

ECON 3640-01 -Probability and Statistical Inference for Economists

Tuesdays 6pm-9pm

Instructor: Luciano Pesci

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3 Credit Hours

Classroom: Marriott Library Room 1160

Office: OSH 209

Office Hours: By appointment

Course Description: This course teaches students the scientific approach to decision making using statistical inference methods. You will learn how to appropriately collect, summarize and interpret basic statistics.

Course Objectives:

1. To teach you the theory and application of statistical inference
2. To teach you the R programming language
3. To give you real world experience and skills for future employment

General Approach to the Semester: This is a flipped classroom, which means all the reading, slides, videos, etc. will be available one week before the class and it is expected that you read/review all materials BEFORE you come to class. **This is critically important because the class will be divided into two sections as needed:**

The first (approximately 2 hours) will be a Socratic lecture based on the assigned reading, which means you will be asked to discuss questions related to the textbook and the material it presents at a theoretical level. This will gauge your understanding of the concepts before you have to state applying them. During this time I will answer questions and focus on certain topics in detail as necessary.

The second (approximately 1 hour) will involve applied demonstration and guidance on using the R programming language to mine data from class data sets. This is where you will see, repeatedly, the application of statistics.

Additional Software Training

A weekly 2 hour training session for the R programming language will be offered at a time we set during the first class. You are not required to attend this training but this will focus directly on your class project so it will be extremely helpful time for you. If you are opting for a verbal comprehensive exam (explained below) you are still welcome to sit in on the training and learn this software language, which will give you a real advantage later in the workforce.

Grade Breakout:

94-100	A	73-76	C
90-93	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	60-62	D-
77-79	C+	<60	F

Class Discussion Participation (20%):

Everyone has something to add to the discussion. Speak up in class and earn credit, or stay silent and lose points. This is worth two full letter grades.

Project or Comprehensive Oral Exam (80%):

You have two choices to demonstrate a master of statistics this semester:

The first is a group-based project using an assigned data set (to be introduced at the first class) in teams of 3-5 people. The purpose of this project will be to show you can apply statistics and give an intelligible summary in a PowerPoint report delivered in person at the end of the semester. **To avoid the “free rider” problem, each person on your team will be given a survey at the end of the semester that asks him or her to rate your level of involvement in the group. If your team identifies you as a freer rider I will talk to you and the team individually. If the evidence points to you as a free rider than you will fail the course.**

The second option is an oral final exam at the end of the semester, in front of all your classmates (this option combines the fear of an exam with the fear of public speaking). While this option does not require you to show an applied knowledge, you must be able to answer any and all of my questions so you really have to understand the theory.

REQUIRED Textbook

Keller. BSTAT, Cengage. (ISBN: 978-0538479820).

Academic Code of Conduct Regarding Plagiarism*

Plagiarism is a short cut to nowhere, and in a digital age it will inevitably catch up with you. One of the purposes of this course is to empower you with the tools and methods to avoid making a mistake that could even be misconstrued as plagiarism. There is nothing to be lost by giving others credit for their work, so when in doubt CITE! The formal definition of plagiarism and the consequences of plagiarizing are as follows:

The University of Utah’s “Student Code” defines plagiarism as:

“Plagiarism” means the intentional unacknowledged use or incorporation of any other person's work in, or as a basis for, one's own work offered for academic consideration or credit or for public presentation. Plagiarism includes, but is not limited to, representing as one's own, without attribution, any other individual's words, phrasing, ideas, sequence of ideas, information or any other mode or content of expression.” (Section I.B.2.c)

If plagiarism is discovered, the “Student Code” states:

“Upon receipt of a complaint or discovery of academic misconduct, the faculty member shall make reasonable efforts to discuss the alleged academic misconduct with the accused student no later than twenty (20) business days after receipt of the complaint, and give the student an opportunity to respond. Within ten (10) business days thereafter, the faculty member shall give the student written notice of the academic sanction, if any, to be taken and the student's right to appeal the academic sanction to the Academic Appeals Committee for the college offering the course. Such sanctions may include requiring the student to rewrite a paper(s) or retake an exam(s), a grade reduction, a failing grade for the exercise, or a failing grade for the course(8). In no event shall the academic sanction imposed by the faculty member be more severe than a failing grade for the course.” (Section V.B.3)

*Source: Policy 6-400: Code of Student Rights and Responsibilities (“Student Code”). Available online at: <http://www.regulations.utah.edu/academics/6-400.html>

Americans with Disabilities Act:

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, <http://disability.utah.edu/>, 160 Olpin Union Building, 581-5020 (V/TDD) to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Service.

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Course Outline¹

Date	Topics Covered	Lecture Slides	Readings
5/19	Syllabus, Welcome & Introduction to Theory of Statistics		
5/26	Data Types & Sources	BSTAT Chapter01, Pesci 1 & 2	BSTAT Ch. 1
6/2	Probability & Sampling	BSTAT Chapter2-8, Pesci 3, 4 & 5	BSTAT Ch. 2-7 optional: read Ch. 8
6/9	Hypothesis Testing & Confidence	BSTAT Chapter09-10, Pesci 6	BSTAT Ch. 9-10
6/16	Describing Data: Tabulation & Visualization		
6/23	Normalization & Test of Difference: t-tests	BSTAT Chapter11, Pesci 7	BSTAT Ch. 11
6/30	Tests of Simultaneous Difference: F-tests & ANOVAs	BSTAT Chapter12-14, Pesci 8 & 9	BSTAT Ch. 12, 13.2 & 14
7/7	Prediction Through Regression: OLS	BSTAT Chapter16 & 17, Pesci 10	BSTAT Ch. 16
7/14	Prediction Through Regression: Other Types	Pesci 11	
7/21	The Data Frontier: SEM to Clustering to AI	Pesci 12	
7/28	How to Use Data in Your Future Job	Pesci 13	
8/4	Comprehensive Oral Exam & Projects Due		

¹ This is a tentative schedule and is subject to change. If changes are necessary a revised course schedule will be provided to you. In addition to the assigned lecture slides and chapters, there will be links to online content including videos.