

WEST VIRGINIA UNIVERSITY
College of Engineering & Mineral Resources
Lane Department of Computer Science & Electrical Engineering

EE 355 Analog Electronics
Fall 2014 - 3 Credit Hours

Instructor: Dr. Dimitris Korakakis Phone: 304-293-9697
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Office Hours: 10:00-12:00 Tuesday-Thursday or by appointment

Class Time: 8:00-9:15 Tuesday-Thursday Class Location: ESB-G102

Prerequisites: EE 223 (Electrical Circuits) and EE 251 (Digital Electronics)

Corequisites: EE 356 (Analog Electronics Laboratory)

Required Text: *Electronic Circuit Analysis and Design*, Donald A. Neamen, 4th Ed., McGraw Hill

Description: This course deals with the design, analysis and understanding of Analog Electronic Circuits. Analog electronic circuits find wide applications in many electrical engineering disciplines including signal processing, communication, control systems, biomedical engineering, consumer electronics and others.

Objectives: The objective of this course is to develop in the students an understanding of the various analog electronic circuits as well as the ability to design simple analog circuits to achieve specified performance levels.

Expected Learning

Outcomes :

Upon successful completion of this course:

1. Students will be able to identify key system-related issues in analog electronic circuits including impedance matching, gain-bandwidth product and loading effects.
2. Students will be able to model BJT and FET transistors and diodes using the small and large signal models.
3. Students will be able to calculate the gain and input/output impedances of several amplifier circuits.
4. Students will be able to design several different types of amplifier circuits for specified parameters.
5. Students will be able to calculate the frequency response of analog circuits.
6. Students will be able to design a simple active filter circuit.
7. Students will be able to design a simple oscillator circuit.
8. Students will be able to design DC power supplies using Zener diode regulators and IC regulator chips.

Tentative Lecture Schedule and syllabus for EE 355:

Subject

1. Semiconductor fundamentals. Diodes and diode circuits.
2. Ideal Operational Amplifier
3. Field Effect Transistor (FET), FET Amplifiers and circuits.
4. Bipolar Junction Transistor (BJT), BJT Amplifiers and circuits
5. **Exam 1**
6. Frequency response.
7. Output Stages and Power Amplifiers
8. Differential and Multistage Amplifiers.
9. Operational Amplifier Circuits

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10. **Exam 2**
 11. Nonideal Effects in Operational Amplifier Circuits
 12. Feedback and Stability
- FINAL**

RULES OF OPERATION FOR EE 355

General: Attendance will be taken intermittently by sign-in sheet and used in grading. The lectures will explain, expand upon, and supplement the assigned reading material and will in many instances provide background information for assignments, therefore, attendance is strongly recommended. Handouts, verbal instructions and demonstrations cannot always be scheduled in advance but will occur when appropriate for the topic. Students missing a class are responsible for all material covered.

Grading: Semester grades will be computed roughly as follows:

Homework, quizzes, attendance:	10% (6-10 assignments)
Mid Term Examinations:	20% + 30%
Final Examination:	40%

Tests will seek to determine your level of mastery of fundamental principles and methods developed in the lectures, text and reinforced/expanded upon through homework assignments. Grades will generally be 90-100%=A, 80-89% = B, 70-79% = C, etc. Actual dates for exams will be chosen in class.

Homework sets: All graded homework sets will be given 100 points per set. Unexcused late homework and reports will not be accepted. Students are encouraged to discuss homework assignments but must submit their individual assignments. Plagiarized assignments will be severely penalized if detected, and if not, punishment is always self-inflicted during exams. If you do not fully understand any material, see me promptly.

Academic Honesty: The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at <http://www.arc.wvu.edu/admissions/integrity.html>. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

WVU is committed to social justice. The instructor of this course concurs with WVU's commitment and expects to maintain a positive learning environment based upon open communication and mutual respect and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, or national origin. Any suggestions as to how to further such a positive and open environment will be appreciated and given serious consideration. If you are a person with disability and anticipate needing any type of accommodation in order to participate in this class, please advise us and make appropriate arrangements with Disability Services (293-6700).