

Introduction to Statistics

MATH 221, Section 1
Spring 2016
MWF 9:20-10:30
SH 160

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Office Hours:

Tues. 1:30-2:30

Wed. 1:20-2:20

Thurs. 11:00-noon

and by appointment

Text: Statistics:Unlocking the Power of Data by Lock, Lock, Lock, Lock and Lock, 1st ed., ISBN 978-0-470-60187-7

Course Description: An introduction to the basic ideas and techniques of statistics, such as sampling theory, confidence intervals, and linear regression.

Course Goals: After this class students will be able to:

- graph and summarize data appropriately
- apply the concepts of inference
- model data with regression
- critically examine and communicate statistical ideas in context

Blackboard: We will use BB to post daily announcements, homework, and for pre-class discussions. The assignment for each class period will be posted within a few hours of the previous class. You will have more warning for larger assignments.

Software/Calculators: We will use several free (or inexpensive) software packages for analysis — they are used in industry much more frequently than hand-held calculators. StatKey, <http://lock5stat.com/statkey/> is the software associated with the book. We might also occasionally use Fathom and R for classroom demos and further analysis. Fathom is at <http://concord.org/fathom-dynamic-data-software> at a current cost of \$5.25 for a year. R is available here, <http://www.r-project.org/> and I recommend using Rstudio <http://www.rstudio.com/>. If you wish to use another software package, feel free (many of the calculations could be done in Excel).

Attendance and Participation: Attendance at class is expected of every student, as participation in class is a crucial element of the learning process. Positive participation includes coming to class on time (and prepared) as well as actively (and positively) participating during class.

Examinations: There will be two midterm examinations (in class Wed. Feb. 24th and Wed. March 30th) and a cumulative final exam (Monday, May 9th at 9am.) Please put these on your calendar ASAP.

Homework: Homework will be collected once weekly most likely on Friday at the beginning of class. Homework assignments for each week as the class progresses will be found on Blackboard. Working together with your classmates on the homework is an important part of learning the material, but all work that is turned in must be your own. We may also use an online homework system — if this works, I will set it up shortly. For any homework, I reserve the right to ask you to explain your work in person.

Writing Assignments: Written assignments, some of which will use the computer statistics packages, will be assigned from the book projects at the end of most units. Students should work in teams of two (not more). Teams will be rotated throughout the course.

Makeup policy: I will accept late homework (and give makeup exams) if you have a documented personal (e.g. a funeral) or medical (i.e. emergency appendectomy) excuse. If you are sick, please e-mail me before class. If you know you are going to miss graded material for any other reason, please contact me beforehand. If you read this line, email me so I know you completed the syllabus-reading assignment. Late papers may have a 10% reduction per day starting at the deadline for submission, at my discretion.

Accommodations: If you have a documented learning disability or need accommodations for any reason, please see me in the first two weeks of the course.

Grades:

Participation	10
Homework	10
Midterm Exams	36 (12% each)
Writing Assignments	20
Final Exam	24

Policy on Academic Honesty: Students are expected to comport themselves in line with the Student Handbook: <http://www.smcm.edu/tothepoint/>. Instances of academic misconduct will be handled in accordance with college policies.

Topics:

We will be covering:

- Chapter 1 Collecting Data
 - Chapter 2 Describing Data
 - Chapter 3 Confidence Intervals
 - Chapter 4 Hypothesis Tests
 - Chapter 5 Approximating with a Distribution
 - Chapter 6 Inference for Means and Proportions
 - Chapter 7 Chi-Square Test for Categorical Variables
 - Chapter 8 ANOVA to Compare Means
 - Chapter 9 Inference for Regression
 - Chapter 10 Multiple Regression
- Essential Synthesis

This schedule is subject to change, especially the later chapters as time permits. We will likely skip sections in the later chapters as well.