

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS
DHAHRAN, SAUDI ARABIA

STAT201: STATISTICAL METHODS

Course Outline, Semester 092 (Spring , 2010)

Instructor: Prof. Hassen A. Muttlak

Office: (5-407)

Telephone: 860 3974, **Fax:** 860 2340

Email: hamstat@kfupm.edu.sa

Home Page: <http://faculty.kfupm.edu.sa/MATH/hamstat/index.html>

Office Hours: SMW 10-11.50am

Text and Package:

The recommended textbook and software are:

(1) Ross, S. H. Introductory Statistics, Elsevier, 2005.

(2) *MINITAB*.

Course Objectives:

STAT201 introduction to statistics is intended to be the first course in statistics for students. The emphasis is on understanding how to use statistics to solve real-world problems. Upon completion of this course you should:

- Be familiar with the techniques of data analysis studied;
- Understand the basic elements of probability studied;
- Understand the assumptions, methods, and implications associated with various methods of statistical inference studied; and
- Be proficient in using *MINITAB* and be able to interpret the associated output.

Assessment

Assessment for this course will be based upon homework, class work, attendance, quizzes, lab, two major exams and final exam (comprehensive), with the following weighting:

| Activities | Weight |
|---|--------|
| Quizzes, homework and class work | 10% |
| Exam 1 (Chapters 1, 2, 3 and 4) Bldg. 5 27/3/2010 at 6.30-8.30pm | 20% |
| Exam 2 (Chapters 5, 6 and 7) Bldg. 54 1/5/2010 | 20% |
| Lab reports and lab exam | 10% |
| Final exam (comprehensive) | 40% |

Syllabus at a Glance

| <i>Week</i> | <i>Section</i> | <i>Topics</i> |
|-------------------------------|----------------|--|
| Week 1 20/2/- 25/2 | 1.1. -1.3 | Introduction, the nature of statistics, populations and samples |
| Week 2 28/2 – 4/3 | 2.1-2.5 | Introduction, frequency tables & graphs, histograms, stem-&-leaf plot, set paired data |
| | 3.1- 3.4 | Mean, median, mode |
| Week 3 6/3 - 10/3 | 3.5-3.7 | Variance & standard deviation, empirical rule and sample correlation coefficient |
| | 4.1-4.2 | Probability: sample space & events, |
| Week 4 13/3 - 17/3 | 4.3-4.4 | Properties, and equally likely outcomes |
| | 4.5-4.5 | Conditional probability and independence |
| Week 5 20/3 - 24/3 | 5.1-5.2 | Discrete random variables |
| Week 6 27/3 - 31/3 | 5.3-5.5 | Expected value & variance, binomial random variables |
| Week 7 3/4 - 7/4 | 6.1-6.3 | Continuous random variables, normal random variables |
| Week 8 10/4 - 14/4 | 6.4-6.7 | Standard normal random variable, probabilities, additive property and percentiles |
| Midterm Vacation | | |
| Week 9 24/4 - 28/4 | 7.1-7.5 | Sample mean, central limit theorem and sampling proportions |
| Week 10 1/5 - 5/5 | 8.1-8.6 | Point estimates of population mean, proportion & variance and interval estimates of mean |
| Week 11 8/5 - 12/5 | 8.7, 9.1-9.2 | Interval estimates of proportion. Hypotheses test & significance levels |
| Week 12 15/5 - 19/5 | 9.3-9.5 | Hypotheses tests for mean and proportion |
| Week 13 22/5 - 26/5 | 10.1-10.4 | Testing equality of means: Large & small sample |
| Week 14 | 12.1-12.5 | Simple linear regression |
| Week 15 4/6 - 9/6 | 12.6-12.9 | Coefficient of determination and correlation coefficient |

Outfits

Students will be required to carry a calculator with statistical functions. A binder will also be an asset to organize yourself with selected lecture notes, handouts, solutions to home works, exams etc.

Notices:

Any notice about the course will be communicated to the instructors through the emails, or through hard copies in pigeonhole. Students will be communicated by the announcements by the instructor.

Homework and Tutorials

Students are required to do the homework problems at home. The first hour of the lab would be devoted to solve the tutorial problems, and to guide how to solve other problems. The second hour of lab would be devoted to show students how to use the MINITAB statistical package and to use it to solve real life problems.

Homework Problems (Ross, S. M. 2005)

Chapter Two: 2.2.1, 2.2.9, 2.3.2, 2.3.5, 2.4.3.

Chapter Three: 3.2.6, 3.2.14, 3.3.2, 3.3.10, 3.3.1.4, 3.4.1, 3.5.2, 3.6.1, 3.6.10
3.7.3, 3.7.15.

Chapter Four: 4.2.3, 4.2.12, 4.3.2, 4.3.11, 4.4.2, 4.4.7, 4.5.4, 4.5.13.

Chapter Five: 5.2.6, 5.2.17, 5.3.4, 5.3.13, 5.4.8, 5.4.13, 5.5.5, 5.5.19.

Chapter Six: 6.2.3, 6.2.6, 6.3.2, 6.3.15, 6.4.2, 6.4.7, 6.5.3, 6.5.13, 6.7.4, 6.7.11.

Chapter Seven: 7.3.4, 7.3.6, 7.4.1, 7.4.4, 7.5.2, 7.5.7, 7.5.15

Chapter Eight: 8.2.4, 8.2.8, 8.3.4, 8.3.11, 8.4.2, 8.4.9, 8.5.3, 8.5.12, 8.6.2, 8.6.13, 8.7.3,
8.7.9.

Chapter Nine: 9.2.1, 9.2.3, 9.3.2, 9.3.11, 9.3.1.2, 9.4.3, 9.4.8, 9.5.2, 9.5.14.

Chapter Ten: 10.2.2, 10.2.7, 10.3.1, 10.3.10, 10.4.2, 10.4.9.

Chapter Twelve: 12.2.3, 12.3.3, 12.3.8, 12.4.6, 12.5.4, 12.5.12, 12.6.4, 12.7.3, 12.8.2,
12.9.1.