

# Economics 427. Economic Forecasting

Last Revised January 8, 2005

## Prerequisite

Economics 321 (Introduction to Statistics) or AREC 310 or SOCS 225 or equivalent.

## Course Content

Economics 427 studies and applies methods of forecasting for business and economics. The emphasis is on time series statistical forecasting tools and their application to practical forecasting challenges for the U.S., Asian and Hawaii economies. Topics include statistical methods for modeling and forecasting trend, seasonal and cyclical components of economic time series, multivariate regression models, forecast evaluation, and forecasting in the presence of unit roots.

## Readings

The required texts for this course are:

Diebold, Francis X., *Elements of Forecasting*, 3<sup>rd</sup> ed., Southwestern, 2004.

*EViews 3.1 Student Version*, Quantitative Micro Software. 2001.

These are available as a bundle from University bookstore. I will also hand out a number of supplementary readings during lectures and in conjunction with problem sets. You are responsible for all assigned textbook readings, assigned supplementary readings, and the content of my lectures.

## Course Requirements

Grades for the course will be based on one midterm exam (20%), one comprehensive final exam (30%), a term project (20%), problem sets (15%), and participation (15%).

**Due dates are firm!** Any problem set, project component, or other work submitted after the start of class on the day it is due will be marked down half a grade per day until I have received it.

### **Exams**

The midterm and final exams **must** be taken at the dates and times given in the schedule below. Except for medical emergency, I will not schedule makeup exams.

### **Problem Sets**

There will be 6 problem sets, covering analytical lecture material and applying the forecasting methods that we are working with to practical forecasting problems. Examples of possible application problems include:

trend modeling of U.S. retail sales, analysis of seasonality in Hawaii visitor arrivals, cyclical modeling of Japanese employment, and a regression model of U.S. automobile demand. These will take a substantial amount of time, so plan ahead!

### ***Class Forecasting Project***

In the final six weeks of the course, you will work with one or more partners on a “production” forecasting model for an aspect of the U.S, Japan, or Hawaii economy. You will review existing literature on the behavior and determinants of the indicator, perform preliminary statistical assessment, develop a forecasting model, evaluate forecast performance, and write up your forecast results. Group reports will be combined into a class forecast report that will be published on the World Wide Web. I will provide you with detailed guidelines later in the term.

### ***Class Participation***

Active participation helps to deepen understanding of course material. To facilitate this, I organize class in an informal lecture and discussion format, and I expect you to participate. You will be evaluated on your class attendance, your preparation, and your contribution to class discussions and periodic in-class group assignments.

Please be prepared for class. Read handouts and textbook chapters **before** I lecture on the material. Do not miss class.

A range of participation grades will be awarded, and it is possible to earn a failing grade on participation if you fail to make a positive impression.

### ***Academic Integrity***

The University has strict standards on academic honesty and severe penalties for dishonesty. Please review carefully this page on [honesty](#) and the language in the University Catalogue.

### ***Students with Disabilities***

If you feel you need reasonable accommodations because of the impact of a disability, please (1) contact the KOKUA Program (V/T) at 956-7511 or 956-7612 in room 013 of the QLCSS, and (2) speak with me privately to discuss your specific needs. I will be happy to work with you and the KOKUA Program to meet your access needs related to your documented disability.

### **Econometric Software**

We will use EViews, a leading econometric modeling and forecasting program. EViews is a graphical object-oriented statistical package that combines powerful modeling capabilities with a simple-to-use interface. The Diebold text provides Eviews examples throughout. Note: EViews runs under Windows (not Mac).

For more information on eviews see <http://www.eviews.com/>. A quick-start guide to basic eviews functionality is available at <http://www.sba.muohio.edu/noblent/EViews/eviews%20user%20guide.htm>.

### **Selected Additional Resources on Forecasting**

## Books

Makridakis S., S. Wheelwright, & R. Hyndman (1997), *Forecasting: Methods and Applications*, J. Wiley & Sons. A classic forecasting text with a wealth of practical advice.

Robert Pindyck and Daniel Rubinfeld (1998): *Econometric Models and Econometric Forecasts*, Fourth Edition, McGraw-Hill. A comprehensive introduction to econometrics with a notable chapter on the use of multi-equation econometric models.

J. Holton Wilson and Barry Keating (1998): *Business Forecasting*, Third Edition, Irwin-McGraw-Hill. Emphasis on business forecasting.

## Web Sites

J. Scott Armstrong's forecasting site at U Penn, <http://hops.wharton.upenn.edu/forecast/>.

Frank Diebold's home page, <http://www.ssc.upenn.edu/~diebold/>.

UCLA Anderson Forecast, <http://www.anderson.ucla.edu/research/forecast/>

The Fairmodel, <http://fairmodel.econ.yale.edu/main2.htm>. Ray Fair's site houses complete macroeconomic forecasting models of the US and global economies that can be simulated online.

Project LINK, <http://www.chass.utoronto.ca/link/>. The United Nations collaborative project for global forecasting and policy analysis.

## Online Data Sources

[Datasets](#) to accompany Diebold, *Elements of Forecasting*. (Download executable and install.)

Economagic, <http://www.economagic.com>, comprehensive online economic data source

Econdata.net, <http://www.econdata.net>, a guide to regional data sources

FRED2 database, St. Louis Federal Reserve Board, <http://research.stlouisfed.org/fred2/>

U.S. Bureau of Economic Analysis, [www.bea.gov](http://www.bea.gov). Source for U.S. GDP, personal income, balance of payments data, state personal income data.

U.S. Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov). Source for U.S., state and local data on employment, unemployment, consumer prices, and other data.

State of Hawaii Department of Business, Economic Development and Tourism, <http://www2.hawaii.gov/dbedt/index.cfm>. Primary source for Hawaii data.

University of Hawaii Economic Research Organization, <http://uhero.isdi-hi.com>. Regular forecasts of the Hawaii and global economies.

## Course Schedule

The following is a plan for the course, showing assignment dates (firm) and a lecture schedule (tentative).

<u>Date</u>	<u>Begin Topic:</u>	<u>Assignments:</u>	<u>Text Chapters</u>
Jan. 10 12	The forecasting challenge. Forecasting problems and forecast objectives.		1, 2
17 19	<b>Martin Luther King Jr. Holiday -- No Class</b> Statistical review: linear regression and diagnostics; graphing		1 (appendix), 3
24 26	Modeling and forecasting trends	<u>Problem set 1 due:</u> forecast objectives, statistics	4
31 Feb. 2	Modeling and forecasting seasonality		5
7 9	Characterizing economic cycles	<u>Problem set 2 due:</u> trends & seasonality	6
14 16	Modeling cycles: MA, AR and ARMA models		7
21 23	<b>Presidents' Day Holiday -- No Class</b>		
28		<u>Problem set 3 due:</u> cycles	
Mar. 2	<b>Wednesday, Mar 2: Midterm exam</b>		
7 9	Forecasting cycles		8
14 16	Putting it all together: trends, cycles and seasonality		9
21 23	<b>Spring Break Spring Break Spring Break Spring Break</b>		
28 30	Forecasting with multivariate regression models	<u>Problem set 4 due:</u> time series forecasting	
Apr. 4 7		<u>Project:</u> Economic Conditions summaries due	

11	Forecast evaluation		11
13		<a href="#"><u>Problem set 5 due: regression models</u></a>	
18	Introduction to unit roots, stochastic trends	<a href="#"><u>Project: Group reports due</u></a>	12
20			
25			
27		<a href="#"><u>Problem set 6 due: forecasting with unit roots</u></a>	
May 2	Review	<a href="#"><u>Project: Class forecast report published</u></a>	
4			

**Final Exam: Friday, May 13, 2:15-4:15 pm**