ENTS 699R Special Topics in Communications: Analytical Foundations of Telecommunications (1 credit)
Summer Session I 2019 Syllabus

Course Description: This course will provide the fundamental knowledge and analytical tools necessary to pursue graduate-level studies in telecommunications. The topics will include: continuous-time and discrete-time signals and systems, time- and frequency-domain analysis, Fourier transforms and their properties, filtering and modulation, including hands-on analysis in Matlab. Probability and random processes, expected value, correlation and covariance, power spectral density, noise and its impact on communication systems' performance and bit error rate, also with hands-on analysis in Matlab. Note: This credit does not count towards a degree.

Lectures: On-line

Course Requirement: (i) Students must watch on-line lecture videos before each Friday, to keep up with the course material. The instructor will announce video links, as they become open for each week. Students are free to watch these videos any time (and as many times as they like) at any time and day before each Friday. (ii) Students will solve on-line quizzes about the video lectures at any time during the week before each Friday. (iii) Each Friday, the quizzes will become inactive (which means unsolved quizzes get a default grade of 0), and new lectures and quizzes will appear. Students are strongly encouraged to use the Canvas/ELMS Webex to contact the instructor with questions.

Instructor:
Name: Alejandra Mercado
E-Mail Address: mercado@umd.edu
Office Hours: Thursdays 9AM-11AM through Webex (you can email me any time, any day)

Logging in to the Course for announcements, instant messaging, documents, etc.:
Go to http://elms.umd.edu. Type in your Maryland Directory ID in the box labeled Username. Enter your Directory password in the Password box

Texts and Supplies
- Textbook: No required textbook
- Recommended texts:
  o Schaum’s Outlines "Probability, Random Variables, & Random Processes" (UMCP Online Resources Internet Accessible: QA273.25 .H78 1997eb )
  o “Signals and Systems” by Oppenheim, Willsky and Young (UMCP Engineering and Physical Sciences Library Stacks QA402 .O63 1983 )

Grading
Online Quizzes (open books, open notes) 60%
Homework (open books, open notes) 10%
Final Online Exam (open book, open notes) 30%
Total 100%
Final Grading will be determined using the following scale based on the overall average score:

<table>
<thead>
<tr>
<th>Threshold for</th>
<th>90 %</th>
<th>Threshold for</th>
<th>70 %</th>
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<tbody>
<tr>
<td>A-, A, A+</td>
<td></td>
<td>C-, C, C+</td>
<td></td>
</tr>
<tr>
<td>B-, B, B+</td>
<td>80 %</td>
<td>D-, D, D+</td>
<td>60 %</td>
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<tr>
<td>Threshold for F</td>
<td>everything else</td>
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±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.

*Tentative Course Schedule*

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

<table>
<thead>
<tr>
<th>Week ending on</th>
<th>Weekly Lectures &amp; Quizzes’ Topics</th>
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<tbody>
<tr>
<td>May 31</td>
<td>Fourier transforms and their properties, filtering and modulation / introduction &amp; problem-solving</td>
</tr>
<tr>
<td>June 7</td>
<td>Continuous-time and discrete-time signals and systems</td>
</tr>
<tr>
<td>June 14</td>
<td>Time- and frequency-domain analysis</td>
</tr>
<tr>
<td>June 21</td>
<td>Probability and random processes, expected value, correlation and covariance, power spectral density</td>
</tr>
<tr>
<td>June 28</td>
<td>Noise and its impact on communication systems’ performance and bit error rate</td>
</tr>
<tr>
<td>July 5</td>
<td>Channel distortion, noise, and their impact on communication systems’ performance and bit error rate</td>
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**A. Requirements**

Students are expected to watch all class lectures, 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. 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 Honesty**

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, iPhones, tablets or other electronic devices during a test is not 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
   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 an 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. 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.

G. Cancellation of Classes
If there is a server problem, or for any reason the student cannot access the on-line course material, the student should alert the instructor immediately by email. The instructor will engage the UM Office of Information Technology to attempt to verify if the problem is local or remote, and attempt to resolve it.

CONTACTS:
Contact the instructor: The best ways to reach me is during my office hours through Webex or 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://www.veterans.umd.edu/