

## STA1013: Statistics through Example

Spring 2021 – Section 0015&0016

### Course Information

**Instructor:** Ms. Zhuo Meng

**Email:** zml7b@my.fsu.edu

**Office Hours:** Wednesdays 3-6 p.m. on Zoom (join via the zoom link on course Canvas) or by appointment

**Class meeting time & Location:** Section 0015: Mon/Wed 3:05-4:20 p.m., HCB0316

Section 0016: Mon/Wed 4:05-6:05 p.m., HCB0312

This class will be taught on Canvas from Jan 6th to April 23rd. I will not be presenting in classroom. The classroom can be used as a quiet study space during your class time since Jan 19th. 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:

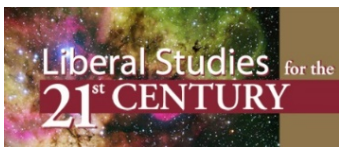
1. Select and apply appropriate methods (i.e., mathematical, statistical, logical, and/or computational models or principles) to solve real-world problems.

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 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.

### **Required Materials**

**Textbook:** There is *NO* required textbook for this class. The notes and relevant materials will be posted on Canvas before class. The following book is recommended as supplementary material for your own study:

*Statistical Reasoning for everyday life, 5<sup>th</sup> ed 2018, by Bennet Briggs Triola.*

**Calculator:** TI-84 Plus or equivalent calculator.

**Canvas Website:** Lecture videos, notes, announcements, assessments and other pertinent information will be available through this site. Please check Canvas regularly for the updates through [canvas.fsu.edu](https://canvas.fsu.edu).

### **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. I will send announcements to your FSU email account ([@my.fsu.edu](mailto:@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 and the Canvas website every day.

When you email me regarding this class, please always include 'STA1013 + your section number + 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.

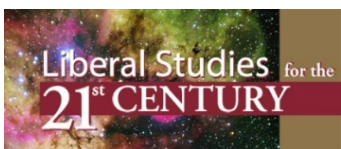
### **Lecture Videos**

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.

### **Tentative Topics**

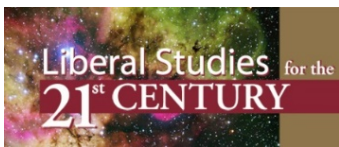
1. Terminology/Initial ideas: population, sample, parameter, statistics, categorical, quantitative, statistical study process;
2. Sampling: simple random sample, systematic sampling, stratified sampling, cluster sampling, convenience sampling
3. Graphs: histograms (sketch and interpret), bar charts (sketch 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  $\mu$ , forward problems
8. Probability: random process, four rules, probability models, addition rule for mutually exclusive events
9. Random Variables: definition, expected values
10. Correlation: what the sign and absolute value of  $r$  imply, correlation does not imply cause-and-effect
11. Simple Linear Regression: read scatterplots, given equation make prediction, interpret R-squared
12. One-sample inference: obtain and interpret z-intervals, understand statistical testing, carry out and interpret results of z-test, interpret p-value

### Tentative Pacing Schedule

Week	Dates	Monday	Wednesday	Quizzes Due
1	Jan 6 ~ Jan 8	/	Syllabus	
2	Jan 11 ~ Jan 15	Terminology	Sampling	
3	Jan 18 ~ Jan 22	<b>MLK Jr. Day. No class.</b>	Graphs (Quiz 1 released)	Quiz 1
4	Jan 25 ~ Jan 29	Summary Statistics	Summary Statistics	
5	Feb 1 ~ Feb 5	Summary Statistics (Quiz 2 released)	Empirical Rule Normal Distribution	Quiz 2
6	Feb 8 ~ Feb 12	Normal Distribution	Normal Distribution (Quiz 3 released)	Quiz 3
7	Feb 15 ~ Feb 19	Central Limit Theorem	Central Limit Theorem	
8	Feb 22 ~ Feb 26	Central Limit Theorem (LSQA released)	Probability	<b>LSQA (Collabration not allowed)</b>
9	Mar 1 ~ Mar 5	Probability	Probability (Quiz 4 released)	Quiz 4
10	Mar 8 ~ Mar 12	Random Variables	Random Variables	
11	Mar 15 ~ Mar 19	Random Variables (Quiz 5 released)	Correlation Simple Linear Regression	Quiz 5



12	Mar 22 ~ Mar 26	Simple Linear Regression	Simple Linear Regression (Quiz 6 released)	Quiz 6
13	Mar 29 ~ Apr 2	One-sample Inference	One-sample Inference	
14	Apr 5 ~ Apr 9	One-sample Inference (Quiz 7 released)	One-sample Inference	Quiz 7
15	Apr 12 ~ Apr 16	One-sample Inference	Review	
16	Apr 19 ~ Apr 23	Final Week		Final Exam (Collabration not allowed)

### 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

**Quizzes (70%):** There will be 7 quizzes during the semester. You may collaborate with others, but the quizzes need to be done on your own.

**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). Collaboration is not allowed.

**Final Exam (20%):** There will be a CUMULATIVE final exam given on the final week. **The final exam will be available on Canvas on April 19<sup>th</sup> 8:00 a.m. and due by April 23<sup>rd</sup> 5:00 p.m..** If you need to miss the final, you must notify the instructor in advance. Collaboration is not allowed.

**Homework (5% extra):** There will be 10 homeworks regarding the topics for your own stud. The homeworks are not mandatory but are highly recommended to practice. The homeworks will not be graded. You will have at most 5% extra credits by doing homework and providing proofs.

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. You will have **TWO attempts** for each assessment. Due dates for each assessment will be provided on Canvas (usually by Sunday). **There should be absolutely no late submission for any assessments.** Assessments that are not submitted will receive a grade of zero. When a makeup is submitted, the zero will be replaced with the earned grade. Grades will be posted on Canvas within one week after the due date. You will



have 5 workdays to bring up your concerns of your grade and/or request a grade change. No grade changes will be made one week after the grades are posted.

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

		<b>B+</b>	87-89	<b>C+</b>	77-79	<b>D+</b>	67-69		
<b>A</b>	93-100	<b>B</b>	83-86	<b>C</b>	73-76	<b>D</b>	63-66	<b>F</b>	0-59
<b>A-</b>	90-92	<b>B-</b>	80-82	<b>C-</b>	70-72	<b>D-</b>	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).

### **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, 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, you must email me immediately. Absolutely no documentation will be accepted after the last day of class.



### **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.

### **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.**

### **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.

### **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 written 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/Academics/Academic-Honor-Policy>.)

### **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:

- (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](mailto:oas@fsu.edu)

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

### **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."