1. Course number and name  ECE 3200 - Electronics II

2. Credits and contact hours: 4 credits, 3 hours lecture, 3 hours lab

3. Instructor’s or course coordinator’s name: R. Makin (Instructor), R. Gejji (Coordinator)

This software will be used to simulate circuits and is available in the CAE center and in the ECE 3200 laboratory. You are responsible for ensuring access to a working copy.
Required Materials: Digital multimeter, Breadboard, Laboratory notebook, permanently bound, not loose leaf, 8.5 inches x 11 inches, 60 pages minimum, quadrille ruled (each page has a square grid), Ruler, Calculator, Safety glasses meeting ANSI Z87.1.

5. Specific course information
   a. brief description of the content of the course (catalog description): Design, analysis, simulation, and laboratory evaluation of electronic amplifiers, filters, and nonlinear signal shaping circuits composed of transistors, diodes, and integrated circuits. Transient response and steady state frequency response behavior for both small and large signal excitation conditions. Amplifier macro-model description and synthesis is introduced.
   b. prerequisites or co-requisites: ECE 2210 and ECE 3100; with a grade of “C” or better in all prerequisites.
   c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: Required

6. Specific goals for the course
   a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.
      This course develops an ability to:
      1. design, analyze, simulate, and build amplifiers, wave shaping circuits, compensators, feedback systems, and oscillators using non-linear devices (diodes, BJTs, MOSFETs) and ICs (operational amplifiers);
      2. translate nonlinear devices and integrated circuits into equivalent circuits that are composed of linear elements (equivalent resistance, equivalent capacitance, equivalent inductance, current sources, and voltage sources);
      3. specify design criteria (gain, input resistance, output resistance, time and frequency responses);
      4. locate and interpret component datasheets;
5. select components, interpret terminal characteristics of components, model components, design circuits, and understand circuit operation;
6. document a circuit design;
7. use application software (e.g. LTspice, MATLAB) for simulating circuits with non-linear devices;
8. use laboratory equipment (oscilloscopes, function generators, multimeters) to verify circuit operation;
9. test circuits and identify the likely errors and failure modes and ways to minimize the errors and failures;
10. use laboratory equipment (oscilloscopes, function generators, multimeters) to verify circuit operation;
11. understand the dynamics of a group and to effectively function in a group.

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course: a,b,d,e

7. **Brief list of topics to be covered**: FETs, BJTs; Analysis and Design of Amplifiers, Filters, Oscillators; Frequency Response,