1. Course number and name
   • EE1105/EE1305 Introduction to Electrical/Computer Engineering

2. Credits and contact hours
   • 4 Credits, 6 contact hours

3. Instructor's or course coordinator's name
   • Robert Roberts and Aryzbe Najera

4. Text book, title, author, and year
   • Students are not required to purchase a textbook. All course material for the lecture and lab is included on the course website. Lecture power point slides are available that provide a comprehensive resource for learning fundamental circuit theory with plenty of examples and links to educational videos.
   a. other supplemental materials
      i. CourseWebsite:http://www.ece.utep.edu/courses/web1305/EE1305

5. Specific course information
   a. brief description of the content of the course (catalog description)
      i. EE 1305: In this course students will learn how to use electronic components to build and design circuits for a variety of medical and miscellaneous sensor applications. Through hands on activities, the course will emphasize (1) mathematical and systems concepts that form the basis for electrical engineering, (2) an introduction to circuit components, voltage and current concepts, and (3) sinusoidal signal characteristics, basic filter responses and bandwidth concepts.
      ii. EE 1105: Introduction to Electrical Engineering laboratory procedures, causes, and correction of errors in measurements theory of operation and usage of basic Electrical Engineering test instruments, and report writing.
   b. prerequisites or co-requisites
      i. Prerequisites: MATH 1411 with a grade of "C" or better, may be taken concurrently with EE 1305.
      ii. Corequisites: EE 1105 and EE 1305
   c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program
      i. Required Course

6. Specific goals for the course
   a. To introduce the fundamental concepts and understanding of electronic circuit components, circuit analysis, and electrical engineering mathematical basics. Expanding on the concepts, students should learn how to apply engineering skills (ABET 1c) to implement circuits in the laboratory experimentally, learn to collect real data, and interpret their results (ABET 6a-6c) and specifically demonstrate
i. Become familiar with the Analog Discovery device (oscilloscope and waveform functions).

ii. Use MATLAB to model experimental data.

iii. Analyze Simple Circuits using KVL, KCL and voltage divider methods.

iv. Build circuits using passive and active components. Build and analyze signals through circuits with low pass, high pass and band pass filters.

v. Use Bode Plots to characterize filters and predict signal response.

vi. Build circuits using sensor inputs to create a measurable output.

vii. Use complex impedance to model and analyze Op-Amp circuits.

viii. Learn to report their experimental results in a formal manner.

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

i. This course introduces students to the learning outcomes of applying engineering (ABET 1c), conducting experiments (ABET 6a), interpreting data (ABET 6b), and drawing conclusions (ABET 6c).

7. Brief list of topics to be covered

- Electrical engineering units and unit conversion
- Ohms Law, Kirchhoff’s Voltage Law, Kirchhoff’s Current Law
- Circuit analysis and simplification
- Operational amplifiers
- Passive and active filter design
- Bode plot analysis of filters
- Experimental circuit prototyping
- Computerized data collection
- Data plotting and analysis
- Written engineering communication and teamwork