

Spring 2022

Department of Statistics, Florida State University

Main office 214 OSB, phone 850-644-3218

STA 2171: Statistics for Biology

Spring 2022 – Section 0004

Course Information

Class Times and Location: MoWe 4:50PM - 6:05PM OSB 0108; Fr 9:20AM - 10:10AM HCB 0205

Meeting Dates: January 5th, 2022 ~ April 22nd (15 weeks + Spring Break)

Lecture Delivery Mode: F2F

Course website: <https://canvas.fsu.edu>

Please turn on the course notifications in Canvas by going to Account/Notifications and selecting the Notify immediately option for all of the items under Course Activities.

Please check your FSU email and the course announcements every day.

We will not use Honorlock.

Instructor Information

Name: Linxi Meng

Email: lm16e@fsu.edu

You may expect a response from me within two work days in Fall/Spring.

Office: OSB 324

Office Hours: Live session on Zoom every Friday, 1:30 PM - 2:30 PM – *see the Zoom link in the Navigation Menu on the left when you enter the course on Canvas*, or by appointment

Grader Information

Name: Cheng Long

Email: c118t@my.fsu.edu

Office Hours: Live session on Zoom every Tuesday, 12:00 PM – 1:00 PM – *see the Zoom link in the Navigation Menu on the left when you enter the course on Canvas*, or by appointment

Course Description

Credit Hours: 4

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



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.

Learning Objectives

This course has been approved to meet FSU's Liberal Studies Quantitative and Logical Thinking requirements and helps 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 this course, students will:

- (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 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.

Required Course Resources

A personal Computer, reliable internet connection, and Chrome or Firefox browser.



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Class notes: A textbook is not required for this class. However, you will need to read each set of *completely filled in* class notes carefully after we cover them in lecture and before the next assessment. We will fill in the class notes during lectures.

Calculator: TI-84 Plus or equivalent, or a free 90-day trial version of the TI Emulator downloadable from [https://urldefense.com/v3/https://education.ti.com/en/software/details/en/49ec565fc6f3417d87f54ca07a531acd/sda-ti-smartview-ce-ti-84-plus-family_!!Epnw_ITfSMW4!_JN3zzKciqT6xURcjNRTbSghQ8NqnDtUjP4TOpMN7C2nEVigUbOU3oPCGexJ0g9YXQ\\$](https://urldefense.com/v3/https://education.ti.com/en/software/details/en/49ec565fc6f3417d87f54ca07a531acd/sda-ti-smartview-ce-ti-84-plus-family_!!Epnw_ITfSMW4!_JN3zzKciqT6xURcjNRTbSghQ8NqnDtUjP4TOpMN7C2nEVigUbOU3oPCGexJ0g9YXQ$)

We will teach you how to use a TI-84 series calculator, but we cannot promise to be able to help with any other type of calculator.

Canvas Class Website: Grades, assessments, 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 note that the materials provided by the instructor were put together for your individual use only. While you may share these materials with classmates, we ask that you do not share them with third parties who are not enrolled in this class. If you seek help outside of class, you may, of course, allow your helper to see the materials, but please do not allow them to make copies or in any other way take our material. We appreciate your co-operation in protecting our material. Thank you!

Additional Resource

- The following free online textbook is an additional resource that you might find useful: *Introductory Statistics* from OpenStax, Print ISBN 1938168208, Digital ISBN 1947172050, www.openstax.org/details/introductory-statistics.

Important dates

- First Day Attendance: Please complete the “First-day Attendance” quiz on canvas by Jan 5th, 7pm, otherwise you will be dropped from the class automatically.
- Drop/Add ends at 11:59pm Jan 10th.
- Quizzes, LSQA and Final Exam: Please see details in Tentative Pacing Schedule.
- Holidays: Martin Luther King, Jr. Day (Jan 17th); Spring Break (Mar 14th – Mar 18th).
- The last Day of Classes: Apr 22nd. The last day of class is your absolute deadline for contact, document submission and make-up of all assessments barring the final exam.



Assessments & Grading

The Academic Honor Policy applies to all graded material in this class. Students are expected to follow the Academic Honor Policy when working on all graded material.

Assessment	Count	Weight	Total Weight
Quizzes	4	12.5%	50%
Homework	8	2.5%	20%
Liberal Studies Quantitative Assessment (LSQA)	1	10%	10%
Final Exam	1	20%	20%
Total			100%

Due dates are given on the Tentative Pacing Schedule.

- Quizzes 50%
 - There will be four quizzes covering different topics. The exercises in Activity handout are helpful for quizzes. I highly recommend you to attend Activity classes.
 - The quizzes will be taken and submitted on Canvas.
 - Quizzes will be “open-book” which means that the following resources may be used during quizzes: class notes, extra exercises, personal notes (these are notes that you can take while preparing/studying for quizzes), textbooks.
 - **Collaboration are not permitted.** Resources that **may not** be used during quizzes: people (including classmates etc.), the internet.
 - Each quiz may maximally have two attempts. The highest score will be kept.
 - Each quiz will have a 24-hour time frame in which they will be available to be taken on Canvas. Each quiz will be timed for approximately 2 hours per attempt.
- Homework 20%
 - There will be 8 homework throughout the semester.
 - The homework will be taken and submitted on Canvas.
 - **Collaborations are permitted.** Each homework has unlimited attempts. The highest score will be kept.
- Liberal Studies Quantitative Assessment (LSQA) 10%
 - STA 2171 have been certified as one of FSU’s Liberal Studies Quantitative and Logical Thinking courses. As a requirement, we must administer the appropriate Liberal Studies Quantitative Assessment (LSQA) during the semester. This will be a common assessment (not final exam).



- All the guidelines mentioned above for Quizzes, except the first bullet point, also apply to the LSQA Quiz. LSQA will be timed for approximately 1 hour per attempt.
- Final Exam 20%
 - There will be a (cumulative) final exam.
 - All the guidelines mentioned above for Quizzes, except the first bullet point, also apply to Final exam.
 - If you need to miss the final, you must notify the instructor as soon as possible. There should be absolutely no late submission for Final Exam.

Note:

- We will allow 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. Assessments that are not submitted will receive a grade of zero. When a makeup is submitted, the zero will be replaced with the earned grade.
- Note on Technology-dependent Assessments: This course is heavily technology-dependent. While we will do our best to work with you on technology issues, please be aware that if you take an assessment but we can find absolutely no record of the fact, then we will not be able to give you credit for it. Please **DO NOT USE SAFARI** when you take assessments on Canvas – **please use Chrome or Firefox.**

Overall Course Grade

Please ignore the grade totals or averages that you may see on the course website; they are not correct. In this class, we only store and display individual assessment grades on the course website, we do not do grade calculations there. Your letter grade will be selected from the table below after rounding the overall numerical course grade UP to the next higher whole number.

FSU does not award A+	B+	87-89	C+	77-79	D+	67-69		
A	93-100	B	83-86	C	73-76	D	63-66	F 0-59
A-	90-92	B-	80-82	C-	70-72	D-	60-62	

Course Policy

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.

**Recorded Lectures Policy:**

Please note that the recorded lectures are the property of Florida State University and are made available only to the students enrolled in this class. Students are not permitted to share the recorded lectures with any other persons outside of this class. Copyrights of the recorded lectures are reserved by the instructor and Florida State University.

Grade Appeal Policy:

After a grade is posted, you have ONE WEEK to request a grade change. After a grade has been posted for one week, no grade changes will be made. If you believe that a correct answer was counted as incorrect on a quiz/exam, [please email grader about it within ONE WEEK after the grade has been made available on Canvas](#). If it turns out that your answer was correct, you will be given credit for it.

Make-up Policy:

- Make-ups are for being unable to submit one or more attempts for an assessment during its availability due to excused absences*. 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. Make-ups will not be given due to undesired performance on an assessment.
- **If you are unable to submit one or more attempts for an assessment during its availability, then please email me immediately (without contact deadline).** You will have until Friday of the following week to make up the missed assessment unless you have a documented reason for being unable to do so. **You only have TWO chances to make up for the missed assessments without providing documentation, but you must provide documentation for all further make-up opportunities.** If you do not complete a make-up according to the above guidelines, then the missed assessment will receive a grade of zero.

No make-ups will be given after the Last Day of Classes. If you are unable to submit the Final Exam during its availability, then you must email me immediately.

**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.*

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 and follow the instructions on the “Request to Reschedule a Final Examination” form at

https://artsandsciences.fsu.edu/sites/g/files/upcbnu321/files/2022-01/Request_to_Reschedule_01032022.pdf.

- (iii) The form needs to be submitted to the College of Arts and Sciences before 5pm on 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.

Receiving a grade of “Incomplete”:

A request for a grade of “Incomplete” will

~ NOT be granted if you have completed the coursework, including the final exam and excluding the allowable absences.

~ be granted only if both of the following conditions are satisfied:

- (1) the only assessment that you have yet to take is the final exam, and (2) your overall average excluding the final exam is a passing grade (70% or above).

Attendance, Absence And Drop/Withdrawal:

- Drop and Withdrawal deadlines are given in the University’s academic calendar at <https://registrar.fsu.edu/calendar/>.
- [First-day attendance](#) will be taken electronically on the course website.
- You are expected to adhere to all assessment deadlines.
- Lack of future planning, or mismanagement of time and other resources, are not acceptable reasons for missing assessment deadlines.
- Bear in mind that the opportunities presented in this class are made equally available to all students in the class and it is up to each individual to make the most of these opportunities.
- In the interests of fairness, we will not do for one student what we cannot do for all students who are likely to request the same.
- Documentation for missing assessment deadlines will not be accepted after the Last Day of Class.

Email and Communication:

- Please check the Class Log on our STA2171 course site on Canvas every day to keep up with what happens in class, especially the announcements part. Please turn on the applicable notification settings on your Canvas course site so that you don’t miss anything.
- We will communicate with you by sending emails to your @my.fsu.edu account and posting announcements on the course website. [Please check your FSU email and the Canvas announcements every day.](#)
- Please refer to Syllabus and other uploaded documents related to this course first whenever you have questions.
- If you email me, please send from your @my.fsu.edu account. **Other emails address will not get a response.**
- Always include your name and section number when you email to the instructor.
- Send assessment-related questions at least 24 hours before the assessment is due, otherwise you may not get a response.

**Public Health Protocols:**

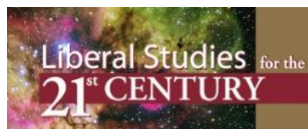
In our classroom, I will expect everyone to wear a proper, well-fitting mask. As our President has informed the university community, FSU expects everyone on campus to use face-coverings. In regions where virus rates are high, the CDC recommends that even vaccinated individuals wear masks in public indoor spaces, like classrooms, especially where social distancing is not possible. Florida infection and hospitalization rates are greater now than they were at the height of the 2020 surge due to the Delta variant, a more infectious and easily transmissible version of the COVID-19 virus. The best way to protect against serious illness is to be fully vaccinated, but not everyone among us can be. Because the Delta variant can infect even vaccinated individuals and can be spread by them to others, it poses a special threat to members of the community with underlying health conditions and children at home who are too young for vaccination.

For these reasons, FSU expects each member of the community to comply with the public health protocols our President set forth on August 9, 2021, including (1) wearing masks in public indoor spaces, (2) getting fully vaccinated, (3) being tested for the virus if you have symptoms, and (4) staying home and away from others if you are sick. Please remember that you should NOT attend class in person if you have tested positive for COVID-19 or are quarantining after exposure. Finally, please bear in mind that the COVID-19 situation is fast-moving, and that university guidance on the issue may change at any time.

Classes Subject to HB233 Recording:

In this class, consistent with state law and university policy, students are permitted to make recordings of class lectures for personal use only. As noted, sharing, posting, or publishing classroom recordings may subject you to honor code violations and legal penalties associated with theft of intellectual property and violations of other state law. Moreover, students and educators have expressed concern that recording classroom activities may negatively impact the learning experience for others, especially in classes that involve questions, discussion, or participation. To protect a learning environment in which everyone feels free to experiment with ideas, we ask you refrain from recording in ways that could make others feel reluctant to ask questions, explore new ideas, or otherwise participate in class. Students must monitor their recording so that they do not include participation by other students without permission. Students with disabilities will continue to have appropriate accommodations for recordings as established by the Office of Accessibility Services.

Confidential Campus Resources:



Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

<p>Victim Advocate Program University Center A, Rm. 4100 (850) 644-7161 Available 24/7/365 Office Hours: M-F 8-5 https://dsst.fsu.edu/vap</p>	<p>Counseling and Psychological Services Askew Student Life Center, 2nd floor 942 Learning Way (850) 644-8255 https://counseling.fsu.edu/</p>	<p>University Health Services Health and Wellness Center (850) 644-6230 https://uhs.fsu.edu/</p>
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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.

Drop and Withdrawal deadlines are given in the University’s academic calendar at <https://registrar.fsu.edu/calendar/>.

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>)

Academic Success:

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Department of Student Support and Transitions to learn more.

Sexual Misconduct and Title IX Reporting:

As an instructor, I am obliged to report all instances of sexual misconduct that I become aware of to the University’s Title IX Director; 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/>), University Health Services (<https://uhs.fsu.edu/>), or pastoral counselors.

Americans With Disabilities Act:

Florida State University (FSU) values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. FSU is committed to providing reasonable accommodations for all persons with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

To receive academic accommodations, a student:

- (1) must register with and provide documentation to the Office of Accessibility Services (OAS);
- (2) must provide a letter from OAS to the instructor indicating the need for accommodation and what type;
- (3) should communicate with the instructor, as needed, to discuss recommended accommodations. A request for a meeting may be initiated by the student or the instructor.

Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from the Office of Accessibility Services 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 Office of Accessibility Services

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

oas@fsu.edu

<https://dsst.fsu.edu/oas>

**Tentative Pacing Schedule:**

Week	Monday	Wednesday	Friday
1		Introduction Jan 5	Graphs Jan 7
2	Summary Statistics Jan 10	Summary Statistics Jan 12	Activity 1 Jan 14
3	Martin Luther King, Jr. Day (No Class) Jan 17	Probability (Homework 1 due) Jan 19	Activity 2 (Quiz 1 open) Jan 21
4	Probability (Quiz 1 due) Jan 24	Random Variables Jan 26	Activity 3 Jan 28
5	Binomial Distribution (Homework 2 due) Jan 31	Binomial Distribution Feb 2	Activity 4 Feb 4
6	Normal Distribution (Homework 3 due) Feb 7	Normal Distribution Feb 9	Activity 5 (Quiz 2 open) Feb 11
7	Central Limit Theorem (Quiz 2 due) Feb 14	Central Limit Theorem Feb 16	Activity 6 Feb 18
8	Confidence Interval (Homework 4 due) Feb 21	Hypothesis Tests Feb 23	Activity 7 Feb 25
9	Hypothesis Tests (Homework 5 due) Feb 28	Hypothesis Tests Mar 2	Activity 8 Mar 4
10	Nonparametric Test (Homework 6 due) Mar 7	Nonparametric Test Mar 9	LSQA Mar 11
11	Spring Break (No Class) Mar 14	Spring Break (No Class) Mar 16	Spring Break (No Class) Mar 18
12	One-way ANOVA Mar 21	One-way ANOVA Mar 23	Activity 9 (Quiz 3 open) Mar 25
13	Two-way ANOVA (Quiz 3 due) Mar 28	Two-way ANOVA Mar 30	Activity 10 Apr 1
14	Chi-square Tests (Homework 7 due) Apr 4	Chi-square Tests Apr 6	Activity 11 Apr 8
15	Simple Linear Regression (Homework 8 due) Apr 11	Simple Linear Regression Apr 13	Activity 12 (Quiz 4 open) Apr 15



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16	Multiple Linear Regression (Quiz 4 due) Apr 18	Multiple Linear Regression Apr 20	Final Exam Review Apr 22
17	Final Exam Apr 25		