COURSE SYLLABUS
FOR
STATISTICAL METHODS IN PRACTICE
(STA/MTH 379) – Fall 2007
CLASS LOCATION: LDB 219 – MEETING TIME 9 – 9:50 MWF

TITLE: Statistical Methods in Practice

INSTRUCTOR: Dr. Cecil Hallum

OFFICE: LDB 420C   **OFFICE HOURS:** 10-11 MW
                                                        9:30-11:00 TTh
                                                        2:00-3:00 MW
                                                        & by Appointment

PHONE: 294-3706

TEXT: *Statistics, Principles and Methods,* 5th Edition, by Richard A. Johnson
            and Gouri K. Bhattacharyya, John Wiley & Sons, Inc., 2006.

DESCRIPTION: This course introduces the fundamentals of statistical concepts and will
            guide the student through basic statistical procedures to permit critical
            insight into the science of collecting, classifying, presenting, and
            interpreting information from data. The three primary topics covered
            are descriptive statistics (graphic presentation of data, histograms,
            plots, charts, measures of central tendency, dispersion, position, etc.),
            bivariate data analysis, linear correlation and regression analysis,
            probability concepts and rules for calculating probabilities of compound
            events. The probability coverage also includes the more commonly
            occurring probability distributions such as the binomial and normal
            distributions. Finally, the third area of coverage is that of inferential
            statistics, including inferences involving one and two populations.
            Students are also introduced to MINITAB (one of the most user-
            friendly, "forgiving" statistics packages in the world and one that is
            especially popular in the workplace).

OBJECTIVE: To develop an understanding of and a facility for the concepts and
            applications of descriptive and inferential statistics.

APPROACH:
            1. Lectures on new concepts and applications.

            2. Assigned problems for experience and familiarity with techniques.

            3. Classroom discussions on applications --- appropriate usage and value.

            4. Examinations to demonstrate understanding and ability to utilize
                methods.

<u>APPRAISAL</u>:

Exam I…………….......................…......30%
Exam II................…………….................30%
Final Exam.....................…………........25%
Homework and MINITAB Assign's….15%

TOTAL   100%

<u>SPECIAL NOTE</u>: Performance on exams is directly related to homework performance --- all homework is to be kept current, neatly together, in sequence, and ready to be handed in upon request.

<u>POLICIES</u>:

1. **Make-up Exams --- DO NOT MISS AN EXAM!! Make-up exams are to be avoided; however, if you miss an exam (and have a authentic excuse -- i.e., a doctor's or other professional's written excuse), a day will be set aside at the end of the semester for all make-ups.**

2. **Withdrawal --- University policy will be followed: the last day for drop/withdrawal is October 10, 2007. It is <u>your personal responsibility</u> to initiate and complete the drop/withdrawal process.**

3. **Homework --- Since topics in the course sequence build upon preceding topics, it is expected that you will remain current in all assignments; also you should have your homework neatly assembled together at all times and be ready to hand it in upon request.**

4. **Incomplete --- A grade of "X" or "Incomplete" is not appropriate for this course.**

5. **Attendance --- Since lectures and in-class discussions are for your benefit, you are expected to be in attendance at all classes.**

6. **Class Behavior --- Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cellular telephones and pagers must be turned off before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.**

7. **Academic Honesty** --- **All work that is handed in for evaluation is to reflect solely your individual performance. All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.**

COURSE SEQUENCE

- **Exam I will be given after approximately 150 pages of coverage.**

- **Exam II will be given after approximately 300 pages of coverage.**

- **The final exam will be given at the time advertised in the schedule of classes. It will be a limited comprehensive exam and will be over the materials covered beyond Exam II along with selected items from earlier in the semester.**

WEEK-BY-WEEK COVERAGE

WEEK 1:
a) **Introduction and Summarizing Data --**
b) **Graphical Methods and Measures of Central Tendency**
c) **Summarizing Data -- Measures of Variability,**
d) **Coding and the Box Plot**

WEEK 2:
a) **Introduction to Probability and Associated Fundamental Properties**
b) **Basic Event Relations and Probability Laws, Conditional Probability, Independence and Bayes Formula.**

WEEK 3:
a) **Discrete Probability Distributions**
b) **The Binomial Distribution**
c) **Introduction to MINITAB**

WEEK 4:
a) **Continuous Probability Distributions**
b) **The Normal Distribution**
c) **The Central Limit Theorem.**

WEEK 5: Review and Exam 1

WEEK 6: Confidence Intervals for the Population Mean/Proportion

   a) **Large Sample Case**
   b) **Small Sample Case**
   c) **Sample Size Estimation**
   d) **MINITAB Session**

WEEK 7: a) Principles of Hypothesis Testing
   b) Tests on the Single Population Mean
   c) Type I and Type II Errors

WEEK 8: a) Tests on the Population Proportion
   b) Confidence Interval Estimation of the Population Variance
   b) Tests on the Population Variance

WEEK 9: Review and Exam II

WEEK 10: Spring Break Week

WEEK 11: Inferences Concerning Two Population Means
   a) **Dependent Samples Case**
   b) **Independent Samples Case**

WEEK 12: Wrap-up of the Two Population Case for the Means
   a) **Case 1: Unequal Variances**
   b) **Case 2: Equal Variances**

WEEK 13: a) Tests Between Two Population Proportions
   b) MINITAB Wrap-up

WEEK 14:   Regression and Correlation Analysis

WEEK 15:   Wrap-up of Regression and Correlation

WEEK 16: Review

WEEK 17: Final Exam

HAVE A FANTASTIC SEMESTER!!