



## STA 1013: Statistics Through Example

Fall 2018 – Section 0015

### Course Information

Instructor: Yinpu Li

Email: [yinpu.li@stat.fsu.edu](mailto:yinpu.li@stat.fsu.edu)

Office Hours: Tuesday, 2:00 pm-4:00 pm or by appointment

Office Location: OSB 444

Class Times and Locations: Classes meet Aug 27<sup>th</sup> ~ Dec 7<sup>th</sup>, MWF, 10:10 – 11:00 AM, HCB 207

Grader: Heli Gao

Email: [hg14e@my.fsu.edu](mailto:hg14e@my.fsu.edu)

### Required Course Resources

Textbook: There is no required textbook for this class. I will post notes and relevant materials to Canvas prior to the next class. Print and bring the appropriate notes and materials to the class. **I will not email or post any filled in notes online.**

For your own study, two books are recommended as supplementary material:

*Statistical Reasoning for everyday life, 4<sup>th</sup> ed. by Bennet Briggs Triola.*

*Elementary Statistics, 7<sup>th</sup> ed, by Mario F. Triola*

Calculator: A scientific calculator or graphing calculator is required. Cell phones are not permitted as calculators during exams and quizzes.

Canvas Class Website: Grades, homework, notes, announcements and other pertinent information will be available through this site. You are responsible for assignments and announcements posted on this website, as well as those sent through your FSU email. Please check your FSU email and Canvas daily.

### Course Description

Prerequisite: None

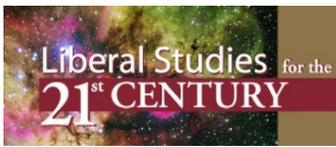
Credit Hours: 3

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 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.
- (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: statistical study process, 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), stem plots (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 variable: 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  $R^2$ .

Tentative Pacing Schedule:

		Mon	Wed	Fri
Week 1	Aug 27 <sup>th</sup> ~Aug 31 <sup>st</sup>	Introduction and Pre-math	Preliminary definitions.	3.1 3.2
Week 2	Sep 3 <sup>rd</sup> ~ Sep 7 <sup>th</sup>	Labor Day. No classes	4.1 4.2	4.3
Week 3	Sep 10 <sup>th</sup> ~Sep 14 <sup>th</sup>	5.1 5.2	5.3	Quiz 1
Week 4	Sep 17 <sup>th</sup> ~Sep 21 <sup>st</sup>	6.1 6.2	6.3	7.1
Week 5	Sep 24 <sup>th</sup> ~Sep 28 <sup>th</sup>	7.2	7.3	7.3
Week 6	Oct 1 <sup>st</sup> ~Oct 5 <sup>th</sup>	7.3	7.3	Review for quiz 2
Week 7	Oct 8 <sup>th</sup> ~Oct 12 <sup>th</sup>	Quiz 2	8.1	8.2
Week 8	Oct 15 <sup>th</sup> ~Oct 19 <sup>th</sup>	8.3	9.1	9.2
Week 9	Oct 22 <sup>nd</sup> ~Oct 26 <sup>th</sup>	9.2	Review for quiz 3(CLT)	Quiz 3(Review)
Week 10	Oct 29 <sup>th</sup> ~Nov 2 <sup>nd</sup>	Quiz 3	9.3	10.1
Week 11	Nov 5 <sup>th</sup> ~Nov 9 <sup>th</sup>	10.1	10.2	10.2
Week 12	Nov 12 <sup>th</sup> ~Nov 16 <sup>th</sup>	Veterans' Day observed. No Classes.	z-score tables	Review for quiz 4
Week 13	Nov 19 <sup>th</sup> ~Nov 23 <sup>rd</sup>	Quiz 4	Thanksgiving. No classes.	
Week 14	Nov 26 <sup>th</sup> ~Nov 30 <sup>th</sup>	10.3	10.3	10.3
Week 15	Dec 3 <sup>rd</sup> ~Dec 7 <sup>th</sup>	10.3	10.3	Review for final



## 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.**

### Grades

Quiz (50%): There will be 4 quizzes during the semester. You could bring one 8.5’’ × 11’’ hand-written single-side cheat sheet and a calculator. If you need to miss an exam, you must notify me by email at least one day before the quiz and provide university approved\* documentation. If you miss a quiz without notifying me or without proper documentation, you will get a zero for the quiz. Quizzes make-ups must be scheduled within one week of the original quiz date.

Tentative quiz schedule:

Quiz 1: Friday, September 14; Quiz 2: Monday, October 8

Quiz 3: Friday, October 26; Quiz 4: Monday, November 19

LSQA(10%): Note that, STA 1013 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). Time length will be about 50 mins.

Final Exam (30%): There will be a (non-cumulative) final exam given at 12:30-2:30 PM Thursday, Dec 13<sup>th</sup> at our usual classroom. At the final exam, you could also bring one 8.5’’ × 11’’ hand-written single-side cheat sheet and a calculator. If you need to miss the final, you must notify me and Radha Bose in advance at the same time.

Attendance/Pop quiz (10%): Attendance will be checked occasionally, or a short pop-quiz will be given during the semester.

Extra Credits (5%): Extra credits could be earned by answering extra credits problems either in quizzes or during courses.

\* includes documented illness, deaths in the family and other documented crises as approved by the Dean of Students office, active military or jury duty, religious work-restricted holy days, and official University activities. Please note that the FSU University Health Services ‘Verification of Visit’ does not constitute a documented absence.

Grades will be posted on Canvas within one week. After a grade is posted the student has one week 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>B+</b>	87-89	<b>C+</b>	77-79	<b>D+</b>	67-69		
<b>A</b>	93-105	<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		



Your raw grade(percentage) will be rounded to the nearest integer to determine your letter grade. And actual letter grades cutoffs may change but no stricter than the above. If you want to appeal your grade, you must contact me within 7 calendar days since the grade is posted, otherwise the grade will be final.

Example:

Student Arron's scores are listed as follows:

Quiz 1: 10/11(Arron gets 10 credits out of 11, which is the full credits for quiz 1)

Quiz 2: 12/12(Arron gets full credits for quiz 2)

Quiz 3: 9/13

Quiz 4: 10/14

LSQA: 90/100(Arron gets 90 out of 100)

Final: 83/100

Attendance: 9/10( Arron misses one of the attendance checks from 10 in total)

Bonus(Extra) Credits: 0/5(Arron fails to give correct answer to the bonus question)

The final grades for A will be calculated as:

$$10+12+9+10+90 \times 10\%+83 \times 30\%+9+0=83.9 \approx 84$$

So, Arron will get a B as final grade!

**Policy Information:**

Make-up Quiz:

- If you miss a quiz, you need to contact me within **TWO** calendar days after the quiz day and explain the situation to take a make-up quiz. The make-up quiz must be taken no later than 7 calendar days since you contact me.
- If you must be absent on a religious holiday, please submit a self-written-and-signed letter at least **ONE WEEK BEFORE** the holiday informing me that you will be absent due to the religious holiday.
- Unexcused absence from a quiz will result in a zero.

Attendance: No attendance is taken past the University mandated first day attendance policy. If you are unable to make it to class, it is your responsibility to get the notes from either me or a classmate, review those notes, and come to my office hours if you have any questions over what you missed. All deadlines are released at the beginning of the semester, so it is up to you to be aware of those and make sure you are caught up by the deadline.

Classroom Conduct: You are expected to act professionally in the classroom. You should arrive on time and prepared for class. If you do arrive late or leave early, please do so in a manner that does not disturb the class.



Email: I will send announcements to your FSU email account via Canvas. You are responsible for all information sent via email. When emailing me regarding this class, put STA 1013 in the subject line, sign your full name and use your FSU email account. I will respond to all email within 2 business days. I do not check work email on weekends/holidays, or after 5pm (ish) on work days.

### **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>.)

### **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.

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/>

### **Syllabus Change Policy**

Except for changes that substantially affect implementation of the grading statement, this syllabus is a guide for the course and is subject to change with advance notice.