Descriptions—Electrical and Computer Engineering

**Courses**

850. **Electrodynamics of Plasmas**
Spring of odd years. 3(3-0) Interdepartmental with Astronomy and Astrophysics; and Physics. P: ECE 457 or PHY 488.
SA: EE 863

863. **Analysis of Stochastic Systems**
Fall. 3(3-0) P: STT 441.
Advanced topics in random variable theory. Stochastic processes and stochastic calculus. Optimal systems for filtering and detection.
SA: EE 863

864. **Detection and Estimation Theory**
Spring. 3(3-0) P: ECE 863
Analysis and implementation of statistical estimation and detection methods used in signal processing, communications, and control applications. Bayesian, Neyman-Pearson, and minimax detection schemes. Bayesian, mean-square-error, and maximum-likelihood estimation methods.
SA: EE 864

865. **Analog and Digital Communications**
Fall of odd years. 3(3-0) P: ECE 457, ECE 863
Optimum signal design in noisy channels, matched filters, quadrature sampling of band-pass signals in noise. Coherent and non-coherent binary modulation such as PSK, FSK, DPSK, M-ary modulation, intersymbol interference, spread spectrum.
SA: EE 865

874. **Physical Electronics**
Fall. 3(3-0)
SA: EE 874

875. **Electronic Devices**
Spring. 3(3-0) P: ECE 874
Operating properties of semiconductor devices including DC, AC, transient and noise models of FET, BJT, metal-semiconductor contact, heterostructure, microwave and photonic devices.
SA: EE 875

885. **Artificial Neural Networks**
Fall. 3(3-0) Interdepartmental with Computer Science and Engineering.
SA: EE 885

899. **Master’s Thesis Research**
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 24 credits in all enrollments for this course.
SA: EE 899

920. **Selected Topics in High Performance Computer Systems**
Spring of odd years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Interdepartmental with Computer Science and Engineering. Administered by Computer Science and Engineering. P: CSE 522. R: Open only to Computer Science or Electrical Engineering majors.
Design of high performance computer systems. Seminar format.
SA: EE 920

921. **Advanced Topics in Digital Circuits and Systems (MTC)**
Fall, Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Computer Science and Engineering.
Topics vary each semester. Topics such as testable and fault-tolerant digital systems, embedded architectures.
SA: EE 921

925. **Advanced Topics in Power (MTC)**
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
Topics vary each semester. Topics such as advanced stability and control of power systems, power system planning, or advanced machine drives.
SA: EE 925

929. **Advanced Topics in Electromagnetics (MTC)**
Fall, Spring. 3 to 4 credits. A student may earn a maximum of 10 credits in all enrollments for this course.
Topics vary each semester. Topics such as planar waveguides and circuits, antenna theory, geometrical theory of diffraction.
SA: EE 929

931. **Advanced Topics in Electronic Devices and Materials (MTC)**
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
Topics vary each semester. Topics such as VLSI technology, microdevices and microstructures, properties of semiconductors.
SA: EE 931

960. **Advanced Topics in Control (MTC)**
Fall. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course.
Topics vary each semester. Topics such as adaptive control, or nonlinear control.
SA: EE 960

963. **Advanced Topics in Systems (MTC)**
Fall, Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
Topics vary each semester. Topics such as system identification and adaptive filtering, robot dynamics and control, or learning in artificial neural networks.
SA: EE 963

966. **Advanced Topics in Signal Processing (MTC)**
Fall, Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
Topics vary each semester. Topics such as discrete time processing of speech signals, multidimensional signal processing, or detection and estimation theory.
SA: EE 966

989. **Advanced Topics in Plasma (MTC)**
Fall of odd years. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course.
Topics vary each semester. Topics such as plasma processing for IC fabrication, plasma diagnostic techniques.
SA: EE 989

999. **Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 72 credits in all enrollments for this course.
SA: EE 999

**ENGINEERING**

**EGR**

College of Engineering

101. **Preview of Science**
Fall. 1(1-0) Interdepartmental with Natural Science; Agriculture and Natural Resources; and Social Science. Administered by Natural Science. R: Approval of College

124. **Internet and Technology**
Fall, Spring. 2(2-0)
The Internet from a user perspective and from a technical perspective. History and social impact of the Internet. Internet tools.

150. **Engineers and the Engineering Profession**
Spring. 2(2-0) R: Open only to freshmen or sophomores.

160. **Diversity and Engineering**
Fall, Spring. 2(2-0) P: (MTH 132 or concurrently) R: Open only to freshmen or sophomores in the College of Engineering.
**ENGLISH**

**Department of English**

**College of Arts and Letters**

**90A. Intensive English for Non-Native Speakers**
Fall, Spring. 0 credit. (12-20-0) See page A-2, item 3. R: Approval of Foreign Language Center. Explanation and intensive practice of English skills. Focus on beginning grammar, speaking, listening, reading, and writing.

**90B. Intensive English for Non-Native Speakers**
Fall, Spring. 0 credit. (12-20-0) See page A-2, item 3. R: Approval of Foreign Language Center. Explanation and intensive practice of English skills. Focus on intermediate grammar, speaking, listening, reading, and writing.

**90C. Intensive English for Non-Native Speakers**
Fall, Spring. 0 credit. (12-20-0) See page A-2, item 3. R: Approval of Foreign Language Center. Explanation and intensive practice of English skills. Focus on advanced grammar, speaking, listening, reading, and writing.

**901. English Structure for Non-Native Speakers**
Fall, Spring. 0 credit. (12-20-0) See page A-2, item 3. R: Approval of Foreign Language Center. Explanation and practice of advanced grammatical structures of English in relation to written communication. Emphasis on editing skills.

**902. Academic Oral Skills for Non-Native Speakers of English**
Fall, Spring. 0 credit. (12-20-0) See page A-2, item 3. R: Approval of English Language Center. Intensive speaking and listening practice of spoken academic English. Lecture-listening and note-taking strategies. Oral communication skills improved through discussions and classroom presentations.

**903. Academic Reading and Writing Skills for Non-Native Speakers of English**
Fall, Spring. 0 credit. (12-20-0) See page A-2, item 3. R: Approval of English Language Center. Integrative reading and writing skills for academic purposes. Vocabulary development, intensive and extensive reading, and critical reading skills. Academic writing style and editing strategies.