Course number and title: ELTR-1620, Electrical Concepts Laboratory

Lecture hours: 0    Laboratory hours: 3    Credits: 1.5

Class time: 1-3:50 p.m.    Days: Thursday    Room: EI-115

Instructor's name: Megan Graham    Phone: 268-2539
Email: mgraham@caspercollege.edu

Instructor's office: EI-119    Office hours: M, T, W, Th: 11:00 a.m.-12:00 p.m.
M, T, W: 5:00-6:00 p.m.

Course Description:

An introductory laboratory course for electronic technicians. Emphasizes analysis and troubleshooting of simple AC and DC circuits. Additional topics covered include magnetism and electromagnetism.

Statement of prerequisites:

Completion or concurrent enrollment in ELTR-1570.

General objectives:

To familiarize the student with basic laboratory techniques and to introduce basic electrical and magnetic concepts.

Specific outcomes:

The student will be able to:

1. Build basic resistive DC circuits
2. Build basic AC RCL circuits with signal generator
4. Troubleshoot a SER/PAR DC circuit with a DMM.
5. Measure Vpp, f and, phase a basic resistive and RCL circuit with oscilloscope.
6. Test single phase transformers with a DMM and clamp-on ammeter for primary and secondary V and I.
**Methodology:**

There will be a brief lecture before the students begin the experiments. The student will do most of the learning by doing. This is a hands-on course.

There will be one experiment per week except where noted on the course outline. The student is expected to do the experiments when they are assigned.

All lab reports are due the week after they are assigned. All late lab reports will be marked down 10%.

A Final Lab Practical will be scheduled to test the students' skills.

**Evaluation criteria:**

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<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Performance in the laboratory</td>
<td>5%</td>
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<tr>
<td>Lab reports</td>
<td>75%</td>
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<tr>
<td>Lab Practical</td>
<td>20%</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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**Required texts, readings, materials:**

There is no text, but references will be made to ELTR-1570 lecture text.

**Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade:**

November 3, 2006

**Student Rights and Responsibilities:** Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

**Chain of Command:** If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head, then the division chair, and lastly the vice president for academic affairs.

**Academic Dishonesty - Cheating & Plagiarism:** Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct.

**ADA Accommodations Policy:** It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment to see me at your earliest convenience.

**Safety:** Personal and equipment safety standards will be strictly enforced. It is the individual's responsibility to develop a safe work attitude.
Calendar or schedule indicating course content:

**Week 1**
EX 1: Resistors and the Color Code
Ohmmeters - Analog and Digital

**Week 2**
EX 2: Ohm's Law and the Power Law
Series Aiding and Opposing DC Series

**Week 3**
EX 3: Series and Parallel DC Circuits
Kirchoff's Law

**Week 4**
EX 4: Series-Parallel Combination DC Circuits

**Week 5**
EX 5: Wheatstone Bridge
Loaded Voltage Divider

**Week 6**
EX 6: Thevenin's Theorem
Maximum Power Transfer

**Week 7**
EX 7: Electromagnetism

**Week 8**
EX 7: Electromagnetism

**Note: Midterm grade is based on EX 1-7**

**Week 9**
EX 8: Oscilloscope

**Week 10**
EX 9: Capacitors
RC Transient Response

**Week 11**
EX 10: Inductors
RL Transient Response

**Week 12**
EX 11: Series RLC AC Circuits

**Week 13**
Thanksgiving Holiday

**Week 14**
Review for Lab Practical

**Week 15**
EX 12: Transformers

**Week 16**
Lab Practical Final: Measuring and Troubleshooting AC and DC Circuits

**Note: All lab reports must be submitted before taking the Lab Practical**