ECE Course Prerequisite Changes – Effective Spring 2015

Prerequisites that have been removed have a red background: ECE 1331.

Prerequisites that have been added are in boxed red text: ENGI 1100.

- **ECE 1331 - Computers and Problems Solving** **Credit Hours: 3.0** (3-0) *Prerequisite:* MATH 1431 and credit for or concurrent enrollment in ECE 1100 and ENGI 1100. Introduction to personal computers and engineering workstations; techniques and standards for networked computers; computer-based tools for engineering problem-solving; programming constructs, algorithms, and applications.
- **ECE 2317 - Applied Electricity and Magnetism** **Credit Hours: 3.0** (3-0) *Prerequisite:* CHEM 1117 and CHEM 1372, ECE 1100 and ECE 1331, MATH 2433, PHYS 1322, and credit for or concurrent enrollment in MATH 3321. Fundamentals of electricity and magnetism, vector calculus, Maxwell's equations, Kirchhoff's laws, static electric and magnetic fields, resistance, capacitance, inductance, magnetic circuits, and transformers.
- **ECE 2331 - Numerical Methods for Electrical and Computer Engineers** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 1100, ECE 1331 3331 and MATH 1432 3321. Basic numerical methods with engineering applications. Emphasis on use of computer-based solution techniques.
- **ECE 3155 - Electronics Laboratory** **Credit Hours: 1.0** (0-4) *Prerequisite:* ECE 2100, ECE 2300, ECE 2317, ECE 3337, ENGI 2304, and credit for or concurrent enrollment in ECE 3355. Corequisite: ECE 3355 Laboratory projects concerning topics studied in ECE 3355.
- **ECE 3317 - Applied Electromagnetic Waves** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 2300 ECE 2317, MATH 2433, MATH 3321, PHYS 1322 and credit for or concurrent enrollment in ECE 3337. Maxwell's equations in time and frequency domains, Poynting's theorem, plane wave propagation, reflection and transmission in lossless and lossy media, transmission lines, waveguides, and antennas.
- **ECE 3331 - Programming Applications in Electrical and Computer Engineering** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 1331, ECE 2300, MATH 3321, and credit for or concurrent enrollment in ECE 2300. Procedural

programming in C and C++, with applications in electrical and computer engineering.

- **ECE 3337 - Signals and Systems Analysis** **Credit Hours: 3.0** (3-0) **Formerly** ECE 3337 Electrical Engineering Analysis *Prerequisite:* MATH 3321, ECE 1331, ECE 2300, and credit for or concurrent enrollment in ECE 2317. Time and frequency domain techniques for signals and systems analysis. Engineering applications of the convolution integral, Fourier series and transforms, and Laplace transforms.
- **ECE 3355 - Electronics** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 2100, ECE 2300, ECE 2317, ECE 3337, ENGI 2304, and credit for or concurrent enrollment in ECE 3155. Signal and amplifier concepts; operational amplifiers; diodes and nonlinear circuits; Bipolar junction transistors; biasing, small and large signal analysis; Transistor amplifiers; two-port networks.
- **ECE 3364 - Circuits and Systems** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 2300, ECE 3337, and credit for or concurrent enrollment in ECE 2317. Three-phase circuits, design of three-phase systems for maximum power to the load, self inductance, mutual inductance, single-phase transformers, three-phase transformers, Laplace transform circuit analysis, analysis and design of frequency-selective circuits, control system characteristics and stability.
- **ECE 3441 - Digital Logic Design** **Credit Hours: 4.0** (3-3) *Prerequisite:* ECE 2100, ECE 2300, and ECE 2317. Initial course in Boolean algebra, combinational logic, sequential machine analysis and synthesis.
- **ECE 3456 - Analog Electronics** **Credit Hours: 4.0** (3-3) *Prerequisite:* ECE 3155, ECE 3355, and ECE 3337. Bipolar MOS and JFET transistors; Multistage amplifier design; Frequency response and feedback concepts; Operational amplifiers; Analysis and design using discreet and integrated devices.
- **ECE 4115 - Control Systems Laboratory I** **Credit Hours: 1.0** (0-3) *Prerequisite:* ECE 2100, ECE 3337, and credit for or concurrent enrollment in ECE 4375. Introductory experiments in automatic control systems.
- **ECE 4335 - Electrical and Computer Engineering Design I** **Credit Hours: 3.0** (2-3) *Prerequisite:* ECE 3155, ECE 3355, ECE 3317, ECE 2331, ECE 3441, ENGI 2304, INDE 2333, credit for or concurrent enrollment in ECE 4436 and a core approved economics elective. Propose and begin team projects involving open-ended design problems supplied by industry and faculty. Professionalism, research methodologies, design tools, and technical communication.
- **ECE 4375 - Automatic Control Systems** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 2300, ECE 3337, and credit for or concurrent enrollment in ECE 4115. Automatic Control System: mathematical modeling, block diagram, transfer function, system response, stability, root-locus, Bode analysis, Nyquist analysis, Nichols analysis, compensator design.
- **ECE 4436 - Microprocessor Systems** **Credit Hours: 4.0** (3-3) *Prerequisite:* ECE 3331 ECE 2300 and credit for or concurrent enrollment in ECE 3331 ECE 3441. Memory devices, microcomputer architecture, assembly language

programming, I/O programming, I/O interface design, data communications, and data acquisition systems. Laboratory exercises in assembly language and C.

- **ECE 5318 - Antenna Engineering** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 3317. Antenna concepts, linear wire antennas, linear arrays, aperture and horn antennas, printed-circuit radiators, frequency-independent antennas, and measurement techniques.
- **ECE 5377 - Power Transmission and Distribution** **Credit Hours: 3.0** (3-0) *Prerequisite:* ECE 3364 and concurrent enrollment in ECE 5127. Power transmission and distribution network architecture and composition; load curves; symmetrical components; parameters and equivalent circuits in symmetrical components for overhead and underground lines, transformers, generators and loads; sub-stations; industrial networks; network steady-state analysis; faults; protection systems; switching equipment; voltage and power static control; surge voltages and protection.
- **ECE 5436 - Advanced Microprocessor Systems** **Credit Hours: 4.0** *Prerequisite:* ECE 3441, ECE 4436. Microcomputer assembly language programming, I/O programming, I/O interface design, memory interfacing.