# STA2023 Introduction to Statistics I

# Fall 2020 Syllabus

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**Instructor:** Maria Ripol

**Office:** 117C Griffin Floyd Hall

**Phone Number:** 352-273-2976

**Office Hours:** MTWR 6th periods (12:50 – 1:30), or by appointment

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**Teaching Assistant:** Deborah Rozum **email:** drozum@ufl.edu

**Office Hours:** TBA

**Class Times:** 5th Period – MTR Lecture in FLO230; W Lab in WEIL 408E (most Wednesdays)

**Course Website:** https://elearning.ufl.edu/

**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 world problems.

**Course Description**

STA2023 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:

1. **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.)
2. **Probability and Inference** – using the language of probability and the properties of numerical summaries computed from random samples (chapters 5, 6 and 7, 4 weeks), we learn to draw conclusions about the population of interest, based on our random samples, and attach a measure of reliability to them (chapters 8, 9, 10 approximately 8 weeks).

| Weeks | Topics Covered |
|---|---|
| **1-2** | Exploring Data with Graphs; Measures of Center, Spread and Position. |
| **2-4** | Exploring Relationships Between Two Variables; Simple Linear Regression, **Exam 1**. |
| **4-5** | Experimental and Survey Design. |
| **6** | Probability Rules. |
| **7-8** | Binomial and Normal Distributions, **Exam 2**. |
| **9-10** | Sampling Distributions of the Sample Proportion and Sample Mean. |
| **10-11** | Confidence Interval for the Population Proportion and Population Mean. |
| **12-13** | Significance Test for the Population Proportion; Significance Test for the Population Mean, **Exam 3**. |
| **13-15** | Comparing Two Ind. Proportions and Two Ind. Means; Compare Means from Dependent Samples, **Exam 4**. |

**Required Supplies**

- Textbook: *Statistics: The Art and Science of Learning From Data* by Agresti/Franklin 4th edition
- Scientific Calculator
- Student Laboratory Workbook by Mocko and Ripol 4th edition (A "You Print" version will also be provided in the course shell in Canvas.)

**Expectations**

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx In addition, I expect you to:

- Attend all lectures
- Arrive on time and review your notes after each class
- Ask questions if you do not understand something
- Make it your goal to understand everything that we do
- Inform the Instructor of a problem in a timely manner

**Grading Structure**

Current UF grading policies for assigning grade points can be found at:

https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

For this class the methods by which you will be evaluated and your grade determined are given below.

| Assessments | % of Grade |
|---|---|
| 4 Exams | 60% (15% per exam) |
| Labs | 10% |
| Homework | 10% |
| Quizzes in Canvas | 10% |
| Class Attendance and Participation | 10% |

**Grading Scale**

| Letter Grade | Grade Points | Percentage of Points Needed |
|---|---|---|
| **A** | 4.00 | 90.0 to 100% |
| **A-** | 3.67 | 88.5 to 89.99% |
| **B+** | 3.33 | 84.5 to 88.49% |
| **B** | 3.00 | 80 to 84.49% |
| **B-** | 2.67 | 78.5 to 79.99% |
| **C+** | 2.33 | 74.5 to 78.49% |
| **C** | 2.00 | 67.5 to 74.49% |
| **D** | 1.00 | 60 to 67.49% |
| **E** | 0.00 | Below 60% |

**Exams**

There will be total of four exams. You will need to bring your own scientific calculator (you cannot share one with another student) and a pencil. If you are unable to take an exam at the scheduled time, it is your responsibility to get in touch with me one week prior to the exam for any arrangements to be made for a makeup. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite under such extenuating circumstances. In case of illness, you must notify me on the day of the exam by 5pm and must receive a medical excuse. Cell phones must be switched off and in your backpacks and must not be in view during the exam. The exam schedule is on the next page.

| Exam | Exam Dates |
|---|---|
| **Exam 1** | In Class: Thursday January 30th |
| **Exam 2** | In Class: Thursday February 27th |
| **Exam 3** | In Class: Thursday April 2nd |
| **Exam 4** | In Class: Wednesday April 22nd |

**Computer Lab**

The class will meet in the Computer Lab in WEIL 408E most Wednesdays – except for the first and last week and for exam reviews, when we will meet in the lecture room. **Students must arrive within 5 minutes of the start of the Lab in order to participate.** The instructor will bring lab worksheets for all the students to complete the activity during class.

**Homework**

Homework problems will be assigned regularly for students to practice the concepts and formulas learned in class. They will be announced in class and in Canvas. The homework problems will be completed electronically and students will receive immediate feedback about their performance, with extra problems and instruction for any topics that present particular difficulties.

**Quizzes in Canvas**

There will be about eight quizzes in Canvas that review material covered during the previous lectures. They will be announced in class and in Canvas, and be open for several days. Students will have three chances at each quiz, and the highest score will count. Quizzes will take place roughly every week, except around exams.

**Class Attendance and Participation**

For each class period throughout the semester, students will receive points for attendance, punctuality, attentiveness and participation. This means that students should come to every class, be on time, pay attention, take notes, work in groups when instructed to do so, and ask and answer questions related to the material.

**Absences and Makeup Lab, Quizzes, Homework**

Students are expected to attend all classes and complete all course assignments within the assigned time frame. Students who miss any assignments missed due to illness or conflict must contact the instructor before or immediately after missing it and provide valid documentation. Assignments should be made up as soon as possible and they cannot be made up after the exam for that material has been given.

**Course Policies**

**Attendance and Class Demeanor**

Exams will be based on the assigned homework problems and the examples that are done in the class. If you miss class for any reason it is your responsibility to get any notes and information you might have missed from the uploaded notes in Canvas. Additionally, you should turn your cell phones off and refrain from eating, drinking, reading newspapers, doing homework for other classes, and excessive talking.

**Grading**

Grading will be changed only when an error has been made; negotiation is not appropriate. **There is no appeal process.**

**Incomplete**

Incompletes are only assigned when extraordinary circumstances, arising after more than 2/3rds of the course has been completed, prevent the student from completing the course requirements. Having a failing grade in the course is not a valid reason for requesting an Incomplete.

**Academic Dishonesty**

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. Please note that the minimum disciplinary action would be to receive a grade of zero on the assignment. If there have been more than one case of disciplinary actions filed with the Dean of Students Office, consequences may be more severe.

**Accommodations for Students with Disabilities**

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

**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.

**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/.

**Campus Resources Health and Wellness**

*U Matter, We Care*: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392- 1575 so that a team member can reach out to the student.

*Counseling and Wellness Ce*nter: https://counseling.ufl.edu/, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

*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/

**Academic Resources**

*E-learning technical support*, 352-392-4357 or e-mail to Learningsupport@ufl.edu. https://lss.at.ufl.edu/help.shtml.

*Career Connections Center*, Reitz Union, 392-1601. Career assistance and counseling. *https://career.ufl.edu/*

*Library Support*, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

*Teaching Center*, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. http://teachingcenter.ufl.edu/

*Writing Studio, 302 Tigert Hall,* 846-1138. Help brainstorming, formatting, and writing papers. http://writing.ufl.edu/writing-studio/

*Student Complaints On-Campus*: https://sccr.dso.ufl.edu/policies/student-honor-code-studentconduct-code/

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 a 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 homework assignments, 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 lab assignments and semester project. 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 their homework assignments, quizzes and on two of the exams.

| Monday | Tuesday | Wednesday | Thursday | Friday (no class) |
|---|---|---|---|---|
| 1/06 Syllabus | 1/07 Notes | 1/08 Notes | 1/09 Notes | 1/10 |
| 1/13 Notes | 1/14 Notes | 1/15 **Computer Lab** | 1/16 Notes | 1/17 |
| 1/20 Holiday<br>MLK Day | 1/20 Notes | 1/22 **Computer Lab** | 1/23 Notes | 1/24 |
| 1/27 Notes | 1/28 Notes | 1/29 Exam 1 Review | 1/30 **Exam 1** | 1/31 |
| 2/03 Notes | 2/04 Notes | 2/05 **Computer Lab** | 2/06 Notes | 2/07 |
| 2/10 Notes | 2/11 Notes | 2/12 **Computer Lab** | 2/13 Notes | 2/14 |
| 2/17 Notes | 2/18 Notes | 2/19 **Computer Lab** | 2/20 Notes | **2/21** |
| 2/24 Notes | 2/25 Notes | 2/26 Exam 2 Review | 2/27 **Exam 2** | 2/28 |
| 3/02<br>Spring Break -------- | 3/03<br>---------- | 3/04<br>---------- | 3/05<br>---------- | 3/06<br>---------- |
| 3/09 Notes | 3/10 Notes | 3/11 **Computer Lab** | 3/12 Notes | 3/13 |
| 3/16 Notes | 3/17 Notes | 3/18 **Computer Lab** | 3/19 Notes | 3/20 |
| 3/23 Notes | 3/24 Notes | 3/25 **Computer Lab** | 3/26 Notes | 3/27 |
| 3/30 Notes | 3/31 Notes | 4/1 Exam 3 Review | 4/2 **Exam 3** | 4/3 |
| 4/06 Notes | 4/07 Notes | 4/08 **Computer Lab** | 4/09 Notes | 4/10 |
| 4/13 Notes | 4/14 Notes | 4/15 **Computer Lab** | 4/16 Notes | 4/17 |
| 4/20 Notes | 4/21 Exam 4 Review | 4/22 **Exam 4** | | |