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SOCI 202.01: Social Statistics

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Social Statistics

Course Information

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

TA: Skye Summers
Office: SS 310
Hours: Monday and Wednesday (2-3:00)
and by appointment
Email: phoenicia.summers@umontana.edu

Preceptors:	<u>Sierra Streuli</u>	<u>Mario Dunn</u>
Office:	SS 324	SS 324
Hours:	Tuesday and Thursday (11-12:00) and by appointment	Monday and Tuesday (10-11:00) and by appointment
Email:	sierra.streuli@umontana.edu	mario.dunn@umontana.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.

Course Structure:

The course meets 3 days a week and each day is designated for a specific purpose. On Mondays I will introduce material for the week through lecture. Wednesdays will be devoted to preparing students for the problem set assignments: lecture and discussion about the problems and demonstrations using the statistical program *SPSS*. On Fridays, we will devote ourselves

to in-class work based on Monday's lecture and Wednesday's instruction, link the material presented to the problem set, and answer additional questions.

Getting Help:

My office hours are listed above. We also have one TA for the class: a graduate student in sociology, Skye Summers, and two undergraduate **preceptors**, sociology majors who took the class and got top grades in it, Sierra and Mario. We are available to meet with you during our listed office hours and also 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—advance 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 Monday or the problem set instruction on Wednesday or Friday 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, *Elementary Statistics in Social Research, eleventh edition*, by Levin, Fox, and Forde. 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 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 do well in the course. To that end, in addition to lectures, readings, and help from your professor and TAs, 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 (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 the representing of another’s work 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:

http://life.umt.edu/vpsa/student_conduct.php) 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!

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 Wednesdays with the homework assignment usually due the following Wednesday (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 (January 23-27)

Monday

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

Wednesday

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

Read: Chpt. 1, pp. 1-10; Appendix A, pp. 481-96 (all readings in Levin, Fox, and Forde)

Handout: Problem Set #1, jump drive/memory stick with data sets, due **February 8**

Friday (and all subsequent Fridays unless notified on Moodle and/or in class)

Meet in LAB groups: Group 1 (LA 304/305); Group 2 (SS 258); Group 3 (SS 262)

Introduction to *Moodle*, the lab and *SPSS*

Week 2 (January 30-February 3)

Monday

DESCRIPTIVE STATISTICS

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

Read: Chpt. 1, pp. 11-24

Wednesday and Friday

Read: Appendix A, pp. 496-506

Familiarize yourself with our *Moodle* site, check for announcements and tips, and work on your first assignment.

Responses to *Moodle Survey*

Bring jump drive/memory stick (or something to transport electronic files) to class.

Week 3 (February 6-10)

Monday

More on Distributions and Data: Terminology

Read: Chpt. 2

Wednesday and Friday

More about *SPSS* and What the Data Mean

Read: Appendix 2 (if you need it); check with the TAs to review what you don't know

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

Handout: Problem Set #2, selected exercises due **February 15**

Week 4 (February 13-17)

Monday

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

Read: Chpt. 3

Wednesday and Friday

Read: pp. 132-134

Due: Problem Set #2, selected exercises

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

Week 5 (February 20-24)

Monday

NO CLASS, PRESIDENT'S DAY HOLIDAY

Wednesday

Lecture: Standard Deviation

Read: Chpt. 4

Friday

Due: Problem Set #3, selected exercises

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

Week 6 (February 27-March 3)

Monday

PROBABILITY THEORY

Introduction to Probability (basic concepts and sampling)

Read: Chpts. 5 and skim 6

Wednesday and Friday

Theoretical Distributions (normal, t , F)

Due: Problem Set #4, selected exercises due

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

Week 7 (March 6-10)

Monday

More Probability and Sampling

Read: Chpts. 5 (reread) and 6

Wednesday and Friday

INFERENTIAL STATISTICS

Hypothesis Testing (one-sample hypothesis tests, confidence intervals)

Read: pp. 208-209;

Due: Problem Set #5, selected exercises

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

Week 8 (March 13-17)

Monday

Hypothesis Testing (differences between means)

Read: Chpt. 6 (reread, make sure you understand this chapter!) and 7

Wednesday and Friday

Read: Chpt. 7

Due: Problem Set #6, selected exercises

Handout: Problem Set #7 selected exercises due **April 5**

Do Extra Credit Practice Exam on *Moodle*

Week 9 (March 20-24)

Spring Break

Week 10 (March 27-31)

Monday

Hypothesis Testing for Relationships Between 2 Variables: ANOVA

Read: Chpt. 8

Wednesday

Midterm: on Moodle IN CLASS

Friday

Midterm: in-class computational exam

Week 11 (April 3-7)

Monday

Reread: Chpt. 8

Wednesday

Due: Problem Set #7, selected exercises

Handout: Problem Set #8, selected exercises due **April 12**

Friday

NO CLASS. Professor Kuipers and Skye will attend the PSA meetings in Portland, OR. Work on Problem Set #8 and review midterm exam results. Make appointment with TA or preceptors to understand what you missed.

Week 12 (April 10-14)

Monday

Hypothesis Testing for Relationships Between 2 Variables: Cross tabulation and Chi-square tests

Read: Chpt. 9

Wednesday and Friday

Read: pp. 341-342

Due: Problem Set #8, selected exercises

Handout: Problem Set #9, selected exercises due **April 19**

Week 13 (April 17-21)

Monday

Correlation

Read: Chpt. 10

Wednesday and Friday

Due: Problem Set #9, selected exercises

Handout: Problem Set #10, selected exercises due **April 26**

Complete in-class exercises

Week 14 (April 24-28)

Monday

NO CLASS—GET CAUGHT UP ON PROBLEM SETS; WORK ON PROBLEM SET #10

Wednesday

Regression Analysis

Read: Chpt. 11

Due: Problem Set #10, selected exercises

Friday

Complete in-class exercises

NO LATE PROBLEM SETS ACCEPTED AFTER THIS DATE

Week 15 (May 1-5)

Monday

Choosing Statistical Procedures for Research Problems

Read: Chpt. 13

Wednesday and Friday

In-class exercises and review

Course Assessment

Finals Week

In-class Computational Final Exam

Moodle Exam: IN CLASS on Moodle

Thursday, May 11 (3:20-5:20)