

EE 322 Advanced Analog Electronics

Course title:

Advanced Analog Electronics

Instructor:

Dr. Anders M. Jorgensen

Workman 227

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Class hours:

Monday, Wednesday, Friday 10:00-10:50

Classroom location:

Workman 113

Laboratory hours:

Monday 14:00-17:00

Laboratory location:

Workman 189

Office hours:

TBD

Textbooks:

1. *Adel S. Sedra and Kenneth C. Smith*, Microelectronic Circuits, Fifth edition, Oxford University Press. (This is the textbook for EE 321)
2. *Paul Horowitz and Winfield Hill*, The Art of Electronics, Second edition, Cambridge University Press. (This book is available at the NMT bookstore)
3. *Ron Mancini, ed.*, Op Amps For Everyone, September 2001 edition. (This book is available as a pdf from the course website)

Learning objectives:

1. Apply basic concepts from previous courses to practical analog circuits and techniques.
2. Learn principles and good experimental technique through laboratory exercises.
3. Exposure to a selected variety of practical circuits.
4. Be able to use a new circuit or IC after reading the section in 'Horowitz and Hill' and the spec sheet.

Prerequisites:

EE 231 and EE 231L, EE 321 and 321L, EE 341.

EE 322 and EE 322L are integrated and must be taken together.

Topics covered:

1. Linear voltage regulators
2. Switching voltage regulators
3. Interference and grounding
4. Noise in circuits
5. Oscillators and comparators
6. Timers

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| 7. Active filters | 9. Feedback op-amps and stability |
| 8. Phase-locked loops | 10. Differential amplifiers |

Course work:

1. Reading. You will be required to keep up with the course by reading the assigned sections in the books.
2. Homework. Assigned approximately weekly.
3. Laboratory exercise. Scheduled most weeks.
4. Tests. Three tests in class during the semester.
5. Final exam. During finals week.

Grading policy:

EE 322

1. Homework 30%
2. Three tests 50%
3. Final exam 20%

EE 322L

Please see specific instructions and grading information on laboratory exercises website.

Approximate Lecture Schedule:

Week of	Lecture	Test	Laboratory Exercise
Jan 20	Voltage regulators		
Jan 25	Switching regulators		Pspice simulation
Feb 1	Switching regulators, grounding		Linear regulator
Feb 8	Oscillator		Switching regulator
Feb 15	Comparators	1	Sine oscillator
Feb 22	Timers, Oscillators		Comparators
Mar 1	Active filters		555 timer
Mar 8	RLC, VCVS		Matlab filters
Mar 15	Spring Break		
Mar 22	Phase-locked loops	2	Active filters
Mar 29	Phase-locked loops, Noise		Phase-locked loops
Apr 5	Voltage/current feedback op-amps		Noise
Apr 12	Differential pairs		Current Feedback
Apr 19	Differential amplifier		Discrete Op-amp - 1
Apr 26	Differential/multi-stage amps	3	Discrete Op-amp - 2
May 3	Review		
May 10		Final Exam	