EE 231
Analog Electronics I
Course Syllabus (Fall 2017)
Fairfield University School of Engineering

Course Number: EE 231	Course Name: Analog Electronics I
Time: **Mon/Thurs 3:30pm - 4:45pm**	Course Location: **Nursing 411**
Instructor: **Jeffrey N. Denenberg**	Final Exam: **TBD**
Office: **Bannow 301C**	Office Hours: **Mon-Thurs 1:00 – 2:00**
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Course Description:

This first course in electronics teaches basic principles and technologies to understand, analyze, and design electronic circuits. The course reviews the properties of semiconductor materials used in the fabrication of diodes, bipolar junction transistors, and field effect transistors. Students analyze amplifier biasing techniques and develop circuit models of semi-conductor devices that are used to analyze and design electronic circuits. Computer simulations of circuits are used to illustrate the fundamental principles.

Prerequisites: **EE213**, **MA228**
Co-requisite: **EE231L**

Learning Outcomes

No.	Outcome	Cognitive Level	ABET a-k
1	Students will understand the role and importance of electronics in the modern world	Knowledge, Application	f, h, j, k
2	Students will be able to analyze and design amplifiers and relate them to the given requirements.	Analysis, Design	a, c, e, k
3	Students will use knowledge from the lecture course in their laboratory reports.	Analysis, Design, Application	a, b, c, d, e, f, g, h, i, j, k
4	Students will learn principles of diode operation and How to apply them in designs	Knowledge, Application	f, h, j, k

Recorded Lectures: Support for Distance Ed students

Textbook:

Author:	Sedra & Smith
Title:	Microelectronic Circuits, 7th Edition (2015)
ISBN #	978-0-19-933913-6
Publisher:	Oxford (OUP)
Errata:	Errata-Sedra&Smith6th.htm
Selected Answers:	appendix_L.pdf

Performance Indicators and grading:

Two written exams will be given at approximately equal intervals during the term as outlined in the syllabus. The exams will be open book, open notes.

Semester Exams (2)	40%
Final Exam	20%
Homework	20%
Laboratory Reports	20%

Exam grading:

The purpose of the exam is to convey your understand the material; therefore, it is important that you show your work. Even if you feel that the solution to a problem is obvious; you must still explain why it is obvious. Furthermore; if you are asked to solve a problem using a given technique; then please use that technique; otherwise, I have no way to judge your understanding of the technique being tested.

Homework policy:

The purpose of homework:

        A: To give student practice.

        B: To give professor feedback.

Homework will be collected and graded.

Grade is based more on **honest effort** than correct answers.

Homework is due the next class after it is assigned (except when specified). This two week homework cycle gives an intervening class where students can ask questions. Late homework assignments are not accepted. If you know you have a conflict, please make arrangements ahead for time.

If you know in advance that you will be missing class please contact me to make arrangements regarding homework.

If you understand how to do the homework problems you will have an easier time with the Exams.

Class structure:

Lectures will be the primary source of information. Students are expected to attend every class and to participate in class discussions. Homework assignments will be discussed in class. Students will be expected to work problems in class. You will find it beneficial to review the chapters before the lecture.

Your laboratory reports on your team design projects in the co-requisite EE231L count towards the lecture course grade as well as your Lab grade. This is to encourage you to put in a good effort on and use of the lecture materials in your designs.

Office hours are open for discussion of anything. You can get help with homework, projects, or more detailed explanations of topics covered in class. Feel free to stop by, email me, or make an appointment to meet another time.

Class Topics and Order of Material

Week	Topics	Notes	Text	HW*	Objectives
9/7	Course Introduction and Pre-Requisite Material Review	Multisim: Tutor, Man, Ch. 1	1.1 – 1.2	1.1, 1.3, 1.7, 1.9, 1.11, 1.16, 1.20, 1.22, 1.24	0
9/11 9/14	Introduction to Electronics	Ch. 1	1.3 – 1.6	1.29, 1.32, 1.34, 1.38, 1.40, 1.64, 168, 1.70	1,2
9/18 9/21	Signals and Amplifiers	Ch. 2	All	2.2, 2.11**, 2.13, 2.17, 2.26, 2.73, 2.92, 2.94, 2.121	1,2,7
9/25 9/28	Semiconductors, *PN* Junctions, and Fermi--Dirac distributions	Ch. 3 F-D ref.	All	3.1, 3.5, 3.9, 3.12, 3.22, 3.27	1,6
10/2 **10/5**	Review for Exam 1 **Exam 1 (Chapters 1-3)**				1,2,6,7
10/9 10/12	**Fall Break – No Class** Exam 1 Reprise	Ch. 4	4.1 – 4.4	4.2, 4.13, 4.17, 4.26, 4.33, 4.37	1,2,6,7 6
10/16 10/19	Semiconductor Diodes	Ch. 4	4.5 – 4.7	4.48, 4.53, 4.56, 4.63, 4.66, 4.85	6
10/23 10.26	MOS Field Effect Transistors	Ch. 5 with audio notes	5.1 – 5.3	5.1, 5.9, 5.11, 5.17, 5.29, 5.56	2, 3, 4
10/30 11/2	Bipolar Junction Transistors	Ch. 6	6.1 – 6.3	6.2, 6.8, 6.28, 6.30, 6.32, 6.52	2, 3, 4
11/6 11/9	MOS Field Effect Amplifiers	Ch. 5 with audio notes	Ch. 7 (5.4-5.5)	7.2, 7.3, 7.6, 7.8, 7.25, 7,33, 7.103	2, 3, 4
11/13 11/16	Bipolar Junction Amplifiers	Ch. 6	Ch. 7 (6.4-6.6)	7.10, 7.15, 7.48, 7.52, 7.80, 7.89	2, 3, 4
11/20 11/23	Bipolar Transistors as current controlled current sources **Thanksgiving – No Classes**	NPN CE Example			2, 3, 4
11/27 11/30	Review for Exam 2 **Exam 2 (Chapters 4-7)**				
12/4 12/7	Exam 2 Reprise Introduction to Digital Electronics	Logic Families Ch. 13	Ch. 14	14.1, 14.22, 14.26	2, 3, 4 5
12/11	Course Review				1-8
12/15 6:30PM	**Final Exam** (Comprehensive: 1-7,13)	Exam Week 12/14-12/20			

*Students to perform outside of class, Most answers (not solutions) are in Appendix L
** Use Multisim to confirm results