Course title and number

ECEN 325: Electronics
Section 200, 501-503

Term

Fall 2015

Meeting times and location

TR 8:00 – 9:15 am; ETB 1037
Lecture: 3 hours   Lab: 3 hours
Credit: 4

Course Description and Prerequisites
Introduction to electronic systems; linear circuits; operational amplifiers and applications; diodes, field effect transistors, bipolar transistors; amplifiers and nonlinear circuits.

Course Prerequisites: ECEN 214 or registration therein.

Learning Outcomes or Course Objectives

The learning outcomes include the following five ABET Criteria (A, B, D, E, and K):
- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to function on multidisciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Instructor Information

Name
Prof. Sebastian Hoyos, Department of Electrical and Computer Engineering
Telephone 979-845-4253
Email address hoyos@ece.tamu.edu
Office hours TR 9:30-10:30 pm or by appointment.
Office location 315D WERC

Textbook and/or Resource Material


Laboratory Manual for ECEN 325 (Required: Available on course website http://ece.tamu.edu/~hoyos/)

Recitation

This semester, the recitation (50 min) each week will focus on solving example circuit problems.
Attendance is optional. Class participation grade will be determined by one or more of the following: attendance in lecture, in-class quizzes.
Grading Policies

There will be three exams. The exams will take place as per the schedule below, unless you are notified of a change in date and time. Reading assignments will not be made; you are expected to study the book topics as appropriate. The dates indicated for the material are approximate; some modifications will be inevitable. There may be important email communications (like a change in the test date) to the class, so it is important for you to monitor your neo email account and the mail on Elearning.

3 Exams: 45%
Laboratory: 20%
Homework: 15%
Class Participation: 5%
Final Project: 15%

Grading Scale (out of 100): A: 90-100; B: 80-89; C: 70-79; D: 60-69; F: 59 or lower

Homework

They will be assigned from the book on a weekly basis.

Computer Access

To use PSPICE or LabView, you can either use the ECE open labs (213B, Crystal Palace) and the ECEN 325 lab.

Course Topics, Calendar of Activities, Major Assignment Dates

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<tr>
<th>Week</th>
<th>Topic (tentative, subject to change)</th>
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| Week 1 (Aug. 31) | Chapter 1 & 14 : Introduction and filters.  
Chapter 1 & 14 : Frequency domain representation and Bode plots. |
| Week 2 (Sep. 7)   | Chapter 1&14: Frequency response of simple RLC filters                                                |
| Week 3 (Sep. 14)  | Chapter 8: The Operational Amplifier                                                                |
| Week 4 (Sep. 21)  | Chapter 8: The Operational Amplifier                                                                |
| Week 5 (Sep. 28)  | Chapter 5: ECEN214 Nilsson Textbook-Differential Amplifiers  
Chapter 10: Differential Amplifiers |
### Academic Integrity

For additional information please visit: [http://www.tamu.edu/aggiehonor](http://www.tamu.edu/aggiehonor)

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”

The handouts used in this course are copyrighted. The definition of "handouts" is all materials generated for this class, which include but are not limited to syllabi, homework assignments, in-class materials, and additional printed materials except published scientific papers for personal use. Because these materials are copyrighted, you do not have the right to make additional copies of the handouts unless the instructor of this course expressly grants permission.

As commonly defined, plagiarism consists of passing off the ideas, words, writings, etc., of another as one’s own. In accordance with this definition, you are committing plagiarism if you copy the work of another person without proper citation and acknowledgement, and turn it in as your own, even if you should have the permission of that person. **Plagiarism** is one of the worst academic offenses, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. **Paraphrasing** without proper citation and acknowledgement is one form of plagiarism. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty".

Any forms of dishonesty including, but not limited to, cheating on any examinations and plagiarism will be handled according to the procedures outlined by the Aggie Honor System Office. Please check the following websites for further information:

University Regulations Student Handbook: [http://student-rules.tamu.edu](http://student-rules.tamu.edu)
Definition of Academic Misconducts: [http://www.tamu.edu/aggiehonor/acadmisconduct.htm](http://www.tamu.edu/aggiehonor/acadmisconduct.htm)

| Week 6 (Oct. 5) | Chapter 2: Semiconductor Basics and Diodes  
Chapter 4: Physics of Bipolar Junction Transistors |
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<tr>
<td>Week 7 (Oct. 12)</td>
<td>Exam # 1 – Oct. 13 during Class Schedule</td>
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<tr>
<td>Week 8 (Oct. 19)</td>
<td>Chapter 5: Bipolar Amplifiers</td>
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<tr>
<td>Week 9 (Oct. 26)</td>
<td>Chapter 5: Bipolar Amplifiers</td>
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| Week 10 (Nov. 2) | Chapter 6: Physics of MOS Transistors  
Exam # 2 – Nov. 3 during Class Schedule |
| Week 11 (Nov. 9) | Chapter 7: CMOS Amplifiers. |
| Week 12 (Nov. 16) | Chapter 7: CMOS Amplifiers |
| Week 13 (Nov. 30) | Chapter 10: Differential Amplifiers  
Exam # 3 – Dec. 3 during Class Schedule |

**FINAL Project Presentations – Tuesday Dec 8th, during Class Schedule**
Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

Design Studio for the Honors Section

The intent of the design studio approach is to show students that there is more to electrical engineering than analyzing circuits and to provide a venue for exposing them to various fields that they might like to study. Design studio problems are stated in words, sometimes with no circuit diagrams. Several of them are open-ended, realistic, top down electrical engineering circuit problems that have numerous solutions, and often have either missing information or too much information. Additional real world constraints such as efficiency, size, weight, power requirements, cost and manufacturability will be specified as appropriate.

You are required to solve the specified problem and consider tradeoffs among various solutions in light of conflicting constraints to arrive at an optimum solution.

Students may be divided in groups and each group may receive a specific problem assignment each week. A teaching assistant will be available to explain the problem and supervise the design process involved. The teaching assistant will also grade the student solutions and take attendance.

Note: Design studio is for Honors Students Only.