

Spring 2025 EN-3212 Electronics Syllabus

Department of Engineering

Massachusetts Maritime Academy

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Office Hours:

MW 8:00 am – 9:00 am or by appointment

Remember, you can always send an email inquiry to the instructor, and the instructor usually replies to your inquiry within one business day.

Textbooks:

- Practical Electronics for Inventors, Fourth Edition
 - Scherz and Monk

Website:

- <https://grussell1407.github.io/EN3212Electronics.github.io/>

Prerequisites:

- SM 2224 (Engineering Physics II)

Course Description:

Review and expand upon AC and DC circuit analysis techniques. An introduction to solid state elements, integrated circuits, and digital logic. Read, analyze, and understand circuit diagrams containing analog and digital circuit elements. Learn how to take and interpreting electrical measurements to improve electrical system diagnostic and troubleshooting skills. Study important electrical sensor, power, and control circuits.

Course Learning Objectives:

- Understand the relationship of component blocks and signals in electronics systems.
- Define and analyze primary circuits and components used for analog signal conditioning.
- Define and analyze primary 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.

STCW Learning Objectives:

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

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Grading Policy:

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.

The final grade is calculated based on the following weights:

- Quizzes (X5) 40% (8% each)
- Exams (X2) 30% (15% each)
- Final Exam 30%

Letter grade is typically assigned with respect to total percentages earned based upon the standard described in the catalog.

(93% - 100%, A; 90% - 92%, A-; 87% - 89%, B+; 83% - 86%, B; 80% - 82%, B-; 77% - 79%, C+; 73% - 76%, C; 70% - 72%, C-; 0% - 69%, F.)

Quizzes 40%:

There are 5 quizzes and each quiz grade counts 8% of the final course grade. The date of each quiz will be announced in class.

Tests 30%:

There are 2 exams and each exam grade counts 15% of the final course grade.

Final Exam 30%:

There is one final exam and its grade counts 30% of the final course grade.

Attendance Policy:

You are permitted to have one unexcused absence without penalty. Each additional unexcused absence results in a two-point deduction from your final course grade. Five unexcused absences, including the first no penalty excuse, automatically results in a failure in the course. Five minutes late of a class or early leave of a class without prior authorization is also considered as an unexcused absence.

Excused Absence:

Any unexcused absence from a quiz, a test or an exam automatically results in a zero in the quiz, the test or the exam. In order to obtain an excused absence or prior authorization from class, homework, quiz, test or exam, you must,

1. notify the instructor in advance of the absence,
2. provide written documents to justify your absence.

Both criteria must be satisfied for an absence to be excused. Having watch is NOT a valid absence excuse. For any excused absence from a quiz, a test or an exam, only a one-time makeup will be arranged. The makeup date will be based on a mutual agreement between a student and the instructor. There is NO second makeup if you miss the one-time makeup. The makeup of a quiz, a test or an exam is NOT the same as the original one.

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Class Disruption:

Any type of behavior deemed to be distracting or disruptive by your instructor will result in your instructor asking you to leave the classroom. Each time a student is asked to leave the classroom due to distracting or disruptive behavior, the instructor reserves the right to add one unexcused absence to the student's attendance record.

Media Recording:

This class may use video and audio recordings of faculty and students to better support learning in a remote format. By enrolling in the course, students are consenting to being recorded in this class and may only withdraw such consent by informing the course instructor in writing. As these recordings may contain intellectual property as well as confidential student information (e.g. student names, likenesses), students may not share or transfer any recordings of such content by any method. Copies of such recordings cannot be provided to others; nor should they be uploaded, linked, embedded, or otherwise posted via _le-sharing, social media, or other sites which could enable other non-enrolled individuals to view them. Access to class video and audio recordings is for personal educational use only and is available only to individuals currently enrolled in the class, unless faculty permission is expressly granted. Recording and/or sharing course without the written consent of the course instructor is a violation of the MMA Honor Code.

Academic Dishonesty:

All work submitted in this course must be your own and produced exclusively for this course. The use of sources (ideas, quotations, paraphrases) must be properly acknowledged and documented. When the instructor has concerns about potential violation of the Honor Code, the instructor may pursue the alleged violation with the Commandant of Cadets. In serious cases, violations of the honor code may result in dismissal from the Academy. If you are in doubt regarding any aspect of these issues as they pertain to this course, please speak with the instructor. Taking and using the writing, ideas or work of another person and passing it in as your own work is considered as plagiarism. If you are not sure if you are plagiarizing, you can always check with the instructor in advance. Some of the most common forms of plagiarism are:

- Turning in another student's work as your own with or without the student's knowledge
- Turning in work that another student, friend, family member, etc. has written for you

Cell Phones:

Cell phones and other similar electronic devices are to be silenced and stored out of sight in class.

Calculators:

Calculators on cell phones are not allowed in quiz, test and exam. Only calculators approved by NCEES (National Council of Examiners for Engineering and Surveying) are allowed.

(See: https://ncees.org/Exams/Examday_policies/Calculator_policy.php)

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Students with Disabilities:

The Director of Disability Resources works in collaboration with the Dean of Undergraduate Studies, faculty and other campus departments to provide support for students with learning disabilities, as outlined in the Americans with Disabilities Act of 1990. Any participant who feels they may need an accommodation based on the impact of a disability should access Disability Resources at <https://www.maritime.edu/ada> to discuss specific needs.

Netiquette:

Netiquette, or network etiquette, refers to the guidelines and recommended practices for effective online communications; it should be used for all class communication for the course: email, chatting, blogging, discussion forums, and messages. Regardless of course delivery methods (in-person, hybrid or online), students are expected to conduct themselves in a respectful manner that upholds a supportive, mutually beneficial learning environment. Specifics include:

- Be respectful. Remember that you are communicating with actual people. Always be courteous and show respect, especially when there are differences of opinion. Remember the golden rule: treat others as you would like to be treated!
- Think before you post. Be aware of who may be able to view your posting, and how your post may be interpreted. Try to maintain a fair and objective tone.
- Stay on topic. Make sure your communication is related to the subject at hand and does not wander off-topic.
- Write clearly. Even though the online environment may seem more informal than your face-to-face class, this is still an academic course and intelligible: mature communication is expected. Correct spelling and grammar are required: proper composition and punctuation are expected.
- Use appropriate language and style. Profanity or offensive wording will not be tolerated. You should avoid using ALL CAPS and repeated punctuation (???? or !!!).
- Be considerate of others. Do not make derogatory, condescending, or harassing remarks. Communication should be well-intentioned, well-articulated, and aimed at fostering a positive learning environment. Be aware of how sarcasm may be misinterpreted by your readers.
- Allow for misunderstandings. Keep in mind that writing often conveys the incorrect tone or intention in the absence of nonverbal communication. You should make allowances. What you may perceive as rudeness may be unintended.
- Cite your sources. If you post work that is not your own, be sure to reference your sources.