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GRANDE PRAIRIE REGIONAL COLLEGE

COURSE OUTLINE

STATISTICS 351

TITLE: ST 351 Introduction to Applied Statistics I

INSTRUCTOR: Dr. Eric Chislett
C 409
Phone: 539-2003

TIME: Class: Monday, Wednesday, Friday 12:00-12:50 p.m.
J227
Lab: Tuesday, 3:00-5:00 p.m.
J201 and J131

MARKING:

Mid-Term	25%
Final	40%
Labs	10%
Assignments/Quizzes	15%
Lab Exam	10%

TEXT: (i) Introduction To The Practice of Statistics, Moore & McCabe.
(ii) Ninitob Handbook to Accompany (i) by Larry Kitchens.

GRANDE PRAIRIE REGIONAL COLLEGE

STAT 351 Introduction to Applied Statistics I
***3 First Term (3-2) UT (3)**

Data collection and presentation, descriptive statistics. Probability distributions, sampling distributions and the central limit theorem. Point estimation and hypothesis testing. Correlation and regression analysis. Goodness of fit and contingency tables.

Prerequisite MATH 202 or equivalent. This course may not be taken for credit if credit has already been received in STAT 241, STAT 255 or PSYCO 309.

LECTURE TOPICS:

1. ROLE OF STATISTICS AND DESCRIPTIVE MEASURES:

Looking at different types of Data and Role of Statistics. Graphical and Numerical tools for describing univariate frequency distributions-Density curves (with special reference to Normal Density Curve). Looking at bivariate data (both continuous and categorical) - graphical and numerical measures. (Two weeks)

2. DATA COLLECTION (HOW THE DATA WAS OBTAINED?):

Census and Sample Surveys. Experimental Designs: Basic principles of Randomization - Why and How to Randomize? (One week)

3. PROBABILITY AND RANDOM VARIABLES:

Concept and Rules of Probability. Its use in studying randomness. Random Variable and Probability Distributions. I.I.D. and Non-i.i.d. random variables; examples of non-i.i.d. random variables. Concept and Rules of Expectation. (Two weeks)

4. SAMPLING DISTRIBUTIONS AND CONCEPTS OF ESTIMATION:

Sampling Distributions of sample mean and proportion. The Central Limit Theorem. Concepts of Unbiasedness and Consistency of an Estimator. Confidence Intervals for Means and Proportions. (Two weeks)

5. HYPOTHESIS TESTING:

Type I and II errors. Testing of Means and Proportions in one and two-sample problems, Interpretation of P-values. Duality between confidence intervals and hypothesis testing. (Two weeks)

6. ANALYSIS OF VARIANCE:

Analysis and the underlying assumptions for One-way and Two-way Experimental Data. (Two weeks)

7. INFERENCE FOR SIMPLE LINEAR REGRESSION:

Statistical Model for Linear Regression. Estimation of Regresion Parameters. Confidence and Prediction Intervals. Significance test on Regression Parameters. Residual Analysis. (Two weeks)

ASSIGNMENTS/QUIZZES

A list of recommended problems from the text will be given in class. There will be two formal assignments to be handed in given during the term. There will also be two quizzes given during the term.

LABORATORY PROJECTS:

There is a two hour laboratory session per week, half of which will be done on the Minitab Statistical Software on the P.C.'s. Lab reports are due on the friday following the lab date. Reports are to be written neatly and graphs and tables are to be completed with the aid of rulers. A title page is to be included.

LABORATORY SCHEDULE:

LAB #	DATE	TOPIC
1	September 10	Frequency Distributions
2	September 17	Descriptive Statistics; Numerical Measures
3	September 24	Minitab: Introduction, Descriptive Statistics
4	October 1	Minitab: Looking at Data
5	October 8	Sampling Distributions
6	October 15	Minitab: Probabilities and Distributions
	October 22	Mid-Term Exam
7	October 29	Probability
8	November 5	Minitab: Regression
9	November 12	Minitab: Analysis of Variance
	November 19	Project Data Collection
10	November 26	Minitab: Project Analysis
	December 3	Minitab: Lab exam