

## **EE 302: Electronic Communication Systems And Digital Communications Fall 2008**

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**Coordinator:** CDR Hewitt M. Hymas ([hymas@usna.edu](mailto:hymas@usna.edu)), Maury Rm. 228, x3-6168

**Website:** <http://www.usna.edu/ee/ee302>

**Texts:** Frenzel, *Principles of Electronic Communication Systems*, 3<sup>rd</sup> ed.

**Course Purpose:** EE302 is the second in a two-part series of electrical engineering courses designed to give midshipmen the technical background necessary to understand communications and networking equipment that they will undoubtedly encounter as commissioned officers.

**Course Objectives:** This course is designed to provide you the tools to:

1. Demonstrate the ability to analyze tuned circuits and filters through use of simulation and hardware.
2. Demonstrate working knowledge of amplitude modulation (AM) and frequency modulation (FM) transmission and AM reception through use of hardware.
3. Demonstrate working knowledge of analog-digital (A-D) and digital-analog (D-A) conversions.
4. Demonstrate working knowledge of digital communications, their modulation and multiplexing techniques, as well as error detection and correction through use of hardware.
5. Demonstrate working knowledge of antennas and their applications at various frequencies and under varying conditions.
6. Demonstrate working knowledge of computers, computer networking, and the Internet.
7. Demonstrate working knowledge of Local Area Networks (LAN) and their use of hardware, protocols, and addressing.

**Class Schedule.** This course meets three times a week; one hour on Monday, and two 2-hour blocks on either Tuesday/Thursday or Wednesday/Friday. Monday classes will be lecture and the 2-hour classes will be split between lecture and laboratory exercise. Each lesson has a reading assignment that is to be completed before class.

**Practical Exercises (PE).** PEs are designed to be completed in class and will primarily be performed at the laboratory stations, although we will occasionally utilize classroom laptop computers. Reading PEs prior to class will greatly increase your understanding of the learning objectives covered. PEs may be worked individually or in groups at the instructor's discretion. Additionally, individual instructor policy will determine whether midshipmen are required to bring their own copies the PEs to class.

**Homework.** Homework is essential to your comprehension of the course material. A Problem Set (PS) will be assigned for each lesson as per the course syllabus and will be posted on the course website. PS solutions will also be posted on the website one week after the assignment was due. Individual homework policies vary by instructor and will be promulgated. *Failure to complete all homework assignments to the satisfaction of your instructor may be grounds for course failure.* In accordance with the Honor Concept, collaboration on homework is permitted as "authorized assistance," however, *wholesale duplication* is not. In addition to properly documenting your work in homework solutions, any sources of outside assistance should be clearly cited.

**Exams and quizzes.** Three 50-minute, closed-book exams are scheduled during Monday class periods through the semester in addition to a comprehensive, 180-minute final exam. A calculator and a single

one-sided, handwritten 8 ½” by 11” note sheet may be used for each exam. These note sheets will be collected by your instructor and returned after the exam. For the final exam, four single-sided, handwritten pages will be permitted which will consist of the three pages prepared for the first three examinations, plus one note sheet covering new material presented after the third exam. Discussion of the contents of the exam with other students on the day of the exam is *strictly forbidden* and constitutes a violation of the Honor Concept. Quizzes will be administered at the discretion of individual instructors. They may be closed or open-book, announced or unannounced.

**Lab Practical.** The lab practical will test your ability to properly build circuits and measure parameters. Familiarization with the lab bench equipment will be exercised through the PE’s that are assigned prior to the administration of this test. The length and details of the test will be promulgated later.

**Calculation of course final grade.** A weighted average final grade will be calculated as follows:

Exam 1	15 %	<i>The instructor reserves the right to adjust your final grade based upon their evaluation of your overall course preparation and participation.</i>
Exam 2	15 %	
Exam 3	15 %	
Final Exam	30 %	
Lab Practical	5 %	
PE/Quiz/Homework/Instructor	20 %	

Note: Intermediate grading criteria (6/12/16 week) will be established by each individual instructor.

Letter grades will be assigned according to following table.

<b>Numerical score</b>	≥ 90%	80% – 90%	70% – 80%	60% – 70%	< 60%
<b>Letter grade</b>	A	B	C	D	F

**Calculators.** The use of electronic calculators will be permitted for all labs, homework, quizzes, and exams unless otherwise stated. You are required to bring a calculator to class each period. The calculator should, at a minimum, have the capabilities of the TI-68 (complex numbers, simultaneous equations, trigonometric functions, etc.). In the event of a calculator failure, manual calculation will be required. Sharing of calculators will not be permitted during examinations.

**Extra Instruction.** Your instructor is available for individual extra instruction during office hours or other mutually agreeable time. To prepare for EI, bring your notes, homework problems, and specific questions/problems with you to help identify trouble areas.

**Section Leader.** The Section Leader will be appointed by the instructor and will be responsible for taking attendance during each class, in addition to any other duties assigned by the instructor. The Section Leader will call the section to attention and report by name the individuals that are absent at the beginning of each class, as well as calling the class to attention for dismissal at the end of the period. In the event the instructor is late for class (in excess of 10 minutes), the Section Leader will contact the ECE Dept. Office (x3-6150). Pending the arrival of someone to take charge of the class, the Section Leader will supervise the class in a study period, collect any assignments due for that period and deliver them to the ECE Dept. Office at the end of the period. Under no circumstances is the Section Leader to secure the class.

CDR Hewitt M. Hymas  
EE302 Course Coordinator