

COURSE: ELECTRONICS EN-3212 SPRING 2016

INSTRUCTOR: Dr. Diane DiMassa ddimassa@maritime.edu HA-215 ext. 1212
Office Hours: MWF at 1000

TEXTS: Electronics Fundamentals: Circuits, Devices & Applications 8th edition, Thomas L. Floyd and David L. Buchla, Prentice-Hall, 2009
Foundations of Analog and Digital Electronic Circuits, Agarwal & Lang, Elsevier 2005
eBook
allaboutcircuits.com

PRE-REQUISITIE: Engine Physics II (SM2224), Calculus II (SM2113)

Electronics provides a broad overview of the modern electronics used by the marine and power industries for automation, system monitoring and control. The course gives the foundations of both analog and digital circuits.

OBJECTIVES:

- Understand the relationship of component blocks and signals in electronic systems.
- Define and analyze primary circuits and components used for analog signal conditioning.
- Define primary and analyze circuits and components used for digital signal conditioning.
- Read analog and digital circuit diagrams, and identify basic electronic components.
- Understand the use of solid-state devices for amplification and switching applications.
- Analyze op-amp circuits.
- Design and analyze logic gate schematics.
- Convert between binary, decimal, and hexadecimal numbering systems.
- Read and understand PLC and ladder logic diagrams used in discrete-state applications.

Demonstrate knowledge and understanding of the following STCW elements:

- OICEW-B1.2 Configuration and operation principles of electronic equipment
- OICEW-B1.2 Characteristics of basic electronic circuit elements
- OICEW-B2.6 The interpretation of electrical and simple electronic diagrams

ATTENDANCE: Attendance is mandatory. You are permitted one (1) unexcused absence without penalty. For each additional unexcused absence, your COURSE grade will be lowered by two (2) points. Any student with more than five (5) unexcused absences will fail the course. For an absence to be excused, the student must 1) notify me *IN ADVANCE*, and 2) provide written documentation justifying the absence. ***Both criteria must be satisfied for the absence to be excused. Having watch is NOT a valid excuse for missing class.***

GRADING: Exam 1 (25%)
Exam 2 (25%)
Quizzes (25%)
Final Exam (25%)

ELECTRONICS IS AN STCW KNOWLEDGE COURSE: Engineers must earn a C- or better to pass the course.

CELL PHONES: Cell phones are NOT permitted in class. If your cell phone rings, beeps, vibrates, etc. or you use your phone for anything (including text messaging) at any time during class, it may be confiscated and delivered to the Academic Dean, and you may be dismissed from class – even if it is during an exam.

CALCULATORS: Only calculators approved by the NCEES (National Council of Examiners for Engineering and Surveying) permitted. See: http://ncees.org/Exams/Exam-day_policies/Calculator_policy.php for details. Calculators may not be permitted in all exams.

DISABILITIES: Students with documented disabilities will be afforded appropriate accommodations. Students entitled to additional time on exams must make arrangements with me in advance. Students who believe they may need accommodations in this class are required to contact the Director of Disability Compliance *within the first two weeks of class*.

TOPICS (not necessarily in order):

- Introduction to Control Systems
- Analog Systems and Signals
- Digital Systems and Signals
- Transfer Functions
- Resistance, Capacitance, Inductance
- Voltage Dividers
- Wheatstone Bridges
- Impedance
- Filters
- Transistors
- Operational Amplifiers
- Numbering Systems
- Boolean Algebra
- Logic Gates
- Digital to Analog Converters
- Analog to Digital Converters
- Programmable Logic Controllers
- Ladder Logic