

Syllabus for STA 2023

Intro to Statistics 1

Spring 2019 -- LD

Instructor Information

John Seppala

jseppala@ufl.edu

Phone: 352-273-2971

Office: Griffin-Floyd 116A

MTWR 10:00 am to 11:00 am

Teaching Assistant Information

Richardson, Hayley

hayleyrichardson@ufl.edu

Office: Griffin-Floyd 209

W 3:00 pm to 4:00 pm, R 4:00 pm to 5:00 pm

HW Help Sessions and Exam Review Sessions

Location: Griffin-Floyd 230

W 5:00 pm to 7:00 pm

Layout of the Course:

The course meets four days each week.

Section 2086

MTWR 8:30 am to 9:20 am

Dauer 342

Section 5780

MTWR 11:45 am to 12:35 pm

Griffin-Floyd 230

On most Wednesdays, the course will have a computer lab in Weil 408E instead of in the regular classroom. Please check the course calendar for exact dates.

Who to contact for Help

Whom do you contact if you have a problem or question?

Problem	Contact
Questions about grades, actual exam questions, or administrative matters	John Seppala, through email or Canvas messaging
Questions about course material from lessons, practice material, labs, etc.	Hayley Richardson, John Seppala, or Canvas Discussion Boards

Technical problems with videos, quiz functions, or other Canvas issues	UF help desk, at 352-392-HELP
Questions about the lessons and other technical questions	Canvas Discussion Board under Technical Questions.

Course Material By Week

Week 1	Introduction to the field of statistics;
Week 2	Exploring Data with graphs, Measures of Center, Shape, and Spread;
Week 3	Exploring Relationships between Two Variables , Regression
Week 4	Cautions with Regression, Data from Surveys/Experiments and Probability
Week 5	Probability and Probability Distributions
Week 6	Probability Distributions, Exam 1
Week 7	Sampling Distribution for the Sample Proportion
Week 8	Sampling Distribution for the Sample Mean, More about Sampling Distributions
Week 9	Spring Break
Week 10	Confidence Intervals for the Population Proportion and Population Mean
Week 11	More about Confidence intervals, Significance Test for the Population Proportion
Week 12	Significance Test for the Population Mean, Exam 2
Week 13	Additional Topics on Significance Test, Comparing Two Independent Proportions
Week 14	Comparing Means from Independent and Dependent Samples
Week 15	McNemar's Test and Permutation Tests, Which Test is Which?
Week 16	Exam 3

Required Materials

For this course, you will need the following five items:

- Student Lab Workbook—for **Statistics, the Art and Science of Learning from Data**, by Megan Mocko and Maria Ripol. Choose either the published version or the You Print version on the Canvas course homepage.
- Scientific Calculator--a NON-GRAPHING calculator with statistical functions for the mean and standard deviation, such as a TI-30, TI-32, TI-34, or TI-36. Typical cost is \$15 to \$25.
- Statistical Software Package--choose either Minitab (free in [UF apps](#)), StatCrunch (\$13 for six months at www.statcrunch.com), or www.artofstat.com (free online).
- Textbook— **Statistics, the Art and Science of Learning from Data**, by Agresti, Franklin, and Klingenberg (4th edition). Pearson, 2017. Choose either a

hardback new or used (ISBN: 9780321997838), new and bundled with the Lab Workbook (ISBN: 9780134567662), an [e-book from the publisher](#), or an [e-book by opting in to UF All Access](#) and then retrieving the text using the Bookshelf tab in the Canvas course homepage.

- Computer--one that has a reliable internet connection for doing the online quizzes.

Course Assessment

Assessment	Points towards Grade
Exam 1	200
Exam 2	200
Exam 3	200
Quizzes	70
Homework	100
Labs	100
Class Activities	80
Free Points	50
Total	1000

Possible Grades for the Course

Letter Grade	Grade Points	Total Points Needed	Percentage of Points Needed
A	4.00	900.00 to 1000.00	90.00 to 100.00%
A-	3.67	880.00 to 899.99	88.00 to 89.99%
B+	3.33	860.00 to 879.99	86.00 to 87.99%
B	3.00	800.00 to 859.99	80.00 to 85.99%
B-	2.67	780.00 to 799.99	78.00 to 79.99%
C+	2.33	760.00 to 779.99	76.00 to 77.99%
C	2.00	700.00 to 759.99	70.00 to 75.99%
D	1.00	600.00 to 699.99	60.00 to 69.99%
E	0.00	0.00 to 599.99	0.00 to 59.99%

Please see the following webpage for UF grading policies for assigning grade points: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

You must have a grade of a C to get general education credit for this course.

Course Website

We will be using the course management system, Canvas (www.elearning.ufl.edu). In Canvas, you find any updates to the syllabus, take the online quizzes, print course notes and homework assignments, ask questions in the discussion boards, and check

your grades. For any technical problems with e-Learning, please contact 392-HELP or learning-support@ufl.edu.

Assignments

- *There will be 11 homework assignments throughout the semester. Each homework assignment has a written submission that is due at the beginning of class on most Thursdays. Late homework is not accepted, but the lowest homework score will be dropped. Homework assignments are worth 10 points each.*
- *There will be 8 classroom assignments throughout the semester. Each classroom assignment has a written submission that is due at the end of class on various days throughout the semester. There are no make-ups or retakes, and no scores will be dropped. Classroom assignments are worth 10 points each.*
- *There will be 11 labs throughout the semester. They take place in Weil 408E on most Wednesdays during normal class time. Each lab has an individual written submission that is due at the end of the lab. There are no retakes, but the lowest lab score will be dropped, and one make-up is allowed during the semester in the event of a personal or medical emergency. Make-ups will take place on the following Tuesday from 3:00 pm to 5:00 pm in Griffin-Floyd 209 using your own laptop. Labs are worth 10 points each.*
- *There will be 8 quizzes throughout the semester. They are taken online during a specific three-day window for each quiz. Each quiz can be taken up to three times, and the highest score is recorded. There are no make-ups or re-takes, but the lowest quiz score will be dropped. Quizzes are worth 10 points each.*
- *There will be 3 major exams throughout the semester. Each exam has several multiple-choice and short-answer questions covering both the important concepts and calculations in the course. The exams will be given in class on Thursday, February 14, Thursday, March 28, and Wednesday, April 26. Students are encouraged to register with the DRC to receive extra time to complete the exam and in a less distracting testing environment. There are no retakes, and make-ups will only be given on a case-by-case basis due to an EXTREME EMERGENCY. The student must contact the instructor by email prior to or on the exam day and provide official verifiable documentation to receive consideration for a make-up exam. Academic dishonesty on any exam will result in a zero for that exam. Only scientific calculators may be used on the exams, and formula sheets and statistical tables will be provided. No exam scores will be dropped. Exams are worth 200 points each.*

Statistical Software Packages

- **StatCrunch** is an online statistical software package that comes with the MyStatLab access code. You can also purchase it through the website *Statcrunch.com* for 6 months for \$13.50. The data sets from the textbook are automatically entered.
- **Artofstat.com** contains an online statistical software package that accompanies our book. It is not required that you have *Mystatlab.com* to use this open-source website.
- **Minitab** is a statistical software package available through UF APPS. See more information here: <https://info.apps.ufl.edu/> .

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*
- 2.4 *Measuring the Variability of Quantitative Data*
- 2.5 *Using Measures of Position to Describe Variability*

Chapter 3 *Association: Contingency, Correlation, and Regression*

- 3.1 *The Association Between Two Categorical Variables*
- 3.2 *The Association Between Two Quantitative Variables*
- 3.3 *Predicting the Outcome of a Variable*
- 3.4 *Cautions in Analyzing Associations*

Chapter 4 *Gathering Data*

- 4.1 *Experimental and Observational Studies*
- 4.2 *Good and Poor Ways to Sample*
- 4.3 *Good and Poor Ways to Experiment*

Chapter 5 *Other Ways to Conduct Experimental and Non-experimental Studies*
Probability in Our Daily Lives

5.1 How Probability Quantifies Randomness

5.2 Finding Probabilities

5.3 Conditional Probability: The Probability of A Given B

5.4 Applying Probability Rules

**Chapter
6**

Probability Distributions

6.1 Summarizing Possible Outcomes and Their Probabilities

6.2 Probabilities for Bell-Shaped Distributions

6.3 Probabilities When Each Observation Has Two Possible Outcomes

**Chapter
7**

Sampling Distributions

7.1 How Sample Proportions Vary Around the Population Proportion

7.2 How Sample Means Vary Around the Population Mean

**Chapter
8**

Statistical Inference

8.1 Point Estimates of Population Parameters

8.2 Constructing a Confidence Interval to Estimate the Population Proportion

8.3 Constructing a Confidence Interval to Estimate the Population Mean

8.4 Choosing a Sample Size for a Study

8.5 How Do Computers Make New Estimation Methods Possible?

**Chapter
9**

Statistical Inference: Significance Test About Hypotheses

9.1 Steps for Performing a Significance Test

9.2 Significance Tests about Proportions

9.3 Significance Tests about Means

9.4 Decisions and Types of Errors in Significance Tests

9.5 Limitations of Significance Tests

**Chapter
10**

Comparing Two Groups

10.1 Categorical Response: Comparing Two Proportions

10.2 Quantitative Response: Comparing Two Means

10.3 Other Ways of Comparing Means and Comparing Proportions

10.4 Analyzing Dependent Samples

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: Extensions will only be given on assignments in cases of prolonged hospitalization. Please notify the instructor at the beginning of the term if you have religious or other observances, sports or club events, or other time conflicts, whether or not they are approved by UF.

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. Grades, attendance, or other information that is not “UF directory information” cannot be given to parents or other third parties.

Email: Email relating to information about the class should be sent to the instructor at jseppala@ufl.edu or through Canvas messaging. In most cases, your message will be answered within one business day. Please kindly refer to the syllabus, the Canvas course homepage, and other course materials for the answers to many common questions. Also, please post questions regarding course material on the Canvas discussion boards so that other students can benefit from your answers to your questions.

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 with disabilities requesting accommodations should first register with the Disability Resources Center (<http://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.

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

Incomplete: Incomplete grades are only assigned when extraordinary circumstances (such as an accident, or extended hospitalization) occur after the withdrawal period has been ended, and the circumstances 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 feedback on the quality of instruction in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu/> Evaluations are typically open during the last two weeks of the semester. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results> .

Where to Get Help for this course:

- During TA or instructor office hours
- During homework help sessions or exam review sessions
- Discussion Board in Canvas
- Via emails to the TA at hayleyrichardson@ufl.edu or to the instructor at jseppala@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 on the course homepage
- Do well on the lessons and quizzes.
- Visit the free tutoring sessions to get help from the TA and your instructor. They are here to answer any questions that you may have, and to help you understand the material and learn how to do the problems correctly.
- 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. Respect each other and refrain from profanity.
- Prepare carefully for exams by going over the lessons, doing your suggested homework problems, 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 course

- Set aside time each day to complete homework and review course notes.
- Review the lessons before taking the quizzes.
- Actively involve yourself in the lessons. Be mentally and physically prepared to learn. Work out additional problems as necessary to improve your understanding.
- Complete the homework assignments and online quizzes in a low-distraction environment. Your attention should be focused completely on statistics.
- Seek help from the TA, the instructor, or another resource as needed.
- Pay attention to all details of each lesson.

Problems

Each course has a process for, and will make every attempt to resolve, student issues within its academic and administrative departments at the program level.

Please contact the instructor first via email at jseppala@ufl.edu to resolve your issue. If your issue is not resolved, please contact the chair of the Department of Statistics at 352-392-1941.

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 1.5 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 day.)

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, 2 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 2 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 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 lessons, quizzes and the two 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 the mini-projects. 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 lessons, quizzes and on the exams.*

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.

University Services

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. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling Services and Mental Health Services

- <http://www.counseling.ufl.edu/cwc/Default.aspx>
- **352-392-1575**

University Police Department

- **352-392-1111 or 9-1-1 for emergencies**