STA 2023 Introduction to Statistics I

Summer B 2017
Section: 5125
MTWRF 2:00pm - 3:15pm
Room: CSE A101

Instructor:
Natalie Burns
Email: natalierburns@ufl.edu
Office: Griffin-Floyd 104
Office Hours: MW 12:00pm - 1:30pm
F 12:00pm - 1:00pm

Tutoring Lab:
Location: Griffin-Floyd 104
Hours: MTWR 10:00am - 1:30pm
MTWR 3:30pm - 5:30pm
F 10:00am - 1:00pm

e-Learning in Canvas: http://elearning.ufl.edu/

General Course Information

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.)

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 f, 2 and 3), 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).

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), 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).

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.

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). 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 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 on the quizzes, and exams. 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 exams.

Required Materials

1. ***Student Lab Workbook for Statistics: The Art and Science of Learning from Data -Ąth edition*** by Megan Mocko and Maria Ripol

2. ***Statistics: The Art and Science of Learning from Data*** by Alan Agresti and Christine Franklin 4th edition, Pearson, 2013.

3. **Scientific Calculator** that has some basic statistical functions: mean and standard deviation. Many inexpensive calculators (around $10 to $15) have these functions; check the manual or look for the following symbols: $\bar{x}$ and either s or σ_{η}-\· **A graphing calculator is not allowed to use during the exams and quizzes.**

4. **Computer** with internet access (either at home or on campus)

Tentative Schedule of Course Topics

Week	Sections from Textbook	Description
1	1.1, 1.2, 2.1, 2.2, 2.3, 2.4, 2.5 3.1, 3.2, 3.3	Exploring Data with Graphs; Measures of Center, Spread and Position; Regression
2	3.4, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3	Regression; Data from Surveys/Experiments; Probability
3	5.4, 6.1, 6.2, 6.3, Exam 1 Review	Probability in our Daily Lives; Probability Distributions
4	7.1, 7.2, 8.1, 8.2	Sampling Distributions; Confidence Intervals for the Population Proportion
5	8.3, 9.1, 9.2, 9.3, 9.4, 10.1	Confidence Intervals for the Population Mean; Significance Tests
6	10.1, 10.2, 10.4, Exam 2 Review	Comparison of Two Proportions and Two Means

Course Assessment

Assessment	Percent of Total	Tentative Date(s)
Exam 1 (Chapters 1-6)	30%	Friday, July 14
Exam 2 (Chapters 7-10)	30%	Friday, August 4
Quizzes (best 5 of 6)	35%	Weekly
Surveys (5 total)	5%	Weekly

Exams

Two multiple choice exams will be held in class tentatively scheduled Friday, July 14 and Friday, August 4. Exam 1 will tentatively cover Chapters 1-6 and Exam 2 will tentatively cover Chapters 7-10. It is your responsibility to bring an approved calculator, pencil, and Gator 1 ID (Photo ID) to each exam. If a student is unable to take an exam at the scheduled time, they must notify the instructor, Natalie Burns, 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, the instructor must be notified by 12:00pm on the day of the exam and must receive a medical excuse. The makeup exam may not be in a multiple choice format. A grade of zero is the minimum punishment of any type of dishonesty on an exam.

Quizzes

A total of 6 quizzes will be held in class every week. The highest five quiz scores will be used to calculate the total quiz score. There will not be any makeup quizzes. The total quiz score will make up 35% of the final grade. Quizzes will be composed of 2 or 3 questions very similar to the homework assigned.

Quiz	Date	Sections Covered
1	Friday, June 30	1.1, 1.2, 2.1, 2.2, 2.3
2	Friday, July 7	2.4, 2.5, 3.1, 3.2, 3.3, 3.4
3	Thursday, July 13	4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3, 5.4
4	Friday, July 21	6.1, 6.2, 6.3, 7.1, 7.2
5	Friday, July 28	8.1, 8.2, 8.3, 9.1, 9.2
6	Thursday, August 3	9.3, 9.4, 10.1, 10.2

Extra Quiz An extra quiz will be given on the e-Learning course page. It will be available starting Friday, July 28 at 3:I5pm and will be due before Thursday, August 3 at 11:59pm. The extra quiz will cover chapters 7-9. Students will be given 60 minutes and three attempts to complete the 10 question quiz. The extra quiz will be worth 20 points and the highest score out of the three attempts on the extra quiz will replace the lowest score of the five quizzes (if higher) that compose the quiz grade. The extra quiz is not mandatory, but suggested to improve the overall quiz grade.

Surveys

A total of 5 surveys will be assigned each of the first five weeks of class through the e-Learning course page http://elearning.ufl.edu/ under the **Quizzes** section. The purpose of the surveys is to collect data that will be used for activities in class. Surveys are completely anonymous and no personal identification will be associated with your responses. Surveys are graded on completion. You must complete the survey by II:59am on the day of the quiz (dates shown above) in order to get credit for the survey.

Homework

Homework will be assigned but not graded. A list of recommended homework problems is posted on the e-Learning course page: http://elearning.ufl.edu/. It is for your benefit that you work these problems. A solutions manual for the homework is available in Griffin-Floyd 104 and on reserve in the Marston Science Library. It is generally observed that students who do the homework perform well in the class.

Letter Grade Distribution:

Letter	Points	Percent (Rounded off)
A	4.00	90% - 100%
A-	3.67	87% - 89%
BA	3.33	84% - 86%
B	3.00	80% - 83%
B-	2.67	77% - 79%
OH	2.33	74% - 76%
C	2.00	67% - 73%
D	1.00	60% - 66%
E	0.00	59% or below

Getting Help

Students should be able to get their statistical questions answered in the following ways:

1. before, after or in class, from your instructor
2. in the tutoring lab in Griffin Floyd Room 104 (more information below)
3. during office hours from the instructor
4. for many classes, not just statistics, at the tutoring lab in the Basement of Broward Hall; a schedule of their hours is at http://www.teachingcenter.ufl.edu/
5. as a last resort, by getting (and paying) a private tutor. A list of private tutors from the Statistics Department can be obtained from the secretary in Griffin-Floyd 102

Tutoring Room

Help will be available from the TAs in the tutoring room in Griffin-Floyd 104. These TAs are there solely for STA 2023. This is a large course with many students so it may not be possible to answer all questions in class or during office hours. The TAs are a great resource to answer homework, quiz, project, or any other questions that may arise about course material. The tutoring room will be open every day according to the schedule on the first page.

School Closures

If classes at the University of Florida are canceled, the course will be suspended until the university re-opens. The University will announce this closure on the University of Florida homepage. Any announcements about the course will be posted at the course e-Learning webpage.

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", they will be directed to contact you. More information can be found at https://catalog.ufl.edu/ugrad/current/regulations/info/student-ferpa-rights.aspx

E-mail

E-mail relating to information about the class should be sent to the instructor at natalierburns@ufl.edu or through the course management system. Your message will be answered within one working day, in most cases. However, we ask you to please refer to this syllabus and the course website to try to find the answers for yourself. Questions regarding the material covered should be asked before, during, or after class, at the instructor's office hours, or in the tutoring room. It is often difficult to answer questions regarding material through e-mail. Questions about quizzes should be sent to the instructor and it should include the quiz number, attempt number and question number.

Attendance

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 another student. 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. Additionally, please turn your cellular phones off and refrain from eating and excessive talking while in attendance.

Instructor's Honor Code

We the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

Academic Honesty

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 instructor.

Students with Disabilities

Students who require special accommodations in class or during exams should follow the procedures outlined by the Disability Resources Program at http://www.dso.ufl.edu/drc/. Please send your letter of accommodations to the instructor as soon as you receive the information. The instructor must be emailed the form 7 days before the exam date for accommodations to be arranged.

Grading

Grades will be changed only when an error has been made; negotiation is not appropriate. Grades will be posted on the e-Learning course page at http://elearning.ufl.edu/. The current UF grading

policies for assigning grade points is available at
https ://catalog, ufi .edu/ugrad / current / regulations / info / grades .aspx.

Incomplete

Incomplete grades 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.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/. Evaluations are typically open during the few weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

The syllabus is subject to change. You will be notified if there is a change.