



STA 1013

Department of Statistics

Florida State University

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## **STA 1013: Statistics Through Example**

*Spring 2023 – 0007/0008*

*January 9 – April 28*

### **Instructor**

Name: Nichole Fusilier

Email: [nfusilier@fsu.edu](mailto:nfusilier@fsu.edu) – *You may expect a response from me within one workday.*

Office Hour: Via Zoom by Appointment Only (Please email for an appointment)

### **Online Mentor**

Name: Yuanyao Tan

Email: [ytan3@fsu.edu](mailto:ytan3@fsu.edu)

Office Hour: Via Zoom by Appointment Only (Please email for an appointment)

*Please be aware that all Teaching Assistants who have been assigned to work with the instructor of this class will have access to your grades and academic accommodations information since it is not possible for the instructor alone to perform all of the duties related to grading and the provision of academic accommodations.*

### **Course Information**

Name: Statistics Through Example

Course Code: STA 1013 Section: 0007/0008

Course Format: Online Asynchronous

Credit-hours: 3

Prerequisites: None

### **Course Video & Audio Recordings**

This class will be taught remotely and asynchronously. Lecture videos will be posted on Canvas by 12 pm EST every Monday and Wednesday. You will need access to a computer and a stable internet connection.

Watching the lecture videos is the equivalent to attending class and listening to lectures. 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 any recordings provided by the instructor are the property of Florida State University and are being made available only to the students enrolled in this class. Students are



not permitted to share the recordings with any person or entity outside of this class. Copyrights of the recordings are reserved by the creators of the recordings and Florida State University.

### **Course Access**

Course website: <https://canvas.fsu.edu>

Canvas Support: Available 8am-5pm, Monday through Friday

Email: [canvas@fsu.edu](mailto:canvas@fsu.edu)

Phone: 850-644-8004

Website: <https://support.canvas.fsu.edu/home/>

**Please turn on the course notifications in Canvas by going to Account/Notifications and selecting the *Notify immediately* option for all of the items under Course Activities.**

We will communicate with you by sending emails to your @fsu.edu account and posting announcements on the course website. Please check your FSU email, your Canvas Inbox, and the course announcements on Canvas every day.

When you email either me or the mentor, please use your @fsu.edu address. You may expect a response to your email within two workdays.

**We will not use Honorlock during this course.**

### **Required Materials**

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

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

A textbook is not required for this class. The instructor will provide all required course notes and exercises. Please note that the materials provided by the instructor were put together for your individual use only. While you may share these materials with classmates, we ask that you do not share them with third parties who are not enrolled in this class. If you seek help outside of class, you may allow your helper to see the materials, but please do not allow them to make copies or in any other way take our material. We appreciate your co-operation in protecting our material. Thank you!



### **Additional Resources**

The following free online textbook is an additional resource that you might find useful: Introductory Statistics from OpenStax, Print ISBN 1938168208, Digital ISBN 1947172050, [www.openstax.org/details/introductory-statistics](http://www.openstax.org/details/introductory-statistics).

### **Course Description**

This course provides students with a background in applied statistical reasoning. Fundamental topics are covered, including graphical and numerical descriptions 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.

### **Learning Objectives**

This course has been approved to meet FSU's Liberal Studies **Quantitative and Logical Thinking** requirements and helps 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 (LSQA) which includes a written summary of results. The LSQA forms a mandatory ten percent of the course grade. If you do not take it, you will not be permitted to pass the class, regardless of how well you perform on the other assessments. The LSQA will be an online assessment graded for accuracy; two attempts will be allowed; collaboration is not permitted; no internet sources are allowed apart from the course Canvas.*

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.

### **Note on Technology-dependent Assignments**

This course is technology dependent. While we will do our best to work with you on technology issues, please be aware that if you take an assignment 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 assignments on Canvas, use Chrome or Firefox.**

### **Completing assessments in a timely manner so that you can stay on track**

This is a semester-long college course, designed to be taken one step at a time throughout the semester rather than hurriedly over the span of a few days, or a few weeks.

We will therefore not allow extensions on due dates during the last two weeks of classes unless you have completed at least eighty percent of the assessments given up to that point, including the LSQA. For example, if the LSQA and nine other assessments have been given by the start of the last two weeks of classes, then you will need to have completed the LSQA and at least seven other assessments in order to receive any extensions on due dates during the last two weeks of classes.

Please note that the assessments need to be completed in order. Therefore, an extension on a specific assessment will not be granted if you have prior outstanding assessments. For example, if you request an extension on Assessment 8 but you did not complete Assessment 3, then you will be denied an extension on Assessment 8, but you may receive an extension on Assessment 3.

The last day of classes will be the deadline for all assessment submissions, including assessments where extensions were granted, but not including the final assessment.

### **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  $\mu$ , 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.

### **Grade Composition (500 points total)**

#### **14 Homework Assignments (5-15 points each)    125**

You may discuss with others but need to write up your results independently. You are allowed five attempts per homework assignment.

#### **5 Quizzes (65 points each)    325**

There will be 5 quizzes administered during the semester. Collaboration is *not permitted*.

#### **LSQA    50**

This is an **online** assessment. STA1013 has been certified as one of FSU's Liberal Studies Quantitative and Logical Thinking courses. As a requirement, the appropriate Liberal Studies Quantitative Assessment (LSQA) will be administered during the semester. This will be a common assessment (not a final exam). Collaboration is *not permitted*. You must complete the LSQA assessment in order to pass the course.

### **Grading Policies**

**Late Policy:** Late, unexcused assignments will be penalized as follows: 10% of the maximum score per day.

**Missing Assignments:** Assignments that are not submitted will receive a grade of zero. When a makeup is submitted, the zero will be replaced with the earned grade.

**Grade Disputes:** If you believe that the grade you received on an assignment is incorrect, please bring it to my attention within two workdays after the grade has been made available to you. If no



issues are raised during that time frame, then it will be assumed that the grade is accepted and subsequent requests for a grade review may not be granted.

### **Grade Assignments (Based on total course points earned)**

Your letter grade will be selected from the grading scale below after rounding your overall numerical course total to the next higher whole number.

|           |         |           |         |           |         |
|-----------|---------|-----------|---------|-----------|---------|
| <b>A</b>  | 465-500 | <b>B-</b> | 400-414 | <b>D+</b> | 335-349 |
| <b>A-</b> | 450-464 | <b>C+</b> | 385-399 | <b>D</b>  | 315-334 |
| <b>B+</b> | 435-449 | <b>C</b>  | 365-384 | <b>D-</b> | 300-314 |
| <b>B</b>  | 415-434 | <b>C-</b> | 350-364 | <b>F</b>  | 0-299   |

### **Make-up Policy**

The Last Day of Classes is the absolute deadline for all make-ups barring the final assessment.

The Last Day of Classes is the ultimate deadline for requesting an extension – this applies to all assignments given during the term.

No make-ups will be allowed after the Last Day of Classes – this applies to all assignments given during the term.

After the final assessment is over, the class will be absolutely and completely over. This means that all assessments will be completely over and absolutely no extensions will be granted.

### **Receiving a grade of “Incomplete”**

A request for a grade of “Incomplete” will

~ NOT be granted if you have completed the coursework, including the assessments that cannot be dropped and excluding the drops and allowable absences.

~ be granted only if both of the following conditions are satisfied:

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

### **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 should talk to me about it first to get my approval and then fill out and follow the instructions on the “Request to Reschedule a Final Examination” form at

**[https://artsandsciences.fsu.edu/sites/g/files/upcbnu321/files/2020-09/Request to Reschedule revised.pdf](https://artsandsciences.fsu.edu/sites/g/files/upcbnu321/files/2020-09/Request%20to%20Reschedule%20revised.pdf)**.



The form needs to be submitted to the College of Arts and Sciences before 5pm on 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.

### **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.

Drop and Withdrawal deadlines are given in the University's academic calendar at <https://registrar.fsu.edu/calendar/>

If you are absent for an extended period of time and/or you do not respond to emails from the instructor over an extended period of time, the instructor reserves the right to deny access to assessments or limit the number of allowed attempts until attendance and/or contact is resumed.

### **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>)

### **Academic Success**

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Department of Student Support and Transitions to learn more.





### **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.

Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Office of Accessibility Services; and
- (2) request a letter from the Office of Accessibility Services to be sent to the instructor indicating the need for accommodation and what type; and
- (3) meet (in person, via phone, email, skype, zoom, etc...) with each instructor to whom a letter of accommodation was sent to review approved accommodations.

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 the latest version of this statement and 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>

Academic accommodations will be provided as soon as possible after email notification from the OAS is received. Academic accommodations are not retroactive, so they will not apply to lectures/lessons and assessments that took place before verification was received.





### **Sexual Misconduct and Title IX Reporting**

As an instructor, I am obliged to report all instances of sexual misconduct and other Title IX issues 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/>), Counseling & Psychological Services (<https://counseling.fsu.edu/>), the Employee Assistance Program (<https://eap.fsu.edu/>), University Health Services (<https://uhs.fsu.edu/>), or pastoral counselors. If you would like to submit a report to the University's Title IX Director, please go to <https://report.fsu.edu/>.

### **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>

#### **Counseling and Psychological Services**

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/>

### **In Case of Disaster/Emergency**

At times of severe weather or other disasters, please check your FSU email, your text messages, the Seminole Safe App and FSU Alerts (<https://alerts.fsu.edu/>) as often as you can to keep yourself informed. In the absence of internet access, you may call 850-644-4636 for updates. Check for the latest information every day before you leave home so that you don't miss any last-minute announcements.

If the University closes due to a disaster, we will all be informed via the above means, and classes and office hours will be automatically cancelled even if I don't announce it. As long as the University remains open, classes will still be on. However, please practice safety first. If it will be unsafe or impracticable for you to come to class or complete an assignment due to the effects of a disaster, please do not attempt to do so. You will not be penalized; we will work with you.

You can sign up to receive alerts via SMS text messages here:

<https://emergency.fsu.edu/services/fsu-alert-emergency-notification-warning-system/fsu-alert-sms-text-messages>.



See here for other ways in which FSU delivers warnings:

<https://emergency.fsu.edu/services/fsu-alert-emergency-notification-warning-system>.

### **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.

### **Classes Subject to HB233 Recording**

In this class, consistent with state law and university policy, students are permitted to make recordings of class lectures for personal use only. As noted, sharing, posting, or publishing classroom recordings may subject you to honor code violations and legal penalties associated with theft of intellectual property and violations of other state law. Moreover, students and educators have expressed concern that recording classroom activities may negatively impact the learning experience for others, especially in classes that involve questions, discussion, or participation. To protect a learning environment in which everyone feels free to experiment with ideas, we ask you refrain from recording in ways that could make others feel reluctant to ask questions, explore new ideas, or otherwise participate in class. Students must monitor their recording so that they do not include participation by other students without permission. Students with disabilities will continue to have appropriate accommodations for recordings as established by the Office of Accessibility Services.



### Tentative Pacing Schedule

| Week | Dates                                       | Day 1 (Mon)                             | Day 2 (Wed) | Homework | Quiz                  |
|------|---|---|-------------|----------|-----------------------|
| 1    | Jan 9 <sup>th</sup> – Jan 13 <sup>th</sup>  | Introduction                            |             | x        | x                     |
| 2    | Jan 16 <sup>th</sup> – Jan 20 <sup>th</sup> | Sampling                                |             | HW1      | <b>Q1</b>             |
| 3    | Jan 23 <sup>rd</sup> – Jan 27 <sup>th</sup> | Visualization                           |             | HW2      | x                     |
| 4    | Jan 30 <sup>th</sup> – Feb 3 <sup>rd</sup>  | Summary Statistics                      |             | HW3      | <b>Q2</b>             |
| 5    | Feb 6 <sup>th</sup> – Feb 10 <sup>th</sup>  | Empirical Rule &<br>Normal Distribution |             | HW4      | x                     |
| 6    | Feb 13 <sup>th</sup> – Feb 17 <sup>th</sup> | Central Limit Theorem                   |             | HW5      | <b>Q3</b>             |
| 7    | Feb 20 <sup>th</sup> – Feb 24 <sup>th</sup> | Probability & Random Variables          |             | HW6      | x                     |
| 8    | Feb 27 <sup>th</sup> – Mar 3 <sup>rd</sup>  | Probability & Random Variables          |             | HW7      | <b>LSQA</b>           |
| 9    | Mar 6 <sup>th</sup> – Mar 10 <sup>th</sup>  | Confidence Intervals                    |             | HW8      | x                     |
| 10   | Mar 13 <sup>th</sup> – Mar 17 <sup>th</sup> | Spring Break (No Classes)               |             | x        | x                     |
| 11   | Mar 20 <sup>th</sup> – Mar 24 <sup>th</sup> | One-sample mean                         |             | HW9      | <b>Q4</b>             |
| 12   | Mar 27 <sup>th</sup> – Mar 31 <sup>st</sup> | One-sample Hypothesis Test              |             | HW10     | x                     |
| 13   | Apr 3 <sup>rd</sup> – Apr 7 <sup>th</sup>   | One-sample Proportion Test              |             | HW11     | x                     |
| 14   | Apr 10 <sup>th</sup> – Apr 14 <sup>th</sup> | Correlation                             |             | HW12     | <b>Q5</b>             |
| 15   | Apr 17 <sup>th</sup> – Apr 21 <sup>st</sup> | Simple Linear Regression                |             | HW13     | x                     |
| 16   | Apr 24 <sup>th</sup> – Apr 28 <sup>th</sup> | Simple Linear Regression                |             | HW14     | x                     |
| 17   | May 1 <sup>st</sup> – May 5 <sup>th</sup>   | Final Exam Week                         |             | x        | <b>Q6<br/>(Bonus)</b> |