

# **SYLLABUS**

## **ENBE 455: Basic Electronic Design**

The purpose of this course is to give the engineer the tools to design simple electronic circuits. Both analog and digital circuits will be covered.

### **Text:**

Grob, B., 1997, *Basic Electronics* (8th ed.) Glencoe/McGraw-Hill, New York, NY, ISBN 0-02-802253-X.

### **Objectives:**

1. To become familiar with fundamental electronic circuits.
2. To learn to use common electronic instrumentation.
3. To learn computer design aids.
4. To become familiar with circuit fabrication and testing.
5. To be able to design electronic circuits to perform realistic tasks.

### **Instructional Procedures:**

Two 1½ hour sessions will be held each week. The first will be a lecture/discussion period devoted to presentation of theory and component description. Design procedures will also be presented. The second period each week will be devoted to laboratory exercises to reinforce theoretical concepts.

Short quizzes and homework problems will be assigned each week. Laboratory reports will be required. At the end of the semester, students will be required to design an electronic circuit to solve a realistic problem. The students will need to fabricate their designs and demonstrate their performances.

Laboratory exercises, laboratory reports, and homework problems will be worked in groups. Each person is expected to contribute fully to the efforts of the group. Each member of the group will sign each submission, and this signature will designate that the individual: 1) contributed fully to the submission, 2) know how to do all the work her- or himself, and 3) attests that all other members of the group know how to do the work. Group contributions will be assessed at the end of the course.

Homework problems will be assigned each week. Problem solutions must either be printed or submitted in neat handwriting in ink. Submissions written in pencil will not be accepted.

### **Grading:**

Quizzes: 20%	Laboratory Reports: 20%	Design Project: 20%
Lab Final: 20%	Homework: 20%	

Based upon peer evaluations of group contributions, adjustment of plus or minus on letter grade may be made in an individual student's final grade.

If you have a documented disability and wish to discuss academic accommodations, please contact Dr. Johnson at (301) 405-1184 as soon as possible.

## Syllabus

Week	Topic	Text
1	Voltage/current Ohm's Law Resistors	Chap. 1,3
2	Capacitors Reactance	Chap. 17, 18 Appendix D
3	RC Combinations	Chap. 23
4	Inductors Kirchhoffs Laws	Chap. 20 Chap. 9, 21
5	Filters	Chap. 27
6	Use of PSPICE	
7	Diodes, Rectifiers, Zener Diodes, LEDs	Chap. 28
8	Operational Amplifiers	Chap. 29
9	Active Filters	
10	Digital Gates Truth Tables Flip-Flops Multi vibrators	Chap. 29 Chap. 31
11	Interface Elements	
12	Boolean Algebra/Design	
13	Power Control Switches	
14	Fabrication Techniques	Appendix B