

Course Syllabus
15:291:532:90
Statistical Methods II
Spring, 2014

Prepared by Prof. Chia-Yi Chiu

Course Information

Instructor: Chia-Yi Chiu
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Time: New course materials will be posted on Mondays
Live Session: Mondays
Discussion: Every weekday
Text: Moore, D. S., & McCabe, G. P. (2009). *Introduction to the practice of statistics (6th ed)*. New York: W. H. Freeman.
Software: *SPSS for Windows (Version 19)*. New York: Prentice-Hall.

Course Description

This course is the second part of a two-semester sequence in statistical methods designed to introduce students to the most commonly used methods in educational and social science research. This course assumes that students have taken the first part of the sequence or have equivalent knowledge through one-sample t-test. Topics covered in this course include two-sample t-test, chi-square test, regression analysis, and one- and two-way analysis of variance (ANOVA).

Course Goals

Upon successful completion of this course, you will be able to complete the following tasks:

1. Understand the probability theory, the foundation of statistical methods.
2. Understand the distributions of random variables as well as their properties.
3. Have a basic understanding of correlation and linear regression.
4. Carry out the statistical analysis using both hand calculation and computer software (SPSS).
5. Test hypotheses applying probability theory.

6. Explain the differences among various statistical techniques and identify an appropriate technique for a given set of variables and research questions.
7. Interpret the outcomes of an analysis and make a decision based on the statistical results.

Course Requirements

1. **Email & eCollege Access:** Efficient communication is the key to evaluate how successful an online course is and in this course, **emailing** and **eCollege** are the two communication tools that we heavily rely on. To maximize the teaching and learning effects, you have to check your email account frequently and make sure you are able to receive information, download files, drop messages, join live sessions, do homework, take exams and access your grades from our webpage. All information and activities are time sensitive. Late responses and requests will not be handled.
2. **Exams:** The two online exams, midterm and final, are worth 30% and 30% of the final grade, respectively.
3. **Homework assignments:** Approximately 5-6 homework assignments, worth 40% of the final grade, will be given online throughout the semester. Homework assignments will be assigned on **Tuesdays** and are due at the **Mondays** the week after they are assigned. So basically you have a whole week to work on a homework assignment. No late homework assignment is accepted.
4. **Participation:** Your participation is expected throughout the semester.
5. **Software & Calculator:** *SPSS for Windows* will be used extensively to conduct statistical analyses for homework assignments and class exercises. However, for the exams, a calculator that performs basic operations will suffice.

Live Sessions

Live sessions in this online course are analogous to office hours in a regular course. To efficiently organize the sessions, I would like to collect questions by Wednesday so that the sessions can be planned in advance. The sessions will be available on our course page on Thursdays.

Discussion Sessions

In addition to live sessions, an alternative to find the solutions to your questions is to simply post your questions online. A **Basket** labeled **Question Box** will be created every week for you to drop content-related questions. Your questions will be answered on a daily basis (weekdays). Therefore, please make sure you are familiar with the **Dropbox** function.

Final Grade

Final letter grade will be assigned as follows:

| Final Score | Letter Grade |
|---------------|--------------|
| 90% and Above | A |
| 80%-89% | B+ |
| 75%-79% | B |
| 65%-74% | C+ |
| 60%-64% | C |
| Below 60% | F |

Notes Posted Dates

The following class schedule is subject to change if necessary. Reading assignments must be completed each week.

| Date | Topic | Section (pages) |
|--------|---|----------------------|
| Jan 22 | Inference for the mean of a population | 7.1 (417-433) |
| Jan 29 | Inference for Two Population Means | 7.2 (447-467) |
| Feb 5 | Inference for Population Variances | 7.3 (473-476) |
| Feb 12 | Inference for Proportions | 8.1, 8.2 (487-515) |
| Feb 19 | Analysis of Two-Way Tables | 9.1, 9.2 (525-545) |
| Feb 26 | Simple Linear Regression I | 10.1 (559-579) |
| Mar 5 | Simple Linear Regression II | 10.2 (579-594) |
| Mar 12 | MIDTERM EXAM (Sections 7.1 - 10.2) | |
| Mar 19 | <i>No Class (Spring Recess)</i> | |
| Mar 26 | Multiple Regression | 11.1, 11.2 (607-625) |
| Apr 2 | <i>No Class (AERA/NCME)</i> | 12.1 (637-655) |
| Apr 9 | One-Way ANOVA | |
| Apr 16 | Contrasts and Multiple Comparisons | 12.2 (655-666) |
| Apr 23 | Two-Way ANOVA I | 13.1 (683-694) |
| Apr 30 | Two-Way ANOVA II | 13.2 (694-699) |
| May 7 | FINAL EXAM | |

Policy on Academic Integrity

Please refer to the Policy on Academic Integrity for Undergraduate and Graduate Students at <http://academicintegrity.rutgers.edu>. I will follow the policy strictly.