CASPER COLLEGE COURSE SYLLABUS
ELTR 1700, Section 01 – Intro to Solid State Electronics

Semester/Year: Spring 2015

Lecture Hours: 2  Lab Hours: 4  Credit Hours: 4

Class Time: 9:00 - 9:50 a.m.  Days: TTH  Room: GW 208
Lab Times: 10:00 - 11:50 a.m.  Days: TTH  Room: GW 214

Instructor’s Name: Mr. Blesi

Instructor's contact Information:
Mr. Blesi
Office Phone: 268-2459
Office Number: GW-116F
Email: jblesi@caspercollege.edu

Office hours:
M 9:00-11:00 a.m.
T 12:00 - 1:00 p.m.
W 11:00 - 12:00 a.m.
W 2:00 – 3:00 p.m.

Course Description:
Fundamentals of semiconductor electronics circuits. Transistor structure, measurement of transistor parameters, transistor biasing, audio and radio frequency amplifiers, and power supplies. Experiments are designed to assist the student to become cognizant of trends in this rapidly developing technology.

Statement of Prerequisites: ELTR 1570, or permission of the instructor.

Goals: Compare measured data to calculated data for basic solid state devices.

Institutional Outcomes:
☐ Demonstrate effective oral and written communication
☐ Use the scientific method
☐ Solve problems using critical thinking and creativity
☐ Demonstrate knowledge of diverse cultures and historical perspectives
☐ Appreciate aesthetic and creative activities
☐ Use appropriate technology and information to conduct research
☐ Describe the value of personal, civic, and social responsibilities
☑ Use quantitative analytical skills to evaluate and process numerical data

Program goals:
Providing the technical training required for successful employment.
The continual evaluation and adjustment of the electronics courses to meet the needs of industry.
Course Goals:

Ability to apply basic circuit skills shows improvement.
Comparison of theory and measured data shows improvement.
Knowledge of basic solid state devices.

Course Objectives:
1. Applying circuit skills (KCL, KVL, Ohm's Law, etc.) to diodes.
2. Identification and evaluation of a full wave bridge rectifier.
3. Applying circuit skills (KCL, KVL, Ohm's Law, etc.) to transistors.
4. Identification, evaluation, and analysis of a common-emitter amplifier.
5. Perform a comparison of a Bipolar Junction Transistor and a Junction Field Effect Transistor.
6. Identify and exercise appropriate use of safety equipment.

Methodology:
Students should read the text sections prior to arriving at class. The Instructor will use the text to discuss the material and answer any questions. Homework will be assigned daily to provide the students with active practice of principles discussed by text and instructor. Competency will be judged by exams. The course consists of two interrelated parts. The lecture portion presents basic theory and mathematical calculations of expected performance based on device characteristics. The laboratory portion is designed to give the student a chance to compare theory with actual devices. The first step in dealing with circuit problems is to understand, from theory, what dc levels and signals should be present.

Evaluation Criteria:
Grade is based on homework, tests, and laboratory reports.

Percent of total grade for required work is shown below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory</td>
<td>40%</td>
</tr>
<tr>
<td>Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Exams</td>
<td>40%</td>
</tr>
<tr>
<td>Lab practical</td>
<td>10%</td>
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Final grade for course is on the following scale:

- 90%-100%  A
- 80%-89%   B
- 70%-79%   C
- 60%-69%   D
- 00%-59%   F

Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.

Required Text, Readings, and Materials:

Scientific Calculator

Grid Graphing Paper

**Class Policies: Last Date to Change to Audit Status or Withdraw with a W Grade:**
April 16, 2015

Emphasis is on layout and methods rather than "answers". If I can't read the homework and laboratory reports, I will assume the material is incorrect!

Late work will receive a lowered grade of 10% per week. No late materials will be accepted after the final exam.

Students are expected to read the material listed on schedule prior to coming to class.

**Safety:** Personal and equipment safety standards will be strictly enforced. *It is the individual’s responsibility to develop and use a safe work attitude.* Disregard for the safety of yourself and/or others will result in dismissal from the class.

**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 to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, 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 for more information on this topic.

**Official Means of Communication:** Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly.

**ADA Accommodations Policy:** If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college’s Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.
### SCHEDULE
#### Spring 2015

<table>
<thead>
<tr>
<th>WEEK (DATES) LABORATORY</th>
<th>TUESDAY</th>
<th>THURSDAY</th>
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</thead>
<tbody>
<tr>
<td>Week 1 (1/20 to 1/23) Lab #1 Circuits review</td>
<td>Introduction</td>
<td>Sec 4.2 and Sec 5.3</td>
</tr>
<tr>
<td>Week 2 (1/26 to 1/30) Lab #2 Troubleshooting</td>
<td>Sec 4.3 and 5.4</td>
<td>Sec 17.1 to 17.5</td>
</tr>
<tr>
<td>Week 3 (2/2 to 2/6) Lab #3 Semiconductor diodes</td>
<td>Sec 17.6 to 17.8</td>
<td>Sec 17.9 to 17.13</td>
</tr>
<tr>
<td>Week 4 (2/9 to 2/13) Lab #4 Oscilloscopes and capacitors</td>
<td>Sec 9.1 to 9.3 Test 1 Review</td>
<td>Test #1 Chapters 4, 5, 17</td>
</tr>
<tr>
<td>Week 5 (2/17 to 2/20) Lab #5 AC to DC conversion</td>
<td>Sec 18.1 to 18.2</td>
<td>Sec 18.3</td>
</tr>
<tr>
<td>Week 6 (2/23 to 2.27) Lab #6 Filtered Bridge rectifiers and regulation</td>
<td>Sec 18.4 to 18.7</td>
<td>Sec 25.1 and 25.4</td>
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<tr>
<td>Week 7 (3/2 to 3/6) Lab #7 Introduction to BJT’s</td>
<td>Sec 19.1 to 19.4 Test #2 review</td>
<td>TEST #2 Chapters 9, 18 and 25</td>
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<tr>
<td>Week 8 (3/9 to 3/13) Lab # 8 Non-stable BJT biasing</td>
<td>Sec 19.5</td>
<td>Sec 19.7</td>
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<td>Week 9 (3/16 to 3/20) Spring break</td>
<td>Spring break</td>
<td>Spring break</td>
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<tr>
<td>Week 10 (3/23 to 3/27) Lab #9 Stable BJT biasing</td>
<td>Sec 19.6</td>
<td>open lab</td>
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<tr>
<td>Week 11 (3/30 to 4/2) Lab #10 PNP biasing</td>
<td>Sec 21.1 and 21.2</td>
<td>Sec 20.1 and 20.2 Review</td>
</tr>
<tr>
<td>Week 12 (4/6 to 4/10) Lab #11 CE amplifiers</td>
<td>TEST #3 Chapters 19, Sec 21.1, and Sec 21.2</td>
<td>Sec 20.3</td>
</tr>
<tr>
<td>Week 13 (4/13 to 4/17) Lab #11 CE amplifiers</td>
<td>Sec 20.4</td>
<td>Sec 20.5 to 20.8</td>
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<tr>
<td>Week 14 (4/20 to 4.24) Lab #12 CC amplifier and MOSFET amplifier</td>
<td>Sec 21.3</td>
<td>Sec 21.4 to 21.8</td>
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<tr>
<td>Week 15 (4/27 to 5/1) Lab #13 Basic Op-amps</td>
<td>Sec 22.1, 22.2 and 22.4</td>
<td>Sec 22.5 Review for Lab Exam</td>
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<td>Week 16 (5/4-5/8)</td>
<td>Lab exam</td>
<td>Test 4 Review</td>
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5/11 10:10 to 12:10 Test #4 Chapters 20, 21, and 22