

# STA1013-0003(Spring 2020): Statistics through Example

Florida State University, Department of Statistics

Mo/We/Fr 2:30PM - 3:20PM, Room: OSB 108

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Instructor: Seungha Um

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Office Hours: MW 1:30PM-2:20PM, or by appointment.

Office: LOV 359

Course Website: Course website is available through canvas: [canvas.fsu.edu](https://canvas.fsu.edu).

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## Course Description

**Prerequisites:** 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.

## Materials

**Textbook:** No book is required. But *Statistical Reasoning for Everyday Life*, Pearson, Fifth Edition, 2018, by Bennet Briggs Triola is a good source.

**Class notes:** Class notes will be posted on Canvas. **You should either print them before class or have them available on a computer.**

**Calculator:** A calculator of type TI-84 Plus or equivalent is necessary.

## 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 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 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.

## Course Topics

- Terminology/Initial ideas
- Sampling: simple random sample, systematic, stratified, cluster, convenience
- Visualization of data: histograms, stem plots, bar charts, pie charts
- Summary Statistics
- Empirical Rule
- Normal Distribution
- Central Limit Theorem
- Probability: random process, four rules, probability models, addition rule for mutually exclusive events
- Random variable
- 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
- Correlation
- Simple Linear Regression

## Exam Schedule

- Final Exam: Thursday, April 30<sup>th</sup>, 12:30 – 2:30 p.m., OSB 108.

## Grading

- **Quizzes (45%)** : There will be 4 quizzes during the semester. Your lowest quiz grade will be dropped, and the other three will equally worth 15% of your grade.
- **Final Exam (35%)** : There will be one final exam. Final exam will last 2 hours.  
**Final Exam: Thursday, April 30<sup>th</sup>, 12:30 – 2:30 p.m., OSB 108.**
- **LSQA (10%)** : STA 1013 has been certified as meeting FSU's Liberal Studies requirements in the area of Quantitative and Logical Claims. In order to maintain that certification, we must administer the appropriate Liberal Studies Quantitative Assessment (LSQA). It is a common assessment (not the final exam).
- **Attendance (10%)**.
- **Extra credit (5%)** : In each quiz, there will be a bonus problem.
- Assessments that are not taken, and assignments that are not submitted, will receive a grade of zero. When a missed assessment/assignment is made up, the zero will be replaced with the earned grade.

## Grading Scale

Grade cutoffs will be established at the end of the course, but will not be stricter than the following cutoffs.

| Letter | Average | Letter | Average | Letter | Average | Letter | Average | Letter | Average |
|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
|        |         | B+     | ≤ 87%   | C+     | ≤ 77%   | D+     | ≤ 67%   |        |         |
| A      | ≤ 94    | B      | ≤ 83%   | C      | ≤ 73%   | D      | ≤ 63%   |        |         |
| A-     | ≤ 90    | B-     | ≤ 80%   | C-     | ≤ 70%   | D-     | ≤ 60%   | F      | < 60%   |

## Missing Exams

Make-ups will not be given unless the student has an official document for an excused absence; see the University Attendance Policy for more information. No documentation will be accepted any later than one week after the absence. If appropriate, then you will be allowed an extension to the following Friday and will be able to get full credit on the missed work.

## Email

- Please check your @my.fsu.edu email every day.
- Always include your full name, course code and section number when you email us.
- Send test-related questions at least 24 hours before the test is due to begin
- Be aware that email sent from outside the FSU domain may not get through to us, so if you email us and you don't get a response within two days, please try to meet us in person before class, or after class, or during office hours.

## Attendance, Absence and Drop/Withdrawal

- First day attendance is mandatory per university regulations.
- Drop/Withdrawal deadlines are given in the University's academic calendar at [https://registrar.fsu.edu/registration\\_guide/fall/academic\\_calendar/](https://registrar.fsu.edu/registration_guide/fall/academic_calendar/)
- Students shall, upon notifying their instructor by formal self-written-and-signed letter at least one week before the holiday, be excused from class to observe a religious work-restricted holy day of their faith.

## Tentative Pacing Schedule

|         |                 | Mon                      | Wed                      | Fri                      |
|---------|-----------------|--------------------------|--------------------------|--------------------------|
| Week 1  | Jan 6 - Jan 10  | First Day Attendance     | Terminology              | Terminology              |
| Week 2  | Jan 13 - Jan 17 | Sampling                 | Sampling                 | Visualization            |
| Week 3  | Jan 20 - Jan 24 | MLK Jr Day               | Visualization            | Quiz 1                   |
| Week 4  | Jan 27 - Jan 31 | Visualization            | Visualization            | Summary Statistics       |
| Week 5  | Feb 3 - Feb 7   | Summary Statistics       | Summary Statistics       | Quiz 2                   |
| Week 6  | Feb 10 - Feb 14 | Empirical Rule           | Normal Distribution      | Normal Distribution      |
| Week 7  | Feb 17 - Feb 21 | Normal Distribution      | Central Limit Theorem    | Quiz 3                   |
| Week 8  | Feb 24 - Feb 28 | Central Limit Theorem    | Central Limit Theorem    | Central Limit Theorem    |
| Week 9  | Mar 2 - Mar 6   | Probability              | Probability              | LSQA Test                |
| Week 10 | Mar 9 - Mar 13  | Random variable          | Random variable          | One-sample mean          |
|         | Mar 16 - Mar 20 | Spring Break             | Spring Break             | Spring Break             |
| Week 11 | Mar 23 - Mar 27 | One sample mean          | One sample mean          | One sample mean          |
| Week 12 | Mar 30 - Apr 3  | One sample mean          | One Proportion           | Quiz 4                   |
| Week 13 | Apr 6 - Apr 10  | One Proportion           | One Proportion           | Correlation              |
| Week 14 | Apr 13 - Apr 17 | Correlation              | Correlation              | Simple Linear Regression |
| Week 15 | Apr 20 - Apr 24 | Simple Linear Regression | Simple Linear Regression | Final Review             |

## Course Policies

### 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.

### Sexual Misconduct and Title IX Reporting

As an instructor, I am obliged to report all instances of sexual misconduct that I become aware of; 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/>), or University Health Services (<https://uhs.fsu.edu/>).

### 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 take it to the Dean of Arts and Sciences office at 010 LON to get it approved, and
- (iii) bring the approved form back to me *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.

### **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/Academics/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.
3. This can be accomplished by logging in to the AIM system and electing to receive academic accommodations in this class so that an email notification will be sent to the instructor.

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)  
[sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu)  
<http://www.disabilitycenter.fsu.edu/>