

**SKIDMORE COLLEGE | DEPARTMENT OF ECONOMICS
EC 237/001 + 002 | STATISTICAL METHODS | SPRING 2006**

INSTRUCTOR: YAHYA M. MADRA | **OFFICE:** HARDER HALL 204-C | **PHONE:** x8303 | **EMAIL:** ymadra@skidmore.edu | **CLASSES MEET** | **237/001:** MW 02:30 PM — 03:50 PM | **237/002:** MW 04:00 PM — 05:20 PM | Both sections in DNA 181 | **OFFICE HOURS:** MW 01:00 PM—2:00 PM, T 03:00—05:00 PM, or by appointment.

REQUIRED TEXTBOOKS:

Elementary Statistics: A Step by Step Approach (Fifth Edition), by Allan G. Bluman. Boston: McGraw-Hill, 2004. [ES]

The Cartoon Guide to Statistics, by Larry Gonick & Woollcott Smith. New York: HarperCollings Publishers, 2005. [CGS]

The textbook is available at the Skidmore Shop. Additional readings will be handed out in class.

COURSE WEBSITE: <http://www.skidmore.edu/~ymadra/ec237.htm>

REQUIREMENTS AND GRADING:

a. Exams: There will be three exams during the course:

Midterm 1: Wednesday, March 8, in class.

Midterm 2: Wednesday, April 12, in class.

Final: Tuesday, May 9, EMERSON, EVE 6PM to 9PM. (Same for everyone.)

Make-up exams will ONLY be given in case of documented medical emergency, bereavement, and in accordance with the College regulations concerning exam conflicts. No exceptions will be made.

All exams count 30% each. Final exam will have a take-home component.

b. Projects: Weekly assignments that will help you keep up with the material. Late submissions will not be accepted. Must be due no later than Friday 4:00 PM.

Project average, participation, and attendance counts 10% for the final grade.

COURSE OUTLINE AND READINGS:

1. DESCRIPTIVE STATISTICS AND DISTRIBUTIONS

Introduction: The nature of probability and statistics: Types of statistics, types of data, data collection, sampling, uses and misuses of statistics (ES 1; CGS 1)

Frequency Distributions and Graphs: Histograms, bar charts, pie charts, and the time series graph (ES 2; CGS 2: 7-13)

Using Excel

Data Description: Mean, median, Chebyshev's Theorem, standard deviation, percentage changes (ES 3; CGS 2: 14-26)

Probability and Counting Rules: Basic concepts and rules of probability, counting rules (ES 4; CGS 3)

Discrete Probability Distributions: Probability distributions, mean, variance, and expectation, the binomial distribution (ES 5; till p. 254; CGS 4)

The Normal Distribution: The standard normal distribution, the central limit Theorem, normal approx. to the binomial distribution. (ES 6; CGS 5 & 6)

MIDTERM 1: WEDNESDAY, MARCH 8, IN CLASS.

2. STATISTICAL INFERENCE AND HYPOTHESIS TESTS

Confidence Intervals and Sample Size: (ES 7; CGS 7)

For large sample sizes

For small sample sizes

For proportions

For variances and standard deviations

Hypothesis Testing: Tests for means, proportions, and standard deviations (ES 8; CGS 8)

Testing the differences between two means, two variances, and two proportions (ES 9; CGS 9)

MIDTERM 2: WEDNESDAY, APRIL 12, IN CLASS.

3. TOWARD REGRESSION ANALYSIS

Analysis of Variance: One-Way Analysis of Variance, Two-Way Analysis of Variance (ES 12)

Correlation and Regression: Scatter plots, correlation, regression, coefficient of determination, the standard error of the estimate, multiple regression (ES 10; CGS 11)

FINAL: TUESDAY, MAY 9, EMERSON, EVE 6PM to 9PM. (Same for everyone.)