

Syllabus

STA2023 – Introduction to Statistics I

Fall 2023

1 INSTRUCTIONAL TEAM

Course Coordinator	Lab Coordinator	Teaching Assistants
<p>Maria Ripol mripol@stat.ufl.edu Griffin Floyd 117C 352-273-2976</p> <p>Office Hours will be posted in Canvas – minimum 3 hours per week, mixture of online and in person OH</p>	<p>Stephanie Stine s.stine@ufl.edu Griffin Floyd 117B 352-273-2975</p> <p>Office Hours will be posted in Canvas – minimum 3 hours per week, mixture of online and in person OH</p>	<p>~16 TAs - names and emails available in Canvas</p> <p>Tutoring Room - available around 40 hours per week, mixture of online and in person tutoring hours in Griffin Floyd 104</p>
<p>Contact Course Coordinator for questions about quiz and exam grades, and for general questions about the course not answered on the syllabus or the homepage in Canvas.</p>	<p>Contact Lab Coordinator for questions about lab.</p>	<p>Contact TAs for incorrectly recorded grades on lab worksheet, and for assistance with the course material in the Tutoring Room (see Canvas for schedule)</p>

Course website in Canvas at <https://elearning.ufl.edu/>

2 MATERIALS

Lecture Notes – you can download them from the course homepage in Canvas, and then print them or write on them electronically. UF allows you to print for free in the computer labs.

Lab Worksheets – needed for the lab portion of the course, and available to print from the course homepage in Canvas.

Scientific Calculator - You will need a calculator with some basic statistical functions: mean and standard deviation. Many inexpensive calculators (around \$15) have these functions; check the manual or look for the following symbols: \bar{x} and either s or $\sigma-1$. Graphing calculators are NOT ALLOWED on exams.

Recommended Textbook: *Statistics: The Art and Science of Learning from Data* by Agresti, Franklin, Klingenberg, 5th edition, Pearson, 2021. You need to have access to the textbook in order to complete the *suggested* homework problems listed for each module- these are good practice to learn the material but *do not count for your grade*. There will be copies of the book available for you to use on reserve at the Marston Science Library and in our Tutoring Room. You can get the book as an eText which allows

you to complete the homework problems electronically, check your answers, and use the homework help for extra videos and examples. See Canvas for more details.

<https://www.pearsonhighered.com/product/Agresti-Statistics-The-Art-and-Science-of-Learning-from-Data-Subscription-4th-Edition/9780133860917.html>

3 COURSE DESCRIPTION

STA 2023 is an introductory course that assumes no prior knowledge of statistics but does assume some knowledge of high school algebra. Basic statistical concepts and methods are presented in a manner that emphasizes understanding the principles of data collection and analysis rather than theory. Much of the course will be devoted to discussions of how statistics is commonly used in the real world. There are two major parts to this course:

I Data – which includes graphical and numerical summaries to describe the distribution of a variable, or the relationship between two variables (chapters 1, 2 and 3, approximately 3 weeks), and data production to learn how to design good surveys and experiments, collect data from samples that are representative of the whole population, and avoid common sources of biases (chapter 4, 1 week.)

II Probability and Inference – using the language of probability and the properties of numerical summaries computed from a random samples (chapters 5, 6 and 7, 4 weeks), we learn to draw conclusions about the population of interest, based on our random sample, and attach a measure of reliability to them (chapters 8, 9, 10 approximately 8 weeks).

Course Objective: The primary goal of the course is to help students understand how the process of posing a question, collecting data relevant to that question, analyzing data, and interpreting data can help them find answers to real problems from their world.

Structure of the Course: This course consists of:

- 36 Modules which include:
 - class material offered as live lectures, recorded lectures, or interactive videos
 - a short online quiz for each one
 - suggested homework problems from the textbook and additional examples
- 10 Labs to be completed weekly, in person, in CSE E231.
- 3 Exams also completed in person

4 LECTURES

In this hybrid course ALL students, regardless of which section they are registered for, can choose to

- attend the live lectures offered MWF 8th period (3pm) in TUR L007 in person
- watch the recordings of those lectures, available in Canvas about an hour after the live lecture ends (for technical problems contact the UF Help Desk <http://helpdesk.ufl.edu/>)
- access the material through the Playposit interactive videos available in the Modules in Canvas

5 QUIZZES

There will be a short, 5-point quiz associated with each module. These online Module Quizzes will be completed in Canvas and students will have three chances for each quiz, with the highest score counting towards your grade. All quizzes will be open from the start of the semester and will close at midnight one business day after the live lecture is taught - see calendar in Canvas for deadlines. For technical problems contact the UF Help Desk <http://helpdesk.ufl.edu/>

6 LABS

Students are required to attend Lab in person once a week, according to the section for which they are registered. Labs meet in CSE E231, which is located close to Turlington and the Marston Science Library. Worksheets with instructions will be posted in Canvas at least one week before labs meet. Students must PRINT these worksheets and bring them to lab. The worksheets must be turned in to the section TA before leaving Lab that day. They will be graded on a scale of 10 points. Students must be on time and will not get credit for the activity if they are more than five minutes late. Students must sign the attendance sheet for each Lab to show they arrived on time. Late students would disrupt the activity and create problems for the rest of the students and the TA, so it will not be tolerated.

7 EXAMS

There will be three assembly exams, each worth 100 points. The two midterms are given at night, and the last one during final exam week. Each exam consists of 33 multiple choice questions, each worth 3 points, which totals 99 points. You can earn the remaining 1 point by bringing a picture ID to the exam and by bubbling in your name, UF ID# and test code (listed on the front page of the exam) correctly. Exams will cover a larger amount of material than the quizzes and will also place more emphasis in the understanding of concepts and ideas behind the formulas.

Room assignments for each exam will be announced in class and on the website. Bring to the exam your UFID number, picture ID, no.2 pencils and eraser for completing the bubble sheets, and a scientific calculator. Graphing calculators may be NOT used during the exam. Accessing notes and formulas from the course during the exam is cheating. Accessing your cell phone or communicating with another individual during the exam is also considered cheating. Academic dishonesty on any exam will result in a minimum penalty of a grade of *zero* on that exam.

Note that exact dates and times for exams will be determined by the University Registrar and announced at the beginning of each semester.

Exams	Date	Time	Chapters in Book	Modules
Exam 1	~Week 7	8:20 pm – 10: 00 pm (AT NIGHT)	Ch. 1 – Ch. 6 Sec. 3	1-16
Exam 2	~Week 12	8:20 pm – 10:00 pm (AT NIGHT)	Ch. 7 Sec. 1 – Ch. 9 Sec. 2	17-26
Exam 3	Finals Week	TBD	Ch. 9 -- Ch. 10 Sec. 4	27-36

8 MAKEUP POLICIES

Quizzes: There are 36 online quizzes during the semester, one associated with each Module. They must be completed by the deadline, one business day after the live lectures are taught. All quizzes are open from the beginning of the semester so students can work ahead if they need to, since all the material is also available as Playposit interactive videos posted from the start. Please complete the quizzes early if you have travel plans, religious observances, sports or club events, or any other conflict whether approved by the university or not. Students are expected to complete ALL module quizzes before the deadline. To allow for situations such as illnesses or emergencies, three makeup quizzes will be available in Canvas during the last week and a half of the semester. No excuses are necessary to take these makeup quizzes.

Labs: There are 10 labs during the semester and students must attend the section they are registered for and be on time. NOTE: If you know you will regularly have trouble attending the lab you are registered for or being on time you MUST CHANGE LAB SECTIONS IMMEDIATELY. This includes conflicts with travel, religious observances, sports or club events, or any other conflict whether approved by the university or not. There are usually plenty of opportunities to change sections during Drop/Add period. After Drop/Add is over, you will need to contact the Lab Coordinator to see if any changes are possible - see the top of this syllabus for the Lab Coordinator's contact information. Students are expected to complete ALL labs in person during the assigned day and time for their section. To allow for situations such as illnesses or emergencies, one makeup lab will be available in Canvas during the last week and a half of the semester. No excuses are necessary to take these makeup lab.

Extenuating Circumstances: The one makeup lab and three makeup quizzes are meant for situations when a student is unable to complete the assignment at the appropriate time and covers all situations including illness, family emergencies, travel, computer or transportation trouble, etc. They should be used judiciously. In very rare instances these makeup opportunities are not enough due to a student experiencing extended hospitalization or illness, or some catastrophic event during the semester. In these cases, the student must meet with the Course Coordinator in person, during office hours, with appropriate documentation for all of their missed assignments. Each case will be reviewed individually.

Exams

- In case of conflict with a class: Assembly exams have priority over regularly scheduled classes. The instructor for the other class must allow you to make up any work you miss because of an assembly exam - contact them early to make arrangements. This is a University of Florida policy, as stated on the Registrar's website <https://catalog.ufl.edu/ugrad/current/regulations/info/exams.aspx>
- In case of conflict with another exam: Assembly exams have priority over time-of-class exams. If you have two assembly exams scheduled for the same day and time, the course with the higher number has priority. This is a University of Florida policy, as stated on the Registrar's website (<https://catalog.ufl.edu/ugrad/current/regulations/info/exams.aspx>) Contact instructor of the appropriate class early to make arrangements for a makeup exam - do not wait until the last minute. If you need to schedule a makeup exam for STA 2023 because it conflicts with another assembly exam for a course with a higher number, you must contact the STA2023 Course Coordinator at least ONE WEEK prior to the regularly scheduled exam.

- In case of sudden illness or emergency: Contact the STA2023 Course Coordinator **prior** to the exam - as soon as you realize you will be unable to take the test at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup exam under such extenuating circumstances. The STA2023 Course Coordinator must be contacted by midnight of the day of the exam via email or voice mail. If you are sick and have documentation you should NOT take the regular test but request a makeup – there are no retakes.
- To make arrangements for a makeup exam: Contact the STA2023 Course Coordinator by email, in person during office hours, or through the phone (information appears at the top of this syllabus). Makeup exams will cover the same material as the regularly scheduled exam but will not necessarily be in multiple choice format.
- Please Note: Being on vacation is not a valid reason to request a makeup.

9 COURSE ASSESSMENT

Grade Structure	Percent
Exam 1	25%
Exam 2	25%
Exam 3	25%
Labs	12.5%
Quizzes	12.5%

Grading Scale		
A	4.00	91 to 100%
A-	3.67	89.5 to 90.99%
B+	3.33	85.5 to 89.49%
B	3.00	81 to 85.49%
B-	2.67	78.5 to 80.99%
C+	2.33	75.5 to 78.49%
C	2.00	68.5 to 74.49%
D	1.00	60 to 68.49%
E	0.00	Below 60%

Minimum grade of C is required for General Education credit. More information on grades and grading policies can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

10 HOW TO GET THE MOST OUT OF THIS COURSE

Time Commitment: Keep up with the class material, either by attending a live class, watching them online, or completing the Playposit interactive videos. Set aside time three times a week to work on the course material. Factor in time to complete your quizzes, and don't forget to attend lab each week, on time.

Choice: Remember the class material is available in three different formats – live lectures, recorded lectures and online interactive videos. Each student should choose the one that works best for them. Everyone is welcome to attend the live lectures, but it may not be possible for you. The Playposit interactive videos are all available well ahead of the time when the live lectures are delivered and

recorded. If you know you will be out of town or very busy one week you may want to complete the modules and quizzes ahead of time.

Watching Videos: You should watch the lectures within a day or two of it being posted. Watch the lectures one at a time at regular speed and then do the quiz and also a few suggested homework problems. Each section in the notes is labeled with chapter and section headings. If I ask the audience to work out a problem, this includes those who watch it online as well. Watch the lectures in a low disruption environment. While watching the lecture, you should be focused on the lecture and not messaging friends, checking social media, etc.. I have carefully considered what needs to be discussed in class in our limited time frame. Make sure that you are paying attention to all of it. If you find that the online lectures are not working for you, consider going to the live lectures.

Getting Help: You can get **free help from all the TAs in the class in the Tutoring Room** that will be open about 40 hours per week in a mixture of ONLINE and IN PERSON tutoring hours. No appointments are necessary, and you don't need to go when your TAs are on duty. There is also free tutoring in Broward Hall - a schedule of their hours can be found at: www.teachingcenter.ufl.edu and through Knack at <https://studentsuccess.ufl.edu/knack-tutoring>. Both Broward and Knack offer tutoring for different classes, so check their websites for more details.

Quizzes: If you have questions on the quizzes, you are allowed to ask teaching assistants and the instructor about submitted attempts on the quiz only. For example, you can take the quiz one time, submit the quiz for grading. The teaching assistants in the Tutoring Room can help you with the problems with which you had questions. You can then go and try attempt 2 on your own. You are not allowed to complete quizzes in the tutoring room. If you send an email to the instructor about a quiz question, make sure that you take a screen shot of the question and include your full name in the email. Remember that you have several days and several tries for each quiz. Given all these opportunities, all students should do extremely well on the quizzes. Hopefully they will serve the purpose of improving your grade in the class, as well as be an important tool in learning the material for the course.

Labs: Each lab activity will require students to work in groups. Students are responsible for understanding the material covered in class and the quizzes from the previous modules so they can complete the activity by following the instructions on the worksheet. TAs will be in lab to facilitate the activity, but students are expected to work independently to explore the statistical concepts, with the help of their group and their notes, according to the principles of active learning. If a question arises, students should turn to other students in their group or table to discuss them.

Learn by Doing: You learn Statistics by doing Statistics. In addition to the lectures, quizzes and labs, there are suggested homework problems and additional tutorials and videos in myLab. You should do as much as you need to understand the material.

11 COURSE POLICIES

Privacy Policies: Student records are confidential. Only information designated "UF directory information" may be released without your written consent. UF views each student as the primary contact for all communication. If your parents contact me about your grade, attendance or other information that is not "UF directory information", I will ask them to contact you.

Privacy in Recorded Live Lectures: Our class sessions will be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. If conducted through Zoom, students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate verbally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Privacy in Zoom Tutoring and Office Hours: The Zoom Tutoring Room is open to all students to discuss course material. Any student who joins can listen in on your questions, as they would in the in-person tutoring room. However, the Office Hours for the Course Coordinator and the Lab Coordinator will only admit one student at a time, with any others being placed in a waiting room. So students can discuss any personal issues or problems with the instructor during office hours with the guarantee of confidentiality. Neither office hours nor tutoring will be recorded.

Email: Email relating to information about the class should be sent to your TA (emails listed on the "Contact Us" website in Canvas) or to the STA2023 Course Coordinator (see first section of this syllabus). Your message will be answered within two business days, in most cases. Please don't email all TAs or all instructors using the group email sending option in Canvas. We don't know who you intended to speak to. Please send email directly to the TA or lab or course coordinator and address them by name. However, we ask you to please refer to this syllabus, the course pages in Canvas to try to find the answers for yourself. Questions regarding the material covered in class, homework problems, or Lab should be asked in person, in the Tutoring Room, in Lab or in class. Statistical questions often require formulas or pictures, which can make it very hard to communicate by email. Emails should include your full name, UFID number and section number.

University's Honesty Policy: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the STA2023 Course Coordinator.

Students with Disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which the student must present to the instructor when requesting accommodations. Students with disabilities should follow this procedure as early as possible in the semester. This letter must be sent to the STA2023 Course Coordinator directly, not with the lab TA, for accommodations on exams to be made. Accommodations will not be made retroactively, but only forward from the day that the letter was received. Special circumstances should be discussed in person with the Course Coordinator.

Grading: Grades will be changed only when an error has been made; negotiation is not appropriate.

Incompletes are only assigned when extraordinary circumstances (such as an accident, or extended hospitalization), arising after the date for dropping the course, prevent the student from completing the course requirements. Having a failing grade in the course is not a valid reason for requesting an Incomplete. Information on **Medical Withdrawal** can be found at <https://umatter.ufl.edu/> Information on how to **Drop a class** can be found in UF's Academic Catalog: <https://catalog.ufl.edu/UGRD/academic-regulations/dropping-courses-withdrawals/>

Instructor / Course Evaluations: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals or in their Canvas course menu under GatorEvals.

12 OTHER UNIVERSITY SERVICES

U Matter, We Care: If you or someone you know is in distress, or needs information on services offered at UF, please contact them: 352-392-1575 umatter@ufl.edu <https://umatter.ufl.edu/>

Student Health Care Center: 352-392-1161 <https://shcc.ufl.edu/>

University Police Department, 352-392-1111 (or 9-1-1 for emergencies) <http://www.police.ufl.edu>

E-learning technical support – contact the UF Computing Help Desk: <http://helpdesk.ufl.edu/>

13 GENERAL EDUCATION OBJECTIVE AND STUDENT LEARNING OUTCOMES

This course satisfies general education credits in the mathematical sciences. Students learn how to summarize data and how to make appropriate decisions based on data. (This course is the general education category of M.)

General Education Objective (Mathematics)

Courses in mathematics provide instruction in computational strategies in fundamental mathematics including at least one of the following: solving equations and inequalities, logic, statistics, algebra, trigonometry, inductive and deductive reasoning. These courses include reasoning in abstract mathematical systems, formulating mathematical models and arguments, using mathematical models to solve problems and applying mathematical concepts effectively to real-world situations.

In this course, this objective will be met by . . .

During the semester the students will be given an introduction to the three main aspects of statistics: design (of experiments/surveys), description (of data collected) and inference (the extension of conclusions from the data gathered in the sample to the larger population). These

concepts will be presented through lectures three times a week and lab once a week. They will also learn about the normal and binomial distributions as well as the methodology of confidence intervals and significance tests. From the methods that they learn in class they will be able to critique real world surveys and experiments, interpret graphs in newspapers and magazines as well as conduct basic statistical inference for one or two groups.

General Education Student Learning Outcomes (SLOs)

Content: Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.

Communication: Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.

Critical Thinking: Students analyze information carefully and logically from multiple perspectives, using discipline specific methods and develop reasoned solutions to the problems.

In this course, these SLOs will be met by . . .

Content: Students will learn critical terminology, concepts, methods, and theories during lecture. These concepts will include terminology to describe one and two samples, discuss surveys/experiments, basic probability theory, sampling distributions, and one and two group inference. The students will be assessed on these terms and concepts during the weekly quizzes and the three exams. Students will also demonstrate their competence in identifying the appropriate formulas to use for each situation and using those formulas correctly.

Communication: The students will use verbal and written communication to discuss central statistical concepts in their weekly labs. These concepts include description of data sets, sampling methods and interpretations of inference methodology.

Critical Thinking: The students will be asked to critically think about trustworthiness of surveys and experiments presented in the media. Additionally, students will learn how to conduct significance tests, a statistical method to logically determine if there is enough evidence for a hypothesis. Students will learn how to state the null and alternative hypotheses (different perspectives) and then to use the data collected to determine if there is enough evidence to support the alternative hypothesis using methods central to the field of statistics. The students will be tested on these concepts in lab, quiz and on two of the exams.

14 WEEKLY COURSE SCHEDULE

Live classes are taught Monday, Wednesday and Friday but the Playposit Interactive Videos for all the modules are available in Canvas from the beginning of the semester. Labs and Exams are done in person. Online Module Quizzes are due at midnight one business day after the material is covered in class, with the exception of the material covered during drop/add, which are all due one day after drop/add ends. All Module Quizzes are available from the beginning of the semester so students can work ahead. See Canvas Calendar for exact dates for current semester and more details. NOTE – calendar is subject to change if necessary.

WEEK	MODULES	ASSINGMENTS
1	M1: Syllabus and Introduction M2: Graphs for Quantitative Data	NO LAB first week Module Quizzes due the day after drop/add ends
2	M3: Measuring Center and Spread M4: Quartiles and Boxplots M5: Intro to Regression	LAB 1: Histograms Module Quizzes for first week due day after drop/add ends. All other Module Quizzes due one business day after the lesson is taught live, at midnight.
3	(holiday) M6: Regression Example M7: Cautions In Regression	NO LAB on HOLIDAY WEEK Module Quizzes due one business day after the lesson is taught live, at midnight.
4	M8: Categorical Data M9: Gathering Data M10: Experiments	LAB 2: Regression Module Quizzes due one business day after the lesson is taught live, at midnight.
5	M11: Other Considerations M12: Basic Probability M13: Advanced Probability	LAB 3: Sampling Module Quizzes due one business day after the lesson is taught live, at midnight.
6	M14: Continuous Prob. Distributions M15: Discrete Probability Distributions M16: More Normal and Binomial	LAB 4: Contingency Tables Module Quizzes due one business day after the lesson is taught live, at midnight.
7	Exam Review M17: Sampling Distribution of p-hat	EXAM 1 NO LAB during exam week Module Quizzes due one business day after the lesson is taught live, at midnight.
8	M18: Sampling Distribution of x-bar M19: More Sampling Distribution Problems M20: Confidence Intervals for p	LAB 5: Sampling Distribution of p-hat Module Quizzes due one business day after the lesson is taught live, at midnight.
9	M21: Confidence Intervals for μ M22: More on Confidence Intervals M23: Sample Size, Small Sample CI for p and Bootstrap	LAB 6: Sampling Distribution of x-bar Module Quizzes due one business day after the lesson is taught live, at midnight.
10	M24: Basics of Significance Tests M25: More about P-values and Significance Tests for Proportions M26: More Significance Tests for Proportions Examples	LAB 7: Confidence Intervals for μ Module Quizzes due one business day after the lesson is taught live, at midnight.
11	M27: Significance Tests for Means M28: Relationship between CI and Sig Tests Exam Review	LAB 8: Significance Test for p Module Quizzes due one business day after the lesson is taught live, at midnight.

12	M29: Other Considerations about Sig Tests M30: Comparing Two Independent Proportions	EXAM 2 NO LAB during exam week Module Quizzes due one business day after the lesson is taught live, at midnight.
13	M31: Comparing Two Independent Means M32: Comparing Two Dependent Means M33: McNemar's Test and Permutation Tests	LAB 9: Significance Test for μ Module Quizzes due one business day after the lesson is taught live, at midnight.
14	Thanksgiving Holiday Monday class if needed	NO LAB during holiday week Module Quizzes due one business day after the lesson is taught live, at midnight.
15	M34: Review Part 1 M35: Review Part 2 M36: Review Part 3	LAB 10: Comparing Two Groups Module Quizzes due one business day after the lesson is taught live, at midnight.
16	Exam Review Reading Days	NO LAB during reading days week Module Quizzes due one business day after the lesson is taught live, at midnight. EXAM 3 during Finals Week