

**Tennessee Technological University
Mathematics Department**

MATH 6270: Mathematical Statistics

- I. COURSE DESCRIPTION FROM CATALOG:** Statistical hypothesis, uniform most powerful test, sufficient statistics, completeness, Roa-Cramer inequality sequential probability ratio test, analysis of variance, multiple comparisons, non-parametric techniques. Lec. 3. Cr. 3.
- II. PREREQUISITE(S):** Consent of instructor.
- III. COURSE OBJECTIVE(S):** To study Chi-Square Goodness of fist Test, Test for equality of means. non-central Distributions, Non-parametric methods. Wilcoxon and Mann-Whitney Tests. Sufficient and Complete Sufficient Statistics, Rank Statistics and Rao-Blackwell Inequalities.

IV. TOPICS TO BE COVERED:

CHAPTER 8 Other statistical Tests

- 8.1 Chi-Square Tests
- 8.2 The Distributions of Certain Quadratic Forms
- 8.3 A Test of the Equality of Several Means
- 8.4 Noncentral and Noncentral F
- 8.5 The Analysis of Variance
- 8.6 A Regression Problem

CHAPTER 9 Nonparametric Methods

- 9.1 Confidence Intervals for Distribution Qualities
- 9.2 Tolerance Limits for Distributions
- 9.3 The Sign Test
- 9.4 A Test of Wilcoxon
- 9.5 The Equality of Two Distributions
- 9.6 The Mann-Whitney-Wilcoxon Test
- 9.7 Distributions Under Alternative Hypotheses 9.8 Linear Rank statistics

CHAPTER 10 Sufficient Statistics

- 10.1 A Sufficient statistic for a Parameter
- 10.2 The Rao-Blackwell Theorem
- 10.3 Completeness and Uniqueness
- 10.4 The Exponential Class of Probability Density Functions
- 10.5 Functions of a Parameter
- 10.6 The Case of Several Parameters

CHAPTER 11 Further Topics in statistical Inference

- 11.1 The Rao-Cramer Inequality
- 11.2 The Sequential Probability Ration Test

V. ADDITIONAL INFORMATION:

Students with a disability requiring accommodations should contact the Office of Disability Services (ODS). 1
An Accommodation Request (AR) should be completed as soon as possible, preferably by the end of the first week of the course. The ODS is located in the Roaden University Center, Room 112; phone 372-6119.

VI. POSSIBLE TEXTS AND REFERENCES:

Introduction to Mathematical Statistics, 6th edition, Hogg and Craig

VII. ANY TECHNOLOGY THAT MAY BE USED:

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