

Sociology 5811: Intermediate Social Statistics, Fall 2010

Course web page: <https://sites.google.com/a/umn.edu/soc-5811/>

Professor: Rob Warren

Class Days and Time: Tuesdays & Thursdays, 11:15am – 12:30pm

Class Location: Social Sciences Building, Room 1114

Office Hours: My schedule is chaotic, but I am happy to make appointments to meet with you and will do everything possible to accommodate your schedule. To make an appointment, send me email (warre046@umn.edu); email is by far the most reliable way to reach me.

Teaching Assistant: Sarah Shannon

Lab Day/Time and Location: Mondays, 2:30pm – 4:25pm in 440 Blegen Hall

Office Hours: Mondays, 1:00pm – 2:30pm

Office: 1156 Social Sciences Phone: (612) 624-7602 Email: ster0171@umn.edu

Textbooks and Other Course Materials

1. **(Required) KB&M** = Knoke, David, George W. Bohrnstedt, and Alisa Potter Mee. 2002. *Statistics for Social Data Analysis* (4th Edition). Wadsworth/Thompson. ISBN 0875814484.
 2. **(Required) Allison** = Allison, Paul. 1998. *Multiple Regression: A Primer*. Pine Forge Press. ISBN 0761985336.
- Lecture notes (copies of my PowerPoint presentations) will be posted on the course web page (in PDF and PowerPoint format) at least a week in advance of the class to which they pertain.
 - You will need a calculator for this class. It should be able to take square roots and natural logs ($\ln x$). It does not need to be fancier than that and it should not cost more than about \$35.

Overview

In this course, we will consider applications of statistics in sociology and related disciplines. Topics include overview of the logic of sampling and causal inference; techniques for graphically and numerically describing distributions; the normal curve; relationships between quantitative variables; relationships between categorical variables; analysis of variance; probability; random variables; sampling distributions; statistical inference; confidence intervals; hypothesis testing; bivariate linear regression; analysis of covariance; and multiple regression.

All of you are embarking on careers in fields that rely heavily on statistical reasoning and statistical evidence. Even if your own research is not statistical or quantitative in nature, you will be severely handicapped in your professional development if you are unable to knowledgeably use statistical tools or review statistical evidence. This course only provides *foundational* statistical skills, knowledge and tools. After successfully completing this course, you will be prepared to acquire (in subsequent courses and research experiences) the tools that quantitative researchers actually use. I do not assume that students have any background in statistics, and I presume a rather limited set of mathematics skills.

Course Requirements

Midterm Examinations (500 Points; 50% of Grade)

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|------------------------------|---------|-----------------|
| • First Midterm Examination | 200 Pts | Tuesday, 10/26 |
| • Second Midterm Examination | 150 Pts | Monday, 11/15 |
| • Third Midterm Examination | 150 Pts | Thursday, 12/16 |

Examinations will consist of short-answer questions and problems. You will need a calculator to complete each examination.

Examinations must be taken at the scheduled time and on the scheduled day unless: (1) you provide documentary evidence of some serious, unforeseen emergency (e.g., a death in immediate family, a serious car accident); (2) you arrange with **me** to take the examination **early**; or (3) you notify me **in advance** of some religious observance or University sponsored event that precludes your taking the examination. In the latter case, you must arrange with me to schedule a make-up date and time.

Problem Sets (500 Points; 50% of Grade)

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|-------------------|-----------|--------------|
| • Problem Set #1 | 50 Points | Monday, 9/20 |
| • Problem Set #2 | 50 Points | Monday 9/27 |
| • Problem Set #3 | 50 Points | Monday 10/4 |
| • Problem Set #4 | 50 Points | Monday 10/11 |
| • Problem Set #5 | 50 Points | Monday 10/18 |
| • Problem Set #6 | 50 Points | Monday 11/1 |
| • Problem Set #7 | 50 Points | Monday 11/8 |
| • Problem Set #8 | 50 Points | Monday 11/29 |
| • Problem Set #9 | 50 Points | Monday 12/6 |
| • Problem Set #10 | 50 Points | Monday 12/13 |

Problem set are due when lab begins on the due date. Late assignments turned in by the start of the next class will receive no more than 50% credit. Assignments turned in any later than that will be reviewed and corrected but will not receive credit. Problem sets **may** be turned in early.

All problem sets **must be typed** in MS Word and turned in by the time lab begins. All equations, tables, graphs, and other material must be included in the single Word file. Problem sets must be submitted by email to the TA **in advance of class**.

Problem sets will be graded according to the rubric on pages 9 and 10 of this syllabus. Although I strongly encourage students to work together to review course materials, **students may not work together on the actual problem sets**. Completed problem sets must represent each student's own original and independent work.

Course Grades

Letter Grade	Point Range	Letter Grade	Point Range	Letter Grade	Point Range
A	930 – 1000	B-	800 – 829	D+	670 – 699
A-	900 – 929	C+	770 – 799	D	630 – 669
B+	870 – 899	C	730 – 769	F	0 – 629
B	830 – 869	C-	700 – 729		

- In the event of a borderline grade, I may use my discretion in adjusting grades based on course participation and effort (or lack thereof).
- I do not give extra credit.
- Incomplete coursework is a **huge** inconvenience for students and instructors. No incompletes will be given except under highly unusual circumstances, and even then, you must have a written agreement with me (about how and when the incomplete will be resolved) prior to the end of semester.

Week 1: Course Introduction

Lecture (Tuesday, 9/7)	Lecture (Thursday, 9/9)	Labs (Monday, 9/13)
→ <i>In Class</i> : Course Introduction; Data and Data Analysis	→ <i>In Class</i> : Graphical Representations of Distributions	→ <i>In Lab</i> : Introduction to SPSS and STATA
	→ <i>Read Before Class</i> : KB&M 1.1—1.7 ; 2.1—2.3	

Week 2: Describing Distributions

Lecture (Tuesday, 9/14)	Lecture (Thursday, 9/16)	Labs (Monday, 9/20)
→ <i>In Class</i> : Numeric Representations of Distributions	→ <i>In Class</i> : Summarizing Distributions in SPSS and STATA; In-Class Exercise	→ <i>In Lab</i> : Review Problem Set #1
→ <i>Read Before Class</i> : KB&M 2.4 — 2.5		→ <i>Due in Lab</i> : Problem Set #1

Week 3: Describing Distributions

Lecture (Tuesday, 9/21)	Lecture (Thursday, 9/23)	Labs (Monday, 9/27)
→ <i>In Class</i> : Percentiles; Standardized Scores; Summarizing Distributions	→ <i>In Class</i> : Sampling	→ <i>In Lab</i> : Review Problem Set #2; Return Problem Set #1
→ <i>Read Before Class</i> : KB&M 2.6—2.8	→ <i>Read Before Class</i> : KB&M 3.1	→ <i>Due in Lab</i> : Problem Set #2

Week 4: Sampling and Probability

Lecture (Tuesday, 9/28)	Lecture (Thursday, 9/30)	Labs (Monday, 10/4)
→ <i>In Class</i> : Probability; Discrete Random Variables	→ <i>In Class</i> : Continuous Random Variables	→ <i>In Lab</i> : Review Problem Set #3; Return Problem Set #2
→ <i>Read Before Class</i> : KB&M 3.2 — 3.3	→ <i>Read Before Class</i> : KB&M 3.4	→ <i>Due in Lab</i> : Problem Set #3

Week 5: Sampling Distributions & Confidence Intervals

Lecture (Tuesday, 10/5)	Lecture (Thursday, 10/7)	Labs (Monday, 10/11)
→ <i>In Class</i> : Sampling Distributions	→ <i>In Class</i> : Confidence Intervals	→ <i>In Lab</i> : Review Problem Set #4; Return Problem Set #3
→ <i>Read Before Class</i> : KB&M 3.5 — 3.7		→ <i>Due in Lab</i> : Problem Set #4

Week 6: Hypothesis Testing

Lecture (Tuesday, 10/12)	Lecture (Thursday, 10/14)	Labs (Monday, 10/18)
→ <i>In Class</i> : Hypothesis Testing	→ <i>In Class</i> : Hypothesis Testing	→ <i>In Lab</i> : Review Problem Set #5; Return Problem Set #4
→ <i>Read Before Class</i> : KB&M 3.8 — 3.9		→ <i>Due in Lab</i> : Problem Set #5

Week 7: Hypothesis Testing; Examination #1

Lecture (Tuesday, 10/19)	Lecture (Thursday, 10/21)	Labs (Monday, 10/25)
→ <i>In Class</i> : Review for Examination; Return Problem Set #5	→ <i>In Class</i> : Analysis of Variance; ANOVA in SPSS and STATA	→ <i>In Lab</i> : No Lab; TA will Hold Office Hours to Prepare for Examination
	→ <i>Read Before Class</i> : KB&M 3.10 — 3.11 & 4.1 — 4.5	

Week 8: ANOVA

Lecture (Tuesday, 10/26)	Lecture (Thursday, 10/28)	Labs (Monday, 11/1)
→ <i>In Class</i> : Examination #1 (Will cover material presented through Week 6 and Problem Set #5)	→ <i>In Class</i> : Associations Between Categorical Variables; Cross-Tabulations in SPSS and STATA; Examination #1 Returned	→ <i>In Lab</i> : Review Problem Set #6
	→ <i>Read Before Class</i> : KB&M 5.1 — 5.4	→ <i>Due in Lab</i> : Problem Set #6

Week 9: Association Between Categorical Variables

Lecture (Tuesday, 11/2)	Lecture (Thursday, 11/4)	Labs (Monday, 11/8)
→ <i>In Class</i> : Associations Between Categorical Variables	→ <i>In Class</i> : Associations Between Continuous Variables	→ <i>In Lab</i> : Review Problem Set #7; Return Problem Set #6
	→ <i>Read Before Class</i> : KB&M 6.1 — 6.3	→ <i>Due in Lab</i> : Problem Set #7

Week 10: Association Between Continuous Variables

Lecture (Tuesday, 11/9)	Lecture (Thursday, 11/11)	Labs (Monday, 11/15)
→ <i>In Class:</i> Associations Between Continuous Variables	→ <i>In Class:</i> Review for Examination; Return Problem Set #7	→ <i>In Lab:</i> Examination #2 (Will cover material presented through Week 10 and Problem Set #7)
→ <i>Read Before Class:</i> KB&M 6.4 — 6.6		

Week 11: Causal Inference and Observational Data ; Examination #2

Lecture (Tuesday, 11/16)	Lecture (Thursday, 11/18)	Labs (Monday, 11/22)
No Lecture Today	→ <i>In Class:</i> Causal Inference and Observational Data	→ <i>In Lab:</i> Review Examination #2; Examination #2 Returned

Week 12: Multivariate Relationships

Lecture (Tuesday, 11/23)	Lecture (Thursday, 11/25)	Labs (Monday, 11/29)
→ <i>In Class:</i> Two-Way ANOVA and Three-Variable Relationships	No Lecture Today	→ <i>In Lab:</i> Review Problem Set #8
→ <i>Read Before Class:</i> KB&M 7.1 — 7.3		→ <i>Due in Lab:</i> Problem Set #8

Week 13: Multiple Regression

Lecture (Tuesday, 11/30)	Lecture (Thursday, 12/2)	Labs (Monday, 12/6)
→ <i>In Class:</i> Three-Variable Relationships and Multiple Regression	→ <i>In Class:</i> Multiple Regression	→ <i>In Lab:</i> Review Problem Set #9; Return Problem Set #8
→ <i>Read Before Class:</i> KB&M 8.1 — 8.2; Allison 1 & 2	→ <i>Read Before Class:</i> KB&M 8.3 — 8.4	→ <i>Due in Lab:</i> Problem Set #9

Week 14: Multiple Regression Assumptions and Diagnostics

Lecture (Tuesday, 12/7)	Lecture (Thursday, 12/9)	Labs (Monday, 12/13)
→ <i>In Class:</i> Multiple Regression Assumptions; Regression Diagnostics	→ <i>In Class:</i> Multiple Regression	→ <i>In Lab:</i> Review Problem Set #10; Return Problem Set #9
→ <i>Read Before Class:</i> KB&M 8.5 — 8.7; Allison 3 — 5	→ <i>Read Before Class:</i> Allison 6 — 7	→ <i>Due in Lab:</i> Problem Set #10

Week 15: Review and Exam

Lecture (Tuesday, 12/14)	Lecture (Thursday, 12/16)	
→ <i>In Class:</i> Review for Examination; Return Problem Set #10	→ <i>In Class:</i> Examination #3	(If the class so desires, we could hold Examination #3 during the regularly scheduled final examination time ... Saturday, 12/18 from 10:30am-12:30pm. We will discuss this as the date approaches.)

Grading Rubric for Problem Sets

Each problem set that is turned in on time is worth 50 points. Your score on each problem set will be a function of ① the effort you demonstrate in attempting to answer the questions (regardless of your understanding of the material or the accuracy of your answers); ② your demonstrated understanding of the materials covered by the questions (regardless of the effort you put forth or the accuracy of your answers); and ③ the completeness and accuracy of your answers (regardless of the effort you put forth or how well you understand the material). Specifically, scores will be assigned as follows:

Demonstrated Effort (Anywhere from 0 to 10 points may be awarded)

10 Points	=	You made a serious effort to answer every problem
7.5 Points	=	You made a serious effort to answer most of the problems, but you made less of an effort to answer a few of them
5 Points	=	You made a good effort to answer several problems, but you made much less of an effort on several others
2.5 Points	=	You made a good effort to answer a few of the problems, but you made little or no effort to answer most others
0 Points	=	You made little or no effort to answer the assigned problems

Demonstrated Understanding of Material (Anywhere from 0 to 10 points may be awarded)

Based on your answers to the problems...

10 Points	=	...you clearly understand nearly all of the material covered by the problem set
7.5 Points	=	...you understand most of the material covered by the problem set, but it is clear that there are some important things that you do not understand
5 Points	=	...you understand some of the material covered by the problem set, but there is just about as much that you do not understand
2.5 Points	=	...you understand a few important parts of the material covered by the problem set, but you do not understand most of the rest of the material
0 Points	=	...you understand very little of the material covered by the problem set

Completeness of Answers (Anywhere from 0 to 10 points may be awarded)

10 Points	=	You completely and clearly addressed each part of every problem
7.5 Points	=	You completely and clearly addressed most of the problems, but in a few cases it is not clear how you arrived at your answer; you provide some answer to every part of every problem
5 Points	=	Your answers are sometimes fairly complete and clear, but about as often it is not obvious how you came to your answer; on some occasions you may not have even addressed parts of problems
2.5 Points	=	Your answers to a few problems are complete and clear, but in most cases it is not obvious how you arrived at your answer; you may not have even addressed some problems
0 Points	=	Answers to problems, if provided at all, are usually so incomplete that it is difficult to evaluate their accuracy

Be sure to ask (preferably in lecture or in lab) how to answer particular problems “completely” (that is, how much work to show, how many steps of the mathematical procedures to show, whether you should provide the formulas you use, etc.).

Accuracy of Answers (Anywhere from 0 to 20 points may be awarded)

20 Points	=	With the exception of a few minor errors (e.g., a typo or an arithmetic mistake), your answers are nearly all correct
15 Points	=	Most of your answers are correct, but several are incorrect (beyond typos or arithmetic errors); or, your answers were mostly correct except that you made several typos or arithmetic errors
10 Points	=	Many of your answers are correct, but about an equal number are incorrect
5 Points	=	Some of your answers are correct, but most are incorrect
0 Points	=	Very few, if any, of your answers are correct

Answer keys to problem sets will be distributed when problem sets are returned to you so that you can compare your answers to mine. We will, however, make notes on your problem set to indicate which answers are incorrect and where in your answer your reasoning or your mathematics (or whatever) appears to have gone wrong.

COLLEGE OF LIBERAL ARTS POLICY

GRADES: University academic achievement is graded under two systems: A-F (with pluses and minuses) and S-N. Choice of grading system and course level (1xxx/3xxx/4xxx) is indicated on the registration website; changes in grade scale may not be made after the second week of the semester. Some courses may be taken under only one system; limitations are identified in the course listings. The Department of Sociology requires A-F registration in courses required for the major/minor. University regulations prescribe the grades that will be reported on your transcript.

- A Represents achievement that is outstanding relative to the level necessary to meet course requirements (4.00 grade points)
- A- 3.67 grade points
- B+ 3.33 grade points
- B Achievement significantly above the level necessary to meet course requirements (3.00 grade points)
- B- 2.67 grade points
- C+ 2.33 grade points
- C Achievement that meets the basic course requirements in every respect (2.00 grade points)
- C- 1.67 grade points
- D+ 1.33 grade points
- D Achievement worthy of credit even though it fails to meet fully the course requirements (1.00 grade point)
- F Performance that fails to meet the basic course requirements (0 grade points)
- S Represents achievement that is satisfactory, which is equivalent to a C- or better.
- N No credit. Its use is now restricted to students not earning an S on the S-N grade base
- I Incomplete, a temporary symbol assigned when the instructor has a "reasonable expectation" that you 1) can successfully complete unfinished work on your own no later than one year from the last day of classes and 2) believes that legitimate reasons exist to justify extending the deadline for course completion. The instructor may set date conditions for make-up work. If a course is not completed as prescribed or not made up as agreed within the year, the I will lapse to an F if registered on the A-F grade base or an N if registered on the S-N grade base.
- W Official withdrawal from a course after the end of the second week of the semester. You must file a course cancellation request before the end of the sixth week of the semester to ensure that the W, rather than the F, will be formerly entered on your record.

FINAL EXAMINATIONS (see schedule on the Calendar web site at <http://onestop.umn.edu/onestop/Calendars/FinalExams.html>): You are required to take final examinations at the scheduled times. Under certain circumstances, however, you may request final examination schedule adjustment in your college office. Instructors are obligated to schedule make-up examinations within the final examination period for students who have three final examinations within a 16-hour period. Instructors also are encouraged to reschedule examinations for students with religious objections to taking an examination on a given day. You must submit your request for an adjustment in your schedule at least two weeks before the examination period begins. For assistance in resolving conflicts, call the CLA Student Information Office at 625-2020. If you miss a final, an F or N is recorded. You must obtain the instructor's permission to make up the examination. Final examinations may be rescheduled by the instructor only through the official procedure for that purpose (as noted on the above web page). Final examinations may not be scheduled for the last day of class or earlier or for Study Day. If an examination is rescheduled at the instructor's request, and you have an examination conflict because of it, you are entitled to be given the final examination at an alternative time within the regularly scheduled examination period for that semester.

CLASS ATTENDANCE: As a CLA student, you are responsible for attending class and for ascertaining the particular attendance requirements for each class or department. You should also learn each instructor's policies concerning make-up of work for absences. Instructors and students may consult the CLA Classroom, Grading, and Examination Procedures Handbook for more information on these policies (<http://advisingtools.class.umn.edu/cgep/>).

COURSE PERFORMANCE AND GRADING: Instructors establish ground rules for their courses in conformity with their department policies and are expected to explain them at the first course meeting. This includes announcement of office hours and location, the kind of help to be expected from the instructor and teaching assistants, and tutorial services, if available. The instructor also describes the general nature of the course, the work expected, dates for examinations and paper submissions, and expectations for classroom participation and attendance. Instructors determine the standards for grading in their classes and will describe expectations, methods of evaluation, and factors that enter into grade determination. The special conditions under which an incomplete (I) might be awarded also should be established. The college does not permit you to submit extra work to raise your grade unless all students in the class are afforded the same opportunity.

CLASSROOM BEHAVIOR: You are entitled to a good learning environment in the classroom. Students whose behavior is disruptive either to the instructor or to other students will be asked to leave (the policies regarding student conduct are outlined in the CLA Classroom, Grading, and Examination Procedures Handbook on-line at <http://advisingtools.class.umn.edu/cgep/>).

SCHOLASTIC CONDUCT: The University Student Conduct Code defines scholastic dishonesty as follows:

Scholastic Dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. Scholastic dishonesty includes, but is not limited to, the description above. It could also be said that scholastic dishonesty is any act that violates the rights of another student with respect to academic work or that involves misrepresentation of a student's own work. Also included would be cheating on assignments or examinations, inventing or falsifying research or other findings with the intent to deceive, submitting the same or substantially similar papers (or creative work) for more than one course without consent of all instructors concerned, depriving another of necessary course materials, and sabotaging another's work. Should misconduct arise, the college's Scholastic Conduct Committee in cooperation with the Office of Student Academic Integrity/Student Judicial Affairs (OSAI/SJA) assists instructors in resolving cases, reviews cases in which students believe themselves unfairly treated, and checks for multiple offenses in different courses. Faculty members who suspect students of scholastic misconduct must report the matter to OSAI/SJA. **Students cannot evade (intentionally or unintentionally) a grade sanction by withdrawing from a course before or after the misconduct charge is reported. This also applies to late withdrawals, including discretionary late cancellation (also known as the "one-time-only drop").**

A REMINDER OF RELEVANT POLICIES AND PROCEDURES
*** SOCIOLOGY DEPARTMENT POLICIES ***

GRADE INFORMATION: Grades are due in the Office the Registrar within 3 business days after the final examination. No information regarding grades will be released by the department office staff to anyone except designated personnel in Records and college offices. Students may access their own grades through their computer account. They may do this by following the directions on the One Stop web site at <http://onestop.umn.edu/>.

INCOMPLETES: It is the instructor's responsibility to specify conditions under which an Incomplete (I) grade is assigned. Students should refer to the course syllabus and talk with the instructor as early as possible if they anticipate not completing the course work. Coursework submitted after the final examination will generally be evaluated down unless prior arrangements are made in writing by the instructor. University policy states that if completion of the work requires the student to attend class in substantial part a second time, assigning an "I" grade is NOT appropriate. Incompletes are appropriate only if the student can make up the coursework independently with the same professor.

MAKE-UP EXAMINATIONS: Arrangements for special examinations must be made directly with the instructor who taught the course and who is responsible for approving and supervising the examination or making individual arrangements. Circumstances for missing an exam include, but are not necessarily limited to: verified illness, participation in athletic events or other group activities sponsored by the University, serious family emergencies, subpoenas, jury duty, military service, and religious observances. It is the responsibility of the student to notify faculty members of such circumstances as far in advance as possible.

GRADE CHANGES: Grades properly arrived at are not subject to renegotiation unless all students in the class have similar opportunities. Students have the right to check for possible clerical errors in the assignment of grades by checking with the instructor and/or teaching assistant.

Students with justifiable complaints about grades or classroom procedures have recourse through well-established grievance procedures. You are expected to confer first with the course instructor. If no satisfactory solution is reached, the complaint should be presented in writing to the department associate chair and/or the department academic advisor (909 Soc Sci). If these informal processes fail to reach a satisfactory resolution, other formal procedures for hearing and appeal can be invoked. See the departmental advisor in 923 Social Sciences to explore options.

DISABILITY SERVICES: Students with disabilities that affect their ability to participate fully in class or to meet all course requirements are encouraged to bring this to the attention of the instructor so that appropriate accommodations can be arranged. For more info contact Disabilities Services in 230 McNamara.

SEXUAL HARASSMENT: University policy prohibits sexual harassment as defined in the December 1998 policy statement, available at the Office of Equal Opportunity and Affirmative Action. Questions or concerns about sexual harassment should be directed to this office in 419 Morrill Hall.

SOCIOLOGY PROGRAMS INFORMATION: The Sociology Department offers two options for the Bachelor of Arts degree and a Bachelor of Science degree. We also have an Honors Program. Students interested in majoring in Sociology should attend an information meeting about the major. Meetings are held about once a week. Sign up for a meeting in 909 Social Sciences. Further information can be obtained from the following persons and offices:

General information, Sociology Department, 909 Social Sciences - 624-4300
Undergraduate Advisor, Becky Mooney, 923 Social Sciences – 624-6013
Director of Undergraduate Studies, Professor Rob Warren, 1172 Social Sciences - 624-2310
Sociology Honors Advisor, Professor Joachim Savelsberg, 1181 Social Sciences - 624-0273
Director of Graduate Studies, Professor Penny Edgell, 1074 Social Sciences – 624-9828 and/or
Graduate Program Associate, Robert Fox, 931 Social Sciences - 624-2093