ENTS 699R Special Topics in Communications: Analytical Foundations of Telecommunications

Summer Session II 2015 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.

Meet time and place: Fridays 5:30pm – 7:35pm, Kim Engineering Building (KEB) Room 1200

Course Requirement: (i) Students must watch on-line lecture videos before each meeting, 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 more than once) at any time and day before each weekly meeting. (ii) Students will solve on-line quizzes about the video lectures at any time during the week before each meeting. (iii) Students will solve short on-line, open book quizzes during class. (iv) There will be occasional homework assigned. (v) There will be one in-class, closed book/closed notes comprehensive final exam on the final lecture.

Instructor:
Name: Alejandra Mercado
E-Mail Address: mercado@umd.edu
Office Hours: Fridays 3:30PM-5:30PM (you can email me any time)
Office Location: AV Williams Building 1365
Web Site: https://elms.umd.edu/

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:
  - Schaum’s Outlines “Probability, Random Variables, & Random Processes” (UMCP Online Resources Internet Accessible: QA273.25 .H78 1997eb )
  - “Signals and Systems” by Oppenheim, Willsky and Young (UMCP Engineering and Physical Sciences Library Stacks QA402 .O63 1983 )
Grading
Class Quizzes (open books, open notes) 30%
Online Quizzes (open books, open notes) 30%
Homework (open books, open notes) 10%
Final 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 A-, A, A+</th>
<th>90 %</th>
<th>Threshold for C-, C, C+</th>
<th>70 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold for B-, B, B+</td>
<td>80 %</td>
<td>Threshold for D-, D, D+</td>
<td>60 %</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Threshold for F</td>
<td>everything else</td>
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</table>

±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>Meeting Date</th>
<th>Weekly Lectures’ Topics / Lab Meeting topic</th>
<th>In-Class Quiz or Final</th>
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<tbody>
<tr>
<td>July 14</td>
<td>Fourier transforms and their properties, filtering and modulation / introduction &amp; problem-solving</td>
<td>-</td>
</tr>
<tr>
<td>July 21</td>
<td>Continuous-time and discrete-time signals and systems</td>
<td>quiz on last week’s material &amp; problem-solving; Open Book Open Notes</td>
</tr>
<tr>
<td>July 28</td>
<td>Time- and frequency-domain analysis</td>
<td>quiz on last week’s material &amp; problem-solving; Open Book Open Notes</td>
</tr>
<tr>
<td>Aug 4</td>
<td>Probability and random processes, expected value, correlation and covariance, power spectral density</td>
<td>quiz on last week’s material &amp; problem-solving; Open Book Open Notes</td>
</tr>
<tr>
<td>Aug 11</td>
<td>Noise and its impact on communication systems' performance and bit error rate</td>
<td>quiz on last week’s material &amp; problem-solving; Open Book Open Notes</td>
</tr>
<tr>
<td>Aug 18</td>
<td>Channel distortion, noise, and their impact on communication systems' performance and bit error rate</td>
<td>Final Exam covers all material from weeks 1 through 5; Closed books and closed notes</td>
</tr>
</tbody>
</table>

A. Requirements
Students are expected to be on time, attend all class meetings, 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 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:
- Plagiarizing from written, video, or Internet resources
- Forgery
- Submitting materials that are not the student’s own work
- Taking examinations in the place of another student, including assessment tests
- Assisting others in committing academic dishonesty
- 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 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.

The following radio and television stations usually broadcast information about campus closings:
- WAMU (88.5 FM)
- WETA (90.0 FM)
- WMAL (630 AM)
- WINX (1600 AM)
- WRC (980 AM)
- Channels 4, 7, 9 TV

For a complete list, check the Student Handbook.
You may also call check the UMCP web page at http://www.umd.edu/emergencypreparedness/weather_emer/

Check the canvas 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: __________________________

Name: __________________________ Name: __________________________

Email: __________________________ Email: __________________________

Phone: __________________________ Phone: __________________________

Contact the instructor: The best ways to reach me is during my office hours 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/