



STA 1013 Fall 2020
Department of Statistics
Florida State University

STA 1013: Statistics Through Example

Fall 2020 – Section 0005/0006

Course Information

Instructor: Linyu Shi

Email: ls16d@my.fsu.edu

Office Hours: Zoom meeting by appointment.

This class will be taught *remotely* and *asynchronously* on Canvas from Aug 24th to Dec 4th. We will not be using *Honorlock*.

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:

- (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 (LSQA) 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.

Required Materials

Textbook: There is *no* required textbook for this course, but a suggested reading for your own study is:

Statistical Reasoning for Everyday Life, Fifth Edition 2018, by Bennet Briggs Triola.

Calculator: A TI-84 or equivalent calculator is required.

Canvas Website: Grades, quizzes, announcements, lecture videos and relevant materials will be available on this site. Please check Canvas regularly for the updates through canvas.fsu.edu.

Lecture Videos

~ Watching the lecture videos is equivalent to attending class and listening to lectures. We acknowledge that the lecture videos are not short, but remember that class time would have been 50 or 75 mins - not short either. On the bright side, however, you may pause the video at any time and return to it later - you would not have been able to do that with live lectures. Therefore, we fully expect you to watch the lecture videos in their entirety. Pause whenever you need to, but always be sure to return and finish watching the video.

~ Please note that the recorded lectures are the property of Florida State University and are made available only to students enrolled in this class. Students are not permitted to share the recorded lectures with any other persons outside of this class. Copyrights of the recorded lectures are reserved by the instructor and Florida State University.

Email & Communication

~ Please **turn on the course notifications in Canvas** by going to Account / Notifications / and checking the Notify me right away option for all of the items under Course Activities.

~ I will send announcements to your FSU email account (@my.fsu.edu) or on Canvas. You are responsible for all information sent via email or put on Canvas website. **Please check your FSU email account and Canvas website every day.**

~ When emailing me regarding this class, please always include STA1013-0005/STA1013-0006 and your name. Do use your FSU email account or your emails will not be replied.

~ You may expect a response to your email within two work days. But if you email me with an enquiry that was previously addressed in the syllabus, in a class email or in a course announcement, you may not get a response.

Tentative Course Topics

1. Terminology/Initial ideas: 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), 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, 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-squared.

Tentative Pacing Schedule

		Lecture Videos to Watch	Quizzes Due
Week 1	Aug 24 ~ Aug 28	Pre-math Terminology	
Week 2	Aug 31 ~ Sep 4	Sampling	Quiz 1
Week 3	Sep 7 ~ Sep 11	Graphs <i>Labor Day</i>	Quiz 2 (collaboration allowed)
Week 4	Sep 14 ~ Sep 18	Summary Statistics	
Week 5	Sep 21 ~ Sep 25	Summary Statistics	Quiz 3
Week 6	Sep 28 ~ Oct 2	Empirical Rule Normal Distributions	Quiz 4 (collaboration allowed)
Week 7	Oct 5 ~ Oct 9	Central Limit Theorem	
Week 8	Oct 12 ~ Oct 16	Central Limit Theorem	LSQA
Week 9	Oct 19 ~ Oct 23	Probability	
Week 10	Oct 26 ~ Oct 30	Random Variables One-sample mean	Quiz 5
Week 11	Nov 2 ~ Nov 6	One-sample mean One-proportion	Quiz 6
Week 12	Nov 9 ~ Nov 13	One-proportion <i>Veteran's Day</i>	Quiz 7 (collaboration allowed)
Week 13	Nov 16 ~ Nov 20	Correlation	Quiz 8
Week 14	Nov 23 ~ Nov 27	Simple Linear Regression Simple Linear Regression <i>Thanksgiving Holiday</i>	
Week 15	Nov 30 ~ Dec 4	Simple Linear Regression	
Final Exam Week	Dec 7 ~ Dec 11	<i>No Lecture Videos</i>	Quiz 9

Grading

Cooperative Quizzes (30%): There will be 3 quizzes that you can collaborate with someone who is not the instructor.

Quizzes (60%): There will be 6 quizzes during the semester. We will not have a cumulative final exam but a final quiz instead. Your lowest grade will be dropped, and the other 5 add up to 60% of the overall grade. Collaboration is *not permitted* for these quizzes.

LSQA (10%): Note that, STA 1013 has been certified as one of FSU's Liberal Studies Quantitative and Logical Thinking courses. As a requirement, administer the appropriate Liberal Studies Quantitative Assessment (LSQA) during the semester. This will be a common assessment (not final exam).

~ In general, we will allow absolutely no make-ups, no extra credit assignments, which means no opportunities for grade improvement, after the LAST DAY of Class, so please do your best during the term.

~ Quizzes that are not submitted will receive a grade of zero. When a make-up is submitted, the zero will be replaced with the earned grade.

~ All quizzes (including LSQA) will be “open-book” which means that ONLY the following resources may be used during quizzes: *class notes, personal notes (these are notes that you can take while preparing/studying for quizzes), textbooks.*

Note on Technology-dependent Assessments

This course is heavily technology-dependent. While we will do our best to work with you on technology issues, please be aware that if you take an assessment but we can find absolutely no record of the fact, then we will not be able to give you credit for it. Please DO NOT USE SAFARI when you take assessments on Canvas – please use **Chrome or Firefox**.

Grading Scale

The grading scale for this course is as follows:

A 93-100

A- 90-92

B+ 87-89

B 83-86

B- 80-82

C+ 77-79

C 73-76

C- 70-72

D+ 67-69

D 63-66

D- 60-62

F 0-59

The letter grades cutoffs will be given at the end of the course, but no stricter than the above. If you wish to appeal the grade for a quiz during the term, please contact me within 7 calendar days after the grade is posted, otherwise the grade will not be changed.

Make-up Policy

~ If you have missed a quiz and want to make up, you need to contact me within TWO calendar days after the quiz day or inform me in advance, and provide university approved documentation, which includes: *documented illness, deaths in the family and other documented crises as approved by the Dean of Students office, active military or jury duty, religious work-restricted holy days, and official University activities.* Please note that the FSU University Health Services ‘Verification of Visit’ does not constitute a documented absence.

~ Unexcused absence from a quiz will result in a zero. The make-up quiz will be given within one week of the original quiz date. I will discuss the detail time with you after receiving the documentation.

~ You will only have 2 chances to make up for the missed quizzes. All the make-ups should be done before the final exam week.

~ If you are going to miss the final exam, you must notify me and Radha Bose (bose@stat.fsu.edu) in advance at the same time.

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)

sdr@admin.fsu.edu

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

Sexual Misconduct and Title IX Reporting

As an instructor, I am obliged to report all instances of sexual misconduct that I become aware of to the University's Title IX Director; I cannot hold such information confidential. If you would like to discuss your situation in confidence, you may contact the Victim Advocate Program (<https://dos.fsu.edu/vap/>), the University Counseling Center (<https://counseling.fsu.edu/>), the Employee Assistance Program (<https://eap.fsu.edu/>), University Health Services (<https://uhs.fsu.edu/>), or pastoral counselors.

Final Exam Rescheduling Policy

You may not take the final exam before final exams week. Individual students who need to reschedule the final exam for a different time during final exams week will need to

- (i) talk to me about it first and get my permission to reschedule,
- (ii) fill out the “Request to Reschedule Final Examination” form at

<https://artsandsciences.fsu.edu/students/undergraduate/forms-requiring-deans-approval/rescheduling-final-examination> and get it approved by the Dean of Arts and Sciences office, and

- (iii) let me have the approved form by the last day of classes.

If you experience a documented emergency that prevents you from observing the above deadline, contact me as soon as you are able to, and we’ll take it from there.

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.