

Electronics

EN-3212

Instructor: Art Torino

atorino@maritime.edu

Room: 209A Ext: 2075

Office Hours: M-W-F 10AM to 11AM
and by appointment

Text: Electronics Fundamentals, Circuits, Devices and Applications, Thomas L. Floyd, Fifth Edition, Prentice Hall

Prerequisite: Physics II (SM2224), Calculus II (SM2113)

Other Texts: Process Control Instrumentation Technology 8th edition, Curtis Johnson, Pearson, 2006

Foundations of Analog and Digital Electronic Circuits, Agarwal & Lang, Elsevier
2005 eBook

Course Description

Theory of basic solid-state electron devices. Power circuits. Use of analog and digital integrated circuits in control systems for logic, interlocks, and automated machinery control.

Entrance Requirements

- Form and solve linear equations quickly and accurately using Algebra
- Analyze series and parallel circuits using Ohm's law and Kirchhoff's laws
- Identify and understand transient behavior in capacitive and inductive circuits
- Solve basic differential equations for time-variant electronic components
- Analyze AC circuits using the concepts of impedance and phasors

Learning Objectives

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

Other Objectives

- Define and analyze primary circuits for analog signal conditioning
- Define and analyze primary circuits for digital signal conditioning
- Read analog and digital circuit diagrams, and identify basic electronic components
- Understand the use of solid-state transistors for amplification and switching applications
- Define and analyze Op-Amp circuits for voltage gain instrumentation
- Convert binary numbers to other number systems, and vice versa
- Read logic gate schematics, and ladder logic diagrams
- Design and program ladder logic PLCs for discrete-state applications

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TOPICS

Weeks 1 – 5

Passive Analog Circuits

Voltage Dividers & Bridges

Impedance

Filters

Weeks 6 - 10

Analog Signal Processing (Amplifiers)

Transistors and Transistor Circuits

Operational Amplifiers

Comparators

Weeks 11 - 15

Digital Signal Processing

Boolean Algebra & Logic Gates

Digital to Analog Converters

Analog to Digital Converters

Digital Systems

Grading:

- Participation: 10%, Quizzes: 30%, Midterm: 30%, Final Exam 30%
- **A quiz will be given at the beginning of class each week and will be based upon the assignments for the week. Make-up quizzes and tests are not given. Make-up test for tests or final are considered only for extraordinary circumstances.**
- Homework is not collected nor graded.
- Attendance is mandatory; each unexcused absence may result in a two point deduction from the final course grade.
- Electronics is an STCW required course. For all students a minimum grade of C- (70%) is required for STCW credit and to pass the course. Engineering Physics II is a prerequisite for the class.

DO YOUR HOMEWORK:

Those who do their homework tend to do well in this course. Although homework is not collected or graded, quizzes and tests are based on the homework assignments and some questions will be taken directly from assignments. **Note: Students are responsible for all example questions in each chapter covered or assigned.**

Calculators:

Only non-programmable calculators are allowed in this class. Uses of programmable calculators, including TI-83, TI-84, or similar type calculators are expressly prohibited. Additionally, any electronic devices that can communicate with devices, including other calculators, cell phones, or other communication equipment are prohibited.

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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 one (1) point. For an absence to be excused, you must 1) notify me IN ADVANCE, and 2) provide written documentation justifying your absence. Both criteria must be satisfied for the absence to be excused.

Unexcused tardiness and leaving class after its begun are prohibited. Students may leave class at any time; however they will not be allowed to return.

If a student has more than five unexcused absences, he or she will fail 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 will be confiscated and delivered to the Academic Dean. **First offense:** you will be dismissed from class (even if it is during an exam). **Second offense:** you will be dismissed from class and your final grade will be lowered by one FULL letter grade. **Third offense:** You will fail the course.

As you can see, it is probably best to just leave your cell phone in your dorm room.

Disabilities:

Students with documented disabilities will be afforded appropriate accommodations. Students entitled to additional time on exams must make arrangements with me in advance. If you have a disability and feel you will need accommodations in order to complete course requirements, contact Director, Disability Compliance and Affirmative Action.

Attire:

All regimental cadets shall be in the proper uniform of the day during class. Boiler suits or other work uniforms are never authorized in class. Non-regimental students are expected and required to maintain a business casual attire.

Health:

MMA Health Services realizes that students may encounter situations which could impede their academic, personal and social development and success. Counseling services are designed to help students address these concerns, increase their self-awareness and empower them to manage challenging areas in their lives. To schedule a confidential appointment please email kshineobrien@maritime.edu or call ext. 1480.

Notes:

The syllabus is a working document and depending on the speed of the class we may do slightly more chapters or slightly less. Any change or adjustment to the syllabus will be clearly communicated.

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Calendar – Spring 2016

Friday	15 April	No class – Patriots Day Break
Monday	18 April	No class – Patriots Day Break
Tuesday	19 April	Deficiencies due
Monday	30 May	No class – Memorial Day
Tuesday	31 May	Virtual Monday
Monday	6 June	Last day of class