



The Florida State University
Department of Statistics
STA 2171 – Section 004
Statistics for Biology
Spring 2019

Class Location: HCB 207
Class Time: 11:00 p.m. – 12:15 p.m. Tuesday and Thursday

Class Location: OSB 108
Class Time: 11:15 a.m. – 12:05 a.m. Friday

Instructor Information:

Instructor: Carlos J. Soto

Email: cjs15g@my.fsu.edu

Work phone: (502) 354-STAT(7828)

Office: OSB 104F

Office hours: Wednesday 2:00-3:00 p.m. or by appointment.

Course Description

Website: LMS (university learning management System, currently Canvas)

Prerequisite: MAC 2311 Calculus I and Biology major status, or departmental approval.

Credit Hours: 4

Special Note : No credit is given for STA 2171 if a grade of "C-" or better is earned in STA3032 or QMB 3200

Required Materials:

- Textbook: Practice of Statistics in the Life Sciences, Fourth Edition 2018, by Baldi Moore, publisher Macmillan.
- A TI-84 or equivalent is **REQUIRED**. If you wish to use your own calculator, make sure to check with me that it will be able to do the required calculations. Also, if you use a different type of calculator, you will be responsible for learning how to perform the required calculations. They will be used on every exam and often used during class, so bring your calculator to every class. Cell phones are not an acceptable calculator for tests or quizzes.
- R software (Only highly recommended).

Course Content:

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 field of Biological Sciences including Medicine, Dentistry, other healthcare professions, Veterinary Medicine, Zoology and Botany. It will emphasize 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, students will demonstrate the ability 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.

Tentative Schedule:

The following schedule is tentative. It is subject to change but you will be informed of all changes

Week Starting with	Tuesday	Thursday	Friday
Jan 6	Introduction	Charts	Summary stats
Jan 13	Summary Stats	Summary stats	Empirical rule
Jan 20	Probability	Probability	Binomial
Jan 27	Binomial Distribution	Normal Distribution	Normal Distribution
Feb 3	Central Limit Theorem	Central Limit Theorem	CLT
Feb 10	Central Limit Theorem	Two Sample tests	Midterm Exam I
Feb 17	Paired Samples	Paired Samples	Paired Samples
Feb 24	Nonparametric tests	Nonparametric tests	Nonparametric tests
Mar 3	Nonparametric tests	Nonparametric tests	Assessment
Mar 10	Power and Errors	ANOVA	ANOVA
Mar 17	Spring Break		
Mar 24	ANOVA	ANOVA	Midterm Exam II
Mar 31	ANOVA	ANOVA	ANOVA
Apr 7	Correlation	Correlation	Linear Regression
Apr 14	Linear Regression	Linear Regression	Multiple Linear
Apr 21	Multiple Linear Regression	Multiple Regression	Review
Apr 28	Finals Exam Week		

Important dates:

- Jan. 11: Drop/Add ends at 11:59 p.m.
- May 2: Final Exam between 7:30 a.m.-9:30 a.m.

Grading Scale (minimum cutoffs):

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
92	90	87	83	80	77	73	70	67	63	60

Missing Grades:

It is the responsibility of the student to make sure that their grades are correctly inputted into Blackboard. I will do my best to post all the grades correctly, but in the case of a missing or incorrect grade, let me know within one week of the grades being posted. I cannot promise to resolve a missing grade issue if it is reported more than one week after the grades are entered.

Requesting a Re-Grade:

If you disagree with the grade you received on an exam, homework, or activity, you need to contact me within one week of the grade being posted. Otherwise, the grade you received will be used to compute your final grade.

Grading:

Attendance (4%)

You are expected to show up to every class on time. I will take attendance at random days. If you are absent for 4 or more unexcused days, you will receive a 0 for your attendance score. Arriving 15 minutes late is considered an absence. While attendance is generally posted, other factors include, for instance, a 0 on a worksheet implies an absence. You are responsible for the material you missed while absent.

Reading (1%)

Every week you will be given reading assignments from either the book or my notes. Each week you will sign a sheet stating if you completed the reading assignment.

Course Assessment (5%) University mandated assessment on Paired data.

Group Activities (15%)

There will be in-class activities throughout the semester, roughly between 5 and 10. You can complete these with a partner or individually. If you are absent for a group activity, you may make it up for half credit and the absence will be logged even if attendance was not taken that day. It must however be turned in before the next class period which means you'd have to email me the day you're absent.

Homework (15%)

There will be approximately 5 homework assignments. Since you'll be given roughly two weeks to do an assignment there will be no late homework accepted. If you miss class the day as assignment is due emailing the homework is fine as long as it's accompanied with a valid excuse. If you use spiral notebook paper, remove the messy ends or lose 5% on that assignment. Homework must be stapled (if your assignment is more than one page) prior to class or lose 5% on that assignment.

Midterm Exam (15%)

There will be two midterm exams. The exam will cover all the material up the point at which the exam is given. You are allowed one hand-written (two-sided) 8 ½ x 11 in. note sheet on the midterm exam. A make-up exam will be given only under the circumstances documented by the university's excused absence policy. If you are going to miss an exam you must notify me in advance and provide proper documentation. You must make up a midterm within one week. For more details, see the attendance policy.

Cumulative Final Exam (30%)

You are allowed one hand-written (two-sided) 8 ½ x 11 in. note sheet on the final exam. **It will be given on Thursday, May 2rd, 7:30 a.m. to 9:30 a.m. in our T/R classroom.** There will be no early finals. No exceptions! Mark your calendars now and do not plan on leaving town before the final exam. If you have already made reservations, revise them now.

Classroom Policies:

The classroom environment is an important factor for effective learning. In order to not distract or cause interruption in the attention of other students, please follow the following policies, in addition to all University policies.

- No food or drink is allowed in the classroom.
- Silence all phones, putting your phone on vibrate is not equivalent.
- Please do not talk or distract others during lecture. They are here to learn, and if you do not want to learn, then you do not have to be here.
- Please show respect for everyone in the classroom. I assure you that I will give you the same measure of respect that I expect from you.
- There is no such thing as a stupid question. Please ask your questions no matter how "stupid" you may think they are.
- I reserve the right to assign and reassign seats whenever I see fit.

Religious Holidays:

Absences related to religious holidays need to be emailed to me during the first two weeks of class.

(1) 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.

(2) 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>.)

(3) 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/>

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.

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.

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 communities through a broad and critical engagement with the world in which they live and work. Liberal Studies offers a transformative experience; this course has been approved as meeting the Liberal Studies requirements and thus 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 computation requirement the student must earn a "C-" or better in the course.