STATISTICS 2520

Introduction to Applied Statistics II
Winter 2000

Grande Priarie Regional College

Calendar Description: Stat 2520 (3-0-2). Methods in applied statistics including regression techniques, analysis of variance and covariance, and methods of data analysis. Applications are taken from Biological, Physical, and Social Sciences, and Business. Prerequisite: St 1410 or 1510 or equivalent.

Rooms/times: Lecture: ~~tba~~ Mon. Wed. 8:30 – 10:00
Lab: ~~tba~~ Wed. 14:30 – 16:30

Instructor: Dr Eric Chislett, C409, ph 539-2003, e-mail chislett@gprc.ab.ca

Textbok: Ramsey and Schafer, ***The Statistical SLEUTH.***

Assessment:

Assignments and Labs	20%
Midterm Exam	25%
Lab Exam	15%
Final Exam	40%

Exams: All exams are open book and a calculator is required.
There is no deferred or make-up exam for the midterm or the lab exam. Students who miss them for a valid reason will have their weight transferred to the final exam. Student who miss the final exam may apply for a deferred exam through the registers office. The date for a deferred final exam is Fri. May 19.

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Detailed Course Description: # of weeks

1. ONE-SAMPLE AND TWO-SAMPLE TESTS: 1.5
   Review of one-sample and two-sample Student t-tests. Non parametric tests: One-sample and two-sample.

2. LINEAR REGRESSION ANALYSIS: 2
   Review of Linear Regression Analysis, Comparison of Two Straight-Line Regression Models.

3. MULTIPLE REGRESSION ANALYSIS:
   Assumptions of the Model, Best Estimate of the Model. Multiple and Partial Corellation Coefficient. Dummy Variables in Regression. Selecting the best Regression Equation. Residual Analysis, Transformations, and Weighted Least Squares.

4. INTRODUCTION TO THE DESIGN OF EXPERIMENTS : 3.5
   Review of Basic Principles of Experimental Design. Basic Concepts pertaining to Experiments with several factors: Main and Interaction Effects; One-way and Two-way ANOVA tables. Multiple Comparisons. Analysis of Covariance.

5. ANALYSIS OF BINARY AND COUNT DATA: 2
   Chi-square tests for two-way contingency tables. Logistic Regression Models.

Laboratory Topics (Two hours per week): These labs will be more of an instructional type rather than consisting of exercises to the students.

1. One-Sample and Two-Sampe tests.
2. Fitting Linear Regrssion Models. Residual Analysis, Checking the Assumptions.
3. Fitting Multivariate Linear Regression Models. Residual Analysis, Checking the Assumptions.
4. Searching for the Best Regression Model.
5. Analysis of One-way ANOVA Models.
6. Analysis of Two-way ANOVA Models.
7. Analysis of Two-way Models with and without Interaction.
8. Dummy Variable Regression Models.