Department of Mathematics & Statistics
Introduction to Statistical Analysis
STAT-1201(6)-001 FW2009-2010

Be on time
5 min early. Sit
don't talk

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The introductory course in Statistics has two broad purposes. The first is to introduce the students to statistical theory and practice. This may be pertinent to the student as a discipline in itself or for the use that she/he can make of it in her/his major field of study. The second purpose is to help in the development of a student's knowledge in the scientific method of testing ideas with experimental evidence and then relating this evidence to develop her/his ideas.

Course Outline http://mathstats.uwinnipeg.ca/

MON WED FRI.
1:30 ~ 11:30 12:30 ~ 1:20
TUE THR
2:30 ~ 3:45

1. **Introduction**
   a) Some basic terms
   b) Types of variables and numerical data

2. **Numerical Descriptive Measures**
   a) Measures of Central tendency
   b) Measures of dispersion
   c) Measures of position: percentiles and quartiles

3. **Probability Theory**
   a) Defining notions
   b) Counting rules: Factorials, permutations and combinations
   c) Probability laws
   d) Conditional probability and independence

4. **Discrete Probability Distributions**
   a) Random variables
   b) Expectation and variance
   c) Binomial, hypergeometric and Poisson

5. **Continuous Probability Distributions**
   a) Normal and standard normal distributions
   b) Applications of normal distribution
   c) Normal approximation to the binomial

6. **Sampling Distributions**
   a) Statistics and their distributions
   b) Sampling distribution of the sample mean and the sample proportion
   c) Central Limit Theorem

7. **Estimation of Parameters**
   a) Introduction
   b) Point estimation
   c) Interval estimation
   d) Student's t-distribution
   e) Determination of sample size

/...2

8. Tests of Hypotheses: One-sample procedure

a) Basic concepts including two types of errors
b) Testing means, proportions and variances based on single samples

9. Tests of Hypotheses: Two-sample procedure

a) Testing means and proportions for two independent samples
b) Testing means of two dependent samples: paired t-test

10. Chi-square Tests

a) Chi-square distribution
b) Testing multinominal data
c) Testing Goodness-of-fit
d) Fitting distributions: binomial, Poisson and normal
e) Contingency table tests of association.

11. Analysis of Variance (ANOVA)

Testing multiple means:

a) Completely Randomized Design
b) Randomized Block Design

12. Linear Regression and Correlation

a) Linear regression model
b) Method of Least Squares
c) Correlation
d) Measuring the strength of the linear regression

Textbook: Introductory Statistics by P.S. Mann, 6th ed., John Wiley ©2007 show the work.

Grading no - midterms test 1 last week of October test 3 February
test 2 last week of November test 4 March

Term tests (four) 50%
Final Examination **(check UW door postings to confirm final exam room and time)** 50%
April 14th 9 am ~ 12 pm entire course **= 100%**
(Final exam covers the entire course) - definitions.

Only self-powered, hand-held calculators are permitted for all tests and the final examination.

Withdrawal: The last day to withdraw without academic penalty from this course is Friday January 22, 2010.

Reading Week has been changed to February 15-20, 2010 (no classes)

Please refer to Section VII of the University Course Calendar for policies on grading, appeals and academic misconduct. (http://www.uwinnipeg.ca/index/calendar-calendar)

Services for Students with Disabilities: Students with documented disabilities requiring academic accommodations for tests/exams (e.g., private space) or during lectures/laboratories (e.g., access to volunteer note-takers) are encouraged to contact the Coordinator of Disability Services (DS) at 786-9771 to discuss appropriate options. Specific information about DS is available on-line at http://www.uwinnipeg.ca/index/services-disability. All information about disability is confidential.