ISE 747: Syllabus

When/Where

T TH 10:15-11:30
Daniels 331

Instructor

Russell E. King
Office: 126A Daniels Hall

email: king@ncsu.edu
Phone: (office) 515-5186
FAX: 515-1543
Office Hours: I am available anytime you find me in my office. DE Students can arrange to have Skype or Polycom video calls, as well phone calls or email exchange.

TA

Christy Minor
Office: 418 Daniels Hall

Email: mcminor@ncsu.edu
Office Hours:

Course Description and Objectives:

Introduction to basic concepts of reliability engineering. Application of probability and statistics to estimate reliability of industrial systems; development of reliability measures; analysis of static and dynamic reliability models; development and analysis of fault trees; analysis of Markovian and non-Markovian models; and optimization of reliability models.

Learning Outcomes:

By the end of this course, the student will be able to:

- Analyze complete and censored lifetime data and fit with appropriate statistical distributions
- Analyze the reliability of coherent systems for specified warranty or projected life periods
- Formulate fault tree models of complex systems and determine the failure modes of the system
- Determine optimal configurations of coherent systems subject to system constraints for specified warranty or projected life periods
- Formulate models, analyze performance and optimize configuration of maintainable reliability systems
- Communicate their analyses to non-technically trained decision makers
Prerequisites

Basic Statistics and Probability on the order of ST 515. You must also be able to do matrix operations and simple differentiation and integration.

Text


Non-required references:

The following texts are referenced in the course notes and may be of help.


Electronic access to some of the chapters from these texts that apply to this course are available on-line through the library reserves system (http://www.lib.ncsu.edu/reserves/). Go to View My Course Reserves and enter ise747 and king to get to these chapters.

Academic Integrity

All work turned in with your name is assumed to be only your work or, if a group assignment, the work of you and your group members. The University policy on academic integrity can be found in the Code of Student Conduct (see Appendix L of the Handbook for Advising and Teaching). It is understood and expected that a student's signature on any test or other assignment indicates that the student has neither given nor received unauthorized aid.

Students with Disabilities

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. http://www.ncsu.edu/dso/

For more information on NC State's policy on working with students with disabilities, please see http://www.ncsu.edu/dso/students/students.html

Exams

There will be two exams (one during the semester and the regular final exam). You will be allowed to bring one sheet (8 1/2 x 11inches, front and back) of handwritten notes to each exam. Tentative dates for exams are listed below. Note: These dates are subject to change but sufficient notice will be given.

- **MidTerm**: In-Class, Thursday, March 3rd, 2011.
- **Final Exam**: Thursday, May 12th, 2011, 8:00-11:00 am
Homework/Project

There will be several homework assignments during the semester. Assignments will be posted through the course Moodle site. Homework will receive one of the following grades.

- 0 (0%) - Did not turn in homework
- 1 (40%) - Homework turned in, but very little effort
- 2 (70%) - Homework turned in, significant effort, but still some incorrect solutions
- 3 (85%) - Homework turned in, solutions mostly correct
- 4 (100%) - Homework turned in, solutions to all problems correct

Late homework will receive, at best, a score of 2 depending upon circumstances.

There will also be a project towards the end of the semester. Details will be provided in class and through the course Moodle site.

Grading

Your grade in the class is determined by averaging the exam and homework scores with the following weights.

Homework 30%, MidTerm 30%, Final Exam 40%

The following grading system will be followed.

A+ : 100.00 – 96.67  B– : 83.33 – 80.00  D : 66.66 – 63.34
A : 96.66 – 93.34  C+ : 79.99 – 76.67  D– : 63.33 – 60.00
A– : 93.33 – 90.00  C : 76.66 – 73.34  F : 59.99 – 00.00
B+ : 89.99 – 86.67  C– : 73.33 – 70.00
B : 86.66 – 83.34  D+ : 69.99 – 66.67

A final average within the boundaries listed above will guarantee you at least the associated grade. However, an overall class curve is possible and is heavily dependent upon overall class participation.

Attendance

Since the course is available through Engineering On-Line, on-campus students will be given access to the recorded lectures and have the option to either attend the live class or view the lectures later.

Course Evaluation

Schedule: Online class evaluations will be available for students to complete during the last 2 weeks of the term.

Students will receive an email message directing them to a website where they can login using their
Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructors.

Evaluation website: https://classeval.ncsu.edu/
Student help desk: classeval@ncsu.edu
More information about ClassEval: http://www.ncsu.edu/UPA/classeval/

You are logged in as Russell King (Logout)

ISE 747 (001) Sprg, 2011