

STA 1013: Statistics Through Example

Spring 2021 – Section 0005/0006

Course Information

Instructor: Xiaolin Wang

Email: xw17b@my.fsu.edu

Office Hours: Thursday 4:00 – 5:30 PM (Office hours will be on Zoom.)

Times and Locations: Section 0005: Jan 6 ~ Apr 23, 2021, TuTh, 4:50 pm – 6:05 pm, HCB 0310.

Section 0006: Jan 6 ~ Apr 23, 2021, TuTh, 6:35 pm – 7:50 pm.

Required Course Resources

A personal computer, reliable internet connection, and Chrome or Firefox browser.

Textbook: There is no required textbook for this class. The notes and relevant materials will be posted to Canvas before class. For your own study, the following book is recommended as supplementary material:

Statistical Reasoning for everyday life, 5th ed 2018, by Bennet Briggs Triola.

Calculator: TI-84 Plus or equivalent calculator. We will help you to learn how to use a TI-84 series calculator, but we cannot promise to be able to help with any other type of calculator.

Canvas Class Website: Lecture videos, notes, announcements, assessments and other pertinent information will be available through this site. You will need to watch lecture videos and study the notes used in the videos. You are responsible for assignments and announcements posted on this website, as well as those sent through your FSU email.

Email & Communication

Please **turn on the course notifications on Canvas** by going to Account / Notifications / and checking the Notify me right away option for all of the items under Course Activities. You may expect a response to your email within two work days (one work day in Summer).

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.

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 for STA1013, 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.

Tentative 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, four rules, probability models, addition rule for mutually exclusive events
9. Random Variables: 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:

Week	Dates	Tue	Thu
1	Jan 6 ~ Jan 8		Terminology
2	Jan 11 ~ Jan 15	Sampling	Graphs
3	Jan 18 ~ Jan 22	Summary statistics	Review
4	Jan 25 ~ Jan 29	Quiz 1 (not allowed to collaborate)	Empirical rule
5	Feb 1 ~ Feb 5	Normal Distributions	Normal Distributions
6	Feb 8 ~ Feb 12	Central Limit Theorem	Central Limit Theorem
7	Feb 15 ~ Feb 19	Review	Quiz 2
8	Feb 22 ~ Feb 26	LSQA (not allowed to collaborate)	Probability
9	Mar 1 ~ Mar 5	Probability	Random Variables
10	Mar 8 ~ Mar 12	Review	Quiz 3 (not allowed to collaborate)
11	Mar 15 ~ Mar 19	One-sample mean	One-sample mean



12	Mar 22 ~ Mar 26	One-proportion	One-proportion
13	Mar 29 ~ Apr 2	Review	Quiz 4 (not allowed to collaborate)
14	Apr 5 ~ Apr 9	Correlation	Simple Linear Regression
15	Apr 12 ~ Apr 16	Simple Linear Regression	Review
16	Apr 19 ~ Apr 23	Final Exam (not allowed to collaborate)	

Liberal Studies for the 21st Century: Quantitative and Logical Claims

The Liberal Studies for the 21st Century Program at Florida State University builds an educational foundation that will enable FSU graduates to thrive both intellectually and materially and to support themselves, their families and their commitments through a broad and critical engagement with the world in which they live and work. This course has been approved as meeting the Liberal Studies requirements and this is designed to help you become a critical analyzer of quantitative and logical claims. **In order to fulfill the state of Florida's College mathematics and computational requirement, the student must earn a C- or better in the course.**

Grade Structure

Attendance (10%): Attendance will be checked randomly for more than 5 times during the semester. The attendance check will be taken electronically on the course website. Each attendance check will contain one ungraded multiple choice question related to the class. **If you do not complete the attendance check on time, you will be deducted 0.5 pts from your attendance every time. You are required to complete at least 5 attendance checks (first-day attendance quiz not included) to receive the full marks for attendance.**

Quiz (50%): There will be 4 quizzes during the semester. Collaboration is allowed only for Quiz 2.

LSQA(10%): Note that, STA1013 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). It will be **part of the Quiz 2** and the total time length will be about 50 mins. Collaboration is not allowed.

Final Exam (30%): There will be a cumulative final exam given on the final exam week. If you need to miss the final exam, you must notify the instructor in advance. Collaboration is not allowed.

All assessments will be **open-book** which means that the following resources may be used during quizzes and final exam: lecture notes, personal notes, textbooks. Each assessment will be available online for one week. You will have **TWO attempts** for each assessment. Due dates for each assessment will be provided on Canvas. **There should be**



absolutely no late submission for any assessments. Assessments that are not taken will receive a grade of zero. When a missed assessment is made up, the zero will be replaced with the earned grade. Grades will be posted on Canvas within one week. After a grade is posted the student has 5 workdays to request a grade change. After a grade has been posted for one week, no grade changes will be made.

The **grading scale** for the course is as follows:

		B+	87-89	C+	77-79	D+	67-69		
A	93-100	B	83-86	C	73-76	D	63-66	F	0-59
A-	90-92	B-	80-82	C-	70-72	D-	60-62		

Please ignore the grade totals or averages that you may see on the course website; they are not correct. In this class, we only store and display individual assessment grades on the course website, we do not do grade calculations there. All grades will be recorded as percentages, and these percentages (not points) will be used in your overall course grade calculation. Your letter grade will be selected from the table above after rounding the overall numerical course grade UP to the next higher whole number. If you want to appeal your grade, you must contact the instructor within 7 calendar days since the grade is posted, otherwise the grade will be final.

Receiving a grade of “Incomplete”

A request for a grade of “Incomplete” will NOT be granted if you have completed the coursework, including the final quiz and excluding the allowable absences. It will be granted only if both of the following conditions are satisfied:

1. the only assessment that you have yet to take is the final quiz, and
2. your overall average excluding the final quiz is a passing grade (70% or above).

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.

Attendance and Drop/Withdrawal

First-day attendance will be taken electronically on the course website. Drop and Withdrawal deadlines are given in the University’s academic calendar at <https://registrar.fsu.edu/calendar/>. For each assessment, you are expected to adhere to the deadline.

Make-up Policy



Make-ups are for absences only. Make-ups will not be given due to undesired performance on an assessment. If you are absent for a quiz or the LSQA, then please email me immediately. You will have until Wednesday of the following week to make up a missed assessment unless you have a documented reason for being unable to do so. If you do not complete a make-up according to the above guidelines, then the missed assessment will receive a grade of zero. **No make-ups will be given after the last day of class.** If you are absent for the Final Exam, then you must email me immediately. Absolutely no documentation will be accepted after the last day of class.

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.

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.

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

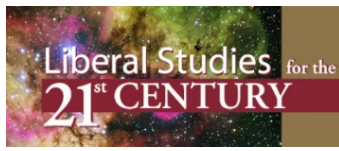
<https://artsandsciences.fsu.edu/students/undergraduate/forms-requiring-deans-approval/rescheduling-final-examination> and get it approved by the Dean of Arts and Sciences office, and

- (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.

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>.)



Confidential Campus Resources

Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

Victim Advocate Program

University Center A, Rm. 4100

(850) 644-7161

Available 24/7/365

Office Hours: M-F 8-5

<https://dsst.fsu.edu/vap>

University Counseling Center

Askew Student Life Center, 2nd floor

942 Learning Way

(850) 644-8255

<https://counseling.fsu.edu/>

University Health Services

Health and Wellness Center

(850) 644-6230

<https://uhs.fsu.edu/>

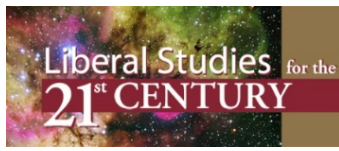
Sexual Misconduct and Title IX Reporting

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.

Americans With Disabilities Act

Florida State University (FSU) values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. FSU is committed to providing reasonable accommodations for all persons with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

To receive academic accommodations, a student:



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- (1) must register with and provide documentation to the Office of Accessibility Services (OAS);
- (2) must provide a letter from OAS to the instructor indicating the need for accommodation and what type; and,
- (3) should communicate with the instructor, as needed, to discuss recommended accommodations. A request for a meeting may be initiated by the student or the instructor.

Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from the Office of Accessibility Services 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 Office of Accessibility Services

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

oas@fsu.edu

<https://dsst.fsu.edu/oas/>