Instructor

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Students must use regular e-mail, not the mail feature in Blackboard, to communicate with the instructor. Students must include INEG 5323 in the subject line of any e-mail sent to the instructor. The instructor will send messages to students at their uark e-mail address.

Catalog of Studies Course Description

Development and analysis of the fundamental probability models used in the analysis of system reliability and system maintenance policies. Introduction to the use of simulation modeling for more complex analysis.

Prerequisites

This course will require students to apply concepts from calculus, probability, stochastic processes, computer programming, and discrete-event simulation. However, the instructor will provide an appropriate amount of background information for students who are rusty with the basic concepts or even unfamiliar with advanced concepts. So, there are no formal prerequisites for this course.

Textbook

The instructor takes a unique approach to presenting the concepts of reliability modeling. Therefore, there is no required textbook. For students who wish to have a nice desk reference on this general subject area, the instructor recommends An Introduction to Reliability and Maintainability Engineering by Charles E. Ebeling.

Software

Other than Microsoft Office, the instructor will provide students with free access to any software required in the course.
Course Topics

1. Probability Primer
2. Static Reliability Models
3. Continuous Random Variables Primer
4. Time-Dependent Reliability Models
5. Discrete Random Variables Primer
6. Burn-In Models
7. Concepts in Modeling Repairable Systems
8. Constant Failure Rate Repairable System Models
9. Renewal Repairable System Models
10. Minimal Repair Repairable System Models
11. Reliability Simulation Basics
12. Research Reviews

Navigating the Course

All course materials (instructions, reading material, video lectures, assignments, solution keys, etc.) are available on the course Blackboard page (learn.uark.edu). **Students may navigate the course at their own pace while adhering to stated deadlines regarding tests and the final exam.**

The typical course topic includes reading material and/or video lectures followed by an ungraded homework assignment (with a video presentation of the solutions). When students are ready, they take a short quiz on the topic. Although the quiz grade does not count toward the course grade, **students must pass the quiz to open up the next course topic in Blackboard.**

**Students must pass a quiz over the content of this syllabus to open the first course topic.**

Assessment

Assessment of student performance is accomplished via two tests and a final exam. **Students may take the tests at any time, as long as they complete each test and the final exam by the stated deadline.** The coverage of and deadline for tests and the final exam is summarized in the following table.

<table>
<thead>
<tr>
<th>Topics Covered</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>1-6 March 10</td>
</tr>
<tr>
<td>Test 2</td>
<td>7-10 March 24</td>
</tr>
<tr>
<td>Final Exam</td>
<td>1-12 March 3</td>
</tr>
</tbody>
</table>

**ProctorU will monitor the completion of tests 1 and 2. Students must register with Proctor U and schedule tests 1 and 2 with Proctor U at least three days in advance (to avoid a $5 fee). In scheduling with ProctorU, students should keep in mind the test deadlines.**
When ready to take the final exam, students should notify the instructor by e-mail of their desired exam date and time (the e-mail must be received by the instructor at least 48 hours in advance of the desired date/time). The student will then receive the exam password from the instructor via e-mail.

Tests and the final exam are graded on a 100-point scale. Tests and the final exam have a time limit of two hours. For tests, students are allowed to use one 8.5 in by 11 in sheet of paper of their own creation (front and back is allowed, handwritten or computer-produced is allowed). For the final exam, students are allowed to use two such sheets. Tests and the final exam may require students to use the same software that is used in completing the homework.

The instructor strives to notify students of their performance on a test or exam within 3-4 days of its completion. On some occasions, the instructor has travel or other commitments that make it impossible to meet this goal. Students are always welcome to e-mail the instructor to inquire about the status of a test or exam that has been completed but not yet graded.

Final course grades will be calculated based on the following percentages.

- 70%  Average Grade on Tests 1 and 2
- 30%  Final Exam Grade

Final course letter grades will be assigned using the following scheme.

<table>
<thead>
<tr>
<th>Course Grade Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>[90,∞)</td>
<td>A</td>
</tr>
<tr>
<td>[80, 90)</td>
<td>B</td>
</tr>
<tr>
<td>[70,80)</td>
<td>C</td>
</tr>
<tr>
<td>[60,70)</td>
<td>D</td>
</tr>
<tr>
<td>[0,60)</td>
<td>F</td>
</tr>
</tbody>
</table>

**Academic Honesty**

Students are expected to read, understand and abide by the university policy on academic honesty.