

STA 2171 – Statistics for Biology, Section 03
Florida State University – Department of Statistics
Fall 2017



Class Time and Location:

- Monday/Wednesday 8:00-9:15am in HCB 208
- Friday 8:00-8:50am in HCB 214

Instructor: Thomas Johansen

Email: t.johansen@stat.fsu.edu

Office: OSB 209H

Office Hours: Wednesday 11:00am-12:00pm, Friday 9:00-9:50am

Grader: Ning Wang

Required Materials:

- Samuels, Myra L., Jeffrey A. Witmer, and Andrew Schaffner, *Statistics for the Life Sciences*, 5th Edition, 2016, ISBN-10: 0-321-98958-9, ISBN-13: 978-0-321-98958-1.
- Calculator (TI-83 or TI-84 is strongly encouraged)

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:

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.

Grade Structure:

- **Quizzes (50%)** – There will be 6 quizzes during the semester. Your lowest quiz grade will be dropped, making each quiz worth 10% of your grade. There is one class day set aside for making up one missed quiz (see make-up policies below).
- **Activities (15%)** – There will be 5 activities covering concepts from preceding lectures throughout the semester. These activities will be done in small groups during certain Friday recitations. These will not be graded for accuracy. Students will receive full credit if they are present and participating, half credit if present and not participating and no credit if absent. Each of the 5 activities will count as 3% of overall grade. Activities can be made up during office hours (see make-up policies below).
- **Attendance (5%)** – There will be 5 random attendance checks throughout the semester. Each attendance check will be 1% of your overall grade.
- **Homework (5%)** – Homework problems will be given each week to help you practice the material taught during lecture. It will be collected on Fridays and graded on completion.
- **Final Exam (25%)** – The final exam will be administered on December 11th. The exam will be cumulative.

Final Grades:

		87-89	B+	77-79	C+	67-69	D+	0-59	F
93+	A	83-86	B	73-76	C	63-66	D		
90-92	A-	80-82	B-	70-72	C-	60-62	D-		

Policies for Make-Up Work:

There will be one quiz make-up day on December 8th. A quiz that has not yet been taken can be made up on that day. Quiz retakes are not allowed. In the event that you miss more than two quizzes or cannot make up quizzes because of circumstances beyond your control, which may include medical illness, deaths in family, legal issues, etc., the instructor will make necessary arrangements to facilitate completion of quizzes once a suitable, timely, and acceptable written excuse is submitted.

One unexcused activity can be made up during office hours. An unexcused activity is one in which documentation for a valid reason for the absence was not received by the instructor within two weeks of the absence. Any activities for excused absences may be made up during office hours, as long as documentation is received with two weeks of the absence.

Grading Appeal Policy:

If you wish to appeal an individual quiz grade, please contact the instructor within one week that the grade is posted on Blackboard. If no complaints are voiced within that time frame, it is assumed that the grade is accepted.

Classroom Policies:

The classroom environment is an important factor for effective learning. To avoid distractions and disruptions during class, please follow the following policies, in addition to all University policies:

- No food or drink is allowed in the classroom
- Silence all phones (not on vibrate)
- Please do not talk or distract others during lecture.
- Please show respect for everyone in the classroom.
- The instructor reserves the right to assign and reassign seats if needed

Other Expectations and Policies:

- You are expected to be at every class meeting. First-day attendance will be taken electronically via the ULMS, so you must be in class on the first day to continue taking the course
- Drop and Withdrawal deadlines are given in the University's academic calendar at http://registrar.fsu.edu/registration_guide/fall/academic_calendar/
- If you miss class, you are expected to keep up-to-date with the lessons, activities, and announcements by getting in touch with a classmate or with the instructor, and by reading the Class Log on the course site
- Excused absences must be discussed with instructor before the missed class period. Emergencies will be accommodated as well. See University attendance policy below for what is considered and excused absence.
- **YOU WILL BE ALLOWED ABSOLUTELY NO MAKE-UPS, NO EXTRA CREDIT ASSIGNMENTS, AND IN GENERAL, NO OPPORTUNITIES FOR GRADE IMPROVEMENT AFTER THE LAST DAY OF CLASS, SO PLEASE DO YOUR BEST DURING THE TERM.**

Tentative Pacing Schedule:

Dates	Monday	Wednesday	Friday
8/28 – 9/01	Introduction, Sampling	Graphs, Summary Statistics	Activity
9/04 – 9/08	Labor Day No Class	Summary Statistics	Quiz
9/11 – 9/15	Empirical Rule	Normal Distributions	Activity
9/18 – 9/22	Normal Distributions	Central Limit Theorem	Quiz
9/25 – 9/29	Probability	Probability	Activity
10/02 – 10/06	Binomial Distributions	Binomial Distributions	Quiz
10/09 – 10/13	Hypothesis Testing	Two-sample Test	Activity
10/16 – 10/20	One proportion test	One-Way ANOVA	Quiz
10/23 – 10/27	One-Way ANOVA	Two-Way ANOVA	Activity
10/30 – 11/03	Two-Way ANOVA	Multiple Comparisons	Quiz
11/06 – 11/10	Correlation, Simple Linear Regression	Simple Linear Regression	Veteran's Day No Class
11/13 – 11/17	Simple Linear Regression	Multiple Linear Regression	Quiz
11/20 – 11/24	Review	Thanksgiving	Break
11/27 – 12/01	Chi-square Goodness of Fit Test	Chi-square Test of Independence	Activity
12/04 – 12/08	Nonparametric Tests	Final Exam Review	Make-up Quizzes
12/11 – 12/15	Final Exam		

LIBERAL STUDIES FOR THE 21st CENTURY:

Quantitative and Logical Thinking

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 thus offers a transformative experience. This course has been approved as meeting the Liberal Studies requirements for Quantitative and Logical Thinking 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.

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>.)

(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/>

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.