ESE 540: Reliability Theory
Syllabus (Fall 2024)

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Learning Objective: To introduce students to the theory and practice of reliable system design and evaluation. This an online course meeting up to 1 hour 15 minutes a week on Mondays. Work will be indicated in place of Wednesday class.

Coverage
  (1) Introduction
  (2) Reliability of Systems and Components
  (3) System Analysis
  (4) Lifetime Distributions
  (5) Repairable Systems
  (6) Warranties
  (7) Software Reliability
  (8) Event and Fault Trees

Text: L. Leemis, Reliability: Probabilistic Models and Statistical Methods, Prentice-Hall, (1st or 2nd edition). Also get a copy (paperback available) of Inviting Disaster by James Chiles.

Grading: Two Self Exams (16 points each), Exam No. 1 and No. 2 (18 points each), Two Projects (16 points each).

A is about 90 and above, A- is about 85 to 89, B-,B, B+ is about 70 to 84, passing C is about 65 and above.

Schedule (all Sunday assignments due at midnight Sunday evening):

Week 1 (Aug. 26th): Chapters 1-2.

Week 2 (Sept. 2nd): Chapter 2.

Week 3 (Sept. 9th): Chapter 2.

Week 4 (Sept. 16th): Chapter 2. **Project 1 due Sunday Sept. 15th**

Week 5 (Sept. 23rd): Chapter 2.

Week 6 (Sept. 30th): Chapters 3 and 4.

Week 7 (Oct. 7th): Chapters 3 and 4. **Self-Exam No. 1 due Oct. 6th**

Oct. 14-15th Spring Break

Week 8 (Oct. 21): Chapter 3 and 4. **Exam No. 1 Monday Oct. 21th.**

Week 9 (Oct. 28th): Chapters 3 and 4.

Week 10 (Nov. 4th): Chapters 3 and 4. **Project 2 due Sunday Nov. 3rd .**

Week 11 (Nov. 11th): Chapter 6. **Self-Exam 2 due Sunday Nov. 10th**

Week 12 (Nov. 18th): Chapter 6.

Week 13 (Nov. 25th): Special Topics. **Exam 2 Monday Nov. 25th .**

Week 14 (Dec. 2nd): Special Topics.

Projects: Theses are straightforward software projects. Any language including mathlab can be used but state the language being used. These are 1 person projects. While you may consult with other students the project should be your own. Graphs should look professional with legends along the axis and captions if necessary identifying plots.
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Self-Exam: A self-exam is four questions and answers on the indicated material the student makes up.   Questions and answers are graded based on correctness, having a good mix of questions, and clarity of solutions (they should be easy to follow and read). Each question should be immediately followed by its answer.   Problems selected should be similar in level of difficulty to old exam problems and book problems. Avoid overly complex problems or problems on material not covered in course --- they make me think they were copied from somewhere else.

Exams No.1 and No. 2: An online exam with four questions distributed just before the start of the exam. Your camera must be on otherwise you will take a makeup. Answers should not be overly long. Each question should be followed by its answer. Collaboration with others is not allowed. PDF file of your answers to be uploaded to the usual Assignment web page on Brightspace. Answers are graded on correctness and clarity of solutions.

 Note: If you have a physical, psychological, medical or learning disability that may impact on your ability to carry out assigned course work, I would urge you to contact the staff in the Student Accessibility Support Center office 631-632-6748. The staff will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation of disability are confidential.