocabulary to express ideas. Advanced classes include writing styles used in academic course work.

101. Responses Through Writing
Fall, Winter, Spring. Summer. 1 to 16 credits. Approval of department.

201. Nature of Language
Fall, Winter, Spring, Summer. 3(3-0)
Various aspects of language—phonology and orthography; morphology, semantics and the lexicon; syntax; and dialects—with special reference to American English.

205. Introduction to Shakespeare
Fall, Winter, Spring. 3(3-0) Not applicable to major or minor requirements. A study of selected plays illustrating the powers of England's greatest writer.

206. Forms of Literature: Fiction
Fall, Winter, Spring. Summer. 3(3-0)
Open to Freshmen.
Major forms of prose fiction, designed to reveal artistic problems met and solved by these forms. Prepares students for advanced literary study by acquainting them with the conventions of various literary forms, by providing a critical vocabulary and by furnishing experience in reading and writing critical evaluations of outstanding literary works from all historical periods.

207. Forms of Literature: Drama
Fall, Winter, Spring. Summer. 3(3-0)
Open to Freshmen.
Major forms of drama, designed to reveal artistic problems met and solved by these forms.

208. Forms of Literature: Poetry
Fall, Winter, Spring. Summer. 3(3-0)
Open to Freshmen.
Major forms of poetry, designed to reveal artistic problems met and solved by these forms.

210. Introduction to the Study of Literature
Fall, Winter, Spring. 4(4-0) English majors or prospective English majors.
Exploration of the major forms of literature, the aims and process of literary study, the cultural and personal functions of literature, and the role of literary study in the University.

† See page A-2 item 3.