ECE 326
Electronic Circuits I
Fall 2015

Instructor: Dr. George L. Engel (EB 3043)
Time: M, W (12:00 pm - 1:15 pm)
Location: EB 1150
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Office Hours: M, W (1:30 - 3:00 pm) and T, R (2:00 - 3:30 pm)

Course Description
Introduction to semiconductor devices; diode, BJTs, FETs; small-signal and large-signal analysis, logic gate families; and electronic system design

Grading Policy
Exam #1  20 %
Exam #2  20 %
Exam #3  20 %
Final Project  20 %
Lab and homework  20 %

Administrative Issues
Please notify me no later than the end of the first week of class concerning any academic accommodations that you will need. You must have a documented disability and an Id Card from Disability Support Services.

If you need accommodations not indicated on the Disability Support Services ID CARD, such as special equipment for clinical experiments or for outside classroom settings, please contact me or the Disability Support Services office as soon as possible so arrangements can be made for the additional equipment or accommodations.
Required Texts

Microelectronic Circuits, Seventh Edition
Oxford University Press
Adel C. Sedra and Kenneth C. Smith
ISBN Number: 978-0-19-933913-6

Lectures

M Aug 24  Section 1.1 - Signals
Section 1.2 - Frequency Spectrum of Signals

W Aug 26  Section 1.4 - Amplifiers

M Aug 31  Section 1.5 - Circuit Models for Amplifiers
Section 1.6 - Frequency Response of Amplifiers

W Sep 02  Section 2.1 - The Ideal Op Amp
Section 2.2 - The Inverting Configuration
Section 2.3 - Non-Inverting Configuration

M Sep 07  *** LABOR DAY ***

W Sep 09  Section 2.4 - Difference Amplifiers
Section 2.5 - Integrators and Differentiators

M Sep 14  Section 2.6 - DC Imperfections
Section 2.7 - Effect of Finite Gain and Bandwidth on Performance
Section 2.8 - Large Signal Operation of Op Amps

W Sep 16  Section 3.1 - Intrinsic Semiconductors
Section 3.2 - Doped Semiconductors

M Sep 21  Section 3.3 - Current Flow in Semiconductors

W Sep 23  EXAM #1 (Chapters 1 and 2)

M Sep 28  Section 3.4 - PN Junction
Section 3.5 - PN Junction with Applied Voltage

W Sep 30  Section 3.6 - Capacitive Effects in PN Junctions

M Oct 05  Section 4.1 - The Ideal Diode
Section 4.2 - Terminal Characteristics of Junction Diodes

W Oct 07  Section 4.3 - Modeling the Diode Forward Characteristic

M Oct 12  Section 4.4 - Operation in Reverse Breakdown
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<th>Date</th>
<th>Topic</th>
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<tr>
<td>W Oct 14</td>
<td>Section 4.5 - Rectifier Circuits</td>
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<td>M Oct 19</td>
<td>Section 4.6 - Limiting and Clamping Circuits</td>
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<td>W Oct 21</td>
<td>Section 4.7 - Special Diode Types</td>
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<td>M Oct 26</td>
<td>Section 5.1 - MOS Device Structure and Physical Operation</td>
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<tr>
<td>W Oct 28</td>
<td>Section 5.1 - MOS Device Structure and Physical Operation</td>
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<td>Section 5.2 - Current-Voltage Characteristics</td>
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<td>M Nov 02</td>
<td>Section 5.2 - MOS Current-Voltage Characteristics</td>
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<td>W Nov 04</td>
<td>Section 6.1 - BJT Device Structure and Physical Operation</td>
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<td>M Nov 09</td>
<td>Section 6.2 - BJT Current-Voltage Characteristics</td>
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<td>W Nov 11</td>
<td>EXAM #2 (Chapters 3, 4, 5)</td>
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<td>M Nov 16</td>
<td>Section 6.2 - BJT Current-Voltage Characteristics</td>
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<td>W Nov 18</td>
<td>Section 7.1 - Basic Principles of Transistor Amplifiers</td>
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<td>Section 7.2 - Small-Signal Operation and Models</td>
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<td>M Nov 23</td>
<td>*** THANKSGIVING BREAK ***</td>
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<td>W Nov 25</td>
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<td>M Nov 30</td>
<td>Section 7.2 - Small-Signal Operation and Models</td>
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<td>W Nov 02</td>
<td>Section 7.3 - BJT Common Emitter Amplifier</td>
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<td>M Dec 07</td>
<td>Section 7.3 - BJT Common Emitter Amplifier</td>
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<tr>
<td>W Dec 09</td>
<td>Section 7.3 - BJT Emitter Follower Amplifier</td>
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Laboratory Exercises

Aug 24  *** NO LABS ***
Aug 31  *** NO LABS ***
Sep 07  LTspice Tutorial
Sep 14  Experiment #12 - Introduction to LTspice and Voltage Dividers
Sep 21  Experiment #10 Part I - Characterization of Op-Amp Circuits (1 - 4)
Sep 28  Experiment #10 Part II - Characterization of Op-Amp Circuits (5 - 7)
Oct 05  Experiment #3 - Silicon Diodes
Oct 12  Experiment #5 - Half-wave Rectifiers
Oct 19  Experiment #7 - Diode Applications
Oct 26  Experiment #9 - Field Effect Transistors
Nov 02  Experiment #8 - Bipolar Transistors
Nov 09  Design Your Own Lab
Nov 16  Work on Final Project
Nov 23  *** THANKSGIVING BREAK ***
Nov 30  Work on Final Project
Nov 07  Demo Final Project