

Department of Statistics
Florida State University
Spring 2019



STA 2171- Statistics in Biology- Section 2

Class Times: MW 5:15 PM 6:30 PM OSB 0110
F 12:20 PM 1:10 PM OSB 0110

Instructor: Younghwan Cho

Office Location: Building: OSB
Room: 209H

Email: ybc17@my.fsu.edu

Office Hours:
Wednesday- 1pm- 2pm or
by appointment if necessary

Grader: Austin King (ak16u@my.fsu.edu)

Office Hours: Monday 1pm-2pm 441 Dirac

Course Materials

Textbook (optional) : Samuels, Myra L., and Jeffrey A. Witmer, *Statistics for the Life Sciences*, 5th Edition, 2016, ISBN-10: 0-321-98958-9, ISBN-13: 978-0-321-98958-1

Class notes: Class notes will be posted on Canvas. (However, correction or modification to the lecture notes can be made during the lecture)

Calculator: TI- 84 plus or equivalent is required.

University Learning Management System: Grades, announcements and other important information will be post on the Canvas. You are responsible for assignments and announcements posted on this website, as well as those sent through your FSU email. Check your FSU mail every day.

COURSE DESCRIPTION:

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 "C-" or better has been previously earned in STA 3032 or QMB 3200.

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

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) 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.

Grade Composition

Quizzes (40%) – There will be 3 Quizzes covering material from preceding lectures, of which the lowest grade including the missed one will be dropped. Quizzes are not cumulative. A two-sided 8.5"x11" cheat sheet is allowed, and TI- 84 plus calculator is required. **Quiz 1 on Feb 4, Quiz 2 on Mar 4, Quiz 3 on Apr 8.**

Final Exam (20%) – There will be cumulative final exam. Two two-sided 8.5"x11" cheat sheets are allowed, and TI- 84 plus calculator is required. **On May 1st Wednesday 5:30 - 7:30 p.m at OSB 110**

Research Project (15%) + peer review (5%) – Form a group of 2 or 3 beginning of the semester. Choose a specific topic related to **simple linear regression or multivariate linear regression** and collect the data (in csv or excel file) from online source. Choose a software, default software for this course is R and R-studio (recommended), to create a written report. Format and instructions will be announced. Brief instructions on how to use R will be given throughout the semester. However, students should learn the details on usage of the software on their own. **Due: Apr. 19, 2019, late submission is not allowed. Peer review on Apr. 19. Each group should submit strictly independent work.**

Research Project presentation (5%) – Each group will be granted up to 5 minutes to present their project during 4/22 – 4/26. Details and schedule will be announced.

Preliminary report for the project (5%) – Create a written preliminary report for the research project. Format and instructions will be announced. **Due: Apr. 5, 2019, late submission is not allowed.**

LSQA (10%) – LSQA will be given on **Apr. 17**, and will count as 10% of your overall grade. Exact coverage will be announced in at least one week’s notice. A two-sided 8.5”x11” cheat sheet is allowed, and TI- 84 plus calculator is required.

Pop-quiz (extra 10%) – random pop-quizzes will be taken during the lecture, which will count as extra credit. You will get half the point even if you miss the answer.

Grade Appeals

During the term, if you believe that your instructor or grader improperly graded a paper go to your Instructors office hours to see your paper and discuss it with them within 7 days after the grades are posted online.

Grade Breakdown

Letter	Num. Grade	Letter	Num. Grade	Letter	Num. Grade		Letter	Num. Grade	Letter	Num. Grade
		B+	≤87, 90<	C+	≤77, 80<		D+	≤67, 70<	F	<60
A	≥93	B	≤83, 87<	C	≤73, 77<		D	≤63, 67<		
A-	≤90, 93<	B-	≤80, 83<	C-	≤70, 73<		D-	≤60, 63<		

Policies for Make-Up

No make-ups are allowed in this course. In the event that you miss exams or LSQA because of circumstances beyond your control, which may include medical illness, deaths in family, legal issues, etc., you need to consult with me at least in 7 days from the event, or you will get the grade of 0.

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)
sdr@admin.fsu.edu
<http://www.disabilitycenter.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.

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/>).

Classroom policies

No food or drinks are allowed in the classroom.

Turn off all audible alarms (cell phones, pagers, calculators, watches etc.)

Come to the class and leave the class on time. Opening and closing the classroom door in the middle of a class cause distraction to the students and the instructor.

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.

Tentative pacing schedule (can change)

1/7 – 1/11	Introduction	Summary statistics	Summary statistics
1/14 – 1/18	Probability	Probability	Random variable
1/21 – 1/25	No class	Random variable	Random variable
1/28 – 2/1	Binomial dist.	Binomial dist.	Normal dist.
2/4 – 2/8	Quiz 1	Normal dist.	Central limit Thm
2/11 – 2/15	Central limit Thm	Confidence interval	Confidence interval
2/18 – 2/22	Hypothesis test	Hypothesis test	Paired t-test
2/25 – 3/1	Paired t-test	Linear regression	Linear regression
3/4 – 3/8	Quiz 2	Multivariate linear regression	Multivariate linear regression
3/11 – 3/15	Chi-square test	Chi-square test	One-way anova
3/18 – 3/22	No class	No class	No class
3/25 – 3/29	One-way anova	Two-way anova	Two-way anova
4/1 – 4/5	Non-parametric test	One-proportion z-test and interval	Due for Preliminary report.
4/8 – 4/12	Quiz 3	One-proportion z-test	One-proportion z-test
4/15 – 4/19	Multiple Comparisons: Tukey range test	LSQA	Due for research project. Peer review.
4/22 – 4/26	Project presentation	Project presentation	TBA
Finals week	Final exam on May 1st Wednesday 5:30 - 7:30 p.m osb110		

