Syllabus
STA2023 – Introduction to Statistics I
Spring 2020

1 Instructional Team

	Course Coordinator	Lab Coordinator	Teaching Assistants
Email	Stephanie Stine s.stine@ufl.edu	Maria Ripol mripol@stat.ufl.edu	~16 TAs - names and emails available in Canvas
Office	Griffin Floyd 117B	Griffin Floyd 117C	Griffin Floyd 104 Tutoring Room
Phone	352-273-2975	352-273-2976	
office hours	MWR 9:30 am – 11:30 am or by appointment	TBA	In Tutoring Room (see Canvas for schedule)
contact for:	Questions about quiz and exam grades. General questions about the course not answered on the syllabus or the homepage in Canvas.	Questions about lab.	Incorrectly recorded grades on lab worksheet. Course material – In Tutoring Room (see Canvas for schedule)
Website	Course website in Canvas at http://www.elearning.ufl.edu		

2 Materials

Lecture Notes – these are needed to follow along with the lectures. You can print them from the course homepage in Canvas under the "Lecture Notes" link.

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: x-bar and either s or σn-1. Graphing calculators are NOT ALLOWED on exams.

Textbook (optional): *Statistics: The Art and Science of Learning from Data* by Agresti, Franklin, Klingenberg, 4th edition, Pearson, 2017. Textbook can be purchased in two ways: hardbound new, used or rented ISBN13: 9780321997838; or as an etext from UF All Access - see flyer for details.

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 online interactive lessons
  - a short online quiz for each one
- 10 Labs to be completed weekly, in person, in CSE E231.
- 3 Exams also completed in person

4 Lectures / Lessons

This is a hybrid course, since all students, regardless of which section they are registered for, have the option of either:

- attending the live lectures offered MWF 2nd period in CSE A101
- watching 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/)
- accessing the material through online interactive lessons available in the Modules in Canvas

5 Quizzes

There will be a short, 5 point quiz associated with each lecture / lesson. These 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 11:59pm EST 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 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 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 apiece. This will total 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 that 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. The class will be divided up by sections. Bring to the exam your UFID number, a 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.

Exams	Date	Time	Chapters in Book	Modules
Exam 1	Tuesday, February 18	8:20 pm – 10: 00 pm (AT NIGHT)	Ch. 1 – Ch. 6 Sec. 3	1-16
Exam 2	Tuesday, March 31	8:20 pm – 10:00 pm (AT NIGHT)	Ch. 7 Sec. 1 – Ch. 9 Sec. 3	17-28
Exam 3	Saturday, April 25	12:30 pm – 2:10 pm (AFTERNOON)	Ch. 9 -- Ch. 10 Sec. 4	29-36

8 MAKEUP POLICIES

Quizzes

There are 36 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 online interactive lessons 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. In addition to the 36 regular quizzes there will be three makeup quizzes available in Canvas during the last week and a half of the semester. All students can take as many of these three makeup quizzes as they want, either to replace a quiz they missed or one with a low grade.

Labs

There are 10 labs during the semester and students must attend the section they are registered for, and be on time. There will be three makeup labs available in Canvas during the last week and a half of the semester. All students can complete as many of these three makeup labs as they want, either to replace a lab they missed or one with a low grade. 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

Extenuating Circumstances

Sometimes students may be unable to complete their labs and quizzes due to extended hospitalization or illness, or some catastrophic event. They should avail themselves of the three makeup opportunities for quizzes and labs. In very rare instances these makeup opportunities are not enough. In these cases the student must meet with the Course Coordinator in person, during office hours, with all the appropriate documentation to discuss the situation. 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 STA 2023 Course Coordinator at least ONE WEEK prior to the regularly scheduled exam.

- In case of sudden illness or emergency: Contact the STA 2023 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 STA 2023 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 STA 2023 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.
- Additional Note: Being on vacation is not a valid reason to request a makeup.

8 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 75.49%
D	1.00	60 to 68.49%
E	0.00	Below 60%

Minimum grade of C is required for General Education credit. Current UF grading policies for assigning grade points can be found at: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

9 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 interactive online lessons. 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 lectures. 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 online interactive lessons 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 complete the lessons 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 / lessons in a low disruption environment. In addition to watching the lecture, you should not also be texting, instant messaging, emailing, reading a website, watching tv, etc. Your attention should be focused on the lecture. 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.

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 / lessons, quizzes and labs, there are suggested homework problems and additional examples in each module. You should do as much as you need to understand the material.

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. 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: http://teachingcenter.ufl.edu/.

10 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.

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 STA 2023 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 STA 2023 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/students/get-started/) 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 discussed with the STA 2023 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.

Class Attendance and Behavior: Attendance to class is not mandatory, since you will be able to watch the lectures online. Attendance to Lab, however, is mandatory, and you are required to attend the Lab section for which you are registered. For both Labs and lectures, we ask that you arrive on time, and to behave in a respectful manner towards the instructors and your fellow students. In fact, no one will receive credit for Lab if they are more than five minutes late. Please turn your off cellular phones and refrain from eating, drinking, reading newspapers, doing homework for other classes, and excessive talking.

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.

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. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

11 OTHER UNIVERSITY SERVICES

U Matter, We Care: Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress.

A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center (https://counseling.ufl.edu/). Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Sexual Assault Recovery Services(SARS): Student Health Care Center, 392-1161

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

12 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.

13 WEEKLY COURSE SCHEDULE

Quizzes on modules are due at 11:59pm EST one business day after the material is covered in class - with the exception of the material covered before drop/add. See Canvas Calendar for more details.

	Monday	**Wednesday**	**Friday**
Week 1 **(no lab)**	**1/6 Module 1:** Syllabus and Introduction *Quiz due 1/16*	**1/8 Module 2:** Graphs for Quantitative Data *Quiz due 1/16*	**1/10 Module 3:** Measuring Center and Spread *Quiz due 1/16*
Week 2 **(Lab 1: Histograms)**	**1/13 Module 4:** Quartiles and Boxplots *Quiz due 1/16*	**1/15 Module 5:** Intro to Regression *Quiz due 1/16*	**1/17 Module 6:** Regression Example *Quiz due 1/21*
Week 3 **(no lab)**	**1/20** MLK Holiday No Class	**1/22 Module 7:** Cautions In Regression *Quiz due 1/23*	**1/24 Module 8:** Categorical Data *Quiz due 1/27*
Week 4 **(Lab 2: Regression)**	**1/27 Module 9:** Sampling *Quiz due 1/28*	**1/29 Module 10:** Experiments *Quiz due 1/30*	**1/31 Module 11:** Other Considerations *Quiz due 2/3*
Week 5 **(Lab 3: Sampling)**	**2/3 Module 12:** Basic Probability *Quiz due 2/4*	**2/5 Module 13:** Advanced Probability *Quiz due 2/6*	**2/7 Module 14:** Continuous Probability Distributions *Quiz due 2/10*
Week 6 **(Lab 4: Cont. Table)**	**2/10 Module 15:** Discrete Probability Distributions *Quiz due 2/11*	**2/12 Module 16:** More Normal and Binomial Examples *Quiz due 2/13*	**2/14 EXAM 1 REVIEW**
Week 7 **(no lab)** **EXAM WEEK**	**2/17 Q&A** **TUESDAY 2/18** **EXAM 1**	**2/19 Module 17:** Sampling Distribution of p-hat *Quiz due 2/20*	**2/21 Module 18:** Sampling Distribution of x-bar *Quiz due 2/24*
Week 8 **(Lab 5: Sampling Distribution of p-hat)**	**2/24 Module 19:** More Sampling Distribution Problems *Quiz due 2/25*	**2/26 Module 20:** Confidence Intervals for p *Quiz due 2/27*	**2/28** No Lecture Lab 5 Friday sections
Week 9	*Spring Break*	*Spring Break*	*Spring Break*
Week 10 **(Lab 6: Sampling Distribution of x-bar)**	**3/9 Module 21:** Confidence Intervals for μ *Quiz due 3/10*	**3/11 Module 22:** More on Confidence Intervals *Quiz due 3/12*	**3/13 Module 23:** Sample Size, Small Sample CI for p and Bootstrap *Quiz due 3/16*

Week 11 **(Lab 7: Confidence Intervals for μ)**	**3/16 Module 24:** Basics of Significance Tests *Quiz due 3/17*	**3/18 Module 25:** More about P-values and Significance Tests for Proportions *Quiz due 3/19*	**3/20 Module 26:** More Significance Tests for Proportions Examples *Quiz due 3/23*
Week 12 **(Lab 8: Significance Test for p)**	**3/23 Module 27:** Significance Tests for Means *Quiz due 3/24*	**3/25 Module 28:** Relationship between CI and Sig Tests *Quiz due 3/26*	**3/27 EXAM 2 REVIEW**
Week 13 **(no lab)** **EXAM WEEK**	**3/30 Q&A** **TUESDAY 3/31** **EXAM 2**	**4/1 Module 29:** Other Considerations about Sig Tests *Quiz due 4/2*	**4/3 Module 30:** Comparing Two Independent Proportions *Quiz due 4/6*
Week 14 **(Lab 9: Significance Test for μ)**	**4/6 Module 31:** Comparing Two Independent Means *Quiz due 4/7*	**4/8 Module 32:** Comparing Two Dependent Means *Quiz due 4/9*	**4/10 Module 33:** McNemar's Test and Permutation Tests *Quiz due 4/13*
Week 15 **(Lab 10: Comparing Two Groups)**	**4/13 Module 34:** Review – Part 1 *Quiz due 4/14*	**4/15 Module 35:** Review – Part 2 *Quiz due 4/16*	**4/17 Module 36:** Review – Part 3 *Quiz due 4/20*
Week 16 **(no lab)**	**4/20 EXAM 3 REVIEW**	**4/22 Q&A**	*Reading Days*

EXAM 3 – Saturday 4/25 12:30 pm – 2:10 pm