Statistics 2023 Honors
Spring 2023

Instructor Hani Doss—222 Griffin-Floyd; email: `doss@stat.ufl.edu` (email is primarily for administrative purposes, not for questions regarding the course material; for such questions, talk to me during office hours). Office Hours: MWF period 3, i.e. 9:35am–10:25am. If you want to talk to me during office hours you should come before 10:10am. Office hours will be in person most of the time, but occasionally will be on zoom. When office hours are in person, I allow only two students in my office at a time. Office hours will be on zoom if I think that many people will want to attend, for example just before an exam or before a homework assignment is due. I will send the zoom link via email. For short questions, you may talk to me in person right after class.

Teaching Assistant TBD—email: `TBD@ufl.edu`.

Course Description and Objectives STA 2023 Honors is an introductory statistics course which does not assume knowledge of calculus, but that nevertheless presents basic statistical concepts and methods at an advanced level. The primary goals of the course are to enable the students to develop a firm understanding of the fundamental ideas behind statistical reasoning and to learn some of the basic techniques of data analysis. An advanced statistical computing language will be used for the computations and graphics.

Grading Your final course grade will be based on the five components below, with their stated weights:

Exam 1:	Friday February 17, 8:20 pm; covers everything up to and including the lecture of Wednesday February 15. Note the evening time slot.	25%
Exam 2:	Monday March 27, 8:20 pm; covers all material after Exam 1 up to and including the lecture of Friday March 24. Note the evening time slot.	25%
Exam 3:	Tuesday May 2, 7:30am–9:30am; covers all material after Exam 2.	25%
HW:	There will be about eight homeworks assigned during the semester.	13%
Projects:	There will be two projects assigned during the semester.	12%

The homeworks will be assigned roughly one every two weeks, with due date approximately a week and a half after the assignment date.

A course average of 93–100 will guarantee an A, 90–92 at least an A$^-$, 87–89 at least a B$^+$, 83–86 at least a B, 80–82 at least a B$^-$, etc. (The actual cutoffs for the grades will almost certainly be much lower than these numbers.) A minimum grade of C is required for general education credit.

Text We will not use a text.

Software We will use the free statistical computing language R. You should download it from https://www.r-project.org and install it before Friday January 13. You may wish to also download RStudio from https://www.rstudio.com (go to https://www.rstudio.com/products/rstudio/download to get the free Open Source License). If you have trouble downloading and installing R or RStudio, contact the TA.

Existing Statistical Software Packages

Package	Cost	Capabilities	Intellectual Requirements
Minitab	$60	.001 of what R can do	none
Excel	$	.0001 of what R can do	none
Stata	$100–$280	.01 of what R can do	none
R	free		

Course Web Page http://users.stat.ufl.edu/~doss/Courses/sta2023h

A username and password are needed to enter the Homeworks folder. I will email these to the class.

General Course Policies

- Homework must be turned in at the beginning of the lecture on the due date. Late homework will not be accepted.

- All emails to me or the TA must have the string "2023h" in the subject line (so I can retrieve emails quickly) and must be sent from your official UF mail account.

- All exams are closed-notes; however, you may bring two 8.5×11 (one-sided) sheets of notes to the exams. You should bring a calculator to the tests. Makeup exams must be approved before the time of the exam and will be given only in case of medical or family emergencies, or conflicts with other exams (any of which must be appropriately documented).

- *You are responsible for everything from lecture.* Do not depend on the course web page for announcements regarding due dates for homework, changes in schedules, etc.

- I am going to use the projector, and distribute hard copies of the slides (electronic versions of the slides will *not* be available). The hard copies will be distributed once. I am not going to bring slides from the previous lecture for the benefit of those who didn't come to class. The notes that are passed out will be a skeleton of the lectures (in other words, they are going to be incomplete) with the missing material developed during the lecture. Therefore, skipping class and getting a copy of the notes is not going to work.

- Cell phones must be turned off (or set on silent). Laptops must be shut.

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

Policies on Covid Safety

Illness If you are sick, stay home. If you are sick and need immediate care, call your primary care provider or the UF Student Health Care Center at 352-392-1161 to be evaluated.

Absences If you test positive, you should not come to class, and as with any excused absence, you will be given a reasonable amount of time to make up missed work.

Masks As of this writing, UF is recommending that we wear masks inside all UF facilities if we are close to other people.

During the lecture, I may or may not wear a mask, depending on whether or not the distance between me and the person closest to me is much greater than six feet. However, I will put on a mask immediately after the lecture, and if you want to talk to me, then you must wear a mask if you get within six feet of me. If you come to office hours, then you must wear a mask regardless of whether or not you are within six feet of me.

Handouts Before the pandemic, at the beginning of each lecture I used to put several sheets of notes at the front of the room for people to pick up. But it takes time to pick up several sheets, and this creates a big crowd at the front of the room. So this semester the sheets of notes will be stapled. You can remove the staples if you want.

General Education Objectives and Student Learning Outcomes

This course satisfies general education credits in the mathematical sciences.

General Education Objectives 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 these objectives are met as follows. The course will focus on the following three aspects of statistics: (1) the design of experiments and surveys, (2) the description of the data collected, and (3) inference, meaning use of the data to make statements regarding the population from which the data were drawn. From the material learned in the course, students will be able to quantify the relationships between several variables measured on experimental subjects and to determine when associations determine causations.

Student Learning Outcomes These learning outcomes are described in the paragraph above, and the students will be tested on these through the exams, homework assignments and projects.

Main Topics Each of the topics below will take a little less than two weeks, although it is not possible to specify exactly how long each will take.

1. Descriptive statistics (simple numerical summaries, and graphical summaries, including histograms and density estimates)
2. Normal distributions
3. Correlation and linear regression
4. Prediction from linear regression models
5. Observational studies, confounding variables, and association and causation
6. Introduction to probability theory (including probability rules, basic combinatorics and conditional probability)
7. The law of averages and the central limit theorem
8. Introduction to statistical inference, focusing on confidence intervals for means of one or two populations
9. Introduction to statistical inference, focusing on hypothesis tests regarding means of one or two populations