Statistical Modeling with R for Economics and Finance

Course Number ECON 151a

Instructor

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Office Hours: By appointment

Course Description

Welcome to R for Economics and Finance and welcome to the world of statistical computing! This course is about developing your coding skills to applications in Economics and Finance. This class is will be held in-person.

Note: no experience in R or coding is required, we start from scratch and develop your coding skills.

Learning Goals

This course has three main goals:

1. Apply statistics to real economic and finance problems.
2. Develop coding skills in R.
3. Learn how to present your research and make it reproducible for others

Prerequisites

ECON 83A (or taken concurrently)

Textbooks

1. An Introduction to Statistical Learning: with Applications in R
2. Using R for Introductory Econometrics
3. Introductory Econometrics
4. Analysis of Financial Time Series

Required Software and Hardware

1. R and R-Studio
   a. Follow [this guide](#) to install R and R-Studio
2. Moodle: I will use Moodle to post announcements and supporting materials

Course Policies and Evaluation

Evaluation

1. R Exercises (30%)
2. Projects (30%)
3. Presentation (30%)
4. Participation (10%)

Success in this four-credit 5 week course is based on the expectation that students will spend a minimum of 18 hours of study time per week for this class. You may discuss your R exercise with other students but answers must be written individually.

	Lecture Topic	
Week 1		
7/8	Introduction	
7/9	Basic Statistics	
7/10	Data visualization	
Week 2		
7/15	Simple Linear Regression	
7/16	Multiple Linear Regression	
7/17	Classification	**Presentation 1**
Week 3		
7/22	Non-Linear functions	
7/23	Time Series I	
7/24	Time Series II	**Workshop**
Week 4		
7/29	Finance Applications	
7/30	Causal Inference	
7/31	Panel Data	**Workshop**
Week 5		
8/5	Machine Learning I	
8/6	Machine Learning II	
8/7	**Presentation 2**	

Late Work

Late assignments will not be accepted. If the deadline is missed, the grade will be a zero. If there is an emergency that will affect your ability to turn in an assignment by the due date, please contact me before the due date to discuss the situation.

Academic Integrity

Every member of the University community is expected to maintain the highest standards of academic integrity. A student shall not submit work that is falsified or is not the result of the student's own effort. Infringement of academic integrity by a student subjects that student to serious penalties, which may include failure on the assignment, failure in the course, suspension from the University or other sanctions. Please consult [Brandeis University Rights and Responsibilities](#) for all policies and procedures related to academic integrity. Students may be required to submit work via TurnItIn.com or similar software to verify originality. A student who is in doubt regarding standards of academic integrity as they apply to a specific course or assignment should consult the faculty member responsible for that course or assignment before submitting the work. Allegations of alleged academic dishonesty will be forwarded to the Department of Student Rights and Community Standards. Citation and research assistance can be found at [Brandeis Library Guides - Citing Sources](#).

Use of Generative AI

Use of artificial intelligence or machine learning tools such as ChatGPT is permitted as long as it is properly documented and credited. However, all assignments should be your own work. Please follow the following guidelines for using an AI-generator for writing:

- May use AI to rephrasing sentences or reorganizing paragraphs you have drafted yourself.
- May NOT use entire sentences or paragraphs without using quotation marks and a citation, just as you would to any other source.
- Citations should take this form: OpenAI, ChatGPT. Response to prompt: "Explain what is a solar tariff" (January 5, 2024, https://chat.openai.com/).
- May NOT use AI to write a draft (either rough or final) of an assignment.

Be aware that other classes at Brandeis may have different policies. If you have any questions, please feel free to reach out.

Accommodations

Brandeis seeks to create a learning environment that is welcoming and inclusive of all students, and I want to support you in your learning. If you think you may require disability accommodations, you will need to work with Student Accessibility Support (SAS). You can contact them at 781-736-3470, email them at access@brandeis.edu, or visit the Student Accessibility Support home page. You can find helpful student FAQs and other resources on the SAS website, including guidance on how to know whether you might be eligible for support from SAS.

If you already have an accommodation letter from SAS, please provide me with a copy as soon as you can so that I can ensure effective implementation of accommodations for this class. In order to coordinate exam accommodations, ideally you should provide the accommodation letter at least 48 hours before an exam.

Communications

I will send out any information or announcements regarding the class via the Course News and Announcements tool on LATTE. These announcements are sent to your email address, and are also saved and always available to you at any time on LATTE.

Classroom Health and Safety

Register for the Brandeis Emergency Notification System. Students who receive an emergency notification while attending class should notify their instructor immediately. In the case of a life-threatening emergency, call 911. As a precaution, review this active shooter information sheet.

Brandeis provides this shuttle service for traveling across campus or to downtown Waltham, Cambridge and Boston.

On the Brandeis campus, all students, faculty, staff and guests are required to observe the university's policies on physical distancing and mask-wearing to support the health and safety of all classroom participants. Review up to date COVID-related health and safety policies regularly.

Course Materials/Books/Apps/Equipment

If you are having difficulty purchasing course materials, please make an appointment with your Student Financial Services or Academic Services advisor to discuss possible funding options, including vouchers for purchases made at the Brandeis Bookstore.

LATTE

LATTE is the Brandeis learning management system. Login using your UNET ID and password. For LATTE help, contact Library@brandeis.edu.

Library

The Brandeis Library collections and staff offer resources and services to support Brandeis students, faculty and staff. Librarians and Specialists from Research & Instructional Services, Public Services, Archives & Special Collections, Sound & Image Media Studios, MakerLab, AutomationLab, and Digital Scholarship Lab are available to help you through consultations and workshops.

Privacy

To protect your privacy in any case where this course involves online student work outside of Brandeis password-protected spaces, you may choose to use a pseudonym/alias. You must share the pseudonym/ alias with me and any teaching assistants as needed. Alternatively, with prior consultation, you may submit such work directly to me.

Student Support

Brandeis University is committed to supporting all our students so they can thrive. If a student, faculty, or staff member wants to learn more about support resources, the Support at Brandeis webpage offers a comprehensive list that includes these staff colleagues you can consult, along with other support resources:

- The Care Team
- Academic Services (undergraduate)
- Graduate Student Affairs
- Directors of Graduate Studies in each department, School of Arts & Sciences
- Program Administrators for the Heller School and International Business School
- University Ombuds
- Office of Equal Opportunity.