

INTRODUCTORY METHODOLOGY
030:201 (POLI:5001:0001), FALL 2014
TTh 9:30 AM – 10:45 PM, 206 EPB
W 6:30-7:20PM, 176 SH

INSTRUCTOR:

Sara McLaughlin Mitchell

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

Office Hours: Tuesday, 3:00-4:30pm, Wednesday, 10:30am-12:00pm, or by appointment

COURSE DESCRIPTION:

This course is an introduction to statistical analysis, the second in our four-course research methods sequence. The purpose of the class 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.

The lab section of the class is scheduled on Wednesdays from 6:30-7:20pm in 176 SH. The labs will cover basic math for social scientists, including algebra, limits and continuity, differential calculus, partial derivatives, integral calculus, and matrix algebra. The lab sessions will also introduce students to STATA, the computer program we will be using for several assignments. Dongkyu Kim, 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 (35%)

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 Tuesday, September 2nd and due on Thursday, September 11th. The homework assignments involve statistics/math problems and computer-based problems. Students are expected to do their own independent work on homework assignments.

2) Applications (5%)

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 one 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.

3) 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 during class on October 23rd. The final exam schedule will be released during the semester by the university. Both exams may include multiple choice, short answer/problem solving, and essay questions.

The grading scale is as follows: 93-100=A; 90-92=A-; 87-89=B+; 83-86=B; 80-82=B-; 77-79=C+; 73-76=C; 70-72=C-; 67-69=D+; 63-66=D; 60-62=D-; 59 or below=F.

REQUIRED TEXTS (Order Online)

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

Moore, Will H. and David A. Siegel. 2013. *A Mathematics Course for Political & Social Research*. Princeton, NJ: Princeton 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:

<u>Date/Topic</u>	<u>Assigned Readings</u>
Tuesday, August 26 Introduction	W&W, Chapter 1 Moore and Siegel, Chapter 1
LAB: Wednesday, August 27	No Class
Thursday, August 28	No Class, APSA Conference
Tuesday, September 2 Descriptive Statistics	W&W, Chapter 2 Lindsey, Chapter 1, pp. 1-19
LAB: Wednesday, September 3 Math: Algebra Review	Moore and Siegel, Chapters 2-3
Thursday, September 4 Introduction to Probability I	W&W, Chapter 3, pp. 69-92 Moore and Siegel, Chapter 9
Tuesday, September 9 Introduction to Probability II	W&W, Chapter 3, pp. 93-104
LAB: Wednesday, September 10 Math: Limits and Continuity	Moore and Siegel, Chapter 4

<u>Date/Topic</u>	<u>Assigned Readings</u>
Thursday, September 11 Introduction to Probability III	Lindsey, Chapter 1, pp. 19-33, Chapter 2
Tuesday, September 16 Probability Distributions I	W&W, Chapter 4 Moore and Siegel, Chapter 10, pp. 198-218
LAB: Wednesday, September 17 Math: Differential Calculus I	Moore and Siegel, Chapter 5
Thursday, September 18 Probability Distributions II	W&W, Chapter 5 Moore and Siegel, Chapter 10, pp. 218-238
Tuesday, September 23 Probability Distributions III	Lindsey, Chapter 3, pp. 109-124 W&W, Chapter 18
LAB: Wednesday, September 24 Math: Differential Calculus II	Moore and Siegel, Chapter 6
Thursday, September 25 Probability Distributions IV	Lindsey, Chapter 3, pp. 124-145 Moore and Siegel, Chapter 11, pp. 242-257
Tuesday, September 30 Probability Distributions V	Lindsey, Chapter 4, pp. 147-173 Moore and Siegel, Chapter 11, pp. 257-270
LAB: Wednesday, October 1 STATA 11.0: Introduction	Dongkyu Kim, Technology TA
Thursday, October 2	Lindsey, Chapter 4, pp. 173-225
Tuesday, October 7 Probability Distributions VI	Lindsey, Chapter 4, pp. 173-225
LAB: Wednesday, October 8	Dongkyu Kim, Technology TA
Thursday, October 9 Sampling Distributions I	No Class, Peace Science
Tuesday, October 14 Sampling Distributions II	W&W, Chapter 6
LAB: Wednesday, October 15 STATA Tutorial	Dongkyu Kim, Technology TA
Thursday, October 16 Point Estimation	W&W, Chapter 7

<u>Date/Topic</u>	<u>Assigned Readings</u>
Tuesday, October 21	Review Problems
LAB: Wednesday, October 22 Math: Integral Calculus I	Moore and Siegel, Chapter 7
Thursday, October 23	Midterm Exam
Tuesday, October 28 Confidence Intervals I	W&W, Chapter 8, pp. 253-273
LAB: Wednesday, October 29 Math: Integral Calculus II	Moore and Siegel, Chapter 8
Thursday, October 30 Confidence Intervals II	W&W, Chapter 8, pp. 273-282
Tuesday, November 4 Hypothesis Testing and Statistical Inference I	W&W, Chapter 9, pp. 287-299
LAB: Wednesday, November 5 Math: Matrix Algebra I	Moore and Siegel, Chapter 12
Thursday, November 6 Hypothesis Testing and Statistical Inference II	W&W, Chapter 9, pp. 300-321
Tuesday, November 11 Hypothesis Testing: Contingency Tables	W&W, Chapter 17
LAB: Wednesday, November 12 Math: Matrix Algebra I	Moore and Siegel, Chapter 12
Thursday, November 13 Hypothesis Testing: Analysis of Variance I	W&W, Chapter 10, pp. 325-346
Tuesday, November 18 Hypothesis Testing: Analysis of Variance II	Lindsey, Chapter 5
LAB: Wednesday, November 19 Math: Matrix Algebra II	Moore and Siegel, Chapter 13

<u>Date/Topic</u>	<u>Assigned Readings</u>
Thursday, November 20 Bivariate Regression I	W&W, Chapter 11
Tuesday, November 25	No Class, Thanksgiving break
LAB: Wednesday, November 26	No Class, Thanksgiving break
Thursday, November 27	No Class, Thanksgiving break
Tuesday, December 2 Bivariate Regression II	W&W, Chapter 12 W&W, Chapter 15, pp. 475-493
LAB: Wednesday, December 3	Math catch-up if needed
Thursday, December 4 Multiple Regression	W&W, Chapter 13 W&W, Chapter 15, pp. 496-506
Tuesday, December 9 Regression Extensions	W&W, Chapter 14
LAB: Wednesday, December 10	Review for final exam
Thursday, December 11 Bayesian Statistics	W&W, Chapter 19

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 Manual*, [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.

DEO Contact Information: Sara Mitchell, sara-mitchell@uiowa.edu or 335-2471

*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](#).