I. Course Objective

Design amplifier related circuits based on BJT's and FET's. The design parameters included are gain, frequency response, and matching impedances. Develop the skills to analyze electronic circuits and systems, as well as interpret experimental results. Develop a better understanding of the theory of electronic devices and circuits through practical examples and testing.

II. Text

ECE 3274 Networks / Electronic Laboratories Manual, available online at www.courses.ece.vt.edu/ece3274


III. Honor Code

The Virginia Tech Honor Code will be enforced in this class. All graded work must be your own.

IV. Prerequisites / Co-requisites

All students are required to be taking ECE 3204, or have successfully completed this course, as a requirement for this lab.

V. Prelab

Each lab has preparation that must be handwritten and completed prior to the lab. The prelab will include the design, design assumptions, schematics, and LTspice analysis of the design at the same input conditions and output requirements of the lab procedure. You must show all work. Include all equations, component values, questions answered, LTspice schematics, and plots. Do not use LTspice as a trial and error method of design. The prelab results and analysis must be your own work. Your name, CRN number, date, project name shall be on the first page, and number all pages. Handwriting shall be clear enough for understanding. Late submission may result in a 5 point reduction of the grade for each day late.

VI. Lab Experiment (in class)

Bring with you to class a flash drive and (optional) the parts kit and Proto board from ECE2074

The lab shall include all preliminary design work (prelab), answer to the assigned questions, actual lab data, and any analysis and conclusions associated with the result of the lab. Each group must bring with them the report data sheet for the experiment from the lab manual. The reports shall also include, when appropriate, the LABVIEW output for the lab. Each group must complete one report/data sheet to be turned for a common grade. The lab results and analysis must be your own groups work.

The completed report with questions answered, must be turned in by the end of lab class. You should keep all the graded lab reports during the semester. Your name, lab partner's name, date of lab, project name, and CRN shall be on the first page. All pages shall be numbered and writing shall be clear enough for understanding.
Lab and Prelabs Format.

1) Heading (Cover Page): Lab title, CRN, student name and the name of your lab partner, date of report.

2) Theory / Approach / preliminary Design: Equations, assumptions and other materials used in preparing the lab. It should also include LTspice analysis for your design.

3) Answers to Assigned Questions:

4) Data Collection: Tables, charts, graphs and / or waveforms as necessary. Scope waveforms and various plots using LABVIEW software.

5) Analysis:
This section shall include an analysis of the actual lab results along with explanation for any differences between the lab results and the initial design values or predicted results. You must recalculate the design values using the as built component values. Do not automatically attribute difference to the component values used. You must show all work.

VII. Quizzes
The quizzes will be in class at the beginning of the class. If you miss a quiz and are excused your final exam score will be substituted for the missed quiz score. You will be tested on reading components values (color code and capacitor values).

VIII. Final Exam
The exam will be a practical exam taken in the classroom to test your working knowledge

IX. Grading
Final grade will be calculated based on the students completing all 6 labs. The lab instructor must approve make-up of any missed lab in advance. Failure to arrange the make-up will result in a grade of zero of that lab. A student must complete prelabs, labs and quizzes

If you become ill and have to miss class, especially in the case of an exam or some due date, you should see a professional in Schiffert Health Center in McComas Hall and acquire a medical excuse. If you experience a personal or family emergency, you should contact the Dean of Students Office.

Percentage of Grade:
Prelab 30% prelabs equal weight (individual work)
Lab Experiment 30% reports equal weight (one report per group)
Quizzes 20% in class quizzes closed book and note
Final Exam 20% in class practical exam closed book and note

A 100% to 93% A- < 93% to 90%
B+ < 90% to 87% B < 87% to 83% B- < 83% to 80%
C+ < 80% to 77% C < 77% to 73% C- < 73% to 70%
D+ < 70% to 67% D < 67% to 63% D- < 63% to 60%
F < 60% to 0%