INTRODUCTORY METHODOLOGY
030:201, FALL 2011
MW 3:30 – 4:45 PM, 143 SH
W 6-7PM, 143 SH

INSTRUCTOR:
Sara McLaughlin Mitchell
307 SH
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Course website: http://icon.uiowa.edu
Office Hours: Monday 10:30am-12:00pm, Thursday, 1:00-2:30pm, 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 143 SH beginning on September 7th. 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 (9/21, 10/26 (during class time), 11/9) in the department collaboratory in 334 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 should set aside enough time to work through these chapters.

1) Homework Assignments (40%) & Applications (10%)
   Each week, I will post a homework assignment on ICON before class on Wednesday, and it will be due at the beginning of class the following Wednesday. The first homework assignment will be distributed on Wednesday, September 7th. The homework assignments involve statistics/math problems and computer-based problems.

Several weeks throughout the semester, the homework assignment will include an application component. This will involve analysis of a published paper (selected by the instructor) that utilizes various methods covered in the course. Students will submit a two page typed paper describing the method utilized in the paper, describing how it was applied to the specific substantive topic, and discussing any problems in the authors' use of the methodology.

2) Exams (50%)
There will be a midterm exam and a final exam, with each exam constituting 25% of your final grade. The midterm exam is scheduled on Monday, October 17th. The final exam is scheduled on Wednesday, December 14th from 9:45-11:45am. Both exams include multiple choice, short answer/problem solving, and essay questions.

REQUIRED TEXTS (Order Online)
Hagle, Timothy M. 1995. *Basic Math for Social Scientists: Concepts*. Thousand Oaks, CA: Sage Publications.

Lindsey, J.K. 2004. *Introduction to Applied Statistics: A Modelling Approach* (2nd Edition). Oxford University Press.

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).

CLASS SCHEDULE:

Date/Topic	Assigned Readings
Monday, August 22 Introduction	W&W, Chapter 1
Wednesday, August 24 Descriptive Statistics	W&W, Chapter 2 Lindsey, Chapter 1, pp. 1-19
Monday, August 29 Introduction to Probability I	W&W, Chapter 3, pp. 69-92
Wednesday, August 31	No Class, APSA Conference
Monday, September 5	Labor Day, No Class
Wednesday, September 7 Introduction to Probability II	W&W, Chapter 3, pp. 93-104
Wednesday, September 7 (6-7pm) Math: Algebra Review	Hagle, pp. 1-21

Date/Topic	Assigned Readings
Monday, September 12 Introduction to Probability III	Lindsey, Chapter 1, pp. 19-33, Chapter 2
Wednesday, September 14 Probability Distributions I	W&W, Chapter 4
Wednesday, September 14 (6-7pm) Math: Limits and Continuity	Hagle, pp.22-31
Monday, September 19 Probability Distributions II	W&W, Chapter 5
Wednesday, September 21 Probability Distributions III	Lindsey, Chapter 3, pp. 109-124 W&W, Chapter 18
Wednesday, September 21 (6-7pm) STATA 11.0 Introduction	Note: Class is in 334SH, Collab Will Farmer, Technology TA
Monday, September 26 Probability Distributions IV	Lindsey, Chapter 3, pp. 124-145 Lindsey, Chapter 4, pp. 147-173
Wednesday, September 28 Probability Distributions V	Lindsey, Chapter 4, pp. 173-225
Wednesday, September 28 (6-7pm) Math: Differential Calculus I	Hagle, pp.31-47
Monday, October 3 Sampling Distributions I	W&W, Chapter 6, pp. 189-207
Wednesday, October 5 Sampling Distributions II	W&W, Chapter 6, pp. 207-226
Wednesday, October 5 (6-7pm) Math: Differential Calculus II	Hagle, pp.31-47
Monday, October 10 Point Estimation	W&W, Chapter 7
Wednesday, October 12 Review Problems	None

Date/Topic	Assigned Readings
Wednesday, October 12 (6-7pm) Math: Partial Derivatives	Hagle, pp.47-58
Monday, October 17	Midterm Exam
Wednesday, October 19 Confidence Intervals II	W&W, Chapter 8, pp. 253-273
Wednesday, October 19 (6-7pm) Math: Integral Calculus I	Hagle, pp.58-71
Monday, October 24 Hypothesis Testing and Statistical Inference I	W&W, Chapter 8, pp. 273-282 W&W, Chapter 9, pp. 287-299
Wed., October 26 (3:30-4:45pm) STATA Tutorial	Note: Class is in 334SH, Collab Will Farmer, Technology TA
Monday, October 31 Hypothesis Testing and Statistical Inference II	W&W, Chapter 9, pp. 300-321
Wednesday, November 2 Hypothesis Testing: Contingency Tables	W&W, Chapter 17
Wednesday, November 2 (6-7pm) Math: Integral Calculus II	Hagle, pp.58-71
Monday, November 7 Hypothesis Testing: Analysis of Variance I	W&W, Chapter 10, pp. 325-336
Wednesday, November 9 Hypothesis Testing: Analysis of Variance II	W&W, Chapter 10, pp. 336-346
Wednesday, November 9 (6-7pm) STATA Tutorial	Note: Class is in 334SH, Collab Will Farmer, Technology TA
Monday, November 14 Hypothesis Testing: Analysis of Variance III	Lindsey, Chapter 5

Date/Topic	Assigned Readings
Wednesday November 16 Bivariate Regression	W&W, Chapter 11
Wednesday, November 16 (6-7pm) Math: Matrix Algebra I	Hagle, pp.71-95
Monday, November 21	No Class, Thanksgiving break
Wednesday, November 23	No Class, Thanksgiving break
Monday, November 28 Bivariate Regression	W&W, Chapter 12 W&W, Chapter 15, pp. 475-493
Wednesday, November 30 Multiple Regression	W&W, Chapter 13 W&W, Chapter 15, pp. 496-506
Wednesday, November 30 (6-7pm) Math: Matrix Algebra II	Hagle, pp.71-95
Monday, December 5 Regression Extensions	W&W, Chapter 14
Wednesday, December 7 Bayesian Statistics	W&W, Chapter 19
Wednesday, December 14	Final Exam, 9:45-11:45am, 143 SH

Teaching Policies & Procedures

Administrative Home
The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS *Student Academic Handbook.*

Electronic Communication
University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences. (*Operations Manua*l, III.15.2. Scroll down to k.11.)

Accommodations for Disabilities
A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Honesty
The College of Liberal Arts and Sciences expects all students to do their own work, as stated in the CLAS Code of Academic Honesty. Instructors fail any assignment that shows evidence of plagiarism or other forms of cheating, also reporting the student's name to the College. A student reported to the College for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

CLAS Final Examination Policies
Final exams may be offered only during finals week. No exams of any kind are allowed during the last week of classes. Students should not ask their instructor to reschedule a final exam since the College does not permit rescheduling of a final exam once the semester has begun. Questions should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

Making a Suggestion or a Complaint
Students with a suggestion or complaint should first visit the instructor, then the course supervisor, and then the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Student Academic Handbook.

Understanding Sexual Harassment
Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on Sexual Harassment for assistance, definitions, and the full University policy.

Reacting Safely to Severe Weather
In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Public Safety web site.

Student Resources: The Writing Center www.uiowa.edu/~writingc/ and the Campus Information Center's Tutor Referral Services http://imu.uiowa.edu/cic/ at the IMU.

*These CLAS policy and procedural statements have been summarized from the web pages of the College of Liberal Arts and Sciences and The University of Iowa *Operations Manual*.