Introduction to Statistics

Course Description

This course will provide you with a basic introduction to statistical methods. It will enable you to become a user of statistics yourself and to think critically about the use of statistics by others. You will learn how to collect, analyze and present data for research purposes. The lectures will be based on the textbook and you will be expected to keep up with the readings. In addition to the theory of statistics, we will also be doing hands-on application exercises in class using statistical computing. This class does not require you to understand the mathematical foundations of statistics. You can understand many things without fully understanding where formulas come from. I hope you will enjoy the class and will learn how statistics can potentially be useful in your future careers.

Course Materials


Additional readings will be available later in the course.

Statistical Computing

We will use Microsoft Excel for data management and SPSS for statistical computing. You will also need a scientific calculator for homework assignments and exam calculations.

Assignments

Homework Assignments: You will have 6 homework assignments, which will consist of problem assignments from the textbook and additional problem assignments requiring the use of SPSS or Excel.
Project: You will be given a dataset and will be asked to write a short 5-7 page paper answering questions about the dataset.

Midterm (Monday, March 11th)

Final (Wednesday, May 15th, 9AM)

Grading

Your grade will be calculated as follows:

24% - Assignments (6 x 4%)
20% - Midterm
30% - Final
20% - Paper
6% - Participation

Tentative Course Outline

Week 1
1/21 (Monday) Introduction

1/22 (Tuesday) Graphs
Read Section 1.1

1/23 (Wednesday) Graphs continued

1/25 (Friday) Lab

Week 2
1/28 (M) Mean, Median, Standard Distribution
Read Section 1.2

1/29 (T) Normal Distribution
Read Section 1.3

1/30 (W) Normal Distribution continued

2/1 (F) Lab

Week 3
2/4 (M) Scatterplots
Read Section 2.1
2/5 (T) Correlation
Read Section 2.2

2/6 (W) Correlation continued

2/8 (F) Lab

Week 4
2/11 (M) Regression
Read Section 2.3

2/12 (T) Regression continued
Read Section 2.4

2/13 (W) Regression continued

2/15 (F) Lab

Week 5
2/18 (M) Categorical data
Read Section 2.5

2/19 (T) Experiments
Read Section 3.1 and 3.2

2/20 (W) Experiments continued

2/22 (F) Lab

Week 6
2/25 (M) Randomness
Read Section 4.1

2/26 (T) Probabilities
Read Section 4.2

2/27 (W) Probabilities continued

3/1 (F) Lab

Week 7
3/4 (M) Sampling Distribution and Central Limit Theorem
Read Section 4.3

3/5 (T) Sampling Distribution Continued
3/6 (W) Lab

3/8 (F) Review for Midterm

Week 8
3/11 (M) MIDTERM (covers Chapters 1-4)

3/12 (T) Statistical Inference
   Read Section 6.1

3/13 (W) Statistical Inference continued

3/15 (F) Lab

SPRING BREAK 3/16-3/31

Week 9
4/1 (M) Review Statistical Inference

4/2 (T) Test of Significance
   Read Section 6.2

4/3 (W) Test of Significance continued
   Read Section 6.3

4/5 (F) Lab

Week 10
4/8 (M) Inference for the Population Mean
   Read Section 7.1

4/9 (T) Inference for Population Mean continued

4/10 (W) Comparing Two Means
   Read Section 7.2

4/12 (F) Lab

Week 11
4/15 (M) Comparing Two Means continued,
   Inference for Spread
   Read Section 7.3

4/16 (T) Population Proportion
   Read Section 8.1
4/17 (W) Inference for Population Proportions continued

4/19 (F) Lab

**Week 12**

4/22 (M) Inference for Two Proportions
Read Section 8.2

4/23 (T) Two Way Tables
Read Section 9.1

4/24 (W) Chi Square Test
Read Section 9.2

4/26 (F) Lab

**Week 13**

4/29 (M) ANOVA
Read Section 10.1

4/30 (T) ANOVA continued
Read Section 10.2

5/1 (W) ANOVA continued

5/3 (F) Lab

**Week 14**

5/6 (M) Inference for Regression
Read Section 11.1

5/7 (T) Inference for Regression continued
Read Section 11.2 and 11.3

5/8 (W) Lab

5/10 (F) Review for Final Exam

**FINAL EXAM: MAY 15 (Wednesday) 9:00-12:00 AM**