MA 186, Sec. 04 - Applied Statistics
Spring 2019

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Office: Pardee 210
Class Meeting Time: MW 2:45-4:00pm (Pardee 101) / F 2:45-4:00 (Pardee 28)
Office Hours: M 4:00-5:00pm, TuTh 11:00am-12:00pm, or any time my door is open.
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SI Office Hours: Su 2-4pm, Tu 7-9pm (Pardee 216)

Why should I study statistics?
I suspect for many of you, your current answer to that question is "because it's required for me to graduate!" My goal for the next semester is to show you the value that statistical knowledge can have in your life. In this day and age, we are surrounded by data on a daily basis. How can you compile it all into some meaningful story? How can you use data to support and inform your decision making? How can you determine the accuracy of wild claims being made in the media? No matter what your future plans, you can benefit from the ability to manipulate and analyze data.

What are the course goals?

This course will emphasize the following material:

- Methods for collecting and summarizing sample data
- Methods for evaluating the accuracy of estimates of unknown population values
- Techniques for using sample data to make generalizations about larger populations

What are the learning outcomes?

After successful completion of this course, you will be able to:

- Understand the reasoning by which findings from sample data can be extended to larger, more general populations
- Evaluate the results of research studies in which statistical analyses are performed
- Compare and contrast data collection methods and describe how to design a valid statistical study
- Analyze data using statistical software
- Have exposure to statistical examples and applications from a variety of fields

What textbook and other resources do I need?
Our text is *Mind on Statistics* (5th Edition) by Utts and Heckard. This book can be purchased through the college bookstore or through several online retailers. You also need to bring a calculator to class each day; this must be separate from your cell phone, as cell phone use will not be allowed during class.

Where can I find our course materials?

The course webpage will be maintained on Moodle (`http://moodle.lafayette.edu`) and will contain all course materials. At your earliest convenience, visit the Moodle site and log in. I use Moodle to communicate with students via email, so make sure you are enrolled in the proper section and regularly check your Lafayette email for course updates. You are responsible for all material posted to the website.

How will this course be structured?

We will meet in our regular classroom on Mondays and Wednesdays (Pardee 101). Most classroom days will be a mixture of lecture and more engaging hands-on activities to give you a chance to put your knowledge to active use. On Fridays, we will be in the computer lab (Pardee 28) learning how to use the R statistical software.

Are there any policies of which I need to be aware?

- **Attendance:** Regular attendance is vital to your success in this course. Except in the case of extenuating circumstances, a total of six or more absences will result in a final grade no higher than a B-. Ten or more absences will result in an automatic F.
- **Use of technology during class:** I do NOT allow use of cell phones during class. There is no reason for cell phones to be out on your desks; if I see them, I will ask you to put them away. If you would like to use a calculator during class, please invest in one that is separate from your phone. When we are in the computer lab, please stay on task and do not access websites unrelated to what we are working on.
- **Academic honesty:** No academic dishonesty of any sort will be tolerated in this course. Cheating or any other suspected violation of the academic integrity of this course will be punished in accordance with the policies and procedures described in your Student Handbook.

What are the expectations for me as a member of our classroom community?

So that everyone can get the most out of our course, I would like to propose the following classroom norms for our time together:

- **Be present.** This is two-fold. You cannot succeed in this course if you are not in the classroom, so regular attendance is expected (see more on attendance policies above). Beyond physical attendance, however, I expect you to be actively engaged during class. I encourage lively discussion with input from all students, and part of your grade will be based on your behavior and contributions during these discussions.
- **Be respectful.** Every single one of you has a right to this knowledge, and every one of you has something to contribute to our classroom community. Please practice active listening when working in small or large groups, and be respectful of differing opinions. Discrimination of any sort will not be tolerated.
- **Fail repeatedly and productively.** This norm may come as a surprise to some of you, but I am a firm believer that there can be no progress (especially in mathematics) without failure first. Failure is as important (or more so) to the process of learning math and statistics as the final success. We learn far more from experimenting and failing than we ever can from blindly following a correct procedure. We will celebrate productive failure in the course, and you are encouraged to share ideas or answers during class discussions even if you feel they may be incorrect.

You will have an opportunity to propose additional norms as a class during the first week of class.

What components make up my grade?

- **Pre-Class Exercises:** At the end of each class, you will usually be given a short exercise or assignment to complete prior to our next meeting. Typically, there will be a section or two of reading to complete, and some form of exercise to check for reading completion and comprehension. Many of our in-class activities will rely upon the pre-class assignment work; if you do not complete your pre-class exercise, you will be unable to fully engage in the class period and your participation grade will suffer. These exercises will be checked for completion only. You must submit your pre-class exercise on Moodle *before class begins* each day for credit. You may type your answers, scan your written work, or submit a picture of your written work; just make sure that your work is legible.

- **Homework:** Your homework for this course will be due weekly on Wednesdays at the start of class. No late assignments will be accepted, with one exception (see "What if I miss a quiz or assignment?" below). I will choose 2-3 problems to grade in full each week; the remainder of the assignment will be graded for completion.

- **Lab Completion:** Each Friday, we will meet in the computer lab to work with the R statistical software. Your labwork will be graded for completion only. Be aware that material from our labs could conceivably show up on an exam or in a quiz, so it is in your best interest to learn the lab material thoroughly! Lab worksheets must be submitted on Moodle by 5pm on Mondays, to allow to you time to work on the lab over the weekend if you are unable to finish it during class.

- **Quizzes:** On most Mondays, we will have a short (10-15 minute) partner quiz. These quizzes are not meant to be stressful, but rather to help me assess your understanding and adjust the pace of the course accordingly. Make-up quizzes will not be given, with one exception (see "What if I miss a quiz or assignment?" below).

- **Exams:** You will have two midterm exams and one final exam. The final exam will be cumulative. You will be allowed to use a calculator on exams (cell phone calculators will not be permitted). You will also be permitted to bring a 3×5 index card with notes. As we approach the exam dates, we will discuss what material will be covered.

- **Final Project:** Towards the end of the semester, you will complete a final project. We will discuss the details at a later date, but know that this will be your chance to put all of your knowledge to practical use! You will be designing your own study or experiment, collecting and analyzing data, and using it to test a hypothesis. This will be a celebration of everything you have learned this semester, and you'll have lots of freedom to be creative and answer a question of interest to you.

- **Class Participation:** You are expected to regularly contribute to class activities, lectures, and labwork; thus, you should be in class every day. If you do have to miss a class, it is your responsibility to work with a classmate to obtain any lecture notes and cover what you have missed before seeking me out for help. There will be assigned reading for each class. Part of your participation grade is the expectation that you will have completed that reading *before* coming to class each day. I reserve the right to give occasional quizzes to test for reading completion. The remainder of your participation grade will be assigned based on your contributions to class discussions and groupwork.

The grade breakdown will be as follows:

Pre-Class Exercises	5%
Homework	10%
Lab Completion	10%
Quizzes	10%
Midterm Exams	30% (15% each)
Final Exam	15%
Final Project	15%
Participation	5%
Total	100%

The letter grade distribution will be assigned as follows:

>= 93.00	A	73.00 - 76.99	C
90.00 - 92.99	A-	70.00 - 72.99	C-
87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	B	63.00 - 66.99	D
80.00 - 82.99	B-	60.00 - 62.99	D-
77.00 - 79.99	C+	<= 59.99	F

What if I miss a quiz or assignment?

Each of you will be granted three (imaginary) tokens at the beginning of the semester. These can be used throughout the semester to make up for unexpected difficulties you encounter along the way. Your tokens may be redeemed for the following purposes throughout the semester:

- Drop a quiz grade (one token).
- Extend a homework assignment due date by 48 hours with no penalty (one token).
- Extend a lab due date by 48 hours with no penalty (one token).
- Miss a pre-class exercise with no penalty (one token).

Note: If you miss a quiz or fail to turn in a pre-class exercise, I will automatically apply one of your tokens (if any remain). If you would like to use a token to extend a homework or lab assignment due date or to drop a low quiz grade, you must contact me via email and make the request.

If you have remaining tokens at the end of the semester, each can be redeemed for a boost of 0.5% on your final grade. So hang on to those tokens if at all possible!

Are there any important dates I should keep in mind?

The following midterm exam dates are *tentative*. I reserve the right to shift these dates, but I will notify you at least a week in advance should I choose to do so.

- Midterm Exam #1: Monday 2/25 (In class)
- Midterm Exam #2: Monday 4/8 (In class)
- Final Exam: Week of 5/13-5/20 (TBA)

Other important dates you should have on your radar:

- Friday, 2/8: Last day to add/drop a class
- Monday, 3/18 - Friday 3/22: No class (Spring Break)
- Monday, 4/22: Last day to withdraw from a class
- Friday, 5/10: Last day of classes

What resources are available to help me succeed?

There are a number of resources in place to help you succeed in this course, and I urge you to make use of all of them! First of all, my office hours are there for a reason. I have an open door policy; if my office hours don't work for you or if you have questions outside of those times, please feel free to drop by.

Your classmates are another incredible resource; use them! I encourage you to work together throughout the course (though keep in mind that you *must submit your own work*). Form study groups, help each other on difficult topics, and celebrate your successes together.

Feel free to make use of the Academic Resource Hub on campus. They offer tutoring services and other resources for most 100, 200, and 300 level courses. We will also have an SI assigned to our section who will sit in on our course, hold office hours, and offer occasional review sessions for the material.

Finally, read the textbook. I promise you, it will help. There are excellent examples in the book to help you digest the material, and plenty of problems at the end of each section that you may use for extra practice if you wish.

How can I request academic accommodations?

In compliance with Lafayette College policy and equal access laws, I am available to discuss appropriate academic accommodations that you require as a student with a disability. Except in unusual circumstances, requests for academic accommodations need to be made during the first two weeks of the semester so that arrangements can be made. Students must register with the Accessibility Services Office in Scott Hall 300 for verification and for determination of reasonable academic accommodations.

Federal Course Requirement:

The student work in this course is in full compliance with the federal definition of a four credit hour course. Please see the Registrar's Office web site for the full policy and practice statement.

Final Notes:

I'm looking forward to a great semester with all of you! If you have any questions regarding the information in this syllabus or need clarification on anything, please don't hesitate to email me or find me in my office. Best of luck to you this semester!