



DEPARTMENT OF STATISTICS

THE WHARTON SCHOOL  
University of Pennsylvania

Statistics 102

Spring 2020

## Introduction to Business Statistics

Sections 001, 002 and 003

Syllabus

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### PEOPLE:

Instructor: Richard Waterman [waterman@wharton.upenn.edu](mailto:waterman@wharton.upenn.edu) 443 JMHH

Classes meet: Section 001, Mon/Wed 9:00am – 10:30am. SHDH 351.

Section 002, Mon/Wed 10:30am – 12:00pm. SHDH 351.

Section 003, Mon/Wed 1:30pm – 3:00pm. SHDH 351.

Office hours: Mon 12-1:20. Wed. 12- 1:20pm and by appointment.

Teaching Assistant: Shuxiao Chen: [shuxiaoc@wharton.upenn.edu](mailto:shuxiaoc@wharton.upenn.edu)

Office hours: TBA

Questions about the homeworks should be addressed to the TA. Administrative issues and exam related questions should be addressed to the Professor.

Course website: All course related materials will be distributed via the Canvas site.

## COURSE OVERVIEW

This course takes the foundational ideas introduced in Stat 101 (probability distributions and statistical inference) and extends them into the realm of statistical modeling. In particular, the goal of the course is to develop competency in multiple regression modeling. This form of modeling is ubiquitous in business settings and provides the basis for activities that involve predictive analytics. Predictive analytics can be used for wide ranging tasks such as predicting how much you will like a movie, predicting your lifetime value as a customer to your insurance company or predicting the price of a stock at the end of next year. In addition to multiple regression modeling, we will also discuss logistic regression which is a modeling technique suitable for categorical outcome variables.

We will be using the JMP software in class to implement the regression models. You are welcome to use whatever software you choose, but the TAs and myself will only be supporting JMP. If you master the regression modeling ideas as well as develop the capability to implement them, you will have developed a well-defined and in demand skillset, by the end of the semester.

The structure of the course will be to review the key ideas from Stat 101, move on to the Simple Regression Model (SRM), then learn about the Multiple Regression Model (MRM) in detail. As time permits, we will cover logistic regression and some time-series analysis.

Readings from the textbook will be posted on the Canvas site.

## COURSE MATERIALS

*TEXTBOOK:* Statistics for Business, Stine & Foster, Third Edition. **No** MyStatLab purchase is required.

Datasets from the book can be accessed at:

[http://media.pearsoncmg.com/aw/aw\\_stine\\_statforbus\\_1/cw/stb1e\\_student\\_launch.html](http://media.pearsoncmg.com/aw/aw_stine_statforbus_1/cw/stb1e_student_launch.html)

*SOFTWARE:* JMP 14, is available directly from the Canvas web site.

## HOMEWORK (20%)

There will be 4 homework assignments during the semester. Each count equally. No late homeworks are accepted except for a valid and documented reason (for example, a health or family emergency). Upload a PDF version of your homework answers to the Canvas site.

You may work with and help one another with the homework. But you must, however, submit your own solutions, with your own write-up and in your own words. Verbatim copying from someone else's homework is a severe violation of the honor code and will incur at least a 2-letter grade penalty.

Scores for homeworks will be finalized one week after they have been returned. If you have a query regarding your grade you must submit it to the TA in writing via email. You should reference the solution key and articulate why you think it is wrong and you are right or why you think you should have gained additional points. There is a one-week window to query grades. It is the case, that on

review by the TA, if they consider that the grading has been too lenient or simply in error, points can be deducted as well as gained.

Homework due dates are 11:59pm on Feb. 5, Mar. 2, Apr. 8 and Apr. 27.

To reiterate, late submissions will not be accepted. The lowest homework score will be dropped.

### **ATTENDANCE AND CLASSROOM EXPECTATIONS (10%)**

Class attendance is an important part of the academic experience and is expected. Attendance will be gauged by sampling the class at *random* points in time. This sampling can involve short quizzes or brief written answers to questions. You can expect *about* 8 of these events in the semester and the lowest two scores will be dropped.

Disruptive behavior in the classroom will be penalized via the attendance requirement. Examples of which include arriving late to class and leaving early.

### **EXAMS (20% EACH)**

There will be three *in-class* midterm exams, but no cumulative final. Each exam is worth 20% of the final grade. These exams will be all multiple-choice questions. The exams will assume that you have attended class as there may be material on the exams that was covered in class spontaneously but is not in the pre-published class notes. The exam dates are February 17, March 23 and April 29. There are *no makeup exams*. You should make sure that you do not schedule any job interviews or travel for these dates. If you already have a conflict, then consider dropping the class.

You can bring a one-page 8.5 x 11 handwritten crib sheet (front and back) to the exam. A basic scientific calculator will be helpful. No networked devices may be used during the exam – for example, you cannot use the calculator on your phone. Headphones/earbuds are not permitted. Given the short time duration of the exam there should be no need to leave the room, but if you do need to leave for some reason, you must leave your phone behind.

### **FINAL PROJECT (10%)**

The final project will be done in self-selected groups (with a maximum of four students). This will involve an analysis of a dataset along with a write-up of the analysis. This is a chance to demonstrate your mastery of the course content.

### **GRADING**

The final grade will be weighted using 20% from the homeworks (drop the lowest), 10% for attendance (drop the two lowest activity scores), 60% from the three mid-term exams and 10% from the final project. I may curve the exams (upwards) at my discretion.

There will be *no extra credit* opportunities for any grading component.

### **CLASSROOM EXPECTATIONS**

Questions are strongly encouraged. Phones, laptops and other electronic devices (except tablets for note-taking) are not to be used in class.