

IP517 Data Analysis

SYLLABUS – SPRING 2006

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COURSE FORMAT

Lecture: Monday - Wednesday 8:00-9:50 Irvine Auditorium
Computer Lab: 1 session per week (estimated time: under 30 minutes).

Office Hours: Wed-Thu 2:00-4:00 PM. 116 McCone .

Teaching Assistant: **TA's Office Hours:** TBA

Virtual Classroom: Visit <http://faculty.miis.edu/~fdepaolis/> for weekly changes and additions regarding syllabus, homework, datasets, and assignments. Also, check daily the course conference on First Class. Once the information has been published, I will assume that you are aware of the changes or additions. Check both sources regularly.

COURSE DESCRIPTION

The course is an introduction to inferential statistics with Policy Analysis applications. Topics to be covered include probability, sampling, estimation, hypothesis testing, simple analysis of variance, simple and multiple regression analysis. The course will also include an introduction to the use of the computer as a tool for data analysis using the SPSS statistical package, as well as Excel statistical functions.

OBJECTIVES

At the end of the semester, students will be able to:

- Identify different types of data and their level of measurement.
 - Describe distributions in terms of their central tendency and dispersion.
 - Perform basic inferential statistical analysis (difference in means and proportions)
 - Perform advanced inferential analyses (analysis of variance, simple/multiple regression)
 - Present their findings using quality writing and graphic representations of analytical results.
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TEXTBOOKS & OTHER MATERIAL

Required:

- **Sirkin, R. Mark.** “*Statistics for the Social Sciences*” 3rd Edition 2006. Sage Publications.
- Computed Lab Guide – Available in pdf format on the course conference.

Suggested:

- **SPSS 12.0 for Windows Student Version (strongly suggested)**
- **Norusis, M.** [SPSS 12.0 Guide to Data Analysis](#)

Software: **SPSS 8.0 for Windows** supported in the Computer Lab.

COURSE METHODOLOGY AND POLICIES

METHODOLOGY

The course is developed as a series of twice-a-week lectures and weekly computer lab sessions. The lectures loosely follow the structure of Sirkin's book, and other material, some of which is indicated in the list of suggested textbooks. The computer lab sessions are based on the "Computed Lab Guide" available at Office Services (located in Casa Fuente). Students are responsible for completing the computer sessions, including the "Do it yourself" sections (some of those sections will be turned in as assignments). Exercises from Sirkin's book will be also regularly assigned; some of them will be graded, and some while be discussed in class. You **MUST** have permanent access to the textbook. Do not rely on library copies.

GROUP WORK

You are strongly encouraged to form a "**study group**." This will maximize your chances of succeeding in the class and, consequently, getting a higher grade. Some weekly assignments and the final project are done in groups (2 to 4 people) throughout the semester. Please turn in only **one** assignment per group. Quizzes and exams are **NOT** done in groups.

WORK SUBMISSION

Homework is due by 5:00 p.m. of the date specified. It will be returned one week from that date. Homework which is submitted late, but before the week is over will be marked down a grade. Late homework must be submitted before the graded homework is returned. I will not accept late submission of the final project.

ACADEMIC CONDUCT

Students are responsible for abiding the rules in the Academic Policy and Standards Manual (APSM). The most serious academic offense in this course is plagiarism, as defined in APSM. I treat this issue very, very seriously. Assignments in which students failed to cite source in the proper fashion will receive a failing "F" grade. I reserve the right to submit any of your work (including drafts and informal pieces) to plagiarism search engines and sites. **No replacement assignment will be given in lieu of the failed assignment.** Students who, through action or omission, facilitate the commission of plagiarism are violating academic integrity. This behavior is unacceptable in all cases (written assignment, in-class tests, etc.) and will be severely penalized. Depending on the circumstances, students might even get a failing grade ("F") for the course.

COURSE WORK REQUIREMENTS AND GRADING

Individual problem assignments / Quiz	40%
Group Final project	25%
Final exam	35%
Total	<u>100%</u>

Every other week or so, there will be an in-class 5-minute quiz on the previous week/s material. Every 2 or 3 weeks, the "Do it yourself" section of the computer lab and/or exercises from the textbook will be handed in as an assignment.

In order to get a passing grade, students must pass the open-book final exam.

LETTER GRADE SCALE

A= 95-100 points	B+= 87-89 points	B- = 80-82 points
A- = 90-94 points	B= 83-86 points	C's= as B's (within 70-79)

Anything **below 70** gets a failing (“F”) grade.

COURSE SCHEDULE AND WEEKLY READINGS

You must read Chp 1 BEFORE classes start.

Week 1 Jan 23-25

TOPICS:

- Introduction to Data Analysis.
- Data Types.
- Introduction to Sampling.

READING:

- SIRKIN - Chp 2 – 3

Week 2 Jan 30-Feb1

TOPICS:

- Descriptive Statistics.
- Central Tendency and Dispersion.
- Probability Distribution I.

READING:

- SIRKIN - Chp 4 – 5

Week 3 Feb 6-8

TOPICS:

- Probability Distribution II
- Statistical Inference.
- Confidence Intervals.
- Significance Tests I.

READING:

- SIRKIN - Chp 7 – 8

Week 4 Feb 13-15

TOPICS:

- Significance Tests II.
- Hypothesis Testing: Difference in Means.

READING:

- SIRKIN - Chp 9

Week 5 Feb 20-22

TOPICS:

- Hypothesis Testing in Proportions.

- Contingency Tables

- Chi-Square Test

READING:

- SIRKIN - Chp 6 – 11 & 12

Week 6 Feb 27-Mar1

- Continuation

Week 7 Mar 6-8

TOPICS:

- Comparing Groups: Analysis of Variance Methods

READING:

- SIRKIN - Chp 10

Week 8 Mar 13-15: SPRING BREAK

Week 9 Mar 20-22

TOPICS:

- Multivariate methods. Correlation

READING:

- SIRKIN - Chp 13

Week 10 Mar 27-29

TOPICS:

- Correlation and Simple Regression I
- OLS and Linear Association.

READING:

- SIRKIN - Chp 13

Week 11 Apr 3-5

TOPICS:

- Correlation and Simple Regression II
- Linear Model.

READING:

- SIRKIN - Chp 9

Week 12 Apr 10-12

TOPICS:

- Multiple Regression Models I.
- Linear models; standardized coefficients; residuals.

READING:

- SIRKIN - Chp 14

Week 13 Apr 17-19

TOPICS:

- Multiple Regression Models II.
- Diagnostics
- Non-linear transformations

READING

- SIRKIN - Chp 14

Week 14 Apr 24-26

- Continuation

Week 15 May 1-3

TOPICS:

- Multiple Regression Models III.
- Combining regression and ANOVA models: ANCOVA

Review. Course Evaluation.

READING:

- Lecture notes and additional readings

Final Exam Mon **MAY 8th** during class

Final Project DUE Thu **May 11th**, 5:00PM