Syllabus: EST-340 (3 Credit Hours) Application Of Solid State Devices

Course Days & Times: Mondays & Wednesdays, 9:00AM to 10:50AM
Course Location: ASA Room 204B

Instructor: George Bricker  Office: ASA 209B  Phone: 453-8805  Email: gbricker@siu.edu

Office Hours: Mondays through Fridays, 12PM to 1PM and 2PM to 3PM
Tuesday & Thursdays, 1PM to 2PM
(I might also be across the hall in room 210)

Course Description:
A technical and managerial approach to the practical application of discrete solid state devices and linear integrated circuits. The characteristics of these devices will be reviewed to assist the student in understanding their selection and application process. Prerequisites: Electronic Systems Technology major.

Course Outline:
This course is comprised of 5 units, with the first 3 units occurring before Spring Break (end of week 8).
Unit 1: Intro to Semiconductors (Ch 1), Diodes (Ch 2), Special Purpose Diodes (Ch 3), Thyristors (Ch 11)
Unit 2: BJTs (Ch 4), Bias Circuits (Ch 5), BJT Amplifiers (Ch 6), Power Amplifiers (Ch 7)
Unit 3: FETs (Ch 8), FET Amplifiers (Ch 9), Amplifier Frequency Response (Ch 10)
Unit 4: Feedback (from class notes), Op Amps (Chs 12, 13, 14), Active Filters (Ch 15)
Unit 5: Oscillators (Ch 16), Voltage Regulators (Ch 17), Communications (Ch 18 & supplemental material)

Course Text & Materials:
2) 3-Ring Binder for Class Notes
3) Scientific Calculator

There will be a review day prior to each exam. Between the review sessions and the scheduled exams, there are a total of 20 class periods devoted to lecture. After each lecture, there is an associated online quiz that is due before the start of the next class. This means that after a Monday lecture, the quiz on that material must be completed before 9AM on Wednesday. After a Wednesday lecture, the quiz on that material is due before 9AM the following Monday. There are a total of 20 quizzes. Most of the quizzes contain 35 questions.

There are also 5 circuit labs that must be completed outside of class. Each lab corresponds to a particular unit, and the circuit must be demonstrated to the instructor no later than 3PM on the Friday following the associated unit exam.

Each unit exam is weighted based upon the number of lectures (and quizzes) required.

Course Grading: (A>=90%, B>=80%, C>=70%, D>=60%, F<60%)

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<thead>
<tr>
<th>Points</th>
<th>Description</th>
<th>Weight</th>
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<tbody>
<tr>
<td>180</td>
<td>Unit 1 Exam</td>
<td>7.5%</td>
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<tr>
<td>240</td>
<td>Unit 2 Exam</td>
<td>10%</td>
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<td>120</td>
<td>Unit 3 Exam</td>
<td>5%</td>
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<td>360</td>
<td>Unit 4 Exam</td>
<td>15%</td>
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<td>Lab Total</td>
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</tbody>
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Total Points
How You Should Approach This Course:

1. DO THE QUIZZES! You have 2 attempts per quiz, so you need to understand WHY you missed a particular question, and then make the correction. If you still have trouble, see the instructor ASAP.

2. Buddy Up. Study together. Partner with someone on your labs. It takes most loners 2 to 3 times longer to do the quizzes and labs. Most students do not have a large amount of surplus time available. Be efficient!

3. The exams are similar to the quizzes. Once again, complete & understand the quizzes. Your quizzes constitute 29.2% of your grade. The exams (which are based upon the quizzes) constitute 50% of your grade. This means that nearly 80% of your grade is based, ultimately, upon the quizzes.

4. This is not a course where you need to memorize a bunch of equations. Most equations you need will be given to you. This course is more concerned with your circuit analysis technique. Pay close attention to HOW your instructor approaches a circuit analysis problem. Your instructor breaks very complicated circuits into smaller, more manageable chunks. Sometimes a complicated-looking circuit can be redrawn in such a manner that suddenly makes the analysis easy. Your goal is to be able to turn mountains into molehills.

It's all about TECHNIQUE. Watch and learn the technique. If you use these techniques, you will soon discover that even the nastiest-looking circuits will fall prey to you.

5. The lab circuit is designed to reinforce the material you have learned. Even though each lab is due after the exam, you might consider completing the lab before the exam (for reinforcement).

Other Policies, Etc.:

• Late Work Policy for each type of assignment/exam.
  10% grade reduction per working day late. After 5 working days the missing assignment/exam is recorded as a zero.

• SIU Policy on “Incomplete” as a Course Grade: The following text is taken from the 2011-2012 Undergraduate Catalog, p. 32:
  An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within a time period designated by the instructor but not to exceed one year from the close of the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, not to exceed one year, or graduation, whichever comes first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. Students should not reregister for courses in which an INC has been assigned with the intent of changing the INC grade. Re-registration will not prevent the INC from being changed to an F.

• Attendance Policy – number of unexcused absences allowed, acceptable excuses, tardiness policy, and the effect of absences and tardiness on a student’s final grade. In particular, if there is a point at which missing a specific number of classes results in a failing grade, this should be explicitly noted on the syllabus. Also, the University Policy on Accommodating Religious Students (SIU 2011-2012 Undergraduate Catalog, p. 494) should be mentioned or included on a syllabus.
  Two unexcused absences are allowed without penalty. Beyond this, each unexcused absence (or extreme tardiness) may result in a 2% final grade reduction per instance.
• Prepared for class: tell the students exactly what it means to be prepared for your class on a regular basis.
  
  Bring your lecture notes, pencil, and calculator.

• Mobile Technology Policy: Include a statement indicating whether and how students may use laptops, iPads, netbooks, e-Readers, smart phones, etc. during your class.
  
  You may take notes on paper or any personal device. During exams however, you will only have access to your scientific calculator.

• Disruptive Behavior Policies – inappropriate use of laptops, cell phones, MP3 players, magazines, newspapers, eating, drinking during class and any other inappropriate disruptive behaviors.
  
  Leave your distractions outside of the classroom. If you can eat & drink quietly without making a mess, you may do so. If you receive a cell phone call, take the conversation outside.

• As with any public forum, the classroom is a shared space where consideration and compassion for others are not negotiable. These are a must! To learn the interpersonal and professional skills offered in the course requires that, as with a sport or any instrument, we practice them daily. We will make this class what it becomes. A positive attitude, a willingness to listen and learn, and an embrace of differences as well as similarities . . . these are just a few of the dynamics we will strive to practice.

• Statement on Inclusive Excellence – SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ from you is an important part of your education in this class, as well as essential preparation for any career.

• Statement on Academic Honesty/Plagiarism – See the Morris Library Guide on Plagiarism (http://libguides.lib.siu.edu/plagiarism)

• Statement of SIU Emergency Procedures
  
  SIU is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIU Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in every building on campus and in the Emergency Response Guideline pamphlet. It is also available on BERT’s website at http://www.bert.siu.edu/ and on the Department of Safety’s website www.dps.siu.edu. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

• Detailed Schedule – a weekly or daily schedule showing required readings, class activities, course withdrawal deadlines, assignment due dates, exam dates, including any exam scheduled during final exam week. Dates for when the class can be dropped without receiving a “W” and/or a “WF.”

• University policy regarding final exams scheduling and its inclusion in their syllabi – All final unit or final examinations must be scheduled the week immediately before commencement. Instructors must administer their examinations only during finals week, whether or not they poll their students to determine an alternate date, and indicate clearly on the syllabus the appropriate day and time set by the University Registrar: http://registrar.siu.edu. Except in the most unusual of circumstances, scheduling final exams during the last week of classes is not an option. The policy is intended to ensure that students have time to do their very best work. Finals held the last week of classes often interfere with students’ other obligations, such as attending all their classes and completing papers,
reports, and projects, which are due in other courses before exam week.

- **Resources for additional academic help –** Writing Center, Learning Support Services, tutoring, DSS services, etc. Two examples:
  Supplementary Assistance: With the cooperation of SIU’s Disability Support Services (DSS), each student who qualifies for reasonable supplementary assistance has the right to receive it. Students requesting supplementary assistance must first register with DSS in Woody Hall B-150, (453-5738) or http://disabilityservices.siu.edu/
  Notice: If you have any type of special need(s) or disability for which you require accommodations to promote your learning in this class, please contact me as soon as possible. The Office of Disability Support Services (DDS) offers various support services and can help you with special accommodations. You may wish to contact DDS at 453-5738 or go to Room 150 at Woody Hall to verify your eligibility and options for accommodations related to your special need(s) or disability.

- **SIU email policy**
  Official SIU Student Email Policy: http://policies.siu.edu/policies/email.htm

- **Saluki Cares—** The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. To make a referral to Saluki Cares click, call, or send: http://salukicares.siu.edu/index.html; (618) 453-5714, or siucares@siu.edu.