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Course: Electronic and Circuit Laboratory

1 credit hours, optional

Prerequisite: Electrical Engineering, Electronic and Circuit.

Class: Class 2009

Lab hours: 09:10AM ~ 12:00PM, Fri.

Room: E217

Office hours: Mon, Wed, Thur, and Fri.: 11:00AM ~ 6:00PM or by appointment.

References:

1. 蔡朝洋, 電子學實驗 (修訂版), 全華科技圖書, 中華民國九十二年十一月。
2. 盧勤庸, 電子電路模擬-使用PSpice A/D, 全華科技圖書, 中華民國九十六年九月。
3. 余文俊、楊國輝, 電子電路實習, 高立圖書, 中華民國九十三年八月。

Course Objectives:

To provide an introduction to electronic circuits measurements for aerospace engineering students. Topics include: basic measuring instruments, resistors, capacitors, inductors, transformers, diodes, transistors, operational amplifiers, and logic circuits.

The objectives of this course are to make students to understand the principles and characteristics of basic electronic components and their possible applications, familiar with the basic electronic measuring instruments and to develop the basic electronic circuit design capability.

Course Schedule:

Week	Dates	Material Covered
1 st	02/20	Syllabus
2 nd	02/27	Lab 1 – Resistors and Capacitors
3 rd	03/06	Lab 2 – Diodes
4 th	03/13	Lab 3 – Clipper
5 th	03/20	Lab 4 – DC Restorer
6 th	03/27	Lab 5 – Digit Logic Circuit
7 th	04/03	Spring Break!! YEA!!
8 th	04/10	Lab 6 – Zener Diode
9 th	04/17	Lab 7 – Differentiators and Integrators
10 th	04/24	Midterm
11 th	05/01	Lab 8 – Timer
12 th	05/08	Lab 9 – 2 nd -Order Low Pass Filter
13 th	05/15	Lab 10 – Fixed Voltage Regulator
14 th	05/22	Lab 11 – Fixed Current Source
15 th	05/29	Lab 12 – Comparator and Schmitt Trigger
16 th	06/05	Lab 13 –LED 跑馬燈
17 th	06/12	Lab 13 –LED 跑馬燈
18 th	06/19	Final

Grading Policy* :

1. Lab Attendance 20%
 - (a) Students are required to attend all labs.
 - (b) Students should work in groups of two or three.
 - (c) Each group should maintain one lab notebook to record the weekly data and schematics (complete with component values). This notebook should be kept in ink.
2. Lab Reports 60%
 - (a) Each lab group will submit only one lab report at the beginning of the next lab session.
 - (b) Late report will be penalized 10% per day.
 - (c) Report grading methodology:
 - (i) Lab work (30%) – evidence of having successfully completed the lab tasks.
 - (ii) Figures/Tables/Equations (20%) – the solid content of the report
 - (iii) Discussion (50%)

* I reserve the right to change the policy.

Purpose – why we did it
Procedures – what we did
Theoretical results – what we should have seen
Measurement results – what we did see
Conclusions – why we see what we did

3. Lab Clean-up

20%

Lab Report Writing Strategies

When writing the lab reports, please stick to the following rules.

1. Use a title page, including title, bench #, names of group member.
2. Lab report should be typed, except for the print-outs from the oscilloscope.
3. Be sure to use any relevant equations when comparing theoretical and measured results and to use the measured component values when calculating theoretical results.
4. All pages should be numbered.
5. When applicable, use percent error to describe how a circuit functions.
6. Keep the report simple. Be complete but concise.

Figures/Tables/Equations:

1. Equations/figures/tables should be numbered in numerical order. (Figure1 always precedes Figure2, and Figure2 always precedes Figure3, but of course Table2 can come before or after Figures 1,2 or 3).
2. Print-outs should be inserted within the report (not at the end). Either paste them in or insert an entire page for it.
3. Each figure should be labeled. For print-outs, handwritten labels are acceptable.
4. Tables and figures should always have descriptive captions, which are properly placed.
5. Do NOT include a figure unless the text says something about it.
6. Once a figure has included, tell the reader what is important to notice about it.
7. Figures should not span multiple pages.
8. Insert actual oscilloscope print-outs from the lab; do NOT insert scanned or photocopied oscilloscope print-outs.