Introduction to Statistics and Data Analysis I

ICPSR Summer Program, 2012
June 18th – July 13th, 2:30pm – 4:30pm

Course Instructors:

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Office Hours	1:15pm – 2:15pm Tue, Wed, Fri.	8:00am - 10:00am Monday - Friday	11:15 - 12:15, 4:30 - 5:30 Monday-Friday

Email

Please check your email regularly for announcements, information, and updates.
We expect you to be up-to-date on all course communications when you come to class.

Course Focus and Goals

This course is an introduction to statistics, probability, and data analysis. Topics include properties of data, probability and sampling distributions, confidence intervals, and significance tests. The course is meant to provide a solid foundation for future methodology courses, such as Introduction to Statistics and Data Analysis II and Regression I. While the content may seem to focus us on quantitative methodologies, you will find the foundation you form during these four weeks also prepares you for and overlaps with research design and qualitative methodologies.

Course Work

Daily Reading: We will cover one chapter in the required textbook every 1-2 days. This course moves quickly, so be sure to complete readings prior to attending class and clarify with us any questions you have immediately.

Daily Meetings: Lectures and class work will center daily on content covered in readings, labs, and other assignments.

Weekly Lab Sessions: Labs will provide you the opportunity to become familiar with the statistical software used in your field. They are also opportunities to further master course content and receive guidance on homework. Choose one lab to attend each week:

Week 1: Thursday 9-11am and 5-7pm
Weeks 2-4: Tuesday 5-6:30pm and Wednesday 9-10:30am

Homework: We will assign daily a set of practice problems to assist you with mastering the content in the readings, class, and labs. These can serve as material for discussion the following day.

In addition, you will have four more substantial assignments, which will be graded. Expect these to extend the work we've completed to that point, and expect them to build on each other.

Some homework requires use of statistical software – SPSS, Stata, or SAS depending on the standard in your field. Make sure you schedule the time you need to access the software. ICPSR has two computer labs for your use.

Homework (to be graded) requirements:

Typed, organized, and stapled. Present exercises in numerical order.
Show all of your work so we can provide partial credit for your work
Clearly label answers. Never two problems on the same page.
Embed visuals within the exercises, not at the end of the homework set.
Answer the entire prompt.

For example, when we ask you to "interpret" your answer or "explain" some condition of the exercise, please do so.

Required Book

Agresti, A., & Franklin, C. (2013).
Statistics: The Art and Science of Learning from Data (3rd ed.).
Upper Saddle River, NJ: Pearson Prentice Hall.

The book will be available at Ulrich's Bookstore:
549 E. University Ave
www.ulrichs.com
(734) 662-3201
It is also available for purchase online (amazon.com, etc.).

Grading

Your grade for this course is based on the four weekly assignments. They will become progressively more difficult. Thus, the weighted value will increase with each assignment:

1st Assignment = 15%
2nd Assignment = 20%
3rd Assignment = 30%
4th Assignment = 35%

Schedule (to be adapted as needed)

WEEK ONE
TOPICS
Day 1: Tuesday, June 19

Introductions Chap. 1 – Statistics: The Art and Science of Learning from Data
Day 2: Wednesday, June 20 Chap. 2 - Exploring Data with Graphs and Numerical Summaries
Day 3: Thursday, June 21 Chap. 3 - Association: Contingency and Correlation.
Day 4: Friday, June 22 Chap. 3 continued
WEEK TWO
Day 5: Monday, June 25 Chap. 5 – Probability in Our Daily Lives
Day 6: Tuesday, June 26 Chap. 5 – Continued
Day 7: Wednesday, June 27 Chap. 6 - Probability Distributions
Day 8: Thursday, June 28 Chap. 6 – Continued
Day 9: Friday, June 29 Review of First Two Weeks
WEEK THREE
Day 10: Monday, July 2 Chap. 7 – Sampling Distributions
Day 11: Tuesday, July 3 Chap. 8 – Statistical Inference: Confidence Intervals
Day 12: Thursday, July 5 Chap. 9 – Statistical Inference: Significance Tests about Hypotheses
Day 13: Friday, July 6 Chap. 9 continued
WEEK FOUR
Day 14: Monday, July 9 Chap. 10 – Comparing Two Groups
Day 15: Tuesday, July 10 Chap. 10 continued
Day 16: Wednesday, July 11 Chap. 11 – Analyzing the Association between Categorical Variables
Day 17: Thursday, July 12 Chap. 14 – Comparing Groups: Analysis of Variance Methods
Day 18: Friday, July 13 Conclude class