# Quantitative Research Methods in Sociology (Soc 549)

**Autumn 2007**

*Professor:* Dr. Reanne Frank (frank.219@osu.edu)
*GTAs:* Daniel Carlson (carlson.192@osu.edu) and Casey Knutson (knutson.12@sociology.osu.edu)
*Class Meetings:* TTh 9:30 – 10:48am
*Lab Meetings:* MW 9:30-10:18am (Carlson) or MW 10:30-11:18am (Knutson)
*Lecture Classroom:* JR 0371
*Lab Classroom:* DB 0070
*Dr. Frank's Office Hours:* Thursday 12:30-1:30 or by appointment
*Dr. Frank's Office:* Journalism #322
*Dan Carlson's Office Hours:* Monday/Wednesday 1:30-3:30
*Casey Knutson's Office Hours:* Tuesday/Thursdays 11:00-1:00
*GTA Office:* DB 0070 (the SIL)
*Class Website is on Carmen:* https://carmen.osu.edu/

*Course Description:*

This course provides a basic introduction to the application and interpretation of statistical analysis in the social sciences. Sociology 549 fulfills the data analysis sub-requirement under the "Quantitative and Logical Skills" category of the General Educational Curriculum (GEC). The aim of the course and its GEC learning objective is for students to understand statistics and probability, comprehend mathematical methods needed to analyze statistical arguments, and recognize the importance of statistical ideas.

By the end of the course, you will be familiar with a variety of basic statistical techniques that allow you to examine interesting social questions. In addition to understanding mainstream sociological research, the skills you learn in this class will allow you to be more critical consumers of statistical information.

The course is divided into three main sections: (1) Descriptive Statistics; (2) Inferential Statistics; and (3) Applied Statistical Techniques. Descriptive statistics are methods that allow you to present a set of scores in a summary form. The primary concepts that we emphasize are central tendency (e.g. mean, mode, median) and dispersion (e.g. standard deviation, variance). The second section, Inferential Statistics, is the backbone of statistical reasoning and it involves making estimates about a population (e.g. the entire class) based on a sample (e.g. 10 or 12 students in a class). This process necessarily involves the invocation of the basic rules of probability and it will introduce you to hypothesis testing which is used throughout the sciences. In the third section of the course, we will review several important applications of statistics (e.g. cross-tabs, correlation, simple regression). This section will emphasize interpretation rather than computation. You will also learn how to use one of the computer programs (SPSS) that is widely used to perform statistical analysis.

*Required Course Materials:*

Gravetter, Frederick and Larry Wallnau. 2007. *Essentials of Statistics for the Behavioral Sciences.* 6th edition. Thomson: Wadsworth.*

* Other editions of this text are also acceptable.

*Grading:*

| | | |
|---|---|---|
| 2 exams | 50% | |
| Attendance | 6% | |
| 4 assignments | 44% | (four assignments, each worth 11%) |
| | 100% | |

Final grades are based on each student's total point score as determined by performance on examinations, problem sets and attendance in lab and lecture. Grades are based on a percentage of 500 points (220 points from 4 assignments (55 points each); and two exams (125 points each). 30 points will be rewarded to those students who attend at least 90% of lectures and lab recitations (i.e. at least 33 of the 37 lectures and labs that follow the two introductory dates). For each subsequent lab or lecture missed (beyond the first 4) one point will be deducted from the 30 points. Extra credit points (available through in-class exercises) will be added to the total number of points earned by the student.

| Percentage (%) | Points | Grade |
|---|---|---|
| 100 | 500+ | A+ |
| 99-93 | 499-475 | A |
| 92-90 | 474-450 | A- |
| 89-87 | 449-450 | B+ |
| 86-83 | 434-415 | B |
| 82-80 | 414-400 | B- |
| 79-77 | 399-385 | C+ |
| 76-73 | 384-365 | C |
| 72-70 | 364-350 | C- |
| 69-60 | 349-300 | D |
| 59-0 | 299-0 | F |

Requirements

1. Attendance to lecture and lab section is required. Attendance is worth 6 percent of your grade. Material, including exam questions, will be introduced in class. Extra credit will also be made available unannounced during some lecture periods (see below). Class notes will be posted on the class website on the Sunday prior to Tuesday's lecture. It is recommended that you print the class notes and bring them to class for note guides.

2. Four assignments will be made throughout the quarter. These will include a combination of problem solving (hand and computer calculations) and conceptual interpretation of the results. Together these assignments are worth 44% of your course grade (each is worth 11% of your grade). Assignments must be turned in *at the beginning* of the lecture or lab in which they are due. Problem set grades will go down 10 points for each day past the TIME on the due date that they are received by your GTA. Assignments turned in later on the same day will ALSO have 10 points deducted. Assignments must be turned in at the beginning of the lecture or lab in which they are due for full credit! Assignments are expected to be neatly

done and easy to read, but they do not need to be typed. You must show work for ALL calculations on all assignments, or points will be deducted. When relevant, students must also attach their SPSS output to assignments to show their work for these problems. Each person must turn in their own assignment that was written INDEPENDENTLY. Students are NOT allowed to turn in the same work.

3. Two examinations will be given during the quarter as scheduled on the course outline below. Each of these exams count for 25% of your course grade. The second exam is not cumulative.

4. You will need to own or have frequent access to a hand calculator (this does NOT include your cell phone) to do the assignments, take in-class exams, and learn the material being taught in this course.

Clicker Technology

In this class we will be using Clicker Technology from Turning Point Technologies. Clickers are a new method being used in universities across the country to increase student-professor interaction, particularly in larger lecture environments. In this class clickers will be used to ensure students understand fundamental concepts; to track attendance; and for in-class extra credit opportunities. Each person will be assigned a clicker (with a specific number) that they will use for the entire quarter. These clickers are owned by the OSU IT department and will have to be returned at the end of each class.

Extra Credit / Bonus Points

Occasionally, short in-class exercises will be offered during the lecture portion of the course. These opportunities are unscheduled and can only be completed during the class in which they are offered (i.e., you have to be there to get credit for it). They will sometimes be offered at the beginning of the lecture so please arrive on time! These assignments will count as extra credit points towards your final grade.

Additional Notes

Communications: All class announcements, lectures, and assignments will be posted on the course website at: *https://carmen.osu.edu/*

No make-up exams will be permitted unless in the case of extreme emergency. Notify Dr. Frank (exams) or the graduate teaching assistants (homework) PRIOR TO THE EXAM OR THE ASSIGNMENT DUE DATE. Even when prior notification is given regarding late homework, points may be deducted for each day it is late.

Religious Holidays: Please contact the instructor regarding any conflict between religious observance dates and course examinations or assignments.

Academic Misconduct: The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Please see the student handbook for a further definition of academic misconduct. We will report all violations. Unless otherwise notified, you should complete all tests and assignments by yourself.

Disability Statement: Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor

as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; http://www.ods.ohio-state.edu/.

Unpaid Fees: Faculty rules specify that students are to have their fees paid by the first day of enrollment for the quarter. [Faculty Rule 3335-9-12]. If you have not paid your fees, you will not be allowed to continue attending class until your fees are paid OR you have a signed letter from Financial Aid stating that you are working with them to get your fees paid.
NOTE: ALL EXAMS AND HOMEWORK WILL BE DISCARDED at the end of Autumn Quarter 2007. If you have questions about individual grades or your final course grade, please raise them immediately so they can be resolved well before this deadline.

| COURSE SCHEDULE | | | |
|---|---|---|---|
| **Week** | **Tuesday** | **Thursday** | **Readings** |
| **SECTION ONE: DESCRIPTIVE STATISTICS** | | | |
| 1 | | **September 20** | |
| | | Introduction and Course Specifics | |
| **2** | **September 25** | **September 27** | |
| | Measurement and Review of Basic Math | Frequency Distributions | Appendix A, Ch. 1, Ch. 2 |
| **3** | **October 2** | **October 4** | |
| | Central Tendency | Variability and Dispersion | Ch. 3 , Ch. 4 |
| **4** | **October 9** | **October 11** | |
| | Standardized Distributions | The Normal Distribution | Ch. 5 |
| **SECTION TWO: INFERENTIAL STATISTICS** | | | |
| **5** | **October 16** | **October 18** | |
| | Probability and the Normal Curve | Probability and the Normal Curve cont'd | Ch. 6 |
| **6** | **October 23** | **October 25** | |
| | Probability and Samples | Confidence Intervals | Ch. 7 |
| **7** | **October 30** | **November 1** | |
| | Hypothesis Testing I | Hypothesis Testing II | Ch. 8, Ch. 9 |
| **8** | **November 6** | **November 8** | |
| | **MIDTERM** | Review of Midterm | |
| **SECTION THREE: BIVARIATE AND MULTIVARIATE APPLICATIONS** | | | |
| **9** | **November 13** | **November 15** | |
| | Hypothesis Testing III | ANOVA | Ch. 10, Ch. 13 |
| **10** | **November 20** | **November 22** | |
| | Chi-Square Test of Independence | **NO CLASS**, Thanksgiving | Ch. 16 |
| **11** | **November 27** | **November 29** | |
| | Correlation | Regression and Final Review | Ch. 15 |
| **12** | **December 5, Wednesday** | | |
| | **FINAL (9:30-11:18)** | | |

| LAB SCHEDULE | | |
|---|---|---|
| **Week** | **Monday** | **Wednesday** |
| **SECTION ONE: DESCRIPTIVE STATISTICS** | | |
| **2** | **September 24** | **September 26** |
| | Introduction to lab and SPSS | Basic Math Review and Measurement |
| **3** | **October 1** | **October 3** |
| | Frequency Distributions | Central Tendency |
| **4** | **October 8** | **October 10** |
| | Variability/Dispersion | Variability/Dispersion |
| **SECTION TWO: INFERENTIAL STATISTICS** | | |
| **5** | **October 15** | **October 17** |
| | Z-scores | Z-scores |
| **6** | **October 22** | **October 24** |
| | Probability and the Normal Curve- | Probability and the Normal Curve |
| **7** | **October 29** | **October 31** |
| | Confidence Intervals | Confidence Intervals |
| **8** | **November 5** | **November 7** |
| | Midterm Review | Hypothesis Testing |
| **SECTION THREE: BIVARIATE AND MULTIVARIATE APPLICATIONS** | | |
| **9** | **November 12** | **November 14** |
| | **NO CLASS**, Veteran's Day | Hypothesis Testing |
| **10** | **November 19** | **November 21** |
| | ANOVA | ANOVA |
| **11** | **November 26** | **November 28** |
| | Chi-Squared | Correlation |

## Assignment Due Dates:*

| Assignment # | Receive Assignment | Assignment Due Date |
|---|---|---|
| **1** | September 27th | October 15th |
| **2** | October 16th | October 31st |
| **3** | November 1st | November 14th |
| **4** | November 15th | November 28th |

* Assignments are due at the BEGINNING of the lab/lecture on the due date. Assignment due dates are tentative and may change slightly during the course of the quarter.