

## ELEN 458 Lab – Schedule \*

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Office Hours : Monday, Tuesday (3-4pm)  
 For other times, please email/call me for arrangement.

Week	Week No.	Lab No.	Topic	Location
Aug 30 <sup>th</sup>	1	0	Introduction	213A
Sept 6 <sup>th</sup>	2	1	Characterization of OPAMP	111C
Sept 13 <sup>th</sup>	3	2	Characterization of OTA	111C
Sept 20 <sup>th</sup>	4	3	Design of a Crossover Filter (Filter Synthesis using OPAMPS)	111C
Sept 27 <sup>th</sup>	5	4	Elliptic BP Filter (Filter Synthesis using OTAs)	111C
Oct 4 <sup>th</sup>	6	5	Design of a BP-based Oscillator (2 stage Quadrature , 2 stage BP filter) extra:2 stage BP filter->BP filter	111C
Oct 11 <sup>th</sup>	7	6	Graphic Equalizer (RC BP filter+OTA BP filter)	111C
Oct 18 <sup>th</sup>	8	6	Graphic Equalizer (integration)	111C
Oct 25 <sup>th</sup>	9	7	Design, Implementation and Simulation of Switched Capacitor	111C
Nov 1 <sup>st</sup>	10	7	Design, Implementation and Simulation of Switched Capacitor	111C
Nov 8 <sup>th</sup>	11	8	Switched Capacitor Filter	111C
Nov 15 <sup>th</sup>			Project	
Nov 22 <sup>nd</sup>			Thanks-giving and Bonfire Week	
Nov 29 <sup>th</sup>			Project	
Dec 6 <sup>th</sup>			Project Presentation	

- Please have pre-lab work ready before each lab

\* Subject to changes (please refer to website regularly, and check your email)

# COURSE POLICIES

## ELEN 458 – Active Filters Laboratory

### 1. ATTENDANCE

Attendance is mandatory for all laboratory periods. Students are to be prompt and remain for the entire session of the laboratory. Before leaving the laboratory, students are to get the signature of their TA on their data sheet to verifying their attendance and the integrity of the data collected. No make-up laboratories will be accepted except in justifiable circumstances outlined in *University Regulations Handbook*.

### 2. ASSIGNMENT

Prelab assignments are to be completed on engineering paper or loose- leaf notebook paper. The name of the student is to appear on the top of each page and all pages are to be stapled or paper clipped together. Assignments turned in on any other paper will be given a grade of zero. All circuits will be constructed within the laboratory.

The prelab assignments of each student will be reviewed, and must be completed before the beginning of each period. Also, the report of previous week's experiment will be turned in at the beginning of the lab period. No late prelab will accepted except in justifiable circumstances outlined in the *University Regulations Handbook*. Late laboratory reports will be deducted 10 points per day for three days, there after given a grade of zero except in justifiable circumstances outlined in the *University Regulations Handbook*.

### 3. WORK QUALITY

Neat, legible systematic and complete presentation is required in prelab assignments and reports for full credit. Units must be written whenever appropriate for the answers. Equations expressed in prelab assignments and lab reports must be expressed using variables only ( $\beta$ ,  $\pi$ ,  $\mu$ , etc.) and numbered sequentially so that your solution methodology may be easily followed and graded. Laboratory reports must follow a good report format (introduction, analytical results, circuit schematics, graphs, tables, conclusions, etc.) as described in the Laboratory Format handout.

*Reports will be graded most heavily on the ability of the student to show the correlation between theoretical and measured data and the discussion of results.*

#### 4. GRADING SYSTEM

The regular university grading scale will be used. Weights will be assigned as follows:

Prelab Scores	60%	
Laboratory Reports	30%	
Participation, Trouble-shooting		10%
TOTAL SCORE		100%

#### 5. ACADEMIC DISHONESTY

All prelab assignments are to be completed individually. Laboratory reports are to be completed only with your lab partner. Collaboration on assignments is forbidden except when specifically authorized. **Plagiarism will not be tolerated.** Students violating this policy may be removed from the laboratory and given a failing grade in the course.

# LABORATORY REPORTS

## ELEN 458 – Active Filters Laboratory

For many students, report writing is a skill that is still under develop. As an engineer, the ability to write concise, grammatically coherent, and informative reports is a must in order to be competitive in the work force. Approximately 20% of your engineering day will be spent reading and writing technical report; reports are one important way engineers communicate their ideas.

Please read the material that is being handed out thoroughly. It provides information on how the labs will be conducted and how you will be graded. An article from IEEE Proceedings, February 1991, entitled “Writing Lab Reports” by Alan Bugos is also recommended.

### 1. LABORAORY REPORT REQUIREMENTS

The student should take the initiative to determine what material should be presented in the report to adequately cover the topic under investigation. The laboratory manual should be considered as a guide in the investigation. The format of the presentation is up to the individuals involved. All reports should be grammatically correct and neatly presented (typing mandatory). The report should be self-contained to the extent that an electrical engineer should be able to determine the purpose of the experiment and also be able to readily duplicate the results after reading the report. A few points are listed below.

1. Use three pages maximum for the report. Figures and plots may be attached. Data must be included in tables, when appropriate, in the body of your report.
2. All plots of data must be generated using a graphics package.
3. All figures should have titles and all axes should be properly labeled.
4. Any circuit discussed should be drawn and component values labeled(computer generated preferred).
5. Any voltage or current mentioned anywhere in the report should be indicated on the appropriate circuit schematic.
6. The method of taking measurements should be indicated.
7. The type of test equipment used to make a measurement should be noted. E.g. ”the following RMS voltage readings were taken using the Fluke digital multimeter ...”.

8. Distinction between theoretical and experimental results should be made.
9. Comparisons should be made between theoretical and experimental results, whenever possible.
10. Any clever measurement techniques or interesting observations should be pointed out in the report.
11. Any significant differences between theoretical and experimental results should be resolved in the laboratory. Do not attempt to resolve them in the laboratory report. If these problems persist, seek assistance on the laboratory.

One logical way to organize the description of your experiment might be based on the following plan:

1. Objectives
2. Analytical/PSPICE simulation results
3. Laboratory procedure used
4. Experimental results
5. **Analysis of results and conclusions**

## **2. CRITERIA USED FOR DETERMINING LAB GRADES**

The following criteria will be used in grading your laboratory reports. Lab reports and the lab sessions themselves will consume most of your time. Please streamline your efforts by preparing for lab, writing concisely, and deciding the format and content of your report before you begin.

1. Neatness, format of layout, graphs, tables, spelling, grammar
2. Accuracy and presentation of analytical results
3. Effectiveness of laboratory procedure
4. Accuracy of data obtained in the lab
5. Analysis of the experimental results, correlation of the experimental results with theoretical predictions, discussion of the sources of errors, conclusions and observations