1. **Course number and name:** EE 3005 Fundamentals of Electrical Engineering

2. **Credits and contact hours:** 4 cr.; 4 hours of lecture per week

3. **Instructor or course coordinator’s name:** Paul Imbertson, Robert Mahmoodi, Ted Higman, David Orser

4. **Textbook (title, author, publisher, and year):**

5. **Specific course information**
   a. **Brief description of the content of the course (catalog description):**
      Fundamentals of analog electronics, digital electronics, and power systems. Circuit analysis, electronic devices and applications, digital circuits, microprocessor systems, operational amplifiers, transistor amplifiers, frequency response, magnetically coupled circuits, transformers, steady state power analysis.
   b. **Prerequisites or co-requisites:** Math 2243, Phys 1302; not for EE majors
   c. **Indicate whether a required, elective, or selected elective:** Required

6. **Specific goals for the course**
   a. **Specific outcomes of instruction:**
      1. Ability to analyze and design resistive circuits.
      2. Understanding of transient analysis sufficient to design or analyze simple RC and RL networks.
      3. Ability to analyze passive circuits with resistors, capacitors, and inductors with steady state sinusoidal sources.
      4. Familiarity with the concepts of frequency response and the ability to analyze passive circuits to find their frequency response.
      5. Knowledge of electronic devices including diodes and simple field effect transistor models sufficient to use these devices in basic electronic circuits.
      6. Ability to analyze or design simple logic gates and simple combinatorial logic circuits.
      7. Knowledge of op amp characteristics sufficient to utilize op amps in basic linear op amp circuits.
      8. Familiarity with some advanced analog circuits including voltage regulators, differential amplifiers, and some basic oscillators.
   b. **Explicitly indicate which of the ABET student outcomes are addressed by the course:**
      In accordance with ABET accreditation criteria, all engineering programs must demonstrate that their students achieve certain outcomes. This list of outcomes may be found on the abet.org website. Of the outcomes listed in the ABET Criterion 3 (enumerated as (1) through (7)), this course teaches skills which help the student achieve the following outcomes: (1)
7. **Brief list of topics to be covered**
   1. Basic concepts
   2. DC circuit analysis
   3. Transient analysis
   4. AC steady state analysis
   5. Power
   6. Frequency response and filters
   7. Basic electronics concepts
   8. Diodes and diode circuit applications
   9. Basic logic concepts and circuits
   10. Transistors as switches; Logic gates
   11. Op amps
   12. Advanced analog electronics: electromechnanics, transformers, motors

**Last Updated: March 26, 2019**