

## STAT 113 – Introduction to Statistics (Spring 2018)

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

**Lectures:** Section 1: MWF 10-10:50am, King 127. Section 2: MWF 1:30-2:20pm, King 239.

**Lab:** Section 1: Tues 10-10:50am, Sci Center K121. Section 2: Tues 1:30-2:20pm, Sci Center K100.

### Office Hours:

Monday 9-10am & 2:30-4pm, Tuesday 12-1:30pm, Thursday 10-11am & 1:30-2:30pm, Friday 11am-12pm, and by appointment. Also, feel free to stop by any time my door is open (but be understanding if I say I am too busy).

### Required Textbook:

*Statistics: Unlocking the Power of Data*, Lock, et al., **2<sup>nd</sup> 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.

### Consent:

This class is consent only. You must contact me directly (and currently, there is a waitlist).

### 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.

### Group Work:

- In a few days, you will be randomly assigned groups, and much of the coursework will be completed in these groups. You will have the same group all semester. For these group assignments, the entire group will receive one grade.
- Group work is valuable for *all* students. Trying to talk through a concept helps you understand it better.
- Mistakes are an opportunity for learning. Small groups give you a low-stakes setting to make mistakes.
- Group work fosters a *sense of belonging*: this is powerful for combatting stereotype threat and for overcoming anxiety about asking for help.
- You are responsible for treating group members with respect and for helping create a collaborative environment where everyone contributes.
- You will have both public and confidential opportunities to evaluate the contributions of group members. I reserve the right to decrease grades of individuals who are not contributing adequately.
- In case of conflicts within the group, you should first attempt to resolve the conflict as a group. This can be painful! If that fails, I can meet with the group to help resolve the conflict. It is possible, but extremely rare, that I would reassign group members.
- You are required to meet once a week with your group. I strongly recommend meeting at least twice: say, Thursday at “class time” to get things started, and then over the weekend to finish things up.

### Grading:

Reading Questions (individual): 10%.

Group participation (group): 10%.

Lab projects: (group): 20%.

Four In-class Midterm Exams (part individual, part group): 10% each,

Final Exam (part individual, part group): 20%.

Reading Questions (individual): 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.

Group participation (group): 10%.

This grade is 100% if your group hands in all the assignments, and you contribute adequately to your group (including being present at a group meeting each week). Each week, **by Monday night**, your group will turn in a weekly report. Part of this report will be acknowledging that you did the weekly homework assignment. The best way to learn the tools and concepts in this course is to practice and to get immediate feedback on it. I will give you the solutions, when I assign the homework. Your group's responsibility is to agree on answers to a problem **before looking at the solutions** (discussing if there is disagreement or confusion), then read the solutions and discuss anything you got wrong. Part of your group's weekly report will be to let me know (under the honor code) that you did this, as well as who was present. The homework will not be graded on correctness, and you don't need to hand in solutions.

Lab projects: (group): 20%.

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. We will have 3 or 4 projects throughout the semester, built up through weekly assignments. I will only grade the final versions for content (completing intermediate versions counts towards your group participation grade above), but will try to give you some feedback on earlier versions. Your group will turn in a single assignment, as part of your weekly report due on **Monday nights**. This report will also detail group member's contributions. Your group is responsible for making sure that everyone is contributing adequately (for example, major tasks may need to be rotated week-to-week). Part of your group participation is attending lab on Tuesdays, where this group work generally starts.

Four In-class Midterm Exams (part individual, part group): 10% each,

Tentatively on Tuesdays: February 27, March 27, April 17, May 1. 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. The first part of the exam will be individual, and the second part completed in your group (I expect that the group part will be to repeat the individual part together). The grade breakdown will be 2/3 individual and 1/3 group.

Final Exam (part individual, part group): 20%.

Section 1: Wednesday, May 16, 7-9pm. Section 2: Wednesday, May 16, 9-11am.

The final will be an in-class exam and will cover the entire course. Like the midterms, it will be part individual and part group.

### **Support:**

- Your group! A major point of the groups is to create a built-in support structure.
- Me! Come by office hours, any time.
- The Quantitative Skills Drop-in Tutoring Center has many students with Statistics knowledge. No appointment is necessary. Spring 2018 hours are: Sun–Thu 7–11pm, in both 1<sup>st</sup> Floor Mudd and the Science Center Library. 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).