

EE311**Electronics****Spring 2008****Location:** Lectures: Sloan 9 MWF @ 1:10 p.m**Instructor:**

Dr. Mohamed A Osman

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Office hours: MF : 3:00 – 4:00, M: 9:00 – 10:00 or by appointment

Web: <http://www.eecs.eecs.wsu.edu/~osman/EE311/>**Teaching Assistant:**

Name: Hari Krishnamurthy office hours: Tuesday: 1:30 – 2:30, Wed: 10:30-11:30 (or by appt.)

Office: Sloan: 344 Phone: 335-4149 e-mail: hkrishna@eecs.wsu.edu**Credits:** 3**Pre-requisites:**By course: EE214, 261 with grade of C or better.By topic: KCL, CVL, basic circuit analysis including DC, AC, and transient analysis.**Text Book:**

1. A. Sedra and .C. Smith, “*Microelectronics*,” Oxford University Press, 5th edition, 2004

Reference books:

1. G.W. Roberts and A. Sedra, “*SPICE for Microelectronic Circuits*,” Oxford University Press, 2nd edition, 1997. ISBN 0-19-510842-6

Grading:

| | |
|------------------------------------|-----|
| Homework | 10% |
| Quizzes (7) | 21% |
| Three midterms (48%) + final (21%) | 69% |

Quizzes:

Open notes and book lasting for 20 minutes. For the dates, see course outline.

Homework Policies:“*No late homework accepted*”

Homework assignments are designed to prepare you for the exams and applying the concepts discussed in lectures. Turn in your own work for homework assignments. Do not copy your colleague’s homework solutions. The TA will be instructed to give students zero points for any problem that has been copied (regardless of “who did the work”). This policy is not meant to discourage studying together, but to ensure that the homework score provides a measure of the effort the student expends on the homework assignment.

Exam. Policies: The following restrictions will apply to all exams.

1. Closed notes and books.
2. Two pages of notes allowed
3. No headphones, cell phones, or pagers. Cell phone should be off, otherwise student will receive ZERO grade for the midterm if the cell phone rings
4. No hats
5. No guests or visitors during exams.
6. Calculators allowed for straight forward computations. Use of programmable features is NOT allowed. The instructor may exchange your calculator with other calculator.
7. Make-up exams will be given only if the instructor provides verbal approval before the regular exam is administered. Leaving the instructor voice messages or sending e-mails does not constitute approval for make-up exam. It is very important that you make note of this policy.
8. Upon return of graded exams, you are given time to review the grading of the exams. Any discussion of the graded exams. will be done at a later time in my office provided you return your exam. immediately.
9. Cheating in any form will result in automatic failure of the course and further actions by the School of EECS and WSU.

Grade Cuts:

The only grade cuts are that students receiving a course average less than 50% will receive an F for the course and those students receiving less than 60% will probably receive C- for the course.

Course grades will be assigned by considering the histogram of course averages and looking for “natural” cuts where there is a clear difference between “groups” of students.

All comprehensive Final exams have to be passed by a grade of 50% or better to pass a class.

Reasonable accommodations are available for students who have a documented disability. Please notify instructor during the first week of class of any accommodations needed for the course. Late notifications may not guarantee the accommodations due to unavailability. All accommodations must be approved through the Disability Resource Center in Administration Annex room 205, 335-1566, e-mail: drc@mail.wsu.edu in Pullman.

| Week | Date | Lecture | Topics | Chapter | Quiz | Homework |
|------|------|---------|--|----------|------|----------|
| 1 | 1/7 | 1 | Amplifiers | 1.4 | | |
| | 1/9 | 2 | Amplifier models | 1.5 | | |
| | 1/11 | 3 | Frequency response | 1.6 | | |
| 2 | 1/14 | 4 | Operational Amplifiers: Ideal op. amps. | 2.1, 2.2 | | |
| | 1/16 | 5 | Operational Amplifiers: applications | 2.3, 2.8 | | HW#1 |
| | 1/18 | 6 | Operational Amplifiers : Frequency response | 2.5 | (1) | |
| 3 | 1/21 | | MLK Day: No classes | | | |
| | 1/23 | 7 | Operational Amplifiers: Frequency response | 2 | | HW#2 |
| | 1/25 | 8 | Operational Amplifiers: DC imperfections | 2.6,2.7 | | |
| 4 | 1/28 | 9 | Diodes: Device Physics | 3.7 | | |
| | 1/30 | 10 | Diodes: DC characteristics | 3.2 | | HW#3 |
| | 2/1 | 11 | Diodes : Small-signal Model | 3.3 | (2) | |
| 5 | 2/4 | 12 | Diodes : Applications | 3.4 | | |
| | 2/6 | 13 | Midterm Exam. 1 (Chaps. 1 & 2) | 4.1 | | HW#4 |
| | 2/8 | 14 | MOSFETs: Device Physics | 4.1 | | |
| 6 | 2/11 | 15 | MOSFETs: DC characteristics | 4.2 | | |
| | 2/13 | 16 | MOSFETs: DC circuits | 4.5 | | HW#5 |
| | 2/15 | 17 | MOSFETS : Amplifier biasing | 4.5 | (3) | |
| 7 | 2/18 | | President's Day : No Classes | | | |
| | 2/20 | 18 | MOSFETS : small signal model | 4.6 | | HW#6 |
| | 2/22 | 19 | MOSFETS: Common Source Amplifier | 4.7 | | |
| 8 | 2/25 | 20 | MOSFETS: Common Gate Amplifier | 4.7 | | |
| | 2/27 | 21 | MOSFETS: Source Follower | 4.7 | | HW#7 |
| | 2/29 | 22 | BJTs : Device Physics | 5.7 | (4) | |
| 9 | 3/3 | 23 | BJTs : DC Characteristics | 5.1 | | |
| | 3/5 | 24 | Midterm Exam. 2 (Chaps. 3 & 4) | | | HW#8 |
| | 3/7 | 25 | BJTs : DC circuits | 5.2 | | |
| | 3/10 | | Spring Break (No classes) | | | |
| | 3/12 | | | | | |
| | 3/14 | | | | | |
| 10 | 3/17 | 26 | BJTs :amplifier biasing | 5.5 | | |
| | 3/19 | 27 | BJTs : small signal model | 5.6 | | HW#9 |
| | 3/21 | 28 | BJTs : Common Emitter Amplifier | 5.7 | (5) | |
| 11 | 3/24 | 29 | BJTs : Common collector Amplifier | 5.7 | | |
| | 3/26 | 30 | BJTs : Common Base Amplifier | 5.7 | | HW#10 |
| | 3/28 | 31 | BJTs: Emitter Follower | 5.7 | | |
| 12 | 3/31 | 32 | Differential pair amplifiers | 7 | | |
| | 4/2 | 33 | Differential pair amplifiers | 7 | | HW#11 |
| | 4/4 | 34 | Multistage amplifiers | 7 | (6) | |
| 13 | 4/7 | 35 | Multistage amplifiers | 7 | | |
| | 4/9 | 36 | Current mirrors | 6 | | HW#12 |
| | 4/11 | 37 | Current mirrors and sources | 6.3 | | |
| 14 | 4/14 | 38 | Midterm Exam. 3 (Chaps. 5 & 7) | | | |
| | 4/16 | 39 | High Frequency Models of BJT & MOSFET | 5.8,4.8 | | HW#13 |
| | 4/18 | 40 | Frequency Response: CE amplifiers | 4.9,6.6 | (7) | |
| 15 | 4/21 | 41 | Frequency Response: CE amplifiers | 4.9,6.6 | | |
| | 4/23 | 42 | Frequency Response: CB amplifiers | 6.7 | | HW#14 |
| | 4/25 | 43 | Review | | | |
| 16 | 5/1 | | Final Exam: Thursday: 3:10 –5:10 p.m. | | | |

Final Exam. Schedule:

| Thurs., May 1 | | | | | |
|------------------|-------|-------|--------------------|-------------------|----------------------|
| Lecture | | | Exam Time | | Block Finals |
| Time | Days | | 3 credits | 4 credits | |
| 10 a.m. | Daily | M,W,F | 8:00 - 10:00 a.m. | 7:00 - 10:00 a.m. | Chem 345 |
| | | | 10:10 - 12:10 p.m. | 10:10 - 1:00 p.m. | Math 172, 202 |
| | | | 1:00 - 3:00 p.m. | | B Law 210 Mktg 360 |
| 1 p.m. | Daily | M,W,F | 3:10 - 5:10 p.m. | 3:10 - 6:10 p.m. | |
| 1:25 - 2:40 p.m. | | M,W | | | |
| | | | 7:00 - 9:00 p.m. | 7:00 - 10:00 p.m. | Biol 101, 102 |