

	Spring 2024 Jan 8 – April 26 Florida State University, Department of Statistics Main office 214 OSB, phone 850-644-3218. FSU Police non-emergency: 850-644-1234. Emergency: 911.	All times stated on the syllabus, on Canvas, in my emails, etc, will be Eastern Time.
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Course Information

Name: Introduction to Applied Statistics

Code: STA 2122 **Sections:** 0001-0013

Credit-hours: 3

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.

Format: Face-to-face. Students will need to follow the University's current health and safety guidelines when they attend class.

Lectures (section 0001): MonWed 1:20-2:10pm HCB 101

Discussions (sections 0002-0013): Fridays at different times – see Syllabus module on course Canvas.

Please note that, for each class period, if no students show up within the first 15 minutes, or if there is ever a 15-minute stretch of time when no students are present, 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.

Instructor Information

Name: Ms. Radha Bose

Email: rbose@fsu.edu

You may expect a response from me 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.

Office Hours & Location: Mon & Wed 2:15-2:55pm in HCB 101. If you are unable to come at these times, please email me to set up an appointment.

TA Information

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.

Please be aware that 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.

Course Access

- Course website: <https://canvas.fsu.edu>
- Canvas Support Hours: 8am-5pm, Mon-Fri
Email: canvas@fsu.edu, Phone: 850-644-8004, Website: <https://support.canvas.fsu.edu/home/>
- 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 account.
- Always include your name and your TA's name when you email us. If we need to know this information in order to respond to your query and you have not provided it, you may not get a response.
- Classes will not be recorded for future viewing. - We will not use an online proctoring service.

Course Description

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 may include 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.

A textbook is not required for this class. The instructor will post all required course notes and exercises on Canvas. Please note that the materials provided by the instructor were put together for your individual use only. We ask that you do not distribute the materials to third parties. If you seek help from someone other than the instructor or TA, you may allow your helper to see the materials, but please do not allow them to take pictures or 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.

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 missed assessments in order and in a timely manner so that you can stay on track

Please note that missed assessments must 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 until you have completed 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. In addition, since 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 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.

Assessments & Grades

Participation: Consists of attending the Friday discussions, staying for the entire period, and participating in the discussion activities. Attendance will be taken twice during the period. Each day, your discussion grade will be one of the following. - Stay for the entire period <i>and</i> participate: 100% - Stay for only part of the period <i>or</i> do not participate: 50% - Absent: 0% + To allow for absences that are beyond your control, you may recover the full 100% by visiting your TA's office hours <i>within the next two weeks but not after the last day of classes</i> and <i>showing them the exercises that you did</i> (the exercises that the rest of the class worked on during the discussion that you missed). You may do this three times only. + To further allow for absences that are beyond your control, the lowest three discussion grades will be dropped before your discussion average is calculated. <i>But they will not be dropped on Canvas, so please expect to continue seeing your lowest three discussion grades on Canvas.</i> This drop policy is intended to cover absences that are beyond your control where recovery is not possible. + Please note that we are not required to accommodate absences that are within your control, we are only required to accommodate those that are beyond 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. Note 1: <i>Students who have an attendance accommodation certified by the OAS will be allowed to recover credit as described above whenever they are absent due to their disability. This will be in addition to three absences for other reasons beyond your control. Please discuss disability-related absences with your TA as soon as possible after the absence.</i> Note 2: <i>FSU athletes will be allowed to recover credit as described above for each sports-related absence that we are notified of by FSU Athletics. This will be in addition to three absences for other reasons beyond your control.</i>	25%
Quizzes: - open book, graded for accuracy - online on Canvas, available Mon-Tue the week after the material is taught - two timed attempts permitted within the above timeframe - collaboration and internet sources (except the course Canvas) are not permitted - quiz grades will not be dropped but due dates will be extended if warranted - if extended due dates are repeatedly missed, we reserve the right to stop the extensions - quizzes must be taken in ascending numerical order - except for the first quiz, the password for each quiz will be provided in the previous quiz - quiz passwords must not be shared - correct answers are not published - Canvas will show which questions you got partial credit on but will not identify the specific parts of each question that you got wrong - questions that need to be graded manually will be graded after the quiz closes	65%

- the grading period for manually-graded questions will be Wed-Thu, no extensions granted during this time if manual grading is required - the final quiz will be made available after the last day of classes	
Liberal Studies Quantitative Assessment (LSQA): The LSQA will be based on the Confidence Intervals for Mu material and will be given after the material is taught. It will not be the final assessment. <i>Please see the Learning Objectives section of this syllabus.</i>	10%
Total	100%

~ You will be allowed a second attempt on some or all of the online assessments so that you can correct any errors you may spot after you submit the first attempt. We will generally not provide assistance with the material between attempts.

~ An initial grade of zero will be assigned to missed or incomplete assessments, including attendance absences. When the assessment/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 an 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 discussion recoveries, including quizzes where extensions were granted, but not including the final quiz.

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

~ 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: **(Discussion Average * 0.25) + (LSQA * 0.1) + (Quiz Average * 0.65).**

Grading scale (percent)

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

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

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 discussions, 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.

Final Exam Rescheduling Policy

(“Final Exam” means final exam or final test or final quiz or other final assessment)

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.

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.

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.

~ If you are absent often or 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.

~ 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 written 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 student's 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.

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 accommodation for all persons with disabilities in a manner that is consistent with the academic standards of the course while empowering the student to meet the 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 an 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

<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.

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/>.

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

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

Counseling and Psychological Services (CAPS)

Florida State University's Counseling and Psychological Services (CAPS) primary mission is to address psychological needs and personal concerns, which may interfere with students' academic progress, social development, and emotional well-being. The following in-person and virtual (tele-mental health) services are available to all enrolled students residing in the state of Florida:

1. Individual therapy
2. Group therapy
3. Crisis Intervention
4. Psychoeducational and outreach programming
5. After hours crisis-hotline
6. Access to community providers for specialized treatment

Call 850-644-TALK (8255) for more information on how to initiate services.

Counseling and Psychological Services

250 Askew Student Life Center

942 Learning Way

(850) 644-TALK (8255)

Walk-in and Appointment Hours:

M-F 8 am – 4 pm

<https://counseling.fsu.edu/>

Services at UHS are available to all enrolled students residing in Florida:

The mission of University Health Services (UHS) is to promote and improve the overall health and well-being of FSU students. UHS provides a coordinated continuum of care through prevention, intervention, and treatment. Services include general medical care, priority care, gynecological services, physicals, allergy injection clinic, immunizations, diagnostic imaging, physical therapy, and a medical response unit. The Center for Health Advocacy and Wellness (CHAW) assists students in their academic success through individual, group, and population-based health and wellness initiatives. Topics include wellness, alcohol and other drugs, hazing prevention, nutrition and body image, sexual health, and power based personal violence prevention. For more information, go to uhs.fsu.edu.

University Health Services

Health and Wellness Center

960 Learning Way

Tallahassee, FL 32306

Hours: M-F, 8 am – 4 pm

(850) 644-6230

<https://uhs.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 will not 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 be held. 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>.

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.

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 laws. 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 to 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 recordings 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.

Tentative Pacing Schedule

Week	MON (HCB 101)	WED (HCB 101)	FRI (see Syllabus module on course Canvas)
1	Jan 8 Syllabus	10 Preliminary Definitions	12 Discussion 1
2	15 Labor Day, no classes	17 Summary Statistics	19 Discussion 2
3	22 Summary Statistics	24 Summary Statistics	26 Discussion 3
4	29 Summary Statistics	31 Normal Distributions	Feb 2 Discussion 4
5	5 Normal Distributions	7 Central Limit Theorem	9 Discussion 5
6	12 Central Limit Theorem	14 Confidence Intervals for Mu	16 Discussion 6
7	19 Confidence Intervals for Mu	21 Hypothesis Tests for Mu	23 Discussion 7
8	26 Hypothesis Tests for Mu	28 Hypothesis Tests for Mu	Mar 1 Discussion 8
9	4 One-way Anova	6 One-way Anova	8 Discussion 9
Mar 11-15 SPRING BREAK			
10	18 <i>Two-way Anova*</i>	20 Simple Linear Regression	22 Discussion 10
11	25 Simple Linear Regression	27 Simple Linear Regression	29 Discussion 11
12	Apr 1 Simple Linear Regression	3 Simple Linear Regression	5 Discussion 12
13	8 <i>Multiple Regression*</i>	10 Chi-Square Tests	12 Discussion 13
14	15 Chi-Square Tests	17 Chi-Square Tests	19 Discussion 14
15	22 <i>One-sample Proportions*</i>	24 <i>One-sample Proportions*</i>	26 Discussion 15
FE	Final quiz available from 12:01am Sat Apr 27 to 11:59pm Tuesday Apr 30.		

* If we fall behind schedule, we will omit some or all of these topics.