

Fall 2015

ENEE 3501

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University of New Orleans

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ENEE 3501

Basic Electrical Machinery

X. Rong Li, Chancellor's University Research Professor of Electrical Engineering

CATALOG DESCRIPTION

Topics include AC power circuits, electrical filters and frequency response, semiconductor operation, digital logic systems, basics of microprocessors, transformers, DC and AC machines.

PREREQUISITES

ENEE 2500, Basic Electrical Circuits 1

MATH 2108, Calculus and Analytical Geometry

TEXTBOOK

Allan R. Hambley, Electrical Engineering Principles and Applications, 6th Edition, Pearson Prentice-Hall, 2014. ISBN # 0-13-311664-6

LEARNING OBJECTIVES

After successfully completing this course you will be able to:

- Formulate basic circuit equations which describe the relationships between voltages, currents, power, and energy in simple AC and DC circuits.
- Differentiate the frequency response of various circuit elements in filter circuits exhibiting low pass, high pass, and bandpass characteristics.
- Analyze the behavior of AC power circuits with respect to single-phase, three-phase, wye and delta configurations, power factor, and transformer operation.
- Describe the basics of semiconductor physics with respect to intrinsic material, majority/minority carriers, and depletion region.
- Differentiate the types of basic semiconductor devices (diodes, transistors) and their behavior in simple electronic circuits.
- Contrast the building blocks of digital logic systems and microprocessor architectures.
- Analyze the performance of circuits containing transformers.
- Describe the differences in operation of systems containing rotating DC and AC machines.
- Understand the need for electrical engineering knowledge in other engineering disciplines.

TOPICS

Chapter 7. Logic circuits and building blocks.

Chapter 6. Frequency response of filters and their behavior

Chapter 10. Electronic theory – diodes

Chapter 13. Electronics – bipolar junction transistors

Chapter 14. Operational amplifiers

Extra: Signals and Systems

Chapter 5. AC power analysis in 3-phase systems.

Chapter 15. Magnetic circuits and transformers

Chapter 16. DC machines

Chapter 17. AC machines

CLASS SCHEDULE

Class Meetings: **Engineering 318, 3:30–4:45PM, Tuesday & Thursday**

INSTRUCTOR CONTACT INFO & OFFICE HOURS

Professor: X. Rong Li

Office: Room 852

Email: xli@uno.edu

Office Hours: **5:00–6:00PM, Monday & Wednesday**

GRADING

Homework	15%
Mid-Term Exam	25%
Final Exam	40%
Other (Quiz)	20%

Homework is due in one week.

Homework more than one week late will not be accepted.

Late homework will be penalized 10% for each day it is late.

Homework should be legible, neat, and organized with clearly marked answers.

Mid-term exam date will be determined well in advance based on class readiness.

Final exam is scheduled for **3:00–5:00PM on Tuesday, December 8, 2015.**

Exams are closed book, but one (8.5X11 in.) sheet for formulas is allowed.

ATTENDANCE POLICY

Attendance is required. Please don't be late in class. There is no excuse for repeatedly arriving late. Distracting interruptions are inconsiderate, disrespectful, and time-wasting.

OTHER PERTINENT INFORMATION

Cheating will not be tolerated.

Discussion is encouraged, but straight copying is not allowed.

In the case of copying, both the copy and the original will receive zero score.

Cell phones and pagers should be turned off before class begins.

Nobody is allowed to record, photograph, videotape, or otherwise copy and reproduce any lecture without written permission from the instructor.

Academic Integrity. Students are expected to conduct themselves according to the principles of academic integrity as defined in the statement on Academic Dishonesty in the UNO Student Code of Conduct. Any student or group found to have committed an act of academic dishonesty shall have their case turned over to the Office of Student Accountability and Advocacy for disciplinary action which may result in penalties as severe as indefinite suspension from the University. Academic dishonesty includes, but is not limited to: cheating, plagiarism, fabrication, or misrepresentation, and being an accessory to an act of academic dishonesty.

Accommodations for Students with Disabilities. Students who qualify for services will receive the academic modifications for which they are legally entitled. It is the responsibility of the student to register with the Office of Disability Services (UC 260) each semester and follow their procedures for obtaining assistance.