

INTRODUCTORY METHODOLOGY

030:201, FALL 2010

TR 10:55 AM – 12:10 PM, 177 SH

W 6-7PM, 177 SH or 21 SH

INSTRUCTOR:

Sara McLaughlin Mitchell

307 SH

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Personal website: www.saramitchell.org

Course website: <http://icon.uiowa.edu>

Office Hours: Monday 2:00-4:00pm, Wednesday, 10-11am, or by appointment

COURSE DESCRIPTION:

This course is an introduction to statistical analysis, the second in our four-course research methods sequence. Its purpose is to (1) provide you with an understanding of some of the concepts that underlie statistical analysis, (2) introduce you to some basic statistical techniques, (3) learn basic math skills for social scientists and (4) develop your own capacity to do quantitative analysis. We will cover a broad range of topics including descriptive statistics, probability distributions, sampling distributions, point and interval estimation, hypothesis testing, regression analysis, and Bayesian statistics.

In addition to the main course meeting two days per week, you are also required to attend a supplementary one-hour class per week. This class is scheduled on Wednesday from 6-7pm in 177 SH beginning on September 8th. These extra classes will cover basic math for social scientists, including algebra, limits and continuity, differential calculus, partial derivatives, integral calculus, and matrix algebra. This is designed mostly as a review, with the intention of providing you a set of notes to refer back to as you progress through the graduate program. I have also arranged for three sessions (9/22, 10/20, 11/10) in our computer lab in 21 Schaeffer Hall that will introduce you to STATA, the computer program we will be using for several assignments. Will Farmer, the technology teaching assistant for the department, will be running those sessions.

COURSE REQUIREMENTS:

Each student is expected to attend all class meetings and to have completed all required readings prior to each class. Reading a statistics text is very different from the readings you will be doing in your other classes. It may take you multiple readings of a section before you understand it, and so you may need to set aside enough time to work through these chapters.

1) Homework Assignments (40%)

Each week, I will post a homework assignment on ICON before class on Thursday, and it will be due at the beginning of class the following Thursday. The first homework assignment will be distributed on Thursday, September 9th.

2) Exams (60%)

There will be a midterm exam and a final exam, with each exam constituting 30% of your final grade. The midterm exam is scheduled on Tuesday, October 19th. The final exam is scheduled on Thursday, December 16th from 12:00-2:00pm. Both exams include multiple choice, short answer/problem solving, and essay questions.

REQUIRED TEXTS (Available at Iowa Book):

Berry, William D. and Mitchell S. Sanders. 2000. *Understanding Multivariate Research*. Boulder, CO: Westview Press.

Hagle, Timothy M. 1995. *Basic Math for Social Scientists: Concepts*. Thousand Oaks, CA: Sage Publications.

Wonnacott, Thomas H. and Ronald J. Wonnacott. 1990. *Introductory Statistics* (Fifth Edition). New York: Wiley.

There will also be a few articles and handouts for the course that will be posted on the ICON website (<http://icon.uiowa.edu>). I have power point slide versions of some of my lecture that I will make available on ICON as well.

RECOMMENDED TEXT (Available at Iowa Book):

Hagle, Timothy M. 1996. *Basic Math for Social Scientists: Problems and Solutions*. Thousand Oaks, CA: Sage Publications.

CLASS SCHEDULE:

<u>Date/Topic</u>	<u>Assigned Readings</u>
Tuesday, August 24 Introduction to Class	None
Thursday, August 26 Multivariate Research I	Berry and Sanders, pp. 1-39
Tuesday, August 31 Multivariate Research II	Berry and Sanders, pp. 41-80
Thursday, September 2	No Class, APSA Conference
Tuesday, September 7 Descriptive Statistics	W&W, Chapters 1-2
Wednesday, September 8 Math: Algebra Review	Hagle, pp. 1-21
Thursday, September 9 Introduction to Probability I	W&W, Chapter 3

<u>Date/Topic</u>	<u>Assigned Readings</u>
Tuesday, September 14 Introduction to Probability II	W&W, Chapter 3
Wednesday, September 15 Math: Limits and Continuity	Hagle, pp.22-31
Thursday, September 16 Probability Distributions I	W&W, Chapter 4
Tuesday, September 21 Probability Distributions II	W&W, Chapter 4
Wednesday, September 22 STATA 11.0 Introduction	Note: Class is in 21SH Will Farmer, Technology TA
Thursday, September 23 Probability Distributions III	W&W, Chapter 5
Tuesday, September 28 Sampling Distributions I	W&W, Chapter 6
Wednesday, September 29 Math: Differential Calculus I	Hagle, pp.31-47
Thursday, September 30 Sampling Distributions II	W&W, Chapter 6
Tuesday, October 5 Point Estimation	W&W, Chapter 7
Wednesday, October 6 Math: Differential Calculus II	Hagle, pp.31-47
Thursday, October 7 Confidence Intervals I	W&W, Chapter 8
Tuesday, October 12 Confidence Intervals II	W&W, Chapter 8
Wednesday, October 13 Math: Partial Derivatives	Hagle, pp.47-58
Thursday, October 14 Hypothesis Testing and Statistical Inference I	W&W, Chapter 9

<u>Date/Topic</u>	<u>Assigned Readings</u>
Tuesday, October 19	Midterm Exam
Wednesday, October 20 STATA Tutorial	Note: Class is in 21SH Will Farmer, Technology TA
Thursday, October 21	No Class, Peace Science Society Conference
Tuesday, October 26 Hypothesis Testing and Statistical Inference II	W&W, Chapter 9
Wednesday, October 27 Math: Integral Calculus I	Hagle, pp.58-71
Thursday, October 28 Hypothesis Testing: Contingency Tables	W&W, Chapter 17
Tuesday, November 2 Hypothesis Testing: Analysis of Variance I	W&W, Chapter 10
Wednesday, November 3 Math: Integral Calculus II	Hagle, pp.58-71
Thursday, November 4 th Hypothesis Testing: Analysis of Variance II	W&W, Chapter 10
Tuesday, November 9 Bivariate Regression	W&W, Chapter 11
Wednesday, November 10 STATA Tutorial	Note: Class is in 21SH Will Farmer, Technology TA
Thursday November 11 Bivariate Regression	W&W, Chapter 12 W&W, Chapter 15, Sections 15-1, 15-2, 15-3
Tuesday, November 16 Multiple Regression	W&W, Chapter 13 W&W, Chapter 15, Sections 15-4, 15-5

<u>Date/Topic</u>	<u>Assigned Readings</u>
Wednesday, November 17 Math: Matrix Algebra I	Hagle, pp.71-95
Thursday November 18 Regression Extensions	W&W, Chapter 14
November 23- November 25	No Class, Thanksgiving Holiday
Tuesday, November 30 Inference and Maximum Likelihood	W&W, Chapter 18
Wednesday, December 1 Math: Matrix Algebra II	Hagle, pp.71-95
Thursday, December 2 Bayesian Statistics I	W&W, Chapter 19
Tuesday, December 7 Bayesian Statistics II	W&W, Chapter 20
Thursday, December 9 Review for Final	Go back through Berry and Sanders
Thursday, December 16	Final Exam, 12:00-2:00pm, 177 SH

**The Political Science Department, The University of Iowa, Professor Cameron Thies,
Chair, 341 Schaeffer Hall, 335-2358**

STUDENTS WITH DISABILITIES Website: <http://www.uiowa.edu/~sds/> Instructors will make reasonable accommodations for students with physical, mental or learning disabilities. Students with disabilities which may require some modification of seating, testing, or other class requirements are to inform the instructor (after class or during the instructor's office hours) so that appropriate arrangements may be made. It is the student's responsibility to contact Student Disability Services, 133 Burge Hall (335-1462) and obtain a Student Academic Accommodation Request form (SAAR). The form will specify what course accommodations are judged reasonable for that student. An instructor who cannot provide the accommodations specified, or has concerns about the accommodations, must contact the Student Disability Services counselor who signed the request form within 48 hours of receiving the form from the student.

DEPARTMENTAL/COLLEGIATE COMPLAINT PROCEDURES Website: http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5 (See "Student Complaints") A student who has a complaint against any member of the college's teaching staff is responsible for following the procedures described in the Student Academic Handbook, which is available on the web site of the College of Liberal Arts and Sciences: http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml/ The student should attempt to resolve the issue with the faculty member or teaching assistant involved. Lacking a satisfactory outcome, the student can turn to the department chair, whose name is listed above along with contact information. (If the complaint concerns a teaching assistant, the student should contact the supervising faculty member first.) If a satisfactory outcome still is not obtained, the student can turn to the College of Liberal Arts and Sciences. Complaints may concern inappropriate faculty conduct (including inappropriate course materials), incompetence in oral communication, inequities in assignments, scheduling of examinations at other than authorized and published times, failure to provide disability accommodations, or grading grievances. In complaints involving the assignment of grades, it is college policy that grades cannot be changed without the permission of the department concerned.

PLAGIARISM AND CHEATING See Academic Fraud at http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml#2 for the complete policy. You are expected to be honest and honorable in your fulfillment of assignments and in test-taking situations. Plagiarism and cheating are serious forms of academic misconduct. Examples of them are given in the Student Academic Handbook: www.clas.uiowa.edu/students/academic_handbook/ix.shtml#2 The Department of Political Science works with individual instructors to detect plagiarism and cheating and to ensure that appropriately serious punishments are applied. An instructor who suspects a student of plagiarism or cheating must inform the student (preferably in writing) as soon as possible after the incident has been observed or discovered. Instructors who detect cheating or plagiarism may decide, in consultation with the departmental executive officer, to reduce the student's grade on the assignment or the course, even to assign an F. The instructor writes an account of the chronology of the plagiarism or cheating incident for the departmental executive officer who sends an endorsement of the written report of the case to Associate Dean of the College of Liberal Arts and Sciences. A copy of the report will be sent to the student.

SEXUAL HARASSMENT You should familiarize yourself with the following web site link from the College of Liberal Arts: <http://www.sexualharassment.uiowa.edu/~opmanual/ii/04.htm>

YOUR RESPONSIBILITIES Your responsibilities to this class-and to your education as a whole-include attendance and participation. This syllabus details specific expectations the instructor may have about attendance and participation. You have a responsibility to help create a classroom environment where all may learn. At the most basic level, this means you will respect the other members of the class and the instructor and treat them with the courtesy you hope to receive in return.

ENROLLED COURSES OUTSIDE YOUR COLLEGE Taking a course outside the College of Liberal Arts and Sciences means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College where the course resides. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of that College. Details of the University policy of cross enrollments may be found at: <http://www.uiowa.edu/~provost/deos/crossenroll.pdf/> Deadlines: See Registrar's Office web site: <http://www.registrar.uiowa.edu/>

PLUS-MINUS GRADING All the department's instructors can append plus or minus grades to the letter grades they assign for the course. If the instructor does not specifically indicate in the syllabus that he or she will not assign plusses or minuses, students should assume that this form of grading will be used.

HOMEWORK EXPECTATION For each semester hour of credit that a Political Science course carries, students should expect to spend approximately two hours per week outside of class preparing for class sessions. That is, in a three-credit-hour course, instructors design course assignments on the assumption that students will spend six hours per week in out-of-class preparation.

REACTING SAFELY TO SEVERE WEATHER The University of Iowa Operations Manual section 16.14 outlines appropriate responses to a tornado (1) or to a similar crisis. If a tornado or other severe weather is indicated by the UI outdoor warning system, members of the class should seek shelter in rooms and corridors in the innermost part of a building at the lowest level, staying clear of windows, or large free-standing expanses such as auditoriums and cafeterias. The class will resume, if possible, after the UI outdoor warning system announces that the severe weather threat has ended. Web site: <http://www.clas.uiowa.edu/~our/opmanual/ii/22.htm>.

Please visit the Political Science Department's web site: <http://www.polisci.uiowa.edu/>. It is frequently updated with new events and procedures in our department, changes in the Schedule of Courses, plus TA and faculty office hours when available. You also may find current information on pre-advising and registration. Our Vernon Van Dyke Computing Facility (Political Science ITC) is located in room 21 Schaeffer Hall. Available hours are listed at our web site and also posted outside room 21 SH.