

ECE 3274 Electronic Networks Lab. II Fall 2009
Department of Electrical & Computer Engineering, Virginia Tech.

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

ECPE 3274 *Networks / Electronic Laboratories Manual*, available online at <http://www.ece.vt.edu/ece3274/>.

Donald A. Neamen, *Electronic Circuit Analysis and Design - 3rd ed.*, New York, McGraw-Hill, 2001

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. Student may not continue this lab if they drop ECE 3204 during the semester.

V. Prelab

Each lab has preparation that must be handwritten and completed **one week prior** to the lab. The prelab will include the design, design assumptions, and **PSPICE 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, PSPICE schematics, and plots. Do not use PSPICE as a trial and error method of design. The prelab results and analysis must be your own work. Your name, lab partner's name, date of lab and project name shall be on the first page. All pages shall be numbered and writing shall be clear enough for understanding

Late submission may result in 5% reduction of grade for each day late.

VI. Lab Report (in class)

The lab report 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 student must bring with them the report data sheet for the experiment from the lab manual. A 10% deduction of the report grade for each student without data sheet.** The reports shall also include, when appropriate, the LABVIEW output for different labs. Each student must maintain his / her own report and complete the initial prelabs. The lab results and analysis must be your own work.

The completed report with questions answered, must be turned in by the end of lab class, and will be available for pick up at the following lab period unless otherwise stated in lab. Late submission will result in **10% reduction** of grade for each day late. You should keep all the graded lab reports during the semester. Your name, lab partner's name, date of lab and project name shall be on the first page. All pages shall be numbered and writing shall be clear enough for understanding.

Late submission may result in 5% reduction of grade for each day late. Maximum of 25% per week.

Lab and Prelabs Format.

1) Heading (Cover Page): Lab title, 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 PSpice 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 should be obtained using LABVIEW software or the Venable Frequency Response Analyzer.

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 Final Exam

The exam will be a two-part exam with an in class written exam 10% and an in class working knowledge exam 10%

VIII Grading

Final grade will be calculated based on the students completing all 10 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 reports

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 at 231-3787 or visit them at 201 W. Roanoke St. (gray house at the corner of Draper Ave. across from the 7-11).

**which is then provided via email to the instructor from the College of Engineering Dean's office.

Percentage of Grade:

Prelab	50%	prelabs all equal weight
Lab Reports	30%	reports all equal weight
Final Exam		
Written	10%	
Practical	10%	

Week	Lab	Prelab due	Lab
Week 1	Roll Call / Introduction		
Week 2	1.Power Supplies	Prelab 1,2	1
Week 3	2.Comparator and S/H	Prelab 3	2
Week 4	3.Oscillator		3
Week 5	Lecture class for prelab 5, thru 10	Prelab 4	
Week 6	4.Current Source	Prelab 5	4
Week 7	5.Common-Emitter Amplifier	Prelab 6	5
Week 8	6.Common Collector Amplifier	Prelab 7	6
Week 9	7.MOSFET Amplifiers	Prelab 8	7
Week 10	8.Active Load	Prelab 9	8
Week 11	9.Power Amplifier	Prelab 10	9
Week 12	10.Two Stage Amplifier		10
Week 13	Exam (Practical)		
Week 14	Exam (Written)		