EEE 6545- Random Processes  
Spring 2018  
Electrical Engineering Department  
University of South Florida

<table>
<thead>
<tr>
<th>Classroom</th>
<th>BSN 1301</th>
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<tbody>
<tr>
<td>Time</td>
<td>Monday and Wednesday at 11am-12:15pm</td>
</tr>
<tr>
<td>Credit hours</td>
<td>Three</td>
</tr>
<tr>
<td>Instructor</td>
<td>Dr. Mahshid R. Naeini</td>
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<tr>
<td>TA</td>
<td>Alireza Khoshnevis  (<a href="mailto:khoshnevis@mail.usf.edu">khoshnevis@mail.usf.edu</a>)</td>
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<tr>
<td>Office / phone</td>
<td>ENB 244A, 813 974-1597</td>
</tr>
<tr>
<td>Office Hours</td>
<td>Wednesdays 2:00-4:00pm or by appointment</td>
</tr>
<tr>
<td>Email</td>
<td><a href="mailto:mahshidr@usf.edu">mahshidr@usf.edu</a></td>
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USF Catalog Description
Review of probability theory, functions of random variables; examples in electrical engineering. Sequences of random variables. Concepts in random processes, correlation functions, power spectrum, random inputs to linear systems. Spectral analysis. Applications to engineering systems. (3 credits)

Prerequisites  
EGN 3443 or equivalent first course in probability (or the approval of the instructor)

Course Objective and Learning Outcomes
This course is a graduate introduction to random processes. The objective of this course is to give the students the ability to use random processes for modeling and evaluating various engineering processes and systems as well as estimating and predicting parameters and behaviors of these systems.

Key Topics
1. Review of probability theory  
2. Concepts of random variables and functions of random variables, joint probability distribution, multivariate Gaussian distribution  
3. Random processes, autocorrelation, power spectra, spectral representation and estimation, Wiener and Kalman filters, and prediction  
4. Markov Chains, Markov process, Poisson process, Renewal Process

References
1- Lecture Notes  

Class Communications and Announcements  
Course related material and announcements will be posted on Canvas. Please stay up-to-date with Canvas content and any e-mail communications regarding EEE 6545.
**Evaluation**

<table>
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<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Assignments/Project</td>
<td>15%</td>
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<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>35%</td>
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<tr>
<td>Final Exam</td>
<td>45%</td>
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<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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**Grade Distribution:**

- 97% & above = A+
- 92% - 96% = A
- 90% - 91% = A-
- 87% - 89% = B+
- 82% - 86% = B
- 80% - 81% = B-
- 77% - 79% = C+
- 72% - 76% = C
- 70% - 71% = C-
- 60% - 69% = D
- Below 60% = F

**Evaluation Details:**

There will be two exams during the semester: a midterm exam and a final exam, tentatively scheduled on the course schedule and USF final exam matrix. There will also be about three homework assignments and two quizzes depending on the course material for better preparation for the exams.

**Quizzes:**

There will be two quizzes during the semester. Quizzes will be announced at least one week before you have to take them.

**Good News: Quiz with lowest grade will be dismissed!**

**Homework Assignments/Project:**

There will be about three homework assignments with about two/three week gaps and depending on the course material. If the time permits, there will be one project (for example: a prediction model implementation) close to the end of the semester, which will be counted in HW grade.

**Exam Policy:**

All exams and quizzes will be closed book/closed notes with no computers, calculators or mobile devices. No make-up exams/quizzes will be given (unless in a medical emergency case) and the score of the missed exams will be considered as zero. In case of medical emergencies or prior approval from the instructor (with valid reasons) a make-up exam can be scheduled. Note that the reason for requesting a make-up should be discussed with the instructor at least two weeks before the exam and one week before quizzes. Also note that reasons, such as busy work schedule, are not valid for scheduling make-ups.

**Attendance:**

**Course Attendance at First Class Meeting:** Students are required to attend the first class meeting of courses for which they registered prior to the first day of the semester. Names of students who register prior to the first day of the semester are printed on the first class roll for each course section. The first class roll is used by instructors to drop students who do not attend the first day of class. Students having extenuating circumstances beyond their control and who are unable to attend the first class meeting must notify the
instructor or the department prior to the first class meeting to request waiver of the first class attendance requirement. Students who add courses or late-register during the first week of classes will not be on the first class roll and, therefore, will not be dropped for non-attendance by the instructor. Students are responsible for dropping undesired courses in these categories by the 5th day of classes to avoid fee liability and academic penalty. Attendance (other than the first class meeting) is highly recommended. There will be signing sheets for students who attend the classes to sign.

Technology Information:
Access to internet is required to use Canvas system, which is provided by the University of South Florida and is the courseware package utilized in this course. Every student is responsible for regularly checking the course Canvas web page (http://learn.usf.edu) for course material, assignments and other important information.

Academic Integrity Policy: (approved by the EE faculty and in effect since 2012):

The faculty of the Electrical Engineering Department is committed to maintaining a learning environment, which promotes academic integrity and the professional obligations recognized in the IEEE Code of Ethics (http://ee.eng.usf.edu/about/codeOfEthics.htm). Accordingly, the department adheres to a common Academic Integrity Policy in all of its courses. This policy is to be applied uniformly in a fair and unbiased manner.

University rules regarding academic integrity will be strictly enforced. It is not acceptable to copy, plagiarize or otherwise make use of the work of others in completing homework, project, laboratory report, exam or other course assignments. Likewise, it is not acceptable to knowingly facilitate the copying or plagiarizing of one’s own work by others in completing homework, project, laboratory report, exam or other course assignments. It is only acceptable to give or receive assistance from others when expressly permitted by the instructor. Unless specified otherwise, as in the case of all take-home exams, scholarly exchange regarding out-of-class assignments is encouraged. A more complete explanation of behaviors that violate academic integrity is provided at: http://www.ugs.usf.edu/catalogs/1112/pdf/AcademicIntegrityOfStudents.pdf.

The minimum penalty for violation of the academic integrity policy stated in the preceding paragraph is the greater of an automatic zero on the assignment or a letter grade reduction in the overall course grade. Student(s) found in violation of the policy on an exam will receive an F in the course. All instances of policy violations will be recorded in a letter from the instructor that is kept in the student files held by the department; a copy of the letter will be forwarded to the Undergraduate Dean's office. second violation of the policy, irrespective of whether it was related to an exam or any other course assignment, will result in a course grade of “FF” and expulsion from the Electrical Engineering Department.

Disabilities:
Students in need of academic accommodations for a disability may consult with the office of Students with Disabilities Services to arrange appropriate accommodations.
Students are required to give reasonable notice (at least one week) prior to requesting an accommodation. For more information see: http://www.sds.usf.edu/

Religious Observances:
Students who anticipate the necessity of being absent from class due to the observation of a major religious observance must provide notice of the date(s) to the instructor, in writing, by the second class meeting.

Emergency Procedures:
In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Canvas, Elluminate, Skype, and email messaging and/or an alternate schedule. It’s the responsibility of the student to monitor Canvas site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.

Non-thesis portfolio course:
For students taking this course as the Portfolio Course, the final grade may be affected by the evaluation of the student’s MSEE Portfolio, as described in the EE Department Portfolio Guidelines.

PLEASE CHECK THE FINAL EXAM DATE/TIME, WHICH IS POSTED IN USF’s FINAL EXAM MATRIX. (Monday April 30th 2018, 10am-12pm)