

Social Statistics

Course Information

Professor: Kathy Kuipers
Office: Social Science, room 311
Hours: Tuesday (3-5:00) and Thursday (2-4:00)¹ and by appointment
Phone: 243-4381 (office); 327-9777 (home—only in emergencies)
Email: kathy.kuipers@umontana.edu

TA: Keith Rongstad
Office: SS 317
Hours: Friday (11-12:00)
LAB: Friday (9:00-9:50) in SS 262
Email: keithjr.rongstad@umontana.edu

Preceptors: Kaitlyn Held
Office: SS 326
Hours: Monday (9:30-10:30)
LAB: Friday (10-10:50) in SS 262
Email: kaitlyn.held@umconnect.edu

Course Objectives:

Social Statistics is a course in basic statistical concepts and techniques. The purpose of the course is to provide a basic understanding of statistics and statistical methodology with an emphasis on social science applications. This course will focus on learning statistics through working with real data. Consequently, emphases will be placed on the applied understanding of statistical methods, the use of computer applications, and critical interpretation of results. In taking this approach, our goal will be to give you a practical feel for statistics and to motivate your interest in the research process.

LEARNING GOALS

Upon completion of the course, you will be able to demonstrate an understanding of the symbols used in statistical research and how they transform numbers to give them meaning. This will include relaying, interpreting, and effectively communicating social information in terms of statistical symbols, operations, and reasoning; and applying creative thinking skills using the language and logic of statistical analysis in order to address a variety of applied and theoretical social problems.

¹ No office hours on Thursday, August 29, October 17, and December 5.

Course Structure:

The course meets 2 days a week and each day is designated for a specific purpose. On Tuesdays I will introduce material for the week through lecture. Usually, Thursdays will be devoted to preparing students for the problem set assignments: lecture on relevant material, discussion about the problems, and demonstrations using the statistical program *SPSS*. We will also hold weekly study labs run by the TA and Preceptor. These will focus on helping you with your problem set assignments and answering your questions about the week's material. Those will begin the second week of classes.

Getting Help:

My office hours are listed above. We also have one TA for the class: a graduate student in sociology, Keith Rongstad, and one undergraduate **preceptor**, a sociology major who took the class and got top grades in it, Kaitlyn Held. We are available to meet with you during our listed office hours and during the study lab. If you can't make any of those times, we are also available by appointment and the best way to reach us is by email.

Prerequisites:

The formal prerequisites for this course are the successful completion of Math 115. This will assure that you have some facility with quantification as a preparation for the calculations you will be required to perform. Calculus is not good—we won't be using calculus—advanced algebra is what you need. You also should have taken Soci 101 so that you have some basic understanding of the concepts and principles of sociology and are familiar with sociological questions and research answers. Additionally, it helps to have taken or be taking Soc. 318, the research methods class, for a better understanding of how data and research fit together.

Course Requirements:

What can we say? You want to pass this class? **DON'T MISS CLASS! NEVER!** Attendance is required because you will miss material that is essential for you to do well in the class. That material is not available in the book or online. I take attendance periodically and there will be in-class activities that contribute to your grade. Additionally, this is one class where it is important NOT to fall behind, and missing the lecture on Tuesday or the problem set instruction on Thursday will put you seriously behind. There also will be a number of opportunities for extra credit points that are available only through class participation or due the following class meeting. Missing class will make those points unavailable to you. (Be forewarned—we do NOT accept late extra credit assignments.)

Readings:

Most readings will come from the primary, required text, available at the campus bookstore, *Statistics for Social Understanding: With Stata and SPSS*, by Whittier, Wildhagen, and Gold. It is important that you complete the required readings before they are discussed in class. While you may find readings somewhat confusing initially, you should plan on familiarizing yourself with concepts, terms, and formulae before they are discussed in class and then reviewing the readings after the lecture to clarify what was unclear the first time. You should bring the text to class every day.

You will need to use the software program, *SPSS*, for your problem set assignments. *SPSS* stands for “Statistical Program for the Social Sciences” and is the software that you will use when you analyze data. You can access *SPSS* on any of the computers in the library and in the SSRL (Social Sciences Building) and in many of the other computer labs around campus. You may want to have your own copy of *SPSS* (a base version is available for rent at a reduced price for students) so that you can conduct data analysis at home, on your own computer. See the link and details for obtaining the software on our class *Moodle* site. WE WILL USE *SPSS* FOR ALL OF THE PROBLEM SETS.

Our goal is to help you learn about statistics in the social sciences and to do well in the course. To that end, in addition to lectures, readings, and help from your professor and TAs, we will rely heavily on *Moodle*, for communication and information. You already may be familiar with the course supplement, *Moodle*. In order to be prepared for class, you will need to check *Moodle* regularly—at the very least, before each class meeting for announcements, readings, and extra information. Direct your browser to: <http://umonline.umt.edu/>

We will use *Moodle* as a supplement—for communication, problem sets, and exams. (You **must** access *Moodle* for the midterm exam and the final.) *Moodle* also contains an online “grade book” where your scores will be posted. As they become available, the syllabus, additional data, handouts, assignments, grades, and other information will be posted on the site. Bookmark this site and visit it regularly.

Assignments and Evaluation:

- 1) Problem Sets and In-class Projects (40%): Problems and small projects will be assigned throughout the semester. Most will be homework (ten assignments), although you will occasionally have time during class to work on portions of them. In addition to readings, you should count on having at least one or two assignments each week that will require following instructions in the book, using the computer, and working with data. For assignments that use *SPSS*, you always will be required to turn in the computer output in addition to the written answers based on the output.
- 2) Class Attendance/Participation (5%): Attendance will be taken on an intermittent basis. Additional in-class exercises also will be collected and used for the calculation of an attendance score.
- 3) Mid-Term Exam (25%): There will be one midterm exam (in two parts) on March 29 and March 31. You will take the **in-class**, computational part of the exam on the first date. The other part (multiple choice, matching, fill in the blank) will be taken on *Moodle* in class on the second date. NO MAKE-UPS WILL BE GIVEN.
- 4) Final Exam (30%): The final exam will be in the same format as the midterm exam (two parts). You will take the computational part during the first hour of the time scheduled for our final. The second part will be taken in-class on *Moodle* after you have completed the computational part, in the second hour of our examination period.
- 5) Late assignments will be penalized (points deducted) and, after a certain period, will no longer be accepted.

A few words about plagiarism and academic dishonesty:

“Plagiarism is “**Representing another person's words, ideas, data, or materials as one's own.**” It is a particularly intolerable offense in the academic community and is strictly

forbidden. Students who plagiarize may fail the course and may be remanded to Academic Court for possible suspension or expulsion. (Taken from [The University of Montana Student Conduct Code](#), available online.) Plagiarism includes:

- Copying from another's examination or allowing another to copy from one's own exam
- Unpermitted collaboration—especially on exams
- Unpermitted sharing of lab assignments and data—your problem sets should be your own—output may not be photocopied.
- Giving or receiving unpermitted aid on an examination.

Make sure that your work is your own. Don't get confused by what is acceptable and what is not. In this class, discussion of ideas and statistical methods is permitted, and even encouraged among classmates. Writing collaboration, however, is not permitted and students should be careful not to work directly from a classmate's notes, not to copy another's paper or exam, and not to let others view their exam. If this is unclear, please ask. Be careful!

Basic Needs:

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Office for Student Success (243-2800; OfficeforStudentSuccess@mso.umt.edu) for support. Furthermore, please notify the professor if you are comfortable in doing so. This will enable her to direct you to additional resources.

Preliminary Course Schedule:

The material in the course will be presented in a series of lectures, organized around three basic topics: Descriptive Statistics, Probability Theory, and Inferential Statistics. Each lecture will be followed by a lab task (usually using *SPSS*) and a homework assignment due the following week. The lab task will be introduced on Thursdays with the homework assignment usually due the following Thursday (see dates below.) This schedule is TENTATIVE, however. While due dates will not change, material content and exercises may change as we see that we need to spend more or less time on a particular topic. It is YOUR RESPONSIBILITY to keep up with the schedule by attending class regularly and checking the *Moodle* announcements frequently and, of course, doing the readings and homework assignments. All readings below are from our textbook unless noted.

Week 1 (August 26-30)

Tuesday

Figuring things out—where, what, and when—collecting and coding data

Thursday

Getting acquainted with data—levels of measurement, error, bias, rounding

Read: Chpt. 1, pp. 1-25; Using SPSS, pp. 33-44 (all readings in Whittier, Wildhagen, and Gold)

Handout: Problem Set #1, jump drive/memory stick with data sets, due **September 10**

Alexis Harris will be speaking from 4:30-6 p.m. on Thursday, August 29 in GBB 123. Her topic is "A Permanent Punishment for the Poor," which is based on her book

Familiarize yourself with our *Moodle* site, check for announcements and tips, and take the "Introduce Yourself" quiz.

Week 2 (September 2-6)

Tuesday

DESCRIPTIVE STATISTICS

A First Look at Data Organization (types of variables, frequency distributions, sample and population, statistics and the social sciences)

Read: Chpt. 2, pp. 54-65

Thursday

Read: Chpt. 2, pp. 66-77

Familiarize yourself with our *Moodle* site, check for announcements and tips, work on your first assignment: responses to *Skill Level Test*, *Introduce Yourself Survey*, and accessing the data sets.

LAB: Introduction to Moodle, the lab, and SPSS.

Week 3 (September 9-13)

Tuesday

Comparison

Read: Pp. 77-85

Handout: Problem Set #2, selected exercises due **September 17**

Thursday

More about SPSS and What the Data Mean

Read: Appendix 2 (if you need it) located in Week 3 on *Moodle*; check with the TAs to review what you don't know

Pp. 95-120, introductions and selected problems

LAB Preparation for Problem Set #2, questions?

Due: Assignment #1, jump drive/memory stick with data sets

Week 4 (September 16-20)

Tuesday

Cross-Tabulations

Read: Chpt. 3, pp. 121-133

Due: Problem Set #2, selected exercises

Handout: Problem Set #3, selected exercises due **September 24**

Thursday

Read: Chpt. 3, pp. 134-143

LAB Preparation for Problem Set #3, questions?

Week 5 (September 23-27)

Tuesday

Central Tendency and Variability (mean, median, mode, standard deviation)

Read: Chpt. 3, pp. 161-180

Due: Problem Set #3, selected exercises

Handout: Problem Set #4, selected exercises due **October 1**

Thursday

More about Central Tendency, make sure to have read Chapter 3

LAB Preparation for Problem Set #4, questions?

Week 6 (September 30-October 4)

Tuesday

Measures of Variability

Read: Chpt. 5, pp. 203-217

Due: Problem Set #4, selected exercises

Handout: Problem Set #5, selected exercises due **October 8**

Thursday

Theoretical Distributions (normal, t , F)

Read: Chpt. 5, pp. 218-220

LAB Preparation for Problem Set #5, questions?

Week 7 (October 7-11)

Tuesday

PROBABILITY THEORY

Introduction to Probability (rules of probability)

Read: Chpt. 6, pp. 241-252

Due: Problem Set #5, selected exercises

Handout: Problem Set #6, selected exercises due **October 15**

Thursday

More Probability and Z-scores

Read: Chpt. 6, pp. 253-266

LAB Preparation for Problem Set #6, questions?

Week 8 (October 14-18)

Tuesday

INFERENTIAL STATISTICS

Sampling Distributions

Read: Chpt. 7, pp. 280-295

Due: Problem Set #6, selected exercises

Handout: Problem Set #7 selected exercises due **October 22**

Thursday

No Class; Do Extra Credit Practice Exam on *Moodle*

LAB Preparation for Problem Set #7, questions?

Week 9 (October 21-25)

Confidence Intervals

Read: Chpt. 8, pp. 314-325

Due: Problem Set #7, selected exercises

Handout: Problem Set #8 selected exercises due **November 5**

Thursday

Midterm: on Moodle IN CLASS

Midterm: in-class computational exam

LAB No lab this week; review session, time and location TBA

Week 10 (October 28-November 1)

Tuesday

More Confidence Intervals, differences between means

Read: Chpt. 8, pp. 326-343

Thursday

Hypothesis Testing—one sample tests

Read: Chpt. 9, pp. 356-365

LAB No lab this week

Week 11 (November 4-8)

Tuesday

Hypothesis Testing for MEANS

Read: Chpt. 9, pp. 365-381

Due: Problem Set #8, selected exercises

Handout: Problem Set #9 selected exercises due **November 12**

Thursday

More about Hypothesis Testing

Review: Chpts. 8 and 9, these are important ones

LAB Preparation for Problem Set #9, questions?

Week 12 (November 11-15)

Tuesday

Hypothesis Testing for Relationships Between 2 Variables: Comparing Groups

Read: Chpt. 10, pp. 399-420

Due: Problem Set #9, selected exercises

Handout: Problem Set #10 (optional), selected exercises due **November 19**

Thursday

More Hypothesis Tests: ANOVA

Read: Chpt. 11, pp. 435-448

LAB Preparation for Problem Set #10, questions?

Week 13 (November 18-22)

Tuesday

Statistical Significance: Chi Square

Read: Chpt. 12, pp. 463-487

Due: Problem Set #10, selected exercises

Thursday

More Chi Square

LAB Complete in-class exercises

Week 14 (November 25-29)

Tuesday

Causality

Read: Chpt. 13, pp. 501-520

Thursday

NO CLASS—THANKSGIVING HOLIDAY

LAB No LAB this week

NO LATE PROBLEM SETS ACCEPTED AFTER THIS WEEK

Week 15 (December 2-6)

Tuesday

Correlation and Regression

Read: Chpt. 14, pp. 542-572

Thursday

In-class exercises and review

Course Assessment

NO LABS—Meet us in our offices for office hours or set up an appointment

Finals Week

Moodle Exam: IN CLASS on Moodle

In-class Computational Final Exam

Monday, December 9 (10:10-12:10)