

ECON 707: Econometrics II

Fall Semester, 2023
Department of Economics
Strome College of Business
Old Dominion University
Evie Zhang
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Office: Constant 2046

Class Hours: Wednesday, 7:10 - 9:50 pm

Office Hours: Wednesday and Friday, 12:30 pm - 2:00 pm

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Classroom: Constant 1036

Course Description

The objective of the course is to introduce students to time series analysis and forecasting. The goal of this course is for students to obtain a hands-on experience with using financial, economic, business, crime, traffic, and other data to construct and evaluate forecasts. The class will introduce several techniques for applied time series analysis and forecasting. Students will be using R to enhance their computer skills.

Use of Statistical Software - R and R Studio

As this course focuses on the learning and application of time series techniques, a computer or laptop with R and R Studio installed is required for class participation, homework, and exams. Students can obtain the latest version of R from <https://www.r-project.org/>. Students can obtain a free version of R-studio from <https://www.rstudio.com/>. While students can directly code in R, it is recommended that student use R-studio to facilitate interactions with the R language. Students will also install numerous open source packages that will facilitate economic analysis in R.

Prerequisites/Corequisites

Prerequisite: ECON 706 or equivalent.

Course Objectives

At the end of this course, students will be able to:

1. Understand and apply common statistical methods used in business and economic forecasting
2. Explain, identify, and extract components of a time series
3. Collect, organize, visualize, and analyze time series data
4. Interpret and critique forecasts

Textbooks and Other Materials

As this course focuses on the learning and application of statistical techniques, a laptop with R installed is recommended for class participation. You will need access to a laptop, tablet, or other computing device to complete the assignments and exams.

You may also use R Studio Cloud instead of a locally installed version of R. You can create a free R-Studio cloud account at <https://rstudio.cloud/>

Required Texts

None.

Reference Texts

Francis X. Diebold, Forecasting in Economics, Business, Finance and Beyond - <https://www.sas.upenn.edu/~fdiebold/Teaching221/Forecasting.pdf>

Gonzalez-Rivera, Gloria (2012). *Forecasting for Economics and Business*. Pearson.

Hansen, Bruce* (<https://www.ssc.wisc.edu/~bhansen/390/2010/>)

Hyndman, R.J., Athanasopoulos, G. (2018) Forecasting: principles and practice, 3rd edition, OTexts: Melbourne, Australia - <https://otexts.com/fpp3/>

↔ A Little Book of R for Time Series (<https://a-little-book-of-r-for-time-series.readthedocs.io/en/latest/src/timeseries.html>)

Instructional Methodologies

This course is based on lecture and practical application. It is expected that each student will have read the assigned materials and be prepared to discuss them and answer related questions in class. Students are expected to participate in class discussions and in-class examples. Students are expected to complete homework to apply the concepts discussed in class.

Requirements and Grading

The evaluation for this course consists of the following elements: assignments, exams (including a cumulative final examination), a project, and a live, in-person forecasting competition. Due to the nature of the course, late submissions of any graded material will receive a score of zero once the answer key is posted. The final grade is comprised of the sum of the following elements:

Assignment	Points	Due
HW 1	50	2023-09-06
HW 2	50	2023-09-13
HW 3	50	2023-09-20
HW 4	50	2023-10-11
HW 5	50	2023-10-18
Project Pitch	50	2023-11-01
Project Data	50	2023-11-15
Final Project	100	2023-12-07
Forecasting Competition	100	2023-11-29
Exam 1	150	2023-09-27
Exam 2	150	2023-10-25
Final	150	2023-12-13

Grades will then be converted using the table:

Min	Max	Letter
930	1000	A
900	920	A-
870	890	B+
830	860	B
800	820	B-
770	790	C+
730	760	C
700	720	C-
670	690	D+
630	660	D
600	620	D-
0	590	F

Except for grades of “Incomplete”, all grades are considered final when reported by a faculty member at the end of a semester. A change in grade may only be requested when a calculation, clerical, administrative, or recording error is discovered in the original assignment of a course grade or when a decision is made by the faculty member to change the course grade because of the disputed academic evaluation procedures.

Grade changes necessitated by a calculation, administrative, or recording error must be reported within a period of six months from the time the grade is awarded. No grade may be changed as the result of a re-evaluation of a student’s work or the submission of supplemental work following the close of a semester

Attendance and Participation

Per university policy, students are expected to attend class. Students missing more than 15% of class meetings may be failed. Therefore, students who miss more than two class meetings are subject to automatic failure.

Digital Devices and Expectations

While digital devices are an integral part of our lives, there is a significant body of research that shows that paying attention to digital devices during classes detracts from knowledge retention and performance. The expectation is that phones will be silenced for the duration of class. If you must answer a text or class, the expectation is that you will do so outside the classroom out of respect for your fellow classmates.

Course Disclaimer

The course schedule and activities are subject to change. Changes will be posted as Announcements in Canvas.

Cultural Diversity

Old Dominion University fosters a campus community that values and supports the cultural identities of each of our members. The University also fosters an inclusive environment and provides programs that cultivate a climate of awareness, understanding, and respect of diverse individuals and groups. [Source: Adapted from The Office of Intercultural Relations]

Honor Pledge

“I pledge to support the honor system of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member of the academic community, it is my responsibility to turn in all suspected violators of the honor system. I will report to Honor Council hearings if summoned.” By attending Old Dominion University, you have accepted the responsibility to abide by this code. This is an institutional policy approved by the Board of Visitors.

Academic Integrity

The Office of Student Conduct & Academic Integrity (OSCAI) oversees the administration of the student conduct system, as outlined in the Code of Student Conduct. Through their interactions with students, they attempt to foster a climate of personal and academic integrity that facilitates the success of all University community members. For more information, please visit the Honor Council online at The Office of Student Conduct and Academic Integrity.

Academic Conduct

Academic dishonesty will not be tolerated. In addition to imposing penalties ranging anywhere from a failing grade (F) to suspension, it is University policy to record all Academic Dishonesty convictions permanently on the student’s transcript. I report all cases of academic dishonesty to the Office of Student Conduct.

Educational Accessibility and Accommodations

Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations.

If you experience a disability that will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you.

If you feel that you will experience barriers to your ability to learn or take tests in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary.

The Office of Educational Accessibility is located at 1021 Student Success Center, and the phone number is 757-683-4655. Additional information is available on the OEA website: The Office of Educational Accessibility.

Communication

Students should feel welcome to contact me via email (s2zhang@odu.edu) or drop by my office during my office hours. I respond to well-crafted emails within 24 business hours. Students should take the time to craft complete, professional emails. The more information that you can provide about a question or problem, the more likely that my response will be helpful. Avoid non-professional language and practice communicating in the corporate workplace. Emails that are unprofessional will be returned with no action. There are many guides on how to compose a professional email which you can easily find online.

University Email Policy

The Old Dominion University email system is the official electronic mail system for distributing course-related communications, policies, announcements, and other information. In addition, the University email user ID and password are necessary for authentication and access to numerous electronic resources (online courses, faculty webpages, etc.). For more information about student email, please visit Student Computing.

Withdrawal

A syllabus constitutes an agreement between the student and the course instructor about course requirements. Participation in this course indicates your acceptance of its teaching focus, requirements, and policies. Please review the syllabus and the course requirements as soon as possible. If you believe that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved – or if you anticipate that the class meetings, assignment deadlines or abiding by the course policies will constitute an unacceptable hardship for you – you should drop the class by the drop/add deadline, which is listed in the ODU Schedule of Classes. For more information, please visit the Office of the University Registrar.

Other Academic Policies

Please see the following link for other academic policies at the university level: <https://catalog.odu.edu/undergraduate/academicinformation/>

Tentative Course Schedule

Week	Date	Topic	Chapter	Due
1	2023-08-30	Visuals		
2	2023-09-06	Making Naïve Forecasts	1, 4	HW 1
3	2023-09-13	Types of Forecasts	5, 6	HW 2
4	2023-09-20	Autocorrelation	7, 8	HW 3
5	2023-09-27	EXAM 1		
6	2023-10-04	AR, MA	9, 10	
7	2023-10-11	AR, MA Forecasts	11, 12	HW 4
8	2023-10-18	Components of a Time Series	13, 14	HW 5
9	2023-10-25	EXAM 2		Project Pitch
10	2023-11-01	Standard Errors, Model Selection	15, 16, 17	
11	2023-11-08	Distributed Lags, Coefficient Dynamics	18, 20	
12	2023-11-15	Forecasting Competition		Project Data
13	2023-11-22	NO CLASS		
14	2023-11-29	Unit Roots	21	
15	2023-12-06	VAR and IRF	25	Final Project
16	2023-12-13	FINAL		