San Jose State University
Department of Aviation and Technology
Tech 231 - System Reliability and Maintainability
Spring 2013
Thursday 18:00 – 20:45 Room IS 120

Instructor:
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Office Hours: 15:30-17:30 or by appointment

Catalog Description

Analysis of appropriate models for systems reliability, including static, dynamic and probabilistic engineering models; reliability estimation and optimization; life cycle prediction techniques; failure models and effects analysis; maintainability prediction and analysis. Prerequisite: ISE 130 or STAT 115 or equivalent and Graduate Standing. Seminar 3 units.

Course Objectives

Upon successful completion of this course, the student will be able to:

- Understand the fundamental concepts of reliability in product design and production
- Determine the requirements and procedures for establishing and measuring mechanical and electronic systems reliability
- Select appropriate mathematical models to predict, control, analyze, and improve engineering systems reliability
- Design and implement reliability-related programs and organizational management to ensure acceptable quality functions
- Evaluate control techniques and testing procedures pertinent to systems reliability

Textbook - Required

O'Connor, Patrick D. T. (2012). Practical Reliability Engineering (5th. Ed.). New York: John Wiley and Sons. ISBN: 978-0-470-97982-2

References

Ireson, W. G., & Coombs, C. F. (1988). Handbook of reliability engineering and management. New York: McGraw Hill.
Juran, J. M, & Gyna, F. M. (1993). Quality planning and analysis. New York: McGraw Hill.

Course Requirements
There will be one three-hour lecture each week. Pop in-class problems/quizzes will be given during lecture and homework problems will be assigned. No make ups. Late assignments will earn only a fraction of the allotted points up to 50%. There will be one final and one midterm in addition to group project(s). There will be no make up for the final and the midterm. If for some reason, beyond your control, you cannot take the test you must inform the instructor in advance, obtain an agreement and set up a mutually convenient time to take the test. A technical presentation based on your term project is required to this class. The Oral presentation is expected to last about 15 to 20 minutes followed by a 5-minute discussion period. The contents of the presentation should be technical and include some viewgraphs related to the chosen subject area.

Grading

Homework & In-Class Assignment	15%
Midterm	25%
Lab Project/Cases	25%
Final	35%

Assignments of Grade: 100 = A+, 95-99 = A, 90-94 = A-, 85-89 = B+, 80-84 =B, 75-79 = B-, 70-74 = C+, 65-69 = C, 60-64 = C-, 55-59 = D+, 50-54 = D, others = F.

<u>Supplementary Information</u>

Academic Integrity
"Your own commitment to learning, as evidenced by your own enrollment at San Jose State University, and the University's Academic Integrity Policy requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development. The policy on academic integrity can be found at: http://sa.sjsu.edu/student_conduct.

Campus policy in compliance with the Americans with Disabilities Act:
"If you need course adaptation or accommodations because of a disability, or if you need special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive97-03 requires that students with disabilities requesting accommodations must register with DRC to establish a record of their disability."

Date	Topic	Chapter
Jan 24, 2013	Introduction to the course Notation and Definitions	
Jan 31, 2013	Introduction to Reliability Engineering	Chapter 1
Feb 07, 2013	Reliability Mathematics (Pages 19 – 57)	Chapter 2
Feb 14, 2013	Chapter 2 continued	
Feb 21, 2013	Load-strength Interference	Chapter 5
Feb 28, 2013	Reliability Prediction and Modeling (Sections 6.1 through 6.10)	Chapter 6
Mar 07, 2013	Chapter 6 continued	
Mar 14, 2013	Design for Reliability Review	Chapter 7
Mar 21, 2013	**MIDTERM**	
Mar 28, 2013	Spring Recess – No School	
Apr 04, 2013	Reliability of Mechanical Components and Systems	Chapter 8
Apr 11, 2013	Electronic Systems Reliability	Chapter 9
Apr 18, 2013	Chapter 9 continued	
Apr 25, 2013	Reliability Testing	Chapter 11
May 02, 2013	Analyzing Reliability Data	Chapter 13
May 09, 2013	Reliability Management (Time permitting) Review	Chapter 17
May 16, 2013	**FINAL 17:15 – 19:30**	