**MATH 5301 Nonparametric Statistics**

**Instructor**

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**Office Hours**

MW 1:00 – 2:00

TR 10:30 – 11:30

You are highly encouraged to visit my office for help.

**Course Meeting Times**

MWF 8:00 – 9:30 in Math 334

**Required Materials**

*Practical Nonparametric Statistics, 3rd ed.,* by W.J. Conover.

**Grades**

Course averages will be computed as follows.

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| **Assignment** | **% of Grade** |
| Homework Completion | 20% |
| Homework Presentations | 20% |
| Exam 1 (Chapters 1—3) | 20% |
| Exam 2 (Chapters 4—5) | 20% |
| Final Exam (Comprehensive) | 20% |

**Students with Disabilities:** It is the policy of Tarleton State University to comply with the Americans with Disabilities Act and other applicable laws. If you are a student with a disability seeking accommodations for this course, please contact Trina Geye, Director of Student Disability Services, at 254.968.9400 or [geye@tarleton.edu](mailto:geye@tarleton.edu). Student Disability Services is located in Math 201. More information can be found at [www.tarleton.edu/sds](http://www.tarleton.edu/sds) or in the University Catalog.

**Academic Integrity:** The Tarleton University Mathematics Department takes academic integrity very seriously. The usual penalty for a student caught cheating includes an F in the course. Further penalties may be imposed, including expulsion from the university.

**Catalog Description:** Introduction to nonparametric statistics. Topics will include hypothesis testing, contingency tables, rank tests, and goodness-of-fit tests. Prerequisite: Junior or senior level statistics course.

**Sections of Primary Interest**

Chapter 1: Probability Theory

* 1. Counting
  2. Probability
  3. Random Variables
  4. Some Properties of Random Variables
  5. Continuous Random Variables

Chapter 2: Statistical Inference

* 1. Populations, Samples, and Statistics
  2. Estimation
  3. Hypothesis Testing
  4. Some Properties of Hypothesis Tests
  5. Some Comments on Nonparametric Statistics

Chapter 3: Some Tests Based on the Binomial Distribution

3.1 The Binomial Test and Estimation of *p*

3.2 The Quantile Test and Estimation of *xp*

3.3 Tolerance Limits

3.4 The Sign Test

3.5 Some Variations of the Sign Test

Chapter 4: Contingency Tables

4.1 The 2 by 2 Contingency Table

4.2 The *r* by *c* Contingency Table

4.3 The Median Test

4.4 Measures of Dependence

4.5 The Chi-Square Goodness-of-Fit Test

4.6 Cochran’s Test for Related Observations

4.7 Some Comments on Loglinear Models

Chapter 5: Some Methods Based on Ranks

5.1 Two Independent Samples

5.2 Several Independent Samples

5.3 A Test for Equal Variances

5.4 Measures of Rank Correlation

5.5 Nonparametric Linear Regression Methods

5.6 Methods for Monotone Regression

5.7 The One-Sample or Matched-Pairs Case

5.8 Several Related Samples

5.9 The Balanced Incomplete Block Design

5.10 Tests with A.R.E. of 1 or More

5.11 Fisher’s Method of Randomization

5.12 Some Comments on the Rank Transformation

Chapter 6: Statistics of the Kolmogorov-Smirnov Type

6.1 The Kolmogorov Goodness-of-Fit Test

6.2 Goodness-of-Fit Tests for Families of Distributions

6.3 Tests on Two Independent Samples

6.4 Tests on Several Independent Samples