CEET 1140 - AC and DC Circuits
Spring 2011 Syllabus

Course Description: Introduction to DC and AC circuit fundamentals, analysis, theorems, laws, components, measuring devices and equipment. Course consists of lectures and labs. Laboratory activities include circuit design, construction and analysis of AC/DC circuits.

Prerequisites: CEET 1110 and credit for or concurrent enrollment in Math 1060 or Math QL1080.

Instructor: Fon Brown
Email: fonbrown@weber.edu
Office: B4 421C
Office Hours: Mon/Wed 2:00-3:30, Tue/Thur 2:30-3:30, or by appointment.

Class Time: MW 10:30-12:20
Text: Boylestad, "Introductory Circuit Analysis", 12th Edition. Prentice Hall.

Software: Students will need to perform computer circuit analysis, but are free to use either OrCAD PSPICE or Multisim. A demo version of OrCAD PSPICE is packaged with the text, but Multisim is available on the lab machines.

Lab Supplies: Protoboard, plus various resistors, capacitors, etc. available in the CEET Storeroom.

Course Objectives: Students will understand the fundamentals of DC and (steady state) AC circuit analysis, including the theorems and laws that are applicable. Students will gain experience working with electronic lab equipment and measuring devices.

Homework: Homework is due two class periods after it is assigned. Homework must be clear and well organized, preferably on engineering paper. Answers must be boxed and include units, where applicable. Your name and a page number must be written on the top of each page. Use only one side of each sheet and submit folded lengthwise, with your name, the class (CEET 1140) and the assignment number written on the outside. Homework that does not conform to this format will be penalized one point. Late homework will be accepted and may be graded as time permits, but a 20% penalty will be assessed.

Quizzes: Quizzes will be unannounced and be given in class.

Labs: Laboratory assignments are available on the course website and will be assigned as shown in the schedule. Labs must be signed off within one week of the date they are assigned, otherwise a 20% penalty may be assessed. Weekly

labs may be done individually or in teams of two. The final lab must be done individually and counts as 20% of your final exam score.

Students will be required to keep a lab notebook. Guidelines for keeping a lab notebook can be found at the end of this syllabus or on the course website.

Exams: There will be two midterm exams and a final exam. The first midterm exam will be taken in class. The second will be a take-home exam. Students will be allowed to re-do problems for half credit. The final exam is scheduled at 11:00am, Wednesday April 20th. All exams are open-text, open-note.

Grading: Grades are based on the weighted average of the exams, labs, homework and quiz scores as shown below. Scores may be normalized to the high in the class (at the instructor's discretion).

Homework & Quizzes	25%
Weekly Labs	25%
Midterm Exams	30%
Final Exam	20%

Letter grades are assigned according to the scale below. Borderline cases may be promoted (again, at the instructor's discretion).

A	93% or more
A-	90% - 92.99%
B+	87% - 89.99%
B	83% - 86.99%
B-	80% - 82.99%
C+	77% - 79.99%
C	73% - 76.99%
C-	70% - 72.99%
D	60% - 69.99%
F	below 60%

Disabilities: Any student requiring accommodations or services due to a disability should contact Services for Students with Disabilities (SSD) in the Student Service Center.

Lab Book Guidelines:

1. Lab books must be bound such that pages cannot be inserted or deleted without leaving evidence. Three ring binders, spiral bound notebooks or books that use glue bindings are not acceptable.
2. All pages must be numbered. If the lab book does not have pre-printed page numbers, it is acceptable to number each page by hand as it is used.
3. Pages should be grid-ruled.
4. All work must be legible and in blue or black ink.
5. Printed work may be included in the lab book if it is glued or taped such that it cannot be removed without leaving evidence.
6. Each page must be signed (or initialed) and dated as it is used. If a page contains work from different dates, it must be separated with horizontal lines, and each section must be signed (or initialed) and dated.
7. Blank pages or large blank spaces are not acceptable. If you wish to leave a blank page or large blank space, draw a diagonal line from one corner to another, then initial and date it.
8. Do not obliterate. Obliteration is defined as (a) overwriting something, (b) scribbling out something or (c) using white-out to cover something. The correct way to handle a small error is to strike it out with a single horizontal line. For large errors, use a single diagonal line. If the strikeout occurs on a different day, then it must also be initialed and dated.
9. Use your lab book as a workbook. Do not transfer notes from scratch paper into your lab book.
10. Start each lab at the top of a new page. For each lab, write a title and a short description.
11. Use the first page in your lab book as a table of contents. Each time you start a lab, add an entry with its title, date and page number.
12. When schematic diagrams are needed, all components must be labeled either by value (e.g. 10KΩ, 330pF) or by reference designator (e.g. R1, C1) with the value for each designator given in a table.
13. Include all formulas, mathematical calculations, and results of computer simulations.
14. Conclude each lab with a signed, dated summary or conclusion that briefly describes what you learned. The summary should also mention what problems were encountered and what, if anything, can be improved.

CEET 1140 Tentative Course Schedule:

Date	Reading	Description	Lab	Homework
1/3	1.3-10 2.2-10	Introduction, Units, Conversions, Voltage, Current		#1) 1.29,30,33,35 2.2,6,8,9,11,13,14 2.16,21,25,28,37
1/5	3.2-9 3.13-14	Resistors, Thermistors, Varistors	Lab 1 – Measurements	#2) 3.2,4,5,11,17,19 3.31,34,35,40,50
1/10	4.2-6	Ohm's Law, Power and Energy		#3) 4.1-3,16a-b,22,24,27,32, 34,41,47,51,53,54,63
1/12	5.2-8 4.9, 5.14	Series DC Circuits, Capture & Simulation	Lab 2 – Ohm's Law	#4) 5.1-4,8,12,15,16,19a, 20a,23,25,29-31,47
1/17		Civil Rights Day		
1/19	5.9-12 6.2-9	Parallel DC Circuits	Lab 3 – Series DC Circuits	#5) 6.2-5,10,13,14,20,22, 24,27,30,31,36,41,49
1/24	7.2-9,11 8.2-6	Series-Parallel Circuits Branch Analysis		#6) 7.2,5,6a-f,8,10,12,19,25, 30,34 8.1-4,7,8,11,13
1/26	8.7-12	Mesh, Nodal Analysis Bridges, Y-Δ	Lab 4 – Parallel DC Circuits	#7) 8.15,20,40,41a, 64
1/31	9.2-9.8	Network Theorems		#8) 9.3,8,12,19,21a-b,24,30, 34a-b,35 ,43,50
2/2		Review	Lab 5 – Thevenin & Norton Equivalents	
2/7		Exam I (Chapters 1-9)		
2/9	10.1-8	Return Exams, Capacitors	No Lab	
2/14	10.9-13	Capacitors		#9) 10.3,6-8,10,13,17,19, 27a-c (plot 100μs), 38a, 47,49,53,57
2/16	11.2-13	Inductors	Lab 6 – Capacitors	#10) 11.1-2,3a,4,6,7,10,11a-c,13, 19,25,33,36,38,44,45,49
2/21		President's Day		
2/23	13.1-9	Inductors Sinusoidal Waveforms	Lab 7 – Inductors	#11) 13.1,4,5,9a-c,13,14,17,22, 27, 31,32,35,38abd,39,47, 49,52
2/28	14.2-10 14.12	Reactance, Complex Number, Phasors		#12) 14.6,10,13,17,24,25,31, 37,39,41a,42b,45,46,53,55,59
3/2	15.2-6	Series AC Circuits	Lab 8 - Reactance	#13) 15.1-3,5,7a-h,8a-h,15,17
3/7		Electron Technologies Activity		
3/9	15.7-13	Parallel AC Circuits	Lab 9 – Impedance	#14) 15.23,24,27a-h,28a-h,31b, 37,38
3/14		Spring Break		
3/16				
3/21	16.2,3 17.2-3	Series-Parallel Networks, Dependent Sources		#15) 16.1,3,8,9,14
3/23	17.4-7	Mesh Analysis - AC,	Lab 10 – Crossover Networks	#16) 17.5,14-16
3/28		Nodal Analysis - AC		#17) 17.17,20,25,28
3/30		Review – Distribute Exam II	Lab 11 – Dependent Sources	
4/4	18.2-6, 19.1-8	Network Theorems – AC Power		#18) 18.1,4,13,14,30,45, 19.7
4/6	20.2-8	Series Resonance	Lab 12 – Resonance	
4/11	21.4-8	Parallel Resonance, Filters		#19) 20.1.3.4.9.25
4/13	21.2-3 21.10-11	More Filters, Bode Plots		#20) 21.1,9,10,12,13,19,21,23,25, 27,28,35
4/18		Review	Lab 13 - Filters	