

Statistics 212: Statistics for the Sciences

Instructor Matt Beckman

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Office Hours: Tues/Thurs: 7:30 – 8am; 9:30 – 11am

Also available by appointment

Stat 212 Help Clinics: Sun, Tues, & Thurs 7-8:30pm

Tomson Hall 182

Class time: Tomson Hall 182 T 8:00 – 9:25 AM
 Th 8:00 – 9:20 AM

Book: *Investigating Statistical Concepts, Applications and Method*;
Beth L. Chance and Allan J. Rossman

*This book is available from the bookstore as a spiral bound copy

Course Description:

Statistics is the use of observations (data) to make predictions. It uses mathematical tools and models and applies them so that we can make judgments about ourselves and the world around us. Statistics is used in a variety of disciplines including biology, economics, psychology, medicine, and engineering. In addition to academic applications, it is also important in today's data-dense society for the individual to have numerical literacy—the ability to follow and understand arguments based on data.

This course and textbook are centered on the idea that you will better understand and retain important statistical concepts if you build your own knowledge and practice using it, rather than by memorization. The book focuses on a series of “Investigations” which we will complete both in and out of class. Write in your textbook as you progress through the course, and stay up to date on readings and assigned Investigations.

Course Objectives:

By the end of this course, you will be able to:

1. Implement statistical concepts to address research questions.
2. Demonstrate basic skills in three key areas of statistics:
 - a. Data collection – methods for obtaining *meaningful* data
 - b. Data analysis – methods for exploring, organizing, and describing data
 - c. Statistical inference – making decisions with data
3. Use statistical software to perform analyses and interpret the results.
4. Understand the different data types and collection methodologies from a wide variety of sources (medical studies, newspaper surveys, sociology studies, etc).
5. Engage in study planning, data collection, and the written and verbal communication of statistical notations.

Course Outline: This is subject to change, so please see the Moodle site for the most up to date information on where we are in the course

Week	What we'll cover	Tests and Quizzes
1: Feb. 9 - 13	Syllabus, 1.1 - 1.2	
2: Feb. 16 - 20	1.3 - 1.6	HW 1 due 2/17
3: Feb. 23 - 27	1.7 - 1.9	
4: Mar. 2 - 6	1.10, 1.12, 1.13	Quiz 1 3/5
5: Mar. 9 - 13	1.14 - 2.3	
6: Mar. 16 - 20	2.4 - 2.7	
7: Mar. 23 - 27	2.7 - 2.10, 3.1	Project 1 due 3/24, Midterm 3/26
8: Mar. 30 - Apr. 3	Spring Break!	
9: Apr. 6 - 10	3.2 - 3.5, handouts	
10: Apr. 13 - 17	3.6 - 3.8, handouts	
11: Apr. 20 - 24	4.6 - 4.7	Quiz 2 4/23
12: Apr. 27 - May 1	4.8, 4.10	
13: May 4 - 8	4.12, 4.13	
14: May 11 - 15	Review, Projects	Project 2 due 5/11
May 20, 2:00-4:00 pm		Final Exam

Grading:

Homework	15%
Class Prep Quizzes	5%
Two Mini-projects	20% (total)
Two Quizzes	15% (total)
Midterm Exam	20%
Final Exam	25%

Homework: Homework will be assigned approximately weekly, and will encompass both Exercises and Practice Problems from your book. You are encouraged to discuss homework problems together, but EACH PERSON MUST HAND IN THEIR OWN WORK. You must show your work for full credit. The homework is not designed to be done in one night, so start it soon after it is assigned. Homework is to be turned in on Moodle by 11:55 pm on the due date. Late work will lose 20% of the possible points if submitted within 24 hours of the due date. Work is not accepted more than 24 hours late without a pre-arranged extension.

Projects: This semester, you will have two mini-projects. For each, you will choose a project partner. With that partner, you will select a data set of interest, analyze the data and present the results in a 2-3 page report.

Exams: There will be an in-class midterm exam (55 mins) and a final exam (2 hours).

Final Exam is scheduled for Wednesday, May 20 from 2 - 4pm

Make up exam policy: Make up exams will only be granted under special circumstances and must be arranged one week in advance.

Disputed grade policy: If you disagree with how an item on a test or homework was graded, you may email me a written statement supporting your position (between 1/2 and 1 page per item) **within one week of receiving the grade.** This statement should include evidence from the textbook and lecture to support your position. This does not guarantee you will get the additional points, and we may still need to meet to discuss, but this is the first step and it is mandatory.

Course Expectations:

Look at Moodle: Important information is here and will be updated throughout the course. Really important announcements will be sent via email.

Note: It is your responsibility to make sure things upload to Moodle properly. If something does not load properly and it ends up being submitted past the due date, it will be graded according to the late submission policy.

Arrive to class prepared: To get the most benefit from this class, please attend and participate in class, and complete any assigned work before class. Moodle quizzes are due by 6 am the day of class and count as part of the participation grade. They are designed as a way to check your work on investigations and to assess your understanding.

Computer use: We will be using computers as part of our regular class work. Please note that during class, computers (both classroom and laptops) are to be used ONLY for educational purposes. Students who use computers during class time for purposes other than Stat 212 (i.e. email, Facebook, writing papers, Buzzfeed, etc.) may have their computer privileges revoked.

Emails to me: If you send me an email, please include "Stat 212" in the subject heading. I will NOT be checking/responding to emails on the weekends. If you send an email NOT on the weekend and have not gotten a response and it has been 48 hours, please send me another email.

Cell phone use: Do not use your cell phone in class. This includes texting. If there is an emergency situation that requires you to have your cell phone on, please let me know before class.

Be respectful in the classroom: Please feel free to ask questions. To facilitate an open learning environment, please respect each other. Raise your hand, listen when others are talking (including when I am speaking), and avoid distracting or rude behavior.

Seek help when you need it: You can all be successful in this class. If you are struggling, come see me! I also encourage you to seek help from your peers in this class or at the Math Clinic. See the Academic Support Center if you want to improve your general study skills and habits.

Math/Stat Clinic: If you want some extra help, you can meet with upper level math/stat students. No appointment is needed. They are available Sunday – Thursday 7:30 – 9:00 pm in Thomson Hall 182 (our classroom).

Other Notes:

Academic integrity

St. Olaf's Honor System is an integral part of your academic experience. Any violation of this code is considered extremely serious and will be handled by the Honor Council. Here are some guidelines for this class. They do not cover all eventualities so if you have any doubts about a course of action you can ask me. In all cases you are bound by the College's Honor Code (see www.stolaf.edu/stulife/thebook).

- Homework assignments may be done in collaboration with other students (this is highly encouraged). However, the final product must be written by you, in your own words.
- In no event can you copy answers from another student, a web site, solutions manuals, or elsewhere.
- No cell phones, iPods, etc during class or exams.
- When you sign your pledge on an exam that you have neither given nor received assistance, and seen no dishonest work I treat your signature as your solemn pledge that all your actions have been honorable.
- Don't treat the honor code lightly; if you're in doubt about a possible violation, ask me.

Disability/Accommodations

If you have a documented disability for which accommodations may be required in this class, please contact Connie Ford (ford@stolaf.edu) or Laura Knobel-Piehl (knobel@stolaf.edu) in the Academic Support Center (507-786-3288, Buntrock 108) as soon as possible to discuss accommodations. If you have already arranged accommodations through Student Accessibility Services, please ensure submission of your accommodation letter within the first two weeks of class. Accommodations will only be provided after the letter is submitted to me and with sufficient lead-time for me to arrange testing or other accommodations. ***Although I will receive the letter electronically, I expect you to initiate a conversation with me about the accommodations.***