

EE 206 – Sophomore Laboratory - 2 hours  
Required Course

1. *2007-2008 Catalog description*

The student is introduced to experimental implementation of analysis techniques developed in EE 205 and EE 201/311 in order to verify circuit theory. In addition the student is introduced to the design of analog and digital circuitry focusing on top-down design methodology culminating in a student-chosen sequential digital design project. Prerequisites: EE 205, with a minimum grade of C. Corequisites: EE 201 or EE 311.

2. *Prerequisites by topic*

- a Circuit analysis techniques
- b Combinational Logic analysis & design using VHDL
- c Sequential Logic analysis & design using VHDL

3. *Textbook (s) and/or other required material*

Required Text: Lab record books: AMPAD 22-157 (Three required) - other required material will be from readily available data sheets and Blackboard. (All course material is posted on Blackboard allowing online student access.)  
Software: Quartus II, ver. 5 or later, [www.altera.com/products/software/products/quartus2/qts-index.html](http://www.altera.com/products/software/products/quartus2/qts-index.html)  
by Altera, <http://www.altera.com/>

4. *Class/Laboratory Schedule*

Two class sessions per week, each 50 minutes, for 7 weeks and one laboratory session per week, each 3 hours, for 14 weeks

5. *Topics Covered (Outcomes influenced)*

- Laboratory Equipment (7ab)
- SPICE & MATLAB (7ac)
- Frequency Response(7abcd)
- Transient and Frequency Domain Analysis (7abcd)
- Second order Complete Response (7abcde)
- Series Resonance (7abcde)
- Digital Design I (7de) – two weeks
- Digital Design II (7ce)
- Digital Design Project (7bcdef) – four weeks

6. *Contribution of course to meeting the curriculum components*

Engineering Science - 50%, Engineering Design - 50%

7. *Course Outcomes (Program Outcome contributions): In learning the course topics, the student will attain the following outcomes*

- a) Student will learn to use basic electronic instrumentation while performing measurements (9B, D)
- b) Student will learn basic troubleshooting of analog and digital circuits while debugging circuits(9B, D)
- c) Student will learn how to utilize appropriate software for design and simulation by designing circuits, and then simulating them using software 9(B, C, D)
- d) Student will perform circuit analysis during experiments guided by the design and simulation (9A, B)
- e) Student will design basic analog and digital circuits (9A, B, C, D, G)
- f) Student will perform a multi-week sophomore project (9A, B, C, D, F, G)

8. *Grading policy and criteria:*

The course grade will be based upon the percentage of points earned throughout the semester. The points are earned based upon how well the student meets the outcomes stated above. Each outcome will be evaluated several times (each laboratory record) and ways (laboratory record, project presentation, project report) throughout the semester to assure accurate evaluation. For a student to pass the class, every unit must be submitted for grading; each unit must receive a minimum score of 45 points, before penalties; and the student must have an overall average greater than 58\*. The points assigned for your

efforts will conform to the Undergraduate Catalog, Gradepoint System. The grade ranges, in percent, are: 100 – A – 85 – B – 72 – C – 58 – D – 45 – F – 0. [Experimental unit (ea) = 100; project = 500]

\*A grade of C corresponds to meeting the minimum competency required to understand course topics and attain course outcomes.

9. *Relationship of course to program outcomes*

label	Program Outcomes (A Graduate from the program will:)	Contribution
A	have knowledge of the mathematical and scientific foundation of electrical engineering	Strong
B	have knowledge of and the ability to apply techniques and technology of electrical engineering	Strong
C	complete a design project sequence, culminating in a capstone project at or near the professional level	Strong
D	understand that acquisition of new knowledge is needed for success in the electrical engineering profession	Strong
E	meet Bradley's general education requirements which are based on the principles of liberal education	NA
F	have experience in communicating technical information and working on teams	Strong
G	understand the importance of professional and ethical behavior	Moderate

10. *Prepared by:* James Irwin – 08 06 02