

Florida State University
Department of Statistics
STA 2171: Statistics for Biology
Section: 02



Fall 2019, Section 2

Instructor:	James O'Hagan	Time:	Class Times: MW 5:15-6:30PM & F 12:20-1:10PM
Email:	jro18b@my.fsu.edu	Place:	Room MW 110 OSB & F HCB 213
Class TA:	Sudipto Saha	TA email:	ss18eo@my.fsu.edu

Office Hours: Tuesday 3:30-4:30PM, Thursday 3:30-4:30PM, or by appointment in OSB 201G.

Course Information:

- **Prerequisites:** MAC 2311 Calculus I and Biology major status, or departmental approval.
- **Credit Hours:** 4
- **Previous Credit:** No credit is given for STA 2171 if a C- or better has been previously earned in STA 3032 or QMB 3200.

Main References: While we will primarily use course notes that will be available on canvas and during class the following materials are also recommended.

- **Software:** Excel or R (recommended)
- **Textbook:** *Practice of Statistics in the Life Sciences*, 4th Edition, Author: Baldi, Moore, Publisher: Pearson (the third edition would also suffice).
- **Calculator:** TI-84 or equivalent. Phones are prohibited during exams.
- **Course Website:** <https://canvas.fsu.edu/courses/51686>

Course Description: This course provides an introduction to statistics emphasizing applications in Biology. Topics include descriptive statistics, elementary probability, the binomial and normal distributions, confidence intervals and hypothesis tests for means and proportions, correlation and regression, contingency tables and goodness-of-fit tests, analysis of variance and non-parametric tests. The purpose of this course is to prepare students for further study and job preparation in the Biological Sciences including the fields of Medicine, Dentistry, Veterinary Medicine, Zoology, Botany, and other healthcare professions. It will emphasize the understanding of data and interpretation of statistical analyses. It will require students to think of data, and report the results of their analyses, in context.

Course Objectives:

By the end of the course, a successful student should be able to:

1. Analyze and address problems drawn from real world scenarios by applying appropriate mathematical, statistical, logical, and/or computational models or principles.
2. Interpret and evaluate data and information as presented in a variety of modes (such as tables, graphs, and charts), using appropriate technology. They will also be able to clearly communicate a summary of their findings to peers. The above two competencies will be assessed in the Liberal Studies Quantitative Assessment for STA 2171, which includes a written summary of results.
3. Use descriptive statistics and graphical methods to summarize data accurately.
4. Use inferential statistics to make valid judgments based on the data available.
5. Select the appropriate statistical tools to analyze a particular problem.
6. Describe the goals of various statistical methodologies conceptually.
7. Develop a healthy skepticism toward statistical studies and their results based on a sensible consideration of the techniques employed.

Grading Policy: The grading breakdown is as follows; tests (44%), final exam (25%), LSQA (12%), attendance (4%), activities (5%), and homework (10%). While I may adjust final grades based on the performance of the class you are guaranteed the following letter grades if your raw final score is; 92.5 A, 89.5 A-, 86.5 B+, 82.5 B, 79.5 B-, 76.5 C+, 72.5 C, 69.5 C-, 60 D-.

Important Dates:

Classes begin	Aug. 26, 2019
Labor day no class	Sept. 2, 2019
Test 1	Sept. 9, 2019
Test 2	Sept. 30, 2019
Drop Deadline (no grade)	Oct. 11, 2019
Homecoming (no class)	Oct. 19, 2019
LSQA	Oct. 23, 2019
Veterans Day (no class)	Nov. 11, 2019
Test 3	Nov. 13, 2019
Drop Deadline with Dean's Permission	Nov. 15, 2019
Test 4	Dec. 2, 2019
Final Exam	Dec. 11, 2019

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.

Attendance Grading Policy: Attendance will be based on random checks throughout the semester. You will receive a proportion of your attendance score based on these checks. If you have more than eight unexcused absences you will receive a 0 for the attendance portion of your final grade. Activity days can also double as attendance checks.

Activity and Homework Grading Policy: Activities are based on attendance. Homework, is in part based on correctness although I will grade somewhat leniently. Homework dates on the syllabus are tentative

due dates. You will typically be given 1-3 weeks to complete it depending on the homework assignment. Late homework will receive significant point deductions.

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.

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 <http://www.disabilitycenter.fsu.edu/>

Free Tutoring from FSU: On-campus tutoring and writing assistance is available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list of on-campus tutoring options - see <http://ace.fsu.edu/tutoring> or contact tutor@fsu.edu. High-quality tutoring is available by appointment and on a walk-in basis. These services are offered by tutors trained to encourage the highest level of individual academic success while upholding personal academic integrity.

Test/LSQA Makeup Policies: In the instance that you miss a test or the LSQA you will be allowed to make up the assessment so long as you submit documentation within one week after the exam date. Appropriate excuses include all cases covered by the university attendance policy. Not that this does not apply to the final exam.

Regrading Policy: In the event that you feel like your test or homework was graded unfairly you will have up to one week to request a regrade.

Syllabus Policy Changes: 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 Policy: 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/>).

Classroom Policies: In order to avoid distracting other students please follow the following classroom policies in addition to all University policies.

- Silence all phones,.
- Please do not talk or distract others during lecture.

- I reserve the right to assign and reassign seats whenever I see fit.

Final Exam You are allowed two hand-written (two-sided) $8\frac{1}{2} \times 11$ in. note sheets on the final exam. It will be given on Wednesday, December 11th, 5:30 p.m. to 7:30 p.m. in our M/W classroom. University policy prevents me from administering final exams early so I am unable to offer the exam before this date. Mark your calendars now and do not plan on leaving town before the final exam.

Liberal Studies Quantitative and Logical Thinking Requirements: 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 2122 , which includes a written summary of results.

Correspondence: I will do my best to answer emails as soon as I can. However at times it might be 48 hours before I can get back to you. Therefore, if you have a pressing issue please try and contact me with enough lead time to respond to your query.

Tentative Course Outline: The following outline is tentative and subject to change based on the progress of the course and my own judgment. I will notify students of any changes made.

Week	Monday	Wednesday	Friday
1 Aug. 26	Class Intro	Plots/Charts	Summary Stats
2 Sept. 2	No Class	Summary Stats	Empirical Rule
3 Sept. 9	Test 1	Basic Prob	Basic Prob
4 Sept. 16	Binomial Distro	Normal Distro	Normal Distro (HW 1 due)
5 Sept. 23	CLT	CLT	CLT
6 Sept. 30	Test 2	Confidence Intervals	One Sample/Paired Samples
7 Oct. 7	Two Sample Tests	Two Sample Tests	Two Sample Tests
8 Oct. 14	Nonparametric Tests	Nonparametric Tests	No class
9 Oct. 21	Nonparametric Tests (HW2)	LSQA	ANOVA
10 Oct. 28	ANOVA	ANOVA	ANOVA
11 Nov. 4	ANOVA	ANOVA	ANOVA (HW 3)
12 Nov. 11	No Class Veterans Day	Test 3	Correlation/SLR
13 Nov. 18	SLR	SLR Inference	SLR Inference
14 Nov. 25	MLR Inference (HW 4)	No Class	No Class
15 Dec. 2	Test 4	Review	Review