

ECON 8310 (BSAD 8080) – Business Forecasting
Date & Time: Thursdays, 6-8:40 PM, Room: MH 115

Instructor: Dustin White, PhD
MH 332M
Phone: 402-554-3303
Email: drwhite@unomaha.edu
Slack Channel: <https://datascienceuno.slack.com>

Office Hours: Thursdays from 5-6 PM, and by appointment.

Materials: Course Slides (hosted on Github at <https://github.com/dustywhite7/Econ8310>)

Python (I recommend Anaconda, since it comes prepackaged with most of the numeric and analytic libraries we will use)

Mimir License (\$25)

Prerequisites: ECON 8320 (or equivalent programming experience) AND ECON 8300 (or equivalent multivariate regression analysis coursework)
OR Instructor Approval

We will be creating our own forecasts, and my examples will use Python. You are welcome to use any other programming language you prefer (such as R), but **I will not provide support for other software or languages.**

Description: The course will cover forecasting tools and applications applied to business settings. We will cover traditional Econometric forecasting methods in the first half of the class. In the second half of the course, we will focus on models in predictive analytics and machine learning, since these models are quickly becoming critical tools for forecasters in many settings. The course will include lecture and lab time, and labs will be focused on teaching students how to implement the models discussed in lectures.

Course Outline: Part 1: Time Series Models

Review of OLS, Tools for Class	1 day
Time Series Models - ARIMA	1 day
Time Series Models - ARIMAX	1 day
Time Series Models - VAR	1 day
Time Series Models - GAM	1 day
Panel Data Models - Fixed-Effects Model	1 day
MIDTERM EXAM	2 days

Part 2: Predictive Models

Logistic Regression	1 day
Lasso and Feature Selection	1 day
Decision Trees	1 day
Ensemble Methods - Random Forests	1 day
Support Vector Machines	1 day
k -Nearest Neighbors	1 day
FINAL EXAM	2 days

Grade Policy: Reading Summaries (12 total)	120 points
Homework/Lab Assignments (4 total)	360 points
Midterm Exam/Presentation	250 points
Final Exam/Presentation	270 points

Grades will be distributed according to the following grade scale:

Score	Letter Grade	Score	Letter Grade
A	> 939	C+	775 - 799
A-	900 - 939	C	725 - 774
B+	875 - 899	C-	700 - 724
B	825 - 874	D	600 - 699
B-	800 - 824	F	< 600

Course Objectives: After this course, students should be capable of:

1. Understanding the respective strengths and weaknesses of the models presented in class
2. Implementing Econometric forecasting models
3. Applying machine learning algorithms in a forecasting setting

Grading: All assignments are to be submitted through the appropriate dropboxes on the course website. Rubrics will be posted, and will contain detailed information on the assignment grading policy.

Homework: Late work is not accepted, except as outlined in University policy.

Academic Honesty: UNO's requirements for Academic Integrity and Behavior All students are required to adhere to the highest standards of academic integrity and behavior and must satisfy the **UNO Academic Integrity Policy** and **Student Code of Conduct**. It is the student's responsibility to read, understand and abide by these policies. If I find that you have plagiarized, been dishonest in completing your assignments, or cheated on an exam or assignment, then I reserve the right to award you no points on the entire exam, project, or assignment and to report the behavior to the university. If this behavior is repeated, I reserve

the right to award a failing grade, independent of your score on other assignments. Academic integrity is essential to education, and I take it very seriously.

Extra Help: Do not hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course. The longer you wait, the more you will struggle.