

## ENTS 622 Introduction to Digital Communications - Fall 2017 Syllabus

**Course Description:** Principles of analog and digital communication systems design. Analysis of the performance and relative merits of different modulation and demodulation, spectral analysis, signal processing, filtering and error control schemes in communication systems. Also provides an understanding of the design of modern digital communication systems and introduction to simulations in Matlab.

**Prerequisites:** Successful completion of a technical undergraduate degree, including successful completion of courses in differential and integral calculus, signals & systems (including Fourier series, Fourier transforms, convolution, properties of linear time-invariant systems), and probability theory (including random variables, cumulative distribution functions, probability density functions, functions of random variables, and moments of random variables).

**Time and place of lecture:** Section 0101 & 0102 Monday 5:30pm – 8:15pm, ATL 2428  
Section 0201 & 0202 Monday 9am – 11:45am, PHY 4221

**Time and place of lab sessions:** Section 0101 Thursday 5:30pm-7pm, AVW 1458 (T.A. *tba*)  
Section 0102 Wednesday 9am-10:30am, AVW 1458 (T.A. *tba*)  
Section 0201 Thursday 9am-10:30am, AVW 1458 (T.A. *tba*)  
Section 0202 Wednesday 10:45am-12:15am, AVW 1458 (T.A. *tba*)

### Instructor:

Name: Alejandra Mercado

E-Mail Address: mercado@umd.edu

Regular Office Hours: Mondays 2PM-4PM ([always set up appointment online, here](#))

Office Location: AV Williams Building 1365

### TA Office Hours (email first to schedule an appointment):

Name: *tba*

Name: *tba*

Email address:

Email address:

Hours:

Hours:

Office Location:

Office Location:

### Logging in to the Course for announcements, instant messaging, documents, etc.:

Go to <http://elms.umd.edu>. Login with your Maryland Directory ID and password.

### Texts and Supplies

- Required Textbook:
  - "Communication Systems" by Haykin and Moher; Publisher: Wiley; 5 edition (March 16, 2009); ISBN-10: 0471697907
- Supporting References for course material:
  - "Communications Systems" by Simon Haykin ([UMCP Engineering and Physical Sciences Library Stacks TK5101 .H37 1994 on reserve for course](#))
  - "Digital Communications" by John Proakis ([UMCP Engineering and Physical Sciences Library Stacks TK5103.7 .P76 2001 on reserve for course](#))
  - "Communication Systems Engineering" by John Proakis and Masoud Salehi ([UMCP Engineering and Physical Sciences Library Stacks TK5101 .P75 2002](#))
  - "Principles of Communication Engineering" by Wozencraft and Jacobs ([UMCP Engineering and Physical Sciences Library Stacks TK5101 .W62](#) )
- Supporting References for background review:
  - "Probability, Statistics, and Random Processes For Electrical Engineering" by Alberto Leon-Garcia ([UMCP Engineering and Physical Sciences Library Stacks TK153 .L425 1994 on reserve for course](#) )

- “Signals and Systems” by Oppenheim, Willsky and Young ([UMCP Engineering and Physical Sciences Library Stacks QA402 .O63 1983](#) )

### Grading

Attendance Quiz (first day)	4%
Midterm exam:	25%
Weekly Quizzes:	30%
Homework:	10%
Final Exam:	31%
Total	100%

Final Grading will be determined using the following scale based on the overall average score:

Threshold for A-, A, A+	90 %	Threshold for C-, C, C+	70 %
Threshold for B-, B, B+	80 %	Threshold for D-, D, D+	60 %
		Threshold for F	everything else

- A± denotes excellent mastery of the subject and outstanding scholarship.
- B± denotes good mastery of the subject and good scholarship.
- C± denotes acceptable mastery of the subject and the usual achievement expected.
- D± denotes borderline understanding of the subject and marginal performance.
- F denotes unsatisfactory performance.
- XF denotes failure due to academic dishonesty

### Tentative Course Schedule

The instructor reserves the right to make schedule changes based on the needs of the students and class progress.

Week #	Week beginning Monday	Lecture Topic from text	Lab Quiz
1	Aug 28	Introduction to the course. Chapters 1 and Matlab Intro & ATTENDANCE QUIZ ( <i>late arrivals will be counted as 0%</i> )	<b>Quiz #2: covers “Communications System Overview” from Lecture 1 (late arrivals will receive 0%)</b>
2	Sept 4	Labor Day on Monday: attend Labs, but no lecture this week	Quiz on lab material covered in previous week’s lab
3	Sept 11	Chapter 2	Quiz on lab material covered in previous week’s lab
4	Sept 18	Chapter 3	Quiz on lab material covered in previous week’s lab
5	Sept 25	Chapter 4	Quiz on lab material covered in previous week’s lab
6	Oct 2	Chapter 5	Quiz on lab material covered in previous week’s lab
7	Oct 9	Chapter 6	Quiz on lab material covered in previous week’s lab
8	Oct 16	Chapter 7	Quiz on lab material covered in previous week’s lab
9	Oct 23	Midterm exam	Quiz on lab material covered in previous week’s lab
10	Oct 30	Chapter 8	Quiz on lab material covered in previous week’s lab
11	Nov 6	Chapter 8	Quiz on lab material covered in previous week’s lab
12	Nov 13	Chapter 9	Quiz on lab material covered in previous week’s lab
13	Nov 20	Chapter 9	<i>No Labs: Happy Thanksgiving!</i>
14	Nov 27	Chapter 9	Quiz on lab material covered in previous week
15	Dec 4	Chapter 10	Quiz on lab material covered in previous week
16	Dec 11	Chapter 10	No labs
16	Dec 12	Reading Day	No labs
	Dec 13 - 19	Finals week	No labs

## A. Requirements

Students are expected to be on time, attend all class meetings and lab sessions, and complete all assignments and all assessments of their knowledge and understanding of the class material.

## B. Assignments

Any assignment that is turned in should be complete, and represent the student's individual and original work. Turn in your assignment at the *beginning* of the class. Late assignments will not be accepted, as this would place an unfair burden on students who hand in their work in a timely manner.

## C. Make-up Policy

In the case of an excused absence (such as a disabling medical emergency with a letter from a physician on official letterhead, or a death in the immediate family with proper documentation), the instructor will redefine the grading distribution in accordance with what assessment was lost.

Excused Absence: If you miss an assessment (test or project), contact me as soon as possible. You may receive an excused absence for such things as: medical emergencies, or death of an immediate relative. Unexcused absences will result in a grade of zero for the missed assessment.

***Religious Observance: The student should inform the instructor at the beginning of the semester about any absences due to religious observances. We will make appropriate arrangements for the missed assessment. This must be NO LATER than the second week of classes.***

## D. Audit Policy

Audit students must participate fully in the course and follow all policies and procedures to audit the course. Exception: exams and reports are not required.

## E. Academic Integrity

The maintenance of the highest standards of intellectual honesty is the concern of every student and faculty member at the University of Maryland. Plagiarism, which is defined as appropriating or closely imitating another person's work or ideas and representing them as one's own original work, is strictly prohibited. Use of phones, tablets or other electronic devices during a test is not allowed. Talking or whispering during exams or quizzes is never allowed.

Academic Dishonesty or Misconduct can occur in many ways. Some examples are:

- a) Plagiarizing from written, video, or Internet resources
- b) Forgery
- c) Submitting materials that are not the student's own work, such as Matlab code
- d) Taking examinations in the place of another student, including assessment tests
- e) Assisting others in committing academic dishonesty
- f) Copying from another student during an examination or on a homework assignment.

Failure to abide by the rules of Academic Integrity (which, in addition to the described above is detailed in <http://www.president.umd.edu/policies/docs/III-100A.pdf>) will result, *at the very least*, in a grade of XF: the grade appears on the student's transcript with the notation "Failure due to academic dishonesty," as well as further disciplinary actions.

## F. Taping and/or Distributing Course Materials Forbidden

All course materials (lecture slides and other materials provided to you) are to be considered copyrighted by the University of Maryland – and may not be reproduced for anything other than personal use without written permission from your instructor and the College Dean. Video-taping or audio-taping lectures is forbidden. If you publicly post or share course materials, and especially any solutions for homework, exams, quizzes, project, etc., you will be in violation of U.S. Copyright Law, University of Maryland policies, as well as the Code of Academic Integrity.

## G. Support Services

[Disability Support Services \(DSS\)](#): Any student who may need an accommodation due to a disability should contact DSS offices at 0106 Shoemaker Building (301.314.7682) A letter from DSS authorizing your accommodations will be needed. For a complete list of other student support services, please refer to the Student Handbook.

## H. Cancellation of Classes

If inclement weather forces the campus to suspend classes or close, public service announcements will be provided to local radio and television stations as early as possible. Assume that classes will be held unless you read or hear otherwise from the university web page or radio or television.

You may also call check the UMCP web page at <http://prepare.umd.edu/weather>

Check the [canvas](#) (ELMS) course site frequently and always before coming to campus for lecture, as instructor will post announcements there about class cancellations or other course-related matter.

## CONTACTS:

Students learn best from each other when studying together. Also, class contacts are useful in the event you miss a class. In that vein, I encourage you to meet your neighbors, and get some contact information.

Name: \_\_\_\_\_ Name: \_\_\_\_\_

Email: \_\_\_\_\_ Email: \_\_\_\_\_

Phone: \_\_\_\_\_ Phone: \_\_\_\_\_

Name: \_\_\_\_\_ Name: \_\_\_\_\_

Email: \_\_\_\_\_ Email: \_\_\_\_\_

Phone: \_\_\_\_\_ Phone: \_\_\_\_\_

*Contact the instructor:* The best ways to reach me is via email. Please only use your UM email address; due to privacy issues I will not read mail from personal email addresses.

## VETERANS

If you are a veteran or on active or reserve status and you are interested in information regarding opportunities, programs and/or services, please visit the University of Maryland Veterans Program Office website at <http://registrar.umd.edu/veteran-benefits.html>