

**Economic Forecasting**  
**Economics 144**  
**UCLA Spring 2017**

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## Syllabus

**Lecturer:** Dr. Randall R. Rojas  
**Office:** Bunche 8248  
**Office Hours:** Tue & Thur 1:30-2:30PM  
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**Readers:** TBD

### Time and Location

Tuesday and Thursday 11:00AM-12:15PM, Haines A18

### Course Description

This course provides a survey of the theory and application of time series methods to forecasting in Economics, Business, and Government. Topics covered include modeling and forecasting trend, seasonality, and cycles. We will also discuss stochastic trends, volatility measure, and evaluation of forecasting techniques. This course presents a hands-on approach to real-world data analysis methods that are widely used by economists and other professionals.

### Textbook:

(1) *Forecasting for Economics and Business*. Gloria Gonzales-Rivera. Pearson, 2013.

Data: [http://wps.prenhall.com/bp\\_gonzalez\\_forecasteb\\_1/221/56733/14523894.cw/index.html](http://wps.prenhall.com/bp_gonzalez_forecasteb_1/221/56733/14523894.cw/index.html)

(2) *Forecasting in Economics, Business, Finance and Beyond..* 2017 Edition. Francis X. Diebold.

Available for free (digital version) at: <http://www.ssc.upenn.edu/~fdiebold/Teaching221/Forecasting.pdf>

### Prerequisites

Economics 101 and 103/103L. Familiarity with a data analysis software (e.g., R, Excel, Matlab, STATA, etc.) and/or programming experience.

### Computation of Course Grade

The course grade will be based on homework assignments, group projects, two midterm exams, and a cumulative final exam. Formula sheets will be provided during the exams. Missed exams and projects may not be made up.

- 20% Group Projects (Two projects, 10% each)
- 15% Homework (~5 Assignments, 3% each)
- 25% Midterm Exam (Chapters: 1-10, May 3<sup>th</sup>)
- 40% Final Exam (Cumulative, June 11<sup>th</sup>, 11:30AM-2:30PM)

## Course Enforced Policies

- There are no make-up exams. Exam dates are indicated on the syllabus. Therefore, if you cannot take an exam on the specified date, you are advised to take the course in a different section.
- You need to bring a valid form of picture ID on scheduled days of exams. You will not be allowed to take the exam without one.
- The use of electronic devices such as cellphones, tablets, and devices that allow you to communicate with others, is strictly banned. You will be reported for cheating if caught using them during exams. Therefore, please turn off all your electronic devices during exams.
- There are no extra credit assignments available.
- All grades are final when filed by the instructor on the Final Grade Report.

## Assignment Enforced Policies

- Homework and project answers must be provided in the order in which they are asked on the respective assignment. If they are not in order, you will be deducted 25% of the total points for the respective assignment.
- Homework and projects must be typed, unless there are analytical questions, in which case, the answers to these questions may be hand written. I would encourage you to use R Markdown and/or L<sup>A</sup>T<sub>E</sub>X.
- There are no make up projects or homework assignments. All projects/assignments are due on the scheduled due date. Late and/or emailed solutions for projects or homework assignments will not be accepted. No exceptions will be made on this.
- Both projects and homework solutions must be submitted with the respective R code. Therefore, incomplete project and/or homework solutions (e.g., missing the respective R code), will not receive any credit.
- You are advised to start working on the assignments as early as possible in order to have enough time to troubleshoot any R issue(s) you may encounter.
- Although I encourage you to work together on the homework assignments, you must submit your own solution for each one.

## R Tutorials/Reference Materials

- Note: You can use either R or RStudio (both are free) the only difference between them is the platform on which you write/run your codes.
- <http://stats.idre.ucla.edu/r/>
- <http://cran.r-project.org/doc/manuals/R-intro.pdf>
- <http://data.princeton.edu/R/>
- On the course website I will also be posting additional reference materials as needed in class.

# Tentative Course Schedule

Week	Lecture Topics	Chapters
1 (Apr 3, 5)	Introduction to Forecasting of Time Series	1 <sup>a</sup> , 2 <sup>a</sup> , 4 <sup>b</sup>
2 (Apr 10, 12)	Statistics and Time Series	3 <sup>a</sup> , 4 <sup>a</sup> , 4 <sup>b</sup>
3 (Apr 17, 19)	Modeling and Forecasting Trend and Seasonality	5 <sup>b</sup>
4 (Apr 24, 26)	Characterizing Cycles	6 <sup>b</sup> , 7 <sup>b</sup>
<b>Project 1 (Apr 26)</b>		
5 (May 1, 3)	Modeling and Forecasting Cycles	6 <sup>a</sup> , 7 <sup>a</sup> , 8 <sup>a</sup> , 6 <sup>b</sup> , 7 <sup>b</sup>
<b>Midterm Exam (May 3)</b>		
6 (May 8, 10)	Models with Trend, Seasonal and Cyclical Components	9 <sup>a</sup> , 9 <sup>b</sup>
7 (May 15, 17)	Forecasting with Regression Models.	11 <sup>a</sup> , 12 <sup>b</sup> , 13 <sup>b</sup> , 14 <sup>b</sup>
8 (May 22, 24)	Evaluating and Combining Forecasts.	12 <sup>a</sup> , 12 <sup>b</sup>
9 (May 29, 31)	Stochastic Trends, ARIMA Forecasting Models, and Smoothing	10 <sup>a</sup> , 13 <sup>b</sup>
<b>Project 2 (May 31)</b>		
10 (June 5, 7)	Volatility Measurement, Modeling and Forecasting	13 <sup>a</sup> , 14 <sup>a</sup> , 8 <sup>b</sup>
11 (June 11)	<b>Final Exam (June 11, 11:30AM-2:30PM)</b>	Cumulative

Note:  $a$  = Textbook 1 (Gonzales-Rivera) and  $b$  = Textbook 2 (Diebold).