THOMPSON RIVERS UNIVERSITY

Course Outline

Economics
School of Business & Economics

ECON 4330 - **3.00** - Academic

Forecasting in Business and Economics

Rationale

Update Curricunet to reflect standard course outlines established by the School.

Calendar Description

Students apply a variety of forecasting methods to solve problems in business and economics. Topics include qualitative forecasting methods; the forecasting process, data considerations, and model selection; moving averages and exponential smoothing; multiple regression and time series decomposition; Box-Jenkins methodology to fit autoregressive conditional heteroscedasticity (ARCH); time-varying volatility and autoregressive integrated moving average (ARIMA) and vector autoregressive models; combining forecasting results; and implementing forecasting.

Credits/Hours

Course Has Variable Hours: No
Credits: 3.00
Lecture Hours: 3.00
Seminar Hours: 0
Lab Hours: 0
Other Hours: 0
Clarify:
Total Hours: 3.00
Delivery Methods: (Face to Face)
Impact on Courses/Programs/Departments: No change
Repeat Types: A - Once for credit (default)
Grading Methods: (S - Academic, Career Tech, UPrep)

Educational Objectives/Outcomes

1. Demonstrate a sound knowledge of quantitative and qualitative forecasting processes.
2. Detect trend, seasonal, and cyclical patterns in time series data.
3. Identify moving averages and various smoothing methods.
4. Estimate and interpret causal models including bivariate and multivariate regression models.
5. Decompose underlying components of business and economics time series.

6. Identify and interpret mixed autoregressive and moving average models.
7. Estimate and interpret ARCH and GARCH models to forecast volatility in financial data.
8. Estimate vector autoregressive models, impulse response functions, and forecast error variance decompositions.
9. Improve forecasting accuracy by combining alterative forecasts.
10. Apply appropriate forecasting methods to various fields in business and economics using real-world data.

Prerequisites

ECON 2330-Economics and Business Statistics 2
ECON 2330-Economics and Business Statistics 2 or
ECON 3330-Applied Statistics for Economics or
equivalent

Co-Requisites

Recommended Requisites

Exclusion Requisites

BUEC 4330

Texts/Materials

Textbooks

1. **Required** Wilson, Keating, and John Galt Solutions. *Business Forecasting With ForescastX*®, 6th ed. McGraw-Hill
2. **Required** Hill, Griffiths, and Lim. *Principles of Econometrics*, 4th ed. Wiley & Sons

Student Evaluation

The Course grade is based on the following course evaluations.

Participation 0-20% (0.00%) Assignments/quizzes 0-20% (0.00%) Project 0-25% (0.00%) Midterm(s) 30-60% (0.00%) Final exam 30-50% (0.00%)

Course Topics

1. Qualitative Forecasting Methods
   - Quantitative and qualitative forecasting
   - New product forecasting - BASS model
   - Executive opinions
   - Sales forces opinions
   - Consumer surveys

   Delphi method
2. Forecast Process, Data Considerations, and Model Selection
   - Trend, seasonal, and cyclical patterns
   - Statistical review
   - Correlograms

3. Moving Average and Exponential Smoothing
    - Moving average
    - Holt's and winters' exponential smoothing
    - New-product forecasting
4. Forecasting with Regression Methods
    - Bivariate regression model
    - Forecasting with simple linear trend
    - Serial correlation and heteroscedasticity
    - Applications
5. Forecasting with Multiple Regression
    - Multiple regression model
    - Selecting independent variables
    - Statistical evaluation of multiple regression models
    - Serial correlation and omitted-variable problem
    - Applications
6. Time-Series Decomposition
    - Basic time series decomposition model
    - Deseasonalizing and seasonal indices
    - Time series decomposition forecast
    - Applications
7. Box-Jenkins Methodology- ARIMA
    - Philosophy of Box-Jenkins
    - Moving average models
    - Autoregressive models
    - Mixed autoregressive and moving average models
    - Box-Jenkins identification process
    - Forecasting seasonal time series

    Applications
8. Forecasting of Dynamic Behavior of Economic and Financial Time Series
    - Non-stationary time series data and cointegration
    - Vector autoregressive (VAR) models
    - Impulse response functions
    - Forecast error variance decompositions
    - ARCH and GARCH models
9. Combining Forecast Results
    - What kind of forecasts can be combined?
    - Three techniques for selecting weights when combining forecasts
    - Applications
10. Implementing Forecasting
    - Forecast process
    - Choosing the right forecasting techniques
    - Special forecasting considerations

Methods for Prior Learning Assessment and Recognition

As per TRU Policy

Last Action Taken

Implement by Submission Preview Subcommittee Chair Peggy McKimmon

Current Date: 27-Oct-20