

## ECE 2100, Circuit Analysis (3-3), 4 Credit Hours Summer I, 2006

**Course Description** (2005-2006 Undergraduate Catalog): “Analysis of linear electric circuits using methods based on Kirchhoff’s laws and network theorems. RL, RC, and RLC transients. Sinusoidal steady state analysis.

**Prerequisites:** PHYS 2070 or taken concurrently and MATH 1230 or 1710.”

**Course Instructor:** Dr. S. Hossein Mousavinezhad, Professor, Electrical and Computer Engineering. B-229, Parkview Campus, 269-276-3153, Fax 269-276-3151, [h.mousavinezhad@wmich.edu](mailto:h.mousavinezhad@wmich.edu). Office Hours: MWF, 8:00 – 10:00 a.m.

**Textbook:** *Fundamentals of Electric Circuits, THIRD edition*, by Charles K. Alexander and Matthew N. O. Sadiku. McGraw-Hill, 2007, [www.mhhe.com/alexander/](http://www.mhhe.com/alexander/).

**Software Tools (CAE):** MATLAB ([www.matworks.com](http://www.matworks.com)), MATHCAD ([www.mathsoft.com](http://www.mathsoft.com))

**References:** There are many books available in the subject area of Electric Circuit Analysis. Visit Waldo Library for additional resources.

1. Introduction to Electric Circuits, 7<sup>th</sup> edition, by R. C. Dorf and J. A. Svoboda. Wiley, 2006.
2. Basic Circuit Analysis by John O’Malley, Schaum’s Outline Series, McGraw-Hill.
3. Electric Circuits by Nilsson and Riedel. Prentice Hall.

**Grading Policy:** Course grades will be based on the following items: (see next page for dates of the exams.)

Homework, Computer Assignments	10%
Laboratory	15%
Exam #1	20%
Exam #2	20%
Comprehensive Final Exam	35%

>>> **FINAL EXAM: Wednesday June 28, 2006, 10:00 a.m. - Noon** <<<

**Homework** assignments should be done neatly and orderly on 8.5x11 engineering papers (on one side only) with no more than one problem per page. As a general rule, no late homework will be accepted.

**Exams** are closed book and notes with one 8.5x11 formula sheet allowed. **8.5x11 exam book** should be used for exams. All exams are to be taken during regularly scheduled hours and dates, since no make-ups are planned at this time. Ordinarily, the following **SCALE** will be used to assign letter grades (subject to change based on class performance): 85 – 100 : A ; 75 - 84: BA, B ; 60 – 74 : CB,C ; 50 – 59 : DC, D ; 0 - 49: E. ((OUTLINE, EXAM DATES ON PAGE 2))

ECE 2100, Summer I 2006 (Mousavinezhad)  
**COURSE OUTLINE AND EXAM DATES**

<b>Topics</b>	<b>Text Reference</b>	<b>DATE</b>
Course Introduction Units, Charge, Current, Voltage, Power & Energy, Circuit Elements	Chapter 1	May 8
Ohm's Law Kirchhoff's Voltage & Current Laws	Chapter 2	May 10
Voltage Division, Current Division	Chapter 2	May 12
Nodal Analysis	Chapter 3	May 15
Mesh Analysis	Chapter 3	May 17
Linearity, Superposition, and Source Transformation	Chapter 4	May 19
Thevenin, Norton Theorems and Maximum Power Transfer	Chapter 4	May 22
<b>EXAM # 1: WEDNESDAY MAY 24, 2006</b>		
Operational Amplifiers (OP AMPS)	Chapter 5	May 26
Capacitors & Inductors	Chapter 6	May 31
RC and RL Circuits, First Order Systems	Chapter 7	June 2
Step Response	Chapter 7	June 5
Second Order (RLC) Circuits	Chapter 8	June 7
Step Response of RLC Circuits	Chapter 8	June 9
<b>EXAM # 2: MONDAY JUNE 12, 2006</b>		
Sinusoidal Steady-State Analysis, PHASORS, Impedance, Admittance	Chapter 9	June 14, 16
AC NODAL/MESH ANALYSES	Chapter 10	June 19, 21
AC POWER ANALYSIS	Chapter 11	June 23, June 26
<b>COMPREHENSIVE FINAL EXAM: WEDNESDAY JUNE 28, 2006</b>		

**LABORATORY EXPERIMENTS** (Your lab instructor will have more information about Laboratory part of the course).

Basic Circuit Measurements and Ohm's Law, Series and Parallel Circuits, Basic DC Meter Design, Node Voltage and Mesh Analysis, Superposition and Thevenin's Theorem, Operational Amplifiers as Circuit Elements, Operational Amplifiers in RC Circuits, RC Step Response, RLC Step Response, AC Circuits, AC Circuit Power.
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