OFFICIAL SYLLABUS  
STAT 484 - RELIABILITY ENGINEERING  
Adopted - Spring 2010  
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Catalog Description: Probabilistic models for the reliability of coherent systems. Statistical models for lifetimes of components and repairable systems. Reliability estimation and prediction. MIL standards. Prerequisite: STAT 480a,b; or IME 365.


Course Outline and Topics

Chapter 1 Introduction
   1.1 Definition of Reliability

Chapter 2 Coherent Systems Analysis
   2.1 Structure Functions
   2.2 Minimal Path and Cut Sets
   2.3 Reliability Functions
   2.4 System Reliability Bounds

Chapter 3 Lifetime Distributions
   3.1 Distribution Representations
   3.2 Discrete Distributions
   3.3 Moments and Fractiles
   3.4 System Lifetime Distributions
   3.5 Distribution Classes

Chapter 4 Parametric Lifetime Models
   4.1 Parameters
   4.2 Exponential Distribution
   4.3 Weibull Distribution
   4.4 Gamma Distribution
   4.5 Other Lifetime Distributions

Chapter 6 Repairable Systems
   6.1 Introduction
   6.2 Point Processes
   6.3 Availability

Chapter 7 Lifetime Data Analysis
   7.1 Point Estimation
   7.2 Interval Estimation
   7.3 Likelihood Theory
   7.4 Asymptotic Properties
   7.5 Censoring

Chapter 8 Parametric Estimation for Models Without Covariates
   8.1 Sample Data Sets
   8.2 Exponential Distribution
   8.3 Weibull Distribution

Any instructor should cover all of the material specified; additional sections are optional.