

**Syllabus**  
**ECON 3313Q: Elementary Economic Forecasting**  
**Spring 2021**

---

<b>Instructor:</b>	Zhenhao Gong ( <a href="mailto:zhenhao.gong@uconn.edu">zhenhao.gong@uconn.edu</a> )
<b>Pronouns:</b>	He/him/his
<b>Office hours:</b>	TuTh 10:20 – 10:50 or by appointment, on Webex
<b>Lectures:</b>	TuTh 11:00 – 12:15, on Webex ( <a href="https://uconn-cmr.webex.com/meet/zhg17009">https://uconn-cmr.webex.com/meet/zhg17009</a> )

---

**Course Description:**

This course provides an upper-level undergraduate introduction to forecasting, broadly defined to include all aspects of predictive modeling, in economics and related fields. Although we will make heavy use of (and assume significant background in) general econometrics/statistics, this course is much more sharply focused. It explicitly and exclusively about economic prediction, or forecasting, as opposed to general econometrics/statistics, or anything else. Emphasis will be on forecast construction, evaluation, and combination (point, interval, density). Mathematics of econometrics will be introduced only as needed and will not be a central focus.

**Prerequisites:** ECON 2202 or 2212Q; ECON 2311Q; MATH 1071Q or 1110Q or 1125Q or 1131Q or 1151Q or 2141Q; and STAT 1000Q or 1100Q.

**Textbook and Readings:**

The main textbook will be used for this course:

- Diebold, F. X., *Elements of Forecasting*, 4<sup>th</sup> Edition, Cengage Learning.

Required textbooks are available for purchase through the UConn Bookstore. The PDF version of this textbook is free to download online on the author's website. Besides the main textbook, the following textbooks are recommended:

- Diebold, F. X., *Forecasting in Economics, Business, Finance and Beyond*, Department of Economics, University of Pennsylvania.
- Stock, J. and Watson, M., *Introduction to Econometrics*, 4<sup>th</sup> Edition, Pearson.

In addition to the recommended textbooks, a series of lecture notes which follow the material presented in class will be posted on [HuskyCT](#). You should check this page regularly. The recommended textbooks and lecture notes are complements to the lectures, not substitutes.

**Grading Policy:**

Participation (10%), Homework (30%), Midterm (30%), Final Project (30%). I will generally follow the following grading scheme, however, I reserve the right to make adjustments as necessary. You will be noticed if adjustments are made.

$\geq 93.00$	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+	$\leq 59.99$	F

**Class Requirements:**

- **Participation:** Regular attendance is essential and expected. Participation Quizzes will be available on huskyct for random selected classes. I will release the answer for the participation quiz at the end of class.
- **Homework Assignments:** There are six homework assignments in total including computer exercises. These assignments with lecture notes are key materials for reviewing the main contents of the lectures and preparing for the exams. Students are encouraged to work with others in the class on their problem sets, but each student must write up his or her answers separately. Please list the name(s) of those with whom you worked on your assignment.
- **Exam and Final Project:** One midterm exams and one final project. Dates are TBA. The Midterm exam will be held online on our regular class time. During the exam, you will have a time slot to download the exam sheet and upload your answers on huskyct. Please consider to drop the class if it is inconvenient for you to attend or take the exams on regular class time. For the final project, you need to write a term paper based on your interest using the forecasting tools we have learned through the semester. More instructions will be given about the final project in class.

**Makeup Exam Policy:** Only students with legitimate excuses will be allowed to make up missed exams. The date and time for student to take a makeup exam will be arranged on a case by case basis.

**Statistical Software:**

We will use the statistical package R which is free and open source. R is a programming language and free software environment for statistical computing. To install RStudio, first download and install R from <http://cran.r-project.org/>. Second, download and install RStudio by visiting <http://rstudio.org/download/desktop> and clicking the link listed under "Recommended for Your System." While not required, these references may be useful if you need some extra help learning R, or want to go beyond the material covered in the course:

- [R Twotutorials](#) by Anthony Damico: ninety energetic, two-minute video tutorials on statistical programming with R.
- [Resources to help you learn R](#) by UCLA Academic Technology Services: a wealth of information about R, conveniently arranged in one place. The R Starter Kit is particularly helpful.
- [R in a Nutshell](#) by Joseph Adler: it provides a comprehensive reference guide to R.
- [Econometrics in R](#) by Grant Farnsworth

**Academic Integrity:**

You are responsible for acting in accordance with the University of Connecticut's [Student Code](#). Review and become familiar with these expectations. In particular, make sure you have read the section that applies to you on [Academic Integrity](#). Cheating and plagiarism are taken very seriously at the University of Connecticut. As a student, it is your responsibility to avoid plagiarism.

**Disabilities and Accommodations:**

In compliance with the University of Connecticut policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Students in need of accommodations should go to the [center for students with disabilities](#) to verify their eligibility for appropriate accommodations. If you are eligible for accommodations such as extra time during exams, please provide documentation and coordinate with me no later than a week prior to every exam.

### **Authentication of Students in Online and Distance Learning Courses:**

The University of Connecticut is required to verify the identity of students who participate in distance learning or online courses and to establish that students who register in these courses are the same students who participate in and complete the course activities and assessments and receive academic credit. Verification and authentication of student identity in this course will include:

- Instructors must use HuskyCT as the primary repository and access point for course content, assessment, and activities, and students use their NetID and password process to securely access course content/assessments.
- Instructors can observe students taking tests/assessments and can lead one-on-one synchronous oral examinations using an online platform. Instructors can ask for identification and/or confirm student identity via official UConn photo in StudentAdmin.

### **How to Succeed in this Course:**

All students can succeed in this course and I am here to help you along the way. Please do not hesitate to ask questions or attend office hours. All questions are important here. Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Consider including links to the [Dean of Students Office](#), [Academic Achievement Center](#), [Writing Center](#), [Quantitative Learning Center](#), [Center for Students with Disabilities](#), [Student Health and Wellness – Mental Health](#), etc.

### **Statement on Copyright:**

My lectures, notes, handouts, displays and recordings are protected by state common law and federal copyright law. They are my own original expression and I've recorded them prior or during my lecture in order to ensure that I obtain copyright protection. Students are authorized to take notes in my class; however, this authorization extends only to making one set of notes for your own personal use and no other use. I will inform you as to whether you are authorized to record my lectures at the beginning of each semester. If you are so authorized to record my lectures, you may not copy this recording or any other material, provide copies of either to anyone else, or make a commercial use of them without prior permission from me.

### **Tentative Course Outline:**

1. **Introduction to Forecasting** (Elements of Forecasting, Chapter 1)
2. **Review of Probability and Statistics**  
(Elements of Forecasting, Chapter 2)
  - (a) Random Variables and Probability Distribution Functions
  - (b) Jointly Distributed Random Variables, Covariance and Correlation
  - (c) Estimators and Sampling Distributions
  - (d) Statistical Inference: Estimation and Hypothesis Testing

**3. Review of Regression analysis and Regression for Forecasting**

(Elements of Forecasting, Chapter 2)

- (a) Simple Linear Regression analysis and Inference
- (b) Multiple Linear Regression analysis and Inference
- (c) Nonlinear Regression analysis and Inference

—————**(Homework 1)**—————

- (d) Regression From a Forecasting Perspective

**4. Six Considerations Basic to Successful Forecasting**

(Elements of Forecasting, Chapter 3)

—————**(Homework 2)**—————

**5. Graphics, Trend and Evaluating Forecasting Models**

(Elements of Forecasting, Chapter 4 & 5)

- (a) Statistical Graphics for Forecasting
- (b) Modeling and Forecasting Trend
- (c) Selecting forecasting models using the Akaike and Schwarz criteria
- (d) Application: characterizing Canadian employment dynamics

—————**(Homework 3 & Midterm)**—————

**6. Modeling and Forecasting Seasonality**

(Elements of Forecasting, Chapter 6)

- (a) The nature and sources of seasonality
- (b) Modeling seasonality
- (c) Forecasting seasonal series criteria
- (d) Application: forecasting housing starts

—————**(Homework 4)**—————

**7. Characterizing and Modeling Cycles** (Elements of Forecasting, Chapter 7 & 8)

- (a) Covariance stationary time series
- (b) White noise, Lag operator and Wold's theorem
- (c) Autocorrelation and Partial Autocorrelation Functions
- (d) Modeling Cycles: MA, AR and ARMA Models
- (e) Application: specifying and estimating models for employment forecasting

—————**(Homework 5)**—————

**8. Forecasting Cycles** (Elements of Forecasting, Chapter 9)

- (a) Optimal forecasts
- (b) Forecasting moving average processes
- (c) Making the forecasts operational
- (d) The chain rule of forecasting
- (e) Application: forecasting employment

—————**(Homework 6)**—————

**9. Putting it all Together: A Forecasting Model with Trend, Seasonal and Cyclical Components**

(Elements of Forecasting, Chapter 10)

—————**(Final Project)**—————