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 1321**, **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**, **MATH 1431**, **MATH 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 3377 - Signals and Systems Analysis** Credit Hours: 3.0 (3-0) Formerly: ECE 3337 Electrical Engineering Analysis
  - Prerequisite: MATH 3321, ECE 3331, ECE 3300, and credit for or concurrent enrollment in ECE 3317.
  - Time and frequency domain techniques for signals and systems analysis. Engineering applications of the convolution integral, Fourier series and transforms, and Laplace transforms.

- **ECE 3335 - Electronics** Credit Hours: 3.0 (3-0) Prerequisite: ECE 2100, ECE 2300, ECE 2303, ECE 3337, ENG 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** 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** Credit Hours: 3.0 (2-3) Prerequisite: ECE 3155, ECE 3355, ECE 3317, ECE 2331, ECE 3441, ENG 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.