Syllabus for STA 2023 - Introduction to Statistics

Spring 2015 - ONLINE

Instructor Information

Instructor: Megan Mocko

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Phone Number: 352-273-2975

Online Office Hours: 3:30 to 5pm Monday, Thursday

Teaching Assistant Information

Instructor: Abhishek Saha

Email: abhisheksaha@ufl.edu

Online Office Hours:

- Week of Jan. 7th ONLY: Friday 12:30 to 3:30pm
- Rest of semester: 4 to 7pm Tuesday

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 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.

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 survey s/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 discussion 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 assignments, quizzes and on two of the exams.

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Course Material By Week

Week	Material
1	Statistics: What is it?; Exploring Data with Graphs
2	Measures of Shape, Center, and Spread; Exploring the relationship between two variables
3	Learning About Regression; Cautions on Using Regression
4	Gathering Data, Understanding Probability
5	Learning Probability Distributions
6	Sampling Distribution of the Sample Proportion
7	Sampling Distribution of the Sample Mean
8	Confidence Interval for the Population Proportion; Confidence Interval for the Population Mean
10	Significance Test for the Population Proportion
11	Significance Test for the Population Mean
12	Comparing Two Independent Proportions
13	Comparing Two Independent Means
14	Comparing Means of Dependent Samples Comparing Proportions of Dependent Samples
15	Review
16	Exam

Required Materials

1. *Student Lab Workbook for Statistics: The Art and Science of Learning from Data— 3''ᵈ edition by Megan Mocko and Maria Ripol*
2. *Statistics: The Art and Science of Learning from Data* by Alan Agresti and Christine Franklin 3ʳᵈ edition, Pearson, 2013 with Mystatlab (Integrated into the course). DO NOT Purchase separately.
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: x-bar and either s or σ_η-ι. All of the more expensive graphing calculator have them as well, but it is not necessary to buy one of them for this class.
4. A **Reliable Computer**

   - Windows Users: A reliable computer running Windows XP(minimum) Windows 8(recommended) (or higher) with 1024 MB of RAM or higher
   - Macusers: Mac OS X (minimum) MAC OSX 10.9 Mavericks (recommended)
   - A web cam with 640x480 video pixel resolution or higher.
   - Headphones or working speakers connected to the computer.
   - A working microphone connected to the computer. We recommend a web cam that has a built in microphone. (Webcam must have 640x480 resolution, 1280by720 preferred.)

- A web browser with Adobe Flash Player installed. We recommend Flash Player 11 and Adobe Shockwave player.
- A reliable, high-speed internet connection (minimum 768 KBPS/384 KPS download upload or higher - recommended 1.5Mbps download and upload speed.) (wired connection preferred)·
- The ability to allow video and screen-sharing connections to the computer you will be using to take your exam.
- Authority to allow remote access to your computer and screen by one of the test proctors.
- Use this link to test your computer before the Exams.
- Functioning microphone
- Web Browser (Google Chrome, Mozilla Firefox, Safari, Internet Explorer 7-10)
- At least 1024 MB RAM but 2 GB preferred.

- http://www.proctoru.com/testitout/

Course Assessment

Assessment	Percent of Grade
Exam **1**	20%
Exam 2	20%
Exam 3	20%
Chapter Quizzes (6 in total)	8%
Lesson Quizzes	8%
"In Action" Activities	8%
Individual "Island" Project	8%
Homework Problems	8%

Possible Grades for the Course

Letter Grade	Grade Points	Percentage of Points Needed
A	4.00	90 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%

Course Websites

We will be using the course management system, Canvas. Mystatlab is incorporated inside Canvas and can be found under the modules link. Canvas can be accessed using your gatorlink id and password.

In Canvas you will be able to: complete the lessons in the course, find any updates to the Syllabus, watch the lectures as streaming video as you complete the lessons, take the online quizzes, turn in portions of the project using the assignment tool, ask questions in the "Piazza", work on your Team Assignments and check your grade. For any technical problems with E-Leaming, please contact 392-HELP or leaming-support@ufl.edu.

In MyStatLab, you will be able to complete the required homework and optional study guides.

Lessons

You will be completing about two lessons a week. This lesson will include text and video about the day's assigned material. As you work through the material, you will be filling in the lab workbook. It will also have several activities and short quizzes for you to accomplish. You should expect this lesson and the homework to take you about 2 to 3 hours per lesson.

After you have finished the lesson, you will want to submit your scores to the gradebook by hitting the Finish button at the bottom of the last page. As you complete the assignment, click save in order for the items that you have completed to be sent to the gradebook. As long as you hit save, you can stop the lesson and come back to work on it at a later time. There is an unlimited number of tries for each lesson up until the due date. After you have finished the lesson, you will want to submit your scores to the gradebook by hitting the Finish button at the bottom of the last page. You will be asked if you would like to send an email of your results. It is a good idea to send this to yourself as a backup of your lesson score.

After you finish the assessment, the grade should appear in the gradebook. Please check the calendar posted in the course management system for a more up to date list of deadlines. Please check your scores in a timely manner. To get your grade for this section, total up your points from each lesson and divide by the total number of points. Take this number and multiple by 100 to get your grade for this part.

Chapter Quizzes

Time: We will have 6 online cumulative quizzes in Canvas.

Quiz	Chapters	Dates
1	1 -3	Thursday, January 22nd 8am until Tuesday, Jan. 27th 11:59pm
2	4-6	Tuesday, February 3rd 8am until Friday, February 8th 11:59pm
3	7	Monday, February 23rd 8 am until Thursday, February 26th 11:59pm

4	8	Wednesday, March 11th 8am until Monday March 16th 11:59pm
5	9	Tuesday, March 31st 8am until Friday April 3rd 11:59pm
6	10	Tuesday, March 14th 8am until Friday, March 17th 11:59pm

Three attempts: You will be allowed three attempts for each quiz - each randomly generated, so the questions won't be identical. The highest grade is counted. 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.

If you have questions, you are allowed to ask teaching assistants and the instructor questions about submitted attempts on the quiz only. Do not post questions about quiz questions on Piazza when the quiz is still running. Email the instructor. In your email, make sure that you show the work that you did on the problem.

Place: You can take the quiz on any computer that has internet access.

Technical Problems: If you have problems with Canvas, please contact the UF computer help desk at 392-HELP for assistance.

Grade: To get your grade for this part, add up the six quiz scores.

Exams

There will be three online proctored exams. The exam will be multiple choice and short answer. 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. **Academic dishonesty** on any exam will result in a grade of *zero* on that exam. There will be 2 parts to the exam - a calculation part and a concept part. For the calculation part, you will have access to your calculator and to the StatCrunch Spreadsheet. For the concept part, you will not have access to any aids.

Online Exam Dates

Exams	Date	Time	Chapters in Book	Handbook Pages
Exam 1	Monday, February 9th 7am until 9pm	Exam length: 2 hr s.	Ch. 1 - Ch. 6 Sec. 3	1 -48
Exam 2	Tues., March 17th 7am until 9pm	Exam length: 2 hrs.	Ch. 7 - Ch. 9 Section 2	49-85
Exam 3	Tues. April 21st 7am until 9pm	Exam length: 2 hrs.	Chapter 9 Section 3 through Chapter 10	86-120

Makeup Exam Policy

- Every effort should be made to take the exam during the open exam period. Only extreme situations will warrant a makeup exam. Contact the instructor 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 makeup exams will be mostly multiple choice with some short answer.
- If you have an emergency on the day of the exam, the instructor must be contacted by midnight of the day of the exam via email.
- **To make arrangements for a makeup exam:** Contact the instructor at mmeece@stat.ufl.edu. Makeup exams will cover the same material as the regularly scheduled exam, but will not necessarily be in multiple choice formats.
- **Additional Note:** Being on vacation is not a valid reason to request a makeup.

Pre-Exam Checklist

- Go to ProctorU's FAQ: http://proctoru.com/faq.php
- Test out your equipment: http://www.proctoru.com/testitout/
- Be sure that you are in a well lit room - must be daylight quality.
- Be sure to have your photo id ready.
- Be sure to bring a reflective surface such as a mirror, CD or DVD.

ProctorU Information Handout

You will be taking your exam through an online proctoring company. I have posted their information here for your convenience.

What We Do

ProctorU is a revolutionary new service that allows students to complete their assessment at any location while still ensuring the academic integrity of the exam for the institution. Using almost any web cam and computer, you can take exams at home, at work, or anywhere you have internet access.

Preparing for Your Exam

You will be connected to a live person during your exam that will be there to guide you through the process and assist with any technical problems. If you have any questions, please call our proctor line at 205-870-8122.

Appointments

Appointments are required to use ProctorU and all appointments need to be made at least 72 hours in advance. If you register prior to 72 hours before the exam, there will not be an additional fee. Reservations made within 72 hours of your exam are subject to a $5 late

reservation fee.There is also a "Take it Now" option that does not require prior reservation. However, it will cost you $8.75. To make an appointment, simply create an account at http://go.proctoru.com, log in, click on the "new exam" link and select the exam, date, and time you desire. You will receive a confirmation email of your reservations at the email address that you provided to ProctorU.

Procedure

- Plan ahead for your session.
- Make sure you have a quiet, private location in which to take the test.
- The area and room around your computer will be scanned using a web cam prior to your exam, so all non-authorized materials should be put away and the area should be clutter-free. If you are using a public computer lab, you must have a web cam connection and use headphones, so you won't disturb others.
- You will also be required to show picture identification to your proctor at the time of your exam. Approved forms of identification include, but are not limited to, a driver's license, military identification card, passport, or school-issued identification card.
- No breaks are allowed during your testing session and cell phones and other devices will not be permitted in the testing area.
- No other people are allowed in the area in which the test is being taken.□
- Any unauthorized notes or other attempts to cheat will abort the test session and will be reported to your instructor.
- At the date and time of your appointment, return to http://go.proctoru.com, log in, and a message will appear saying, "You have an exam. Click here to begin." Click on this button and it will automatically take you to the proctor page. Fill out your personal information and hit submit. You will then be directed to a screen which will connect you to your proctor. Just follow the steps on the screen and a proctor will be connected with you shortly. Once connected, your designated proctor will walk you through the set up process and you will log into your testing portal. Your proctor will also supply the password for your examination. Your exam time will begin when the proctor enters the examination password on your screen. If you have any problems connecting, please call ProctorU at 205-870-8122. Should you not be able to reach ProctorU via telephone you can email help@proctoru.com If you have scheduled an exam and you are late, your proctor will attempt to call you at the phone number you provided when you scheduled your exam. Should there be any UF login issues at the time of your scheduled exam your proctor will contact the course instructor or course coordinator and you will be able to reschedule your exam if necessary.
- You may not take the exam at a café, on a plane, train or other public place.
- Make sure that your laptop is plugged in before starting the exam.

Lecture Notes

The notes in the Lab Workbook will be used in class. When you are following the lectures, you should always have the lecture notes in front of you. The instructor will go over the definitions and theory, and work out the examples on the spaces provided.

Homework Questions

Doing the homework is essential step in succeeding in this class. For every lesson, there will be about 30 to 60 minutes of work for you to complete in MyStatLab. Please see the schedule in the course management system for due dates. The help functions have been turned on, so that you will have guidance as you are working on the problems. You may complete the homework problems multiple times.The highest score will be recorded. The homework scores will be kept in MyStatLab. Please view the Grade book in MyStatLab to see your homework scores. I will transfer homework score from MyStatlab into the Canvas gradebook through the semester. If you are having trouble understanding homework problems or course concepts, please post your questions in Piazza. This way everyone will benefit from your question. WARNING: Because the help functions have been turned on in the course, homework scores are not always a good judge of how you are learning the material. Carefully, reflect on how often you have to use the help functions and how many times you submit the homework. Each homework is worth 10 points. To get your final homework score, add up all of your homework scores and divide by 220. Take this number and multiply by 100 to get your overall score.

StatCrunch

StcitCranch is an online statistical software package that comes with your MyStatLab access code. The data sets from the textbook are automatically entered. We will be using StatCrunch to work out problems throughout the semester. The lessons will include videos on how to do certain tasks and quiz you on these activities. You will also be using StatCrunch as part of your "Island" project and will be used on the test.

Individual "Island" Project

In this course, there is an individual project. More information and rubrics are provided in the course management system. The Island Project is worth 8% of your grade. The Island project has been broken down into 3 parts. See more information in the course in Canvas.

"In Action" Assignments

There were also several "In Action" assignments. Som of these assigmnents are discussion questions were you will share your findings from a scavenger hunt, whereas others are virtual field trips to visit UF and Gainesville researches explore how they use data in their day to day work. More information can be found in Canvas.

Office Hours and Review Sessions

Online Office Hours:

During the semester there will be online office hours using the Chat function. Please see the top of the syllabus for hours. If needed we may also transfer to using Big Blue Button (a video conference tool) to answer a detailed question.

Live Review Sessions

We will also be having Live Review Sessions during the semester before the exams. I will post a collaboration page before each review session for questions to be posted before each exam. These live review sessions will be held in Big Blue Button. Attendance at the review sessions is not required. Sessions will be recorded and can be viewed at a later time by all. The sessions are stored for 14 days before they are automatically deleted. The review sessions will be conducted by the instructor, Megan Mocko and by the teaching assistants. I will stay online for 15 minutes, if no one attends, I will close the session.

Question and Answer Discussion Board (Piazza)

All students will have access to a Piazza in Canvas. Piazza is a great tool that will allow us to organize questions so that it is easier to find answers. Please try to post questions under the correct chapter or assignment heading. You are able to ask questions about lessons, videos, lesson quizzes, and homework questions. DO NOT POST QUESTIONS ABOUT CANVAS QUIZZES OR TESTS. Students who post CANVAS quiz or test answers on Piazza will be penalized. It will be considered an honor violation. Please send an email to the instructor to discuss private matters such as grades, medical excuses and DRC letters.

- SignUp Link: piazza.com/ufl/spring2015/sta2023
- Class Link: piazza.com/ufl/spring2015/sta2023/home

Textbook Chapters Covered

Chapter 1	Statistics: The Art and Science of Learning From Data
	1.1 Using Data to Answer Statistical Questions
	1.2 Sample versus Population
Chapter 2	Exploring Data with Graphs and Numerical Summaries
	2.1 Different Types of Data
	2.2 Graphical Summaries of Data
	2.3 Measuring Center of Quantitative Data

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 website.

Course Policies

Extensions and "Re-Dos" At the beginning of the semester, you have two tokens. These tokens can be exchanged for a 48 hour extension on an assignment, or a re-do of a manually graded assignment after it has been graded. It cannot be used on exams or on the final submission of "Island Project"; however, it can be used on the Island Proposal or Midterm Report. This arrangement must be made within 48 hours(not including weekends) of an assignment being due and "re-dos" must be accomplished within 5 business days.

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 the instructor at
mmeece@stat.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 and homework problems should be asked on the Piazza board. Questions about the quiz should be sent to your instructor and it should include the quiz number, attempt number and question number.

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 Dishonesty
We adhere to the University of Florida rules and guidelines for handling instances of academic dishonesty. Please refer to the Office for Student Services for detailed information about the current policies.

Students with Disabilities
Students who require special accommodations in class or during exams should follow the procedures outlined by the Disability Resources Program (http://www.dso.ufl.edu/drc/) **Please send the course coordinator (Megan Mocko) your letter of accommodations as soon as you receive the information. I 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.

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.

Where to Get Help for this course:

- During Online Office Hours and Review Sessions
- Piazza in Canvas
- Via Emails to the instructor at mmeece@stat.ufl.edu

How to do well in the course

- Keep up with the lessons. Set a schedule for yourself and stick with it.
- Visit the course website regularly, to read announcements and take the online quizzes.
- Do well on the lesson quizzes, cumulative quizzes, projects and homework.
- Use the help function in MyStatLab to help you work out homework problems.

- Visit the online office hours and review sessions regularly to get help from the TA and your instructor. Our job is to clarify any questions that you may have, and to help you understand the material and learn to do the problems.
- Get to know other students in the class and get together regularly to work on homework problems, and to study for quizzes and exams. Please remember to be professional in your conversations. Please respect each other and refrain from profanity.

- Prepare carefully for exams by going over the lectures, doing your homework and practice questions, studying your quizzes and reading the book. Pay special attention to the understanding of concepts and ideas behind the formulas.

How to get the most out of the online course

- Set aside time each day to complete the lessons
- You should watch and read the lessons on a regular schedule
- Complete the lessons and then do homework assignment
- Actively involve yourself in the lesson. Be inquisitive. Work out the lesson quizzes and activities. Learning is not a spectator sport. Jump in and work on the problems.
- Watch the lecture videos and complete the lessons in a low disruption environment. In addition, to watching the lecture, you should not be also texting, instant messaging, emailing, reading a website, watching TV, etc. Your attention should be focused on the lesson.
- I have carefully considered what needs to be discussed in the lessons. Make sure that you are paying attention to all of it.

Problems

Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See http://distance.ufl.edu/student-complaints for more details.

- First, please contact the instructor first via email at mmeece AT ufl.edu first.
- If necessary after that, please contact the chair of the Statistics department at 392-1941.

• If necessary after that, should you have any complaints with your experience in this
course please visit http ://www. di stance, ufi. edu/ student-complaints to submit a complaint.

Instructor Course/Evaluations

Students are expected to provide feedback on the quality of instruction in this course based on
10 criteria. These evaluations are conduced online at http s : //evaluaţi ons. ufi. edu/ Evaluations are
typically open during the last two or three 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 .