Instructor
  Khalid Eid
  SCI221
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Class Meetings
  Monday, Wednesday 2:15 – 3:05, ONLINE   (Lecture)

  Saturday 1:00pm – 4:00pm   (Lab)

Text
  Basic Electronics: An Introduction to Electronics for Science Students by Curtis
  A. Meyer. Available in the local bookstores, or you may order it online from
  http://www.lulu.com.

Course Description
  The course covers theory and applications of electronic instrumentation for
  scientists. Discrete components as well as integrated circuits will be covered. Both
  analog and digital circuit theories will be discussed.

Course Goals
  The student will develop an understanding of the basic theory and applications of
  analog and digital electronic instrumentation. Upon completion of this course the
  student will be able to read electronic circuit diagrams, analyze and understand
  the operation of a given circuit, and design electronic circuits for the measurement
  of physical quantities.

Course Evaluation
  Homework problems will be assigned regularly. There will be one midterm exam
  and a comprehensive final exam .Exams will consist of free-response problems
  similar to those worked in class and assigned for homework. Make-up exams will
  be given only for very special circumstances that must be discussed as soon as
  they arise!

  The weighting of the various parts is as follows:

Midterm exam	**20%**
Final exam	**40%**
All homework assignments together	**10%**
Lab reports	30%

Tentative Schedule
The schedule will be adjusted as necessary.

Ch. 1.1–1.3	Intro; Simple Circuits
Ch. 1.4	Circuits and Power
Ch. 1.6	Equivalent Circuits
Ch. 1.5	Voltage Divider
Ch. 2.1-2.3	Alternating Current Circuits
Ch. 2.6-2.8	
Ch. 2.6- 2.8	AC-circuits/ Impedance, ….
Ch. 6.1–6.2	Amplifier and Negative Feedback
Ch. 6.3	Op-Amps
Ch. 6.3	Op-Amp Circuits
Ch. 6.3	Op-Amp Circuits
Handout?	Instrumentation Amplifier
Ch. 6.4	Ideal vs. Real Op-Amp; Limitations
Ch. 6.8	Positive Feedback, Comparators
Ch. 6.8	Schmitt Trigger
Ch. 4.1–4.4	Semiconductor Physics
Ch. 4.5	PN-Junction and Diodes
Exam 1	
Ch. 4.6	Diode Circuits
Ch. 5.1–5.2	Bipolar Junction Transistor
Ch. 5.3	Bipolar Junction Transistor
Ch. 5.4	Transistor Circuits
Ch. 5.4	Transistor Circuits
Ch. 5.5	Field Effect Transistors
Ch. 7.1–7.3	Digital Electronics, Binary Arithmetic
Ch. 7.4–7.5	Digital Logic and Gates
Ch. 7.6	Flip-Flops and Memories
Ch. 7.7	More Flip-Flops
Ch. 7.8	Digital Counters
Ch. 7.9	Shift Registers

Lab Experiments

1-   VOLTAGE DIVIDERS AND KIRCHHOFF'S LOOP RULE

2- LabVIEW CONCEPTS

3- LabVIEW PROGRAMMING EXERCISES

4- INVERTING AND NON-INVERTING AMPLIFIERS

5- THERMOCOUPLE AMPLIFIER

6- INTEGRATING MAGNETOMETER

7- PHYSICAL PENDULUM

8- CURRENT-TO-VOLTAGE CONVERTER

9- BIPOLAR JUNCTION TRANSISTOR CHARACTERISTICS

10-   INTRODUCTION TO ARDUINO

11-   ARDUINO

12-   PULSE-WIDTH MODULATION