



STA 1013 Statistics Through Example

Spring 2020 Section 06

Course Information:

- Course Meeting Location: OSB 108
- Course Meeting Time: TuTh 6:45PM - 8:00PM
- All materials will be available in university learning management system

Instructor: Dongrui Zhong

- Email: dzhong@fsu.edu
- Office: LOV 365
- Office Hour: Wednesday 2:00 – 3:00pm or by appointment

Course Description:

Prerequisite: None

Credit Hours: 3

This course provides students with a background in applied statistical reasoning. Fundamental topics are covered including graphical and numerical description of data, understanding randomness, central tendency, correlation versus causation, line of best fit, estimation of proportions, and statistical testing.

Statistical thinking, relevant ideas, themes, and concepts are emphasized over mathematical calculation. In this class students learn many of the elementary principles that underlie collecting data, organizing it, summarizing it, and drawing conclusions from it.

Course Objectives:

This course has been approved to meet FSU's Liberal Studies **Quantitative and Logical Thinking** requirements

and is designed to help you become a critical analyst of quantitative and logical claims.



In order to fulfill the State of Florida's College mathematics and computation requirement the student must earn a “C-” or better in the course.

By the end of the course, students will demonstrate the ability to:

- 1) Select and apply appropriate methods (i.e., mathematical, statistical, logical, and/or computational models or principles) to solve real-world problems.
- 2) Use a variety of forms to represent problems and their solutions.
(The above two competencies will be assessed in the Liberal Studies Quantitative Assessment for STA 1013, which includes a written summary of results)
- 3) Apply sound concepts of sample selection and experimental design in producing data.
- 4) Use statistical thinking in the context of work processes, academic endeavors, and everyday life.
- 5) Describe how inferential statistical methods are used to make valid judgments based on the data.
- 6) Evaluate the validity of statistical results with skepticism based on sensible considerations.

Materials:

- Recommended Textbook: *Statistical Reasoning for Everyday Life*, 4th edition by Jeffrey O. Bennett, Mario F. Triola, and William Briggs.
- Calculator: A basic calculator that can do elementary arithmetic, square and square root is required.

Topics:

- 1) Terminology/Initial ideas: statistical study process, population, sample, parameter, statistics, categorical, quantitative;
- 2) Sampling: simple random sample, systematic sampling, stratified sampling, cluster sampling, convenience sampling;
- 3) Graphs: histograms (sketch and interpret), stemplots (sketch and interpret), bar charts (sketch and interpret), pie charts (interpret);
- 4) Summary statistics: mode, mean, quartiles, range, standard deviation, five-number summary, boxplot;
- 5) Empirical rule;

- 6) Normal Distributions: forward problems (finding area under the curve/percentage of data)
- 7) Central Limit Theorem: sampling distributions of \bar{x} , features of the distributions and implications when using a larger/smaller sample to estimate μ , forward problems (finding probabilities);
- 8) Probability: random process, four rules, probability models, addition rule for mutually exclusive events;
- 9) Random variable: definition, expected values;
- 10) One-sample mean: obtain and interpret z-intervals, carry out and interpret results of z-test, interpret p-value;
- 11) One-proportion: z-intervals and z-tests;
- 12) Correlation: what the sign and absolute value of r imply, correlation does not imply cause-and-effect;
- 13) Simple Linear Regression: read scatterplots, given equation make prediction, interpret R^2 .

Grading:

- Quiz (15% \times 4): Time TBD. You can bring ONE 8.5" x 11" hand-written two-sided sheet.
- Final Exam (30%): April 28, 8:00 –10:00 p.m. You can bring TWO 8.5" x 11" hand-written two-sided sheets.
- Attendance & pop quiz (10%): I will occasionally check attendance or give a short pop quiz.
- Extra Credit (5%): Extra credit problems will be given in quizzes or final exam.
- Letter Grade Cutoffs: A (≥ 93) A- (90-92) B+ (87-89) B (83-86) B- (80-82) C+ (77-79) C (73-76) C- (70-72) D (60-69) F (≤ 59). Actual letter grades cutoffs may change but no stricter than the above.
- Your raw grade (percentage) will be rounded to the nearest integer to determine your letter grade.
- Grade appealing: You must contact me within 7 calendar days since the grade is posted, otherwise the grade will be final.

Make-up Quiz Policy:

- If you miss a quiz, you need to contact me within TWO calendar days after the quiz day and explain the situation to take a make-up quiz. The make-up quiz must be taken no later than 7 calendar days since you contact me.
- Exams that are not taken will receive a grade of zero. When a missed assessment/assignment is made up, the zero will be replaced with the earned grade.
- If you must be absent on a religious holiday, please submit a self-written-and-signed letter at least ONE WEEK BEFORE the holiday informing me that you will be absent due to the religious holiday.

University Attendance Policy:

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy:

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... to strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/academic-resources/academic-integrity-and-grievances/academic-honor-policy>.)

Americans With Disabilities Act:

Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Student Disability Resource Center;
- and
- (2) bring a letter to the instructor indicating the need for accommodation and what type.

Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Student Disability Resource Center has been provided.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

sdrc@admin.fsu.edu

<http://www.disabilitycenter.fsu.edu/>

Syllabus Change Policy:

Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.