Department of Electrical Engineering  
EENG 2920.002 Project IV: Analog Circuit Design  
Spring 2015

Class Meetings: T 2:30 PM - 5:20 PM in B207

Instructor: Miguel F. Acevedo  
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Email: acevedo@unt.edu  
Office Hours: T-Th 9-10 AM, T-Th 11:30 AM-12M or by appointment

Prerequisites

Circuit Analysis (EENG 2610) and Project II: Introduction to Electrical Engineering (EENG 1920)

Required Textbooks


Online resources

Blackboard Learn [https://learn.unt.edu](https://learn.unt.edu)

Course Learning Outcomes

After completing this course, students will be able to:

1. Practice safety in the laboratory.
2. Competently use state of the art electronic test equipment (multimeter, power supply, oscilloscope, waveform generator).
3. Design, construct and characterize electric and electronic circuits according to specification on breadboards, and prototype boards.
4. Identify values of resistor, capacitor, and inductor and pins of IC chips from datasheet.
5. Use of SPICE as a tool for simulating various circuits for analysis.
6. Analysis of circuits using MATLAB
7. Analyze and interpret experimental results and writing lab reports.
8. Work in teams and carryout project planning and scheduling.
9. Conduct system testing and troubleshooting in analog environments.
10. Research design ideas and collect reference material that relates to their projects.
11. Defend their projects orally with good presentation skills.
12. Communicate effectively results of experiments and group projects through written reports and project notebook.
13. Understand engineering design, the steps involved and carry out engineering design principles in relation to their project.
14. Demonstrate an understanding of ethical and professional issues as related to their projects.

**General Policies**

- Class attendance is mandatory. Attendance will be monitored.
- Weekly lab reports are due before the class in the following week.
- Weekly reports are submitted individually. Mini-Project and final project reports and presentations are submitted by teams.
- Late submissions will be penalized except in extenuating circumstances.

**Grading Policy**

- Average of 10 reports on lab exercises, 60%
- Mini-project report and demo, 15%
- Final project, presentations and demos, 25%

**Tentative Schedule by week**

Subject to change by the instructor according to student progress

1. Introduction to the course; lab safety guidelines, equipment, and software tutorial
2. Basic Instrumentation, Laboratory Equipment, protoboard, DC Circuit Analysis.
3. Transient analysis of RC and RL circuits
4. Op-Amps
5. Mini-project 1: Sensors and transducers, LDR voltage divider
6. Mini-project 1: Continued prototypes
7. Bridge and amplifier
8. Analog Indicators, LED indicators, Driver IC
9. Resonant circuits and filters
10. Active filters
11. Rectification, DC-DC conversion, and power supplies
12. Beyond the breadboard, soldering.
13. Final project: Design
14. Final project: Implementation, testing
15. Final project: Finalize prototype
16. Finals week: Presentation, demonstration, and final report. **According to UNT schedule of finals exams: Tuesday May 12, 2-4 pm**
Policies

Grades: All grades for the course will be final. No extra credit assignments or work will be considered after the final grade has been recorded.

Accommodations: The EE Department in cooperation with the Office of Disability Accommodation complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request before the 12th class day.

Academic Dishonesty: Students caught cheating, plagiarizing, or any other academic dishonesty will be subject to penalty according to the new Policy on Students Standards on Academic Integrity. See full policy at [http://www.unt.edu/policy/UNT_Policy/volume3/18_1_16.pdf](http://www.unt.edu/policy/UNT_Policy/volume3/18_1_16.pdf)

According to this policy the categories of academic dishonesty are:

A. Cheating. The use of unauthorized assistance in an academic exercise, including but not limited to:
   a. use of any unauthorized assistance to take exams, tests, quizzes or other assessments;
   b. dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems or carrying out other assignments;
   c. acquisition, without permission, of tests, notes or other academic materials belonging to a faculty or staff member of the University;
   d. dual submission of a paper or project, or re-submission of a paper or project to a different class without express permission from the instructor;
   e. any other act designed to give a student an unfair advantage on an academic assignment.

B. Plagiarism. Use of another’s thoughts or words without proper attribution in any academic exercise, regardless of the student’s intent, including but not limited to:
   a. the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgement or citation.
   b. the knowing or negligent unacknowledged use of materials prepared by another person or by an agency engaged in selling term papers or other academic materials.

C. Forgery. Altering a score, grade or official academic university record or forging the signature of an instructor or other student.

D. Fabrication. Falsifying or inventing any information, data or research as part of an academic exercise.

E. Facilitating Academic Dishonesty. Helping or assisting another in the commission of academic dishonesty.

F. Sabotage. Acting to prevent others from completing their work or willfully disrupting the academic work of others.