

STA1013: Statistics through Example

Fall 2021 – Section 0005/0012

Department of Statistics, Florida State University

Course Information

Instructor: Ms. Zhuo Meng

Office: OSB 329

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Class meetings: Section 0005: Monday, Wednesday, and Friday 1:20 – 2:10 p.m., HCB 0207.

Section 0012: Monday, Wednesday, and Friday 12:00 – 12:50 p.m., HCB 0207.

Office Hours: Monday and Wednesday 2:30 – 4:30 p.m., OSB 329 or by appointment.

Course Format: The course is F2F. This class will be taught in person from Aug 23rd to Dec 10th. Students will need to follow the University's current health and safety guidelines. We will not be using Honorlock.

Course Description

Credit Hours: 3

Prerequisite: None

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

- 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.

Additional Resource

The following free online textbook is an additional resource that you might find useful: Introductory Statistics from OpenStax, Print ISBN 1938168208, Digital ISBN 1947172050,

[https://urldefense.com/v3/_http://www.openstax.org/details/introductory-statistics_!!Epnw_ITfSMW4!5YHNLDAM3!SlxwASdTwXWHybrfKLXU4AaxjG5jMbYtn8f4PDiZ4k1O5wWVNqlanA\\$.](https://urldefense.com/v3/_http://www.openstax.org/details/introductory-statistics_!!Epnw_ITfSMW4!5YHNLDAM3!SlxwASdTwXWHybrfKLXU4AaxjG5jMbYtn8f4PDiZ4k1O5wWVNqlanA$.)

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.
- 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 and other recordings

Please note that the recorded lectures and other recordings 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 recorded lectures or other recordings with any other persons outside of this class. Copyrights of the recorded lectures and other recordings 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 μ , forward problems
8. Probability: random process, four rules, probability models, addition rule for mutually exclusive events
9. Random Variables: definition, expected values
10. One-sample inference: obtain and interpret z-intervals, understand statistical testing, carry out and interpret results of z-test, interpret p-value
11. Correlation: what the sign and absolute value of r imply, correlation does not imply cause-and-effect
12. Simple Linear Regression: read scatterplots, given equation make prediction, interpret R-squared

Tentative Pacing Schedule

Week	Dates	Monday	Wednesday	Friday	
1	Aug 23 – Aug 27	Syllabus	Terminology	Terminology	
2	Aug 30 – Sep 3	Sampling	Sampling	Visualization	
3	Sep 6 – Sep 10	Labor Day No class	Visualization	Test 1	
4	Sep 13 – Sep 17	Summary Statistics	Summary Statistics	Summary Statistics	
5	Sep 20 – Sep 24	Summary Statistics	Summary Statistics	Test 2	
6	Sep 27 – Oct 1	Empirical Rule	Normal Distribution	Normal Distribution	
7	Oct 4 – Oct 8	Normal Distribution	Normal Distribution	Central Limit Theorem	
8	Oct 11 – Oct 15	Central Limit Theorem	Central Limit Theorem	Q & A LSQA (online)	
9	Oct 18 – Oct 22	Probability	Probability	Homecoming No class	
10	Oct 25 – Oct 29	Probability	Probability	Random Variables	
11	Nov 1 – Nov 5	Random Variables	Random Variables	Test 3	
12	Nov 8 – Nov 12	One-sample Inference	One-sample Inference	One-sample Inference	
13	Nov 15 – Nov 19	One-sample Inference	One-sample Inference	Test 4	
14	Nov 22 – Nov 26	Correlation	Thanksgiving No class	Thanksgiving No class	
15	Nov 29 – Dec 3	Simple Linear Regression	Simple Linear Regression	Simple Linear Regression (Last day of classes)	
16	Dec 6 – Dec 10	Final Week			Final Exam: Section 0005: Dec 8th (Wednesday) 12:30 p.m. – 2:30 p.m., HCB 0207 Section 0012: Dec 7th (Tuesday) 10:00 a.m. – 12:00 p.m., HCB 0207

Grading

Tests (65%): There will be 4 *pencil-and-paper* tests during the semester. All tests will be held during the regular class meetings.

LSQA (10%): STA1013 has been certified as one of FSU's Liberal Studies Quantitative and Logical Thinking courses. As a requirement, we must administer the appropriate Liberal Studies Quantitative Assessment (LSQA). This will be a common assessment and will be online. The LSQA will be *open-book*. You will have TWO attempts for this assessment.

Final Exam (25%): This will be a CUMULATIVE exam. It will be a *pencil-and-paper* exam as well and will be given in the final week in the regular classroom. If you need to miss the final, you must notify the instructor in advance.

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

Note that:

- You are allowed to bring 1 double-sided sheet of notes to the tests, and up to 4 to the final exam. The sheets must be hand-written.
- Please have your TI-84 Plus or equivalent calculator with you. Any other electronic equipments are NOT allowed during the tests and final exam.
- Collaboration is NOT allowed for the tests, LSQA and final exam.
- 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 assessment. 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+	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		

Your final 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.

Note on Technology-dependent Assessments

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 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.

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 test or the LSQA, please email me immediately so that we can discuss about the make-up for the missed assessment. 5% penalty will be taken if you're absent without a documented/valid reason. 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/sites/g/files/upcbnu321/files/2020-09/Request_to_Reschedule_revised.pdf 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.

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 in class. 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.

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/>), 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.

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>)

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 Dean of Students office 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.

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

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

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/>

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."