

# ECEN 325: Electronics

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Fall 2009

TR 2:20-3:35, ZACH 223C

<http://www.ece.tamu.edu/~spalermo/ecen325.html>

**Instructor:** Sam Palermo  
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**Prerequisite:** ECEN 314 (co-registration)

**Textbook:** *Microelectronic Circuits, 5<sup>th</sup> Edition*, A. Sedra and K. Smith, Oxford University Press, 2004. **(Optional)**

**Reference:** *Class Notes*, Jose Silva-Martinez. This is the primary class reader.  
*Class Notes*, Aydin Karsilayan. Excellent Condensed Notes Set.  
Both notes sets are posted on class website.

**Objectives:** To be able to plot complex transfer functions using bode approximations and be able to develop small signal (linear) models for soft non-linear circuits. To study circuits based on operational amplifiers, diodes, bipolar devices and MOS field effect transistors. To be able to recognize the importance and roll of dc and ac signals on the amplifiers. To analyze, design, simulate basic configurations of electronic circuits. To get practical experience on the use of these devices and topologies; students will build some circuits in the lab and use the SPICE simulator to verify functionality and robustness of the design.

## Grading:

- **Exams** **60%**
  - Three Midterm Exams (20% each)
  - Closed book
  - One double sided 8.5x11 note sheet allowed
  - No make-up exams except for university excused absences
  - No Final Exam
- **Homework** **10%**
  - You are encouraged to work together with your colleagues on the homework. However, each student must turn in an independent write-up.
  - Due at beginning of class
  - No late homework will be graded
- **Laboratory** **20%**
- **Laboratory Project** **10% (+2%)**
  - Report and PowerPoint presentation required
  - Opportunity for extra credit (+2pts on final grade)

### Grading Policy\*:

Letter Grade	x = Your Average
A	$x \geq 90.00$
B	$89.99 \geq x \geq 80.00$
C	$79.99 \geq x \geq 70.00$
D	$69.99 \geq x \geq 60.00$
F	$59.99 \geq x$

\*This is the lowest grade that you are guaranteed for your raw average, x. Depending on the relative performance of the class, your grade **MAY** be adjusted higher.

### Outline & Preliminary Schedule\*

Topic		Week
I.	Introduction to electronics	Week 1-4
II.	Circuit analysis and bode plots	
III.	Operational amplifiers and circuit analysis	
	<b>Review session (30 min.)</b>	<b>Sep. 29</b>
	<b>1<sup>st</sup> MIDTERM</b>	<b>Oct. 1</b>
IV.	Diode and bipolar device models	Week 5-8
V.	Concepts on input and output impedances and transmission gain	
VI.	Basic and multi-stage amplifiers	
	<b>Review session (30 min.)</b>	<b>Oct. 27</b>
	<b>2<sup>nd</sup> MIDTERM</b>	<b>Oct. 29</b>
VII.	Field-effect (MOS) transistors	Week 9-12
VIII.	Basic and multi-stage amplifiers	
IX.	Differential amplifiers	
	<b>Review session (30 min.)</b>	<b>Dec. 1</b>
	<b>3<sup>rd</sup> MIDTERM</b>	<b>Dec. 3</b>
	<b>Project Report Due</b>	<b>Dec. 8</b>
	<b>Project presentations</b>	<b>Dec. 16</b>

\*Exam dates are approximate and subject to change with reasonable notice.

### Americans with Disabilities Act (ADA) Policy Statement:

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 the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.

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

Honor Council Rules and Procedures: <http://www.tamu.edu/aggiehonor>

## Build the Hell Outta Electronic Circuits!

