

*INSTRUCTORS:* Dr. Danial L. Lau, [dllau@engr.uky.edu](mailto:dllau@engr.uky.edu)  
Mr. Steve McFadden, [stevemcfadden@alltel.net](mailto:stevemcfadden@alltel.net)

*WHEN, WHERE:*

Lecture		9:30AM -10:45 R, FPAT 257
Lab	Section 1,	8:00AM-10:50AM T, FPAT 465
	Section 2,	2:00PM-4:50PM W, FPAT 465
	Section 3,	2:00PM-4:50PM R, FPAT 465

Dr. Lau *OFFICE HOURS:* (FPAT 567) M,W,F, 10:00AM to 11:00PM

*TEXTBOOK:* EE 222 Electrical Engineering Laboratory I: Laboratory Manual, K. W. Whites, E. L. Steele, Revised August 2000. (Available only at Kennedy's Bookstore)

*TEACHING ASSISTANT:* Yan Du - [Yan.Du@uky.edu](mailto:Yan.Du@uky.edu)  
- Sections 1 & 3, *OFFICE HOURS:* T 1:00-3:00 W 1:00-2:00  
Zhen Zeng - [georgiazeng@gmail.com](mailto:georgiazeng@gmail.com)  
- Section 2, *OFFICE HOURS:* M 1:00-2:45

*PARTS KIT:* You will need to purchase parts for this course. Additionally, you should purchase a breadboard (small or medium sized) and the screwdriver for adjusting a trim pot. All parts are available from the IEEE Parts Store located in 560 Anderson Hall. Visit <http://www.engr.uky.edu/~ieec/> for details.

*LAB NOTEBOOK:* Any firm, covered laboratory notebook that has numbered pages and can make copies of pages is acceptable for this course. Examples include:

	National	Roaring Spring
Carbon Paper	#43-649	#77469
No carbon Paper	#43-644	#77644

*EXPECTED OUTCOMES OF STUDENT LEARNING:* The following outcomes will be developed by the student upon successful completion of this course;

1. The ability to operate basic electrical engineering equipment such as the digital voltmeter, DC power supply, signal generator and oscilloscope.
2. The ability to collect data and maintain a laboratory notebook in an organized and ethical manner.
3. The ability to analyze and measure DC and AC voltages and currents in linear circuits.
4. The ability to analyze and construct basic operational amplifier circuits (such as summers and filters) and measure input and output voltages.
5. The ability to conduct an experiment, collect data, quantify measurement error, and convey this information in a technical report.

*INSTRUCTIONS:* Students are responsible for all material covered in the manual, lectures and laboratories. The laboratory meets in 465 AH 8:00-10:50AM on Tuesdays, 2:00-4:50 PM on Wednesdays & Thursdays. Please be on time. It is imperative that you attend all laboratory classes

and turn in all reports. Excused absences should be made up within the week of the experiment. In severe extenuating circumstances, you may make up a missed laboratory assignment by making arrangements with the instructor.

*PROCEDURE:* Laboratory lectures begin on Thursday Jan. 10 2008 and continue on Thursday thereafter. The laboratory lectures are held before the assigned laboratory experiments. The slides of the lecture notes can be found at the end of the laboratory manual.

A 15-minute quiz will be given during most lecture periods. The quizzes will cover material related to the pre-laboratory and laboratory sections of the lab for the previous week as well as the laboratory report that is in progress for the next week. There is no quiz in the first laboratory lecture. The lowest quiz score will be dropped. No makeup quizzes will be given.

The cycle of laboratory experiments begins on Thursday Jan. 10 2008 and continues weekly. The pre-laboratory assignments are due at the beginning of the laboratory period for the assigned experiment. **Late pre-laboratory assignments will not be accepted.** They should be worked out in your laboratory notebook using carbon paper. The carbon copy of your pre-laboratory work must be given to your laboratory instructor at the beginning of the laboratory class and the original pages retained in your notebook for later reference.

Laboratory data should be entered in the laboratory notebook, **in ink**, as it is taken, with carbon copies made. If a mistake is made, do not erase the error. Instead, put a line or an "X" through the error. The copies must be given to your laboratory instructor at the end of the lab period. Where practical, the data should be hand plotted on a graph at the same time it is recorded.

<i>GRADING:</i>	Pre-Laboratory Assignments	20 %
	Laboratory Notebook	15 %
	Laboratory Reports	30 %
	Lecture Quizzes (drop lowest)	15 %
	Final Exam (practical)	20 %

The final exam will be an in-lab practical examination. This exam will occur during the last few weeks of classes. A review sheet that lists the applicable topics and measurement covered by the exam will be available later in the semester.

The letter grade assignment will then be determined according to the table below.

Final Grade	Letter Grade
91-100 %	A
81-90 %	B
71—80 %	C
61-70%	D
60 % or less	E

**LABORATORY REPORTS:** A written report will be prepared for every laboratory experiment. The report must be typed and based on the data and observations recorded in your laboratory notebook. Laboratory reports are due at the beginning of the following laboratory period. Except for severe extenuating circumstances, no late laboratory reports will be accepted.

Your laboratory reports must be prepared using a word processor. Hand-written equations will be accepted. Equations using an equations editor are preferred. In addition, the graphs appearing in your report must be prepared using a computer-plotting package. Hand drawn graphs will not be accepted. However, you are allowed to sketch circuit diagrams. Keep your reports brief but complete.

There are two types of laboratory reports you will prepare during this course. The first is a technical memorandum and the second is a full report. The format of each of these reports is described on pages 6 and 7 in the lab manual.

### SCHEDULE

Note that this schedule is tentative and that some dates may be rescheduled. TM indicates that a technical memorandum is to be written for this experiment. FR indicates that a full report is to be written for this experiment.

Lecture Date	Quiz Topic	Lab Dates	Experiment Number	Topic
Jan. 10	N/A	Jan. 10,15,16	1	Introduction to Electrical Engineering (TM)
Jan. 17	Exp. 1	Jan. 17,22,23	2	DC Meters and Measurements (TM)
Jan. 24	Exp. 2	Jan. 24,29,30	3	Thevenin and Norton Equivalent Circuits (TM)
Jan. 31	Exp. 3	Jan 31, Feb 5,6	4	Measurements of Time Constants and Phase Angles in Circuits with Passive Components (TM)
Feb. 7	Exp. 4	Feb. 7,12,13	5	Complex Power (FR)
Feb. 14	Exp. 5	Feb. 14,19,20	6	Maximum Power Transfer (TM)
Feb. 21	Exp. 6	Feb. 21,26,27	7	The Operational Amplifier as a Circuit Element and its Application to a Summing Circuit (TM)
Feb. 28	Exp. 7	Feb. 28, Mar. 4,5	8	Measurement of the Frequency Response of an Operational Amplifier (TM)
Mar. 6	Exp. 8	Mar. 6, 18,19	9	Series and Parallel Resonant Circuits (TM)
Mar. 20	Exp. 9	Mar. 20,25,26	10	Active Filter Circuits using Operational Amplifiers (FR)
Mar. 27	Exp. 10	Mar. 27, Apr.1,2	11	Square Wave Generator using a 555 Timer Integrated Circuit (TM)
Apr. 3	Exp. 11	Apr. 3, 8 9	12	Design a "Coin-counting" circuit (TM)
Apr. 10	Exp. 12	Apr. 10,15,16	N/A	Practice for practical exam, course evaluation
N/A	N/A	Apr. 17,22,23	N/A	Practical exam

**HONOR SYSTEM:** Cheating and plagiarism will not be tolerated. Anyone caught cheating will be given an *E* grade for that assignment and possibly assessed other penalties following University of Kentucky Regulations. This especially applies to presentation of copied works from previous semesters.