

**ECON 4117-001**  
**BUSINESS AND ECONOMIC FORECASTING**  
**TR 8:30 – 9:45 am**  
**SPRING 2020**  
**Friday Room #117**

INSTRUCTOR: Dr. Hui-Kuan Tseng  
OFFICE: 227A, Friday Building  
OFFICE HOURS: MW 2:00 – 3:00 pm and TR 11:30 am – 12:30 pm  
OFFICE PHONE: 704-687-7598  
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**REQUIRED TEXT:** Barry Keating and J. Holton Wilson, Forecasting and Predictive Analytics with ForecastX, 7<sup>th</sup> edition (McGraw Hill-Irwin)

**Credit Hours:** (3)

**Prerequisite(s):** [ECON 2101](#), [ECON 2102](#), and [ECON 3112](#); [INFO 2130](#); [MATH 1120](#) or [MATH 1241](#); and [STAT 1220](#) or equivalent; all with grades of C or above; or permission of instructor.

**COURSE DESCRIPTION:** Analysis of fluctuations in economic activity, including production, employment, prices and industry sales. Topics include forecasting methods, business cycle theories, historical record, industry and sales forecasting. Not available for credit in the M.S. program in Economics.

**COURSE OBJECTIVES:** In this course, you will learn the conceptual basis for various forecasting techniques. Both time series and regression-based approaches will be covered. The accompanying computer software will allow you to put these various techniques to use. After studying this course, students should understand both theoretical and practical aspects of forecasting.

**GRADING POLICY:**

MIDTERM EXAM I	100 points
MIDTERM EXAM II	100 points
MIDTERM EXAM III	100 points
FINAL EXAM (NON-CUMULATIVE)	100 points
PROBLEM SETS (best 3 of 4)	60 points
<u>ATTENDANCE</u>	<u>20 points</u>
	480 points

**Notes:**

1. There will be three 100-point midterm exams during the semester plus a 100-point non-cumulative final exam.

2. No make-up exams shall be given for whatever reason. Students who miss one midterm exam are required to take a cumulative final exam which carries a weight of 200 points. Students who miss two midterm exams will get an "F" as course grade.
3. The final exam, regular or cumulative, will be given according to the university's final exam schedule. There will be no consideration given to students who wish to take the final exam early.
4. There will be four homework assignments. The homework will include the use of ForecastX to get hands on practice with the various forecasting techniques as well as questions that will help you to prepare for exams. Only the highest three homework assignment grades will be counted. Late homework will absolutely not be accepted.
5. **Attendance:** Students are expected to attend, to arrive on time and to stay the entire class period. Attendance will be taken 20 times during the semester. Each attendance counts 1 point of your total course points. You are permitted *one absence* from class without the penalty over the course of the semester. If you miss a class for any reason, you are expected to obtain class notes or assignments from other students in the class. In other words, your primary source of information is the classroom – if something is announced in class I am under no obligation to also post that information online or notify the class via e-mail. Please do NOT e-mail me to say, "I cut your class today - what did I miss?" I won't respond.
6. **Bonus Opportunities:** There are extra credit opportunities. You may earn extra credits from in-class practice questions. When the extra credits are offered, they must be completed in class and only students who are present are eligible for the extra credits. No make-up for in-class practice questions.
7. The course grade is determined by the following formula and scale:

$$Average(\%) = \frac{Exam1 + Exam2 + Exam3 + FinalExam + HW + Attendance + Bonus}{480}$$

A = 90% or above

B = 80% - 89.9%

C = 70% - 79.9%

D = 60% - 69.9%

F = below 60%

**Cells phones and other technology:** The use of cell phones, beepers, or other communication devices is disruptive, and is therefore not permitted during class. If you have a personal or professional emergency or urgent matter, let the instructor know that you may need to respond to a call during class; turn your cell phone to the "vibrate" option, and leave the room to respond to the call. Otherwise, cell phones and other communication devices should be turned off. I also ask that students do not "surf" the internet, text-message or twitter during class; if you have a personal emergency let me know; you can leave the room to respond to a call or text-message. One more thing, you may not use the calculator features of your cell phone during exams.

**Academic Integrity:** Students have the responsibility to know and observe the requirements of The UNC Charlotte Code of Student Academic Integrity. This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Any special requirements or permission regarding academic integrity in this course will be stated by the instructor and are binding on the students. Academic evaluations in this course include a judgment that the student's work is free from academic dishonesty of any type; and grades in this course therefore should be and will be adversely affected by academic dishonesty. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases, the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty to the course instructor.

#### **TENTATIVE READING ASSIGNMENT:**

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|--|-------|
| I. Introduction to Business Forecasting                            | Chp 1 |
| i.    New Produce Forecasting                                      |       |
| ii.   Naïve Forecasting Models                                     |       |
| iii.  Criteria for Evaluating Forecast Accuracy                    |       |
| iv.   Introduction to ForecastX                                    |       |
| II. The Forecast Process, Data Considerations, and Model Selection | Chp 2 |
| i.    Trend, Seasonal, and Cyclical Data Patterns                  |       |
| ii.   Review of Basis Statistics                                   |       |

**Thursday, 1/30      \*\*\*\*\* Midterm Exam I \*\*\*\*\***

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|---|-------|
| III. Moving Averages and Exponential Smoothing            | Chp 3 |
| i.    Moving Averages                                     |       |
| ii.   Simple Exponential Smoothing                        |       |
| iii.  Holt's Exponential Smoothing                        |       |
| iv.   Winters' Exponential Smoothing                      |       |
| v.    Adaptive-Response-Rate Single Exponential Smoothing |       |

- IV. Introduction to Forecasting with Regression methods Chp 4
- i. The Bivariate Regression Model
  - ii. Forecasting with a Simple Linear Trend
  - iii. Using a Causal Regression Model to Forecast

**Thursday, 2/27      \*\*\*\*\* Midterm Exam II \*\*\*\*\***

- iv. Statistical Evaluation of Regression Models
  - v. Cross-Sectional Forecasting
- V. Forecasting with Multiple Regression Chp 5
- i. Selecting Independent Variables
  - ii. Statistical Evaluation of Multiple-Regression Model
  - iii. Seasonality in Multiple Regression Models

- VI. Time-Series Decomposition Chp 6
- i. The Basic Time-Series Decomposition Model
  - ii. Deseasonalizing the Data
  - iii. Finding the Long-Term Trend
  - iv. Measuring the Cyclical Component

**Tuesday, 4/7      \*\*\*\*\* Midterm Exam III \*\*\*\*\***

- VII. ARIMA – Type Forecasting Models Chp 7,8
- i. Moving-Average Models
  - ii. Autoregressive Models
  - iii. Autoregressive Moving Average Models
  - iv. Forecasting Seasonal Time Series with ARIMA models
  - v. Combining Forecast Results

**Tuesday, 5/5, 8:00 – 10:30am      \*\*\*\*\* Final Exam \*\*\*\*\***

***Diversity: The Belk College of Business strives to create an inclusive academic climate in which the dignity of all individuals is respected and maintained. Therefore, we celebrate diversity that includes, but is not limited to ability/disability, age, culture, ethnicity, gender, language, race, religion, sexual orientation, and socioeconomic status.***

***UNC Charlotte is committed to access to education. If you have a disability and need academic accommodations, please provide a letter of accommodation from Disability Services early in the semester. For more information on accommodations, contact the Office of Disability Services at 704-687-0040 or visit their office in Fretwell 230.***