

STAT 113 – Introduction to Statistics (Fall 2018)

Instructor: Kevin Woods, King 220B, Kevin.Woods@oberlin.edu. Call me Kevin! (he/him/his)

Lectures: MWF 10-10:50am, King 239.

Lab: Tues 10-10:50am, Sci Center K100.

Office Hours:

Mon 4-5pm, Tue 12-2pm, Wed 2-3pm, Thu 10-11am, Fri 9-10am. Also, feel free to stop by any time my door is open (but be understanding if I say I am too busy), or you can make an appointment via email.

Required Textbook:

Statistics: Unlocking the Power of Data, Lock, et al., **2nd edition**. The edition number is important, particularly for the homework problems, but also for the daily readings. We will cover the whole book. There are a few copies in King 205 that may be checked out there, during business hours (8am-noon, 1:30-4:30pm, weekdays). I will post the readings for the first week on blackboard.

Readiness:

There is a self-diagnostic exam on the Math department website (or email me for a link), covering general mathematics, below the level of calculus. I strongly recommend you take it before enrolling in this class.

Stats in High School:

This class starts from the beginning, assuming no knowledge of Stats. If you had AP Stats in high school, or some other good stats class, I urge you to take STAT 205 (offered every fall). That class reviews everything you've previously seen, before going further.

Computer Software:

We will use the statistical package R, specifically the implementation RStudio. You will be able to access RStudio from any computer, using a web browser. Instructions and tutorials will come during the lab sessions on Tuesdays.

Blackboard:

I will post homework, reading, and other announcements on the course website at blackboard.oberlin.edu. You will also answer the daily reading questions on it.

Learning Goals:

At the end of this course, students should be able to:

- Explain the central role of *variability* in the field of statistics and understand how *randomness* affects our ability to draw conclusions from data.
- Produce appropriate *graphical displays* and *numerical summaries* of data.
- Apply basic ideas of *statistical inference*, both hypothesis tests and interval estimation, in a variety of settings.
- Understand how *statistical models*, including multivariable models, are used.
- Gain facility with a *statistical software package*, and use the output as part of a *written analysis* of data.

Grading:

Reading Questions (10%).

Homework (10%).

Projects (30%).

2 In-class Midterm Exams (15% each),

Final Exam (20%).

Reading Questions: 10%.

I don't want to come to class each day and tell you what the book already says. Because of this, you need to read the book beforehand; we can have better discussions when we're on the same page about the material. To encourage this, you must answer a few questions before each class. You must go to Blackboard by **8am the day of class** to answer these questions (click on the "Reading Questions" link). These will not be graded for correctness, only that you made a legitimate attempt at them. These will also be helpful to me to see what I need to emphasize in class.

Homework (10%).

The best way to learn the tools and concepts in this course is practice! Homework will be assigned each week and generally due on Fridays. I strongly suggest that you also do the suggested problems that I will assign as well; I will post full solutions to these on Blackboard. Use full sentences to explain what you are doing. Your lowest homework grade will be dropped at the end of the semester.

Honor Code: You may (should!) work together on these problems, but your written solutions must be your own. In particular, you should not be reading another student's final written solutions. You may use the book and your notes, and of course come talk to me! You may use calculators and software also.

Late Work Policy: They are due at 4pm, generally on Fridays. If you do not hand them in at class, I will leave an envelope out for you to put them in. If they are handed in by the time the grader collects them from my office (no guarantees when that is), you get full credit. If they are not, you get a 0. Because I drop one homework grade at the end of the semester, I generally do not allow you to turn it in late because of sickness, etc.

Projects (30%).

The purpose of this type of assignment is to give you an opportunity to work on more involved and open-ended problems and to write things up in a careful manner. I will give you more specifics when I assign them. You will generally have the last bit of lab every week to get started on the assignment, and you will be able to work with others to some degree. We will have 3 or 4 projects throughout the semester, built up through weekly assignments. I will only grade the final versions, and you will get (and give) peer feedback on prior versions. A **significant part** of your grade will be completing the intermediate assignments and giving adequate peer feedback, and the rest of your grade will be the quality of the final result.

Honor Code: I will clarify this on the first assignment. In general, you may/should consult with others, but do your own writing.

Late Work Policy: Since peers will be heavily reliant on you to get the intermediate assignments in on time, you will get a zero on that segment if it is late. For final versions, consult me **in advance** if you need to turn them in late. In general, I'll give you a day or two for free, longer lateness will be a letter grade off, and extreme lateness will be two letter grades.

Two In-class Exams (15% each).

Tentatively Monday, October 8 and Wednesday, November 14. These will concentrate on topics covered in that segment of the course, but the course material is very cumulative, so you will have to know everything from the course so far.

Honor Code: You must work on it alone. They will be closed book, but you are allowed a page of notes. More detailed instructions will follow.

Late Work Policy: Only in rare (emergency) circumstances will late exams be accepted.

Final Exam (20%).

Wednesday, December 19, 2-4pm.

The final will be an in-class exam and will cover the entire course.

Honor Code: You must work on it alone. It will be closed book, but you are allowed a page or two of notes. More detailed instructions will follow.

Late Work Policy: You would need to talk to me and the Dean of Studies **in advance**.

Support:

- Me! Come by office hours, any time.
- Your peers! Working with other students helps everyone improve.
- The Quantitative Skills Drop-in Tutoring Center has many students with Statistics knowledge. No appointment is necessary. Fall 2018 hours are: Sun–Thu 2–11pm in the Science Center Library, Sun–Thu 7–11pm in 1st Floor Mudd, and Mon–Thu 2–4pm in the MRC. Looking at the current schedule, there is almost always a student there who can help you with Stats. If one location doesn't have someone who can help, try the other one.
- If you have a disability of any sort that may affect your performance in this class, please consult with me and with Student Academic Success Programs (Peters 118). All requests for accommodation must go through that office.
- You can often get a free, individual tutor from Student Academic Success Programs (Peters 118).