

	Department of Statistics Main Office 214 OSB Phone 850-644-3218	<b>INTRODUCTION TO APPLIED STATISTICS</b> STA 2122 Sections 0001-0013 SPRING 2023, 3 credit hours FACE-TO-FACE FORMAT Jan 9 – Apr 28 Course website: <a href="https://canvas.fsu.edu">https://canvas.fsu.edu</a>
	FSU Police Non-emergency 850-644-1234 <b>Emergency 911</b>	

<p><b>Instructor:</b> Ms. Radha Bose  <b>Email:</b> <a href="mailto:rbose@fsu.edu">rbose@fsu.edu</a>  <b>Office Hours:</b>          MON 4:00-5:00pm in-person in 325 OSB          TUE 4:00-5:00pm on Zoom,  <a href="https://fsu.zoom.us/j/94368224950">https://fsu.zoom.us/j/94368224950</a>.</p> <p><b>Canvas Support</b>          Email: <a href="mailto:canvas@fsu.edu">canvas@fsu.edu</a> , Phone: 850-644-8004          Website: <a href="https://support.canvas.fsu.edu/home/">https://support.canvas.fsu.edu/home/</a>          Hours: 8am-5pm, Mon-Fri</p>	<p><b>Lectures:</b> MonWed 12:00-12:50pm HCB101  <b>Friday Recitations:</b> listed on a later page.</p> <p>Students will need to follow the University's current health and safety guidelines when they attend class.</p> <p>Classes will not be recorded for future viewing.</p> <p>We will not use Honorlock.</p>
<p>Teaching Assistant (TA) names, email addresses, office hours and assigned sections are in the Syllabus module on the course Canvas. TA office hours will begin in the second week of classes.</p>	
<p>All Teaching Assistants who have been assigned to work with the instructor of this class will have access to your grades and academic accommodations information since it is not possible for the instructor alone to perform all of the duties related to grading and the provision of academic accommodations.</p>	
<p>For each class period, if no students show up within the first 15 minutes, or if there is a 15-minute stretch of time when no students show up after the last student has left, then the rest of the period will be cancelled. The next lesson will begin where the cancelled period would have left off, and the next assessment will include the material that would have been taught in the cancelled period.</p>	

### Course Description

**Prerequisites:** A grade of "C-" or better in MAC 1105 College Algebra (or equivalent).

**Special Note:** Subsequent credit for STA 5126 is not permitted. No credit given for STA 2122 if a grade of "C-" or better is earned in STA 2171, STA 3032 or QMB 3200.

This course covers Normal distributions, sampling variation, confidence intervals, hypothesis testing, one-way and two-way analysis of variance, correlation, simple and multiple regression, contingency tables and chi-square tests, non-parametric statistics.

The purpose of this course is to prepare students for further study and job preparation in the field of Natural Sciences. 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 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 (LSQA) which includes a written summary of results. The LSQA forms a mandatory ten percent of the course grade. If you do not take it, you will not be permitted to pass the class, regardless of how well you perform on the other assessments. The LSQA will be an online assessment graded for accuracy; two attempts will be allowed; collaboration is not permitted; no internet sources are allowed apart from the course Canvas.*

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 Materials**

- A personal computer, reliable internet connection, and Chrome or Firefox browser.
- A TI-84 Plus or equivalent calculator. 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.
- The ability to take handwritten notes, either on a tablet or on paper copies of the course notes which you will print out and bring to class.

A textbook is not required for this class. The instructor will provide all required course notes and exercises. 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 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](http://www.openstax.org/details/introductory-statistics).

**Video/audio recordings**

Please note that any recordings provided by the instructor are the property of Florida State University and are being made available only to the students enrolled in this class. Students are not permitted to share the recordings with any person or entity outside of this class. Copyrights of the recordings are reserved by the creators of the recordings and Florida State University.

**Note on Technology-dependent Assessments**

This course is 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.

**Completing assessments in a timely manner so that you can stay on track**

This is a semester-long college course, designed to be taken one step at a time throughout the semester rather than hurriedly over the span of a few days, or a few weeks. We will therefore not allow extensions on due dates during the last two weeks of classes unless you have completed at least eighty percent of the assessments given up to that point, including the LSQA. For example, if the LSQA and nine other assessments have been given by the start of the last two weeks of classes, then you will need to have completed the LSQA and at least seven other assessments in order to receive any extensions on due dates during the last two weeks of classes. Please note that the assessments need to be completed in order. Therefore, an extension on a specific assessment will not be granted if you have prior outstanding assessments. For example, if you request an extension on Assessment 8 but you did not complete Assessment 3, then you will be denied an extension on Assessment 8 but you may receive an extension on Assessment 3. The last day of classes will be the deadline for all assessment submissions, including assessments where extensions were granted, but not including the final assessment.

**Assessments & Grades**

<p><b>Participation:</b> Consists of attending the Friday recitations, staying for the entire period, and participating in the recitation activities and discussions. <b>Attendance will be taken twice during the period.</b> Each day, your recitation grade will be one of the following.</p> <ul style="list-style-type: none"> <li>Stay for the entire period <i>and</i> participate: 100%</li> <li>Stay for only part of the period <i>or</i> do not participate: 50%</li> <li>Absent: 0%</li> </ul> <p>+ To allow for absences that are beyond your control, you may recover the full 100% by visiting your TA's office hours <b><i>within the next two weeks but not after the last day of classes</i></b> and <b><i>showing them the exercises that you did</i></b> (the exercises that the rest of the class worked on during the recitation that you missed). You may do this three times only.</p> <p>+ To further allow for absences that are beyond your control, the lowest three recitation grades will be dropped before your recitation average is calculated. <i>But they will not be dropped on Canvas, so please expect to continue seeing your lowest three recitation grades on Canvas.</i> This drop policy is intended to cover absences that are beyond your control where recovery is not possible.</p> <p>Please note that we are not required to accommodate absences that are within your control. As such, the above policies will be applied to the excused absences described in the University Attendance Policy (whether you have documentation or not), absences due to FSU sports events, absences due to other FSU events, and absences certified by the FSU Office of Accessibility Services.</p> <p><i>Note: Students who have an <u>attendance accommodation</u> certified by the OAS will be allowed to recover credit as described above whenever they are absent due to their</i></p>	<b>25%</b>
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<i>disability. Please discuss disability-related absences with your TA <u>as soon as possible</u> after the absence.</i>	
<b>Liberal Studies Quantitative Assessment (LSQA):</b> The LSQA will be based on the <b>Simple Linear Regression</b> material and will be given after the material is taught. It will not be the final assessment.	<b>10%</b>
<b>Quizzes:</b> <ul style="list-style-type: none"> <li>- open book, graded for accuracy</li> <li>- online on Canvas, available Mon-Tue the week after the material is taught</li> <li>- two timed attempts permitted within the above timeframe</li> <li>- questions that need to be graded manually will be graded after the quiz closes</li> <li>- the grading period for manually-graded questions will be Wed-Thu, no extensions granted during this time</li> <li>- collaboration and internet sources (except the course Canvas) are not permitted</li> <li>- quiz grades will not be dropped but due dates will be extended if warranted</li> <li>- if extended due dates are repeatedly missed, we reserve the right to stop the extensions</li> <li>- missed quizzes must be made up in ascending numerical order</li> <li>- the final quiz will be made available during final exams week</li> </ul>	<b>65%</b>
<b>Total</b>	<b>100%</b>

~ Missed assessments, including attendance absences, will receive a grade of zero. When a makeup/recovery is completed, the zero will be replaced with the earned grade.

~ Please check your grades every Sunday to make sure that your most recent assessment grades have been uploaded to Canvas. If your grades are not there, please let your TA know immediately.

~ If you believe that the grade you received on an assessment is incorrect, please bring it to your TA's attention within two work days after the grade has been made available to you. If no issues are raised during that time frame, then it will be assumed that the grade is accepted and subsequent requests for a grade review may not be granted.

~ If you request a quiz extension, please check your email every 12 hours until you receive a response saying that the extension was granted/denied.

~ If multiple quiz extensions are required due to exceptional circumstances, then only one extension will be granted at a time, and the extensions will follow the ordering of the quizzes. After you submit the extended quiz, you will email your TA and ask them to reopen the next one. Please note that it may take a day or two for the quiz to be reopened after you send the email, so you should send your email in a timely manner and check your email every 12 hours for a response.

~ The last day of classes is the ultimate deadline for all quiz submissions and recitation recoveries, including quizzes where extensions were granted, but not including the final quiz.

~ After the last day of classes, there will be no recitation recoveries, no quiz extensions, no extra credit assignments, and in general, no opportunities for grade improvement, so please do your best during the term.

~ After the final assessment is over, the class will be absolutely and completely over. In particular, this means that all assessments will be completely over and absolutely no recoveries or extensions will be allowed.

~ Please ignore the grade totals or averages that you may see on the course website; they are not correct and unfortunately it is not possible to disable them. In this class, we only store and display individual assessment grades on the course website, we do not do grade calculations there.

~ All grades will be recorded as percentages, and these percentages (not points) will be used in your overall course grade calculation:  $(\text{Recitation Average} * 0.25) + (\text{LSQA} * 0.1) + (\text{Quiz Average} * 0.65)$ .

~ Your letter grade will be selected from the grading scale below after rounding the overall numerical course grade up to the next higher whole number.

A = [93, 105]%	B+ = [87, 90)%	C+ = [77, 80)%	D+ = [67, 70)%	F = [0, 60)%
A- = [90, 93)%	B = [83, 87)%	C = [73, 77)%	D = [63, 67)%	
	B- = [80, 83)%	C- = [70, 73)%	D- = [60, 63)%	

### How to aim for success in this class

- ~ bring your computer and/or all of the printed material that you have for this class, and your calculator, to the classroom every day
- ~ attend all of the MonWed lectures, pay attention, fill in the notes as demonstrated by the instructor, ask questions
- ~ after the lectures, study thoroughly the information and examples in the notes, including the handwritten work that we did in class
- ~ do all of the associated practice problems – study the solutions even if you get the answers right because the solutions can provide insights to the problems
- ~ make sure you know how to use your calculator appropriately
- ~ attend all of the Friday recitations, discuss the material with your classmates and your TA, ask questions, receive help
- ~ take the Quiz the following week and utilize the second attempt if you get less than 100% on the first attempt, the higher of the two grades will be kept
- ~ last but not least, get enough sleep – your brain needs downtime in order to process and store information

**We will not have a cumulative final exam, but the policy below will apply to our final quiz, which will be given during final exams week.**

### 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 should talk to me about it first to get my approval and then 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](https://artsandsciences.fsu.edu/sites/g/files/upcbnu321/files/2022-01/Request_to_Reschedule_01032022.pdf).

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 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 assessments that cannot be dropped and excluding the drops and 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 assessment, and

(2) your overall average excluding the final assessment is a passing grade (70% or above).

### **Email & Communication**

~ Please turn on the course notifications on 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, your Canvas Inbox, and the course announcements on Canvas every day.

~ If you communicate with us via email, please use your [@fsu.edu](mailto:@fsu.edu) account.

~ Always include your name and your TA's name when you email us. If we need to know this information in order to answer your query and you have not provided it, you may not get a response.

~ You may expect a response to your email within two work days in Fall/Spring, or one work day in Summer. However, please note that the first two weeks and the last two weeks of classes, and final exams week, are usually email-heavy times for us, so we may not be able to respond to individual student emails in a timely manner. If we find that many students are asking the same question, we may answer it in an email sent to the entire class or in an announcement on the course Canvas, instead of responding to the individual student emails.

### **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, but you will be expected to attend class in-person on the first day and all other days.

~ 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.

~ However, please always discuss your missed assessment deadlines with us regardless of the reasons you missed the deadlines. We will do our best to work with you while maintaining fairness to the other students in the class.

~ 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 missed assessment deadlines, if required, will not be accepted after the last day of classes.

### 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/>.

If you are absent for an extended period of time and/or you do not respond to emails from the instructor over an extended period of time, the instructor reserves the right to deny access to assessments or limit the number of allowed attempts until attendance and/or contact is resumed.

### 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.

### Confidential Campus Resources

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

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

As an instructor, I am obliged to report all instances of sexual misconduct and other Title IX issues 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/>), Counseling & Psychological Services (<https://counseling.fsu.edu/>), the Employee Assistance Program (<https://eap.fsu.edu/>), University Health Services (<https://uhs.fsu.edu/>), or pastoral counselors. If you would like to submit a report to the University's Title IX Director, please go to <https://report.fsu.edu/>.

**Disaster**

At times of severe weather or other disasters, please check your FSU email, your text messages, the Seminole Safe App and FSU Alerts (<https://alerts.fsu.edu/>) as often as you can to keep yourself informed. In the absence of internet access, you may call 850-644-4636 for updates. Check for the latest information every day before you leave home so that you don't miss any last minute announcements. If the University closes due to a disaster, we will all be informed via the above means, and classes and office hours will be automatically cancelled even if I don't announce it. As long as the University remains open, classes will still be on. However, please practice safety first. If it will be unsafe or impracticable for you to come to class or complete an assignment due to the effects of a disaster, please do not attempt to do so. You will not be penalized, we will work with you.

You can sign up to receive alerts via SMS text messages here:

<https://emergency.fsu.edu/services/fsu-alert-emergency-notification-warning-system/fsu-alert-sms-text-messages>.

See here for other ways in which FSU delivers warnings: <https://emergency.fsu.edu/services/fsu-alert-emergency-notification-warning-system>.

**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.

Students with disabilities needing academic accommodation should:

- (1) register with and provide documentation to the Office of Accessibility Services; and
- (2) request a letter from the Office of Accessibility Services to be sent to the instructor indicating the need for accommodation and what type; and,
- (3) meet (in person, via phone, email, skype, zoom, etc...) with each instructor to whom a letter of accommodation was sent to review approved accommodations.

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 the latest version of this statement and 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](mailto:oas@fsu.edu)

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

Academic accommodations will be provided as soon as possible after email notification from the OAS is received. Academic accommodations are not retroactive, so they will not apply to lectures/lessons and assessments that took place before the notification was received.

### 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.

### 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.

### FRIDAY RECITATION SECTIONS

Section	Room	Begin	End	Section	Room	Begin	End
0002	HCB_0312	08:00 AM	08:50 AM	0008	HCB_0208	08:00 AM	08:50 AM
0003	HCB_0212	09:20 AM	10:10 AM	0009	HCB_0215	09:20 AM	10:10 AM
0004	HCB_0212	10:40 AM	11:30 AM	0010	HCB_0209	10:40 AM	11:30 AM
0005	HCB_0212	12:00 PM	12:50 PM	0011	HCB_0205	12:00 PM	12:50 PM
0006	HCB_0215	01:20 PM	02:10 PM	0012	HCB_0212	01:20 PM	02:10 PM
0007	HCB_0205	03:05 PM	03:55 PM	0013	HCB_0212	03:05 PM	03:55 PM

## TENTATIVE PACING SCHEDULE

Week	Month	MON	WED	FRI
1	Jan	9 Syllabus	11 Preliminary Definitions	13 Recitation 1
2	Jan	16 MLK Jr Day	18 Summary Statistics	20 Recitation 2
3	Jan	23 Summary Statistics	25 Summary Statistics	27 Recitation 3
4	Jan-Feb	30 Summary Statistics	1 Normal Distributions	3 Recitation 4
5	Feb	6 Normal Distributions	8 Central Limit Theorem	10 Recitation 5
6	Feb	13 Central Limit Theorem	15 Confidence Intervals for Mu	17 Recitation 6
7	Feb	20 Confidence Intervals for Mu	22 Confidence Intervals for Mu	24 Recitation 7
8	Feb-Mar	27 Hypothesis Tests for Mu	1 Hypothesis Tests for Mu	3 Recitation 8
9	Mar	6 Hypothesis Tests for Mu	8 Hypothesis Tests for Mu	10 Recitation 9
SB	Mar	13 SPRING	15 BREAK	17 xxx
10	Mar	20 One-way Anova	22 One-way Anova	24 Recitation 10
11	Mar	27 Simple Linear Regression	29 Simple Linear Regression	31 Recitation 11
12	Apr	3 Simple Linear Regression	5 Simple Linear Regression	7 Recitation 12
13	Apr	10 Simple Linear Regression	12 Simple Linear Regression	14 Recitation 13
14	Apr	17 Simple Linear Regression	19 Chi-Square Tests	21 Recitation 14
15	Apr	24 Chi-Square Tests	26 Chi-Square Tests	28 Recitation 15