THOMPSON RIVERS UNIVERSITY

Course Outline

Economics
School of Business & Economics

ECON 4320 - **3.00** - Academic

Econometrics

Rationale

GET analysis has identified that this course meets the Critical Thinking & Investigation ILO criteria. See attached foci tool and notes under Educational Objectives/Outcomes.

Calendar Description

Students are introduced to econometric models and the application of classical regression techniques to estimate socio-economic relationships. Topics include an introduction to econometrics; simple linear regression; interval estimation and hypothesis testing; predictions, goodness of fit, and modeling issues; multiple regression; non-linear relationships; heteroscedasticity; dynamic models, autocorrelation, and forecasting; simultaneous equations; and qualitative dependent variables. General econometric computer software is used to reinforce course concepts.

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 the econometric estimation process.
2. Test the significance of estimated coefficients and econometric models.
3. Identify problems relating due to collinearity, autocorrelation, and heteroskedasticity.

4. Estimate nonlinear economic relationships, including interaction between continuous variables, and nonlinearfunctional forms.
5. Use categorical independent variables in estimating economic and other relationships.
6. Estimate basic simultaneous systems of equations.
7. Estimate models with qualitative dependent variables and interpret their outcomes.
8. Apply the estimation techniques and procedures to various fields within business such as marketing, finance, supplychain management, and economics using real-world data and appropriate econometric software.
9. This course meets the Critical Thinking & Investigation ILO criteria. See attached foci tool demonstrating the match.

Prerequisites

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

Co-Requisites

Recommended Requisites

Exclusion Requisites

Texts/Materials

Textbooks

1. **Required** Hill, Griffiths, and Lim. *Principles of Econometrics*, 4th ed. Wiley & Sons, 2012
2. **Required** Hill, Griffiths, and Lim. *Using Eviews® for Principles of Econometrics*, 4th ed. Wiley & Sons, 2012

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. Introduction to Econometrics
   - Why study econometrics?
   - What is econometrics about?
   - The econometric model
   - Economic data types
   - Research process
2. The Simple Linear Regression Model

- Economics model
- Econometric model
- Estimating the regression parameters
- Assessing the least squares estimators
- Probability distribution of the least squares estimators
- Estimating the variance of the error term

3. Interval Estimation and Hypothesis Testing

   - Interval estimation
   - Hypothesis tests
   - Rejection regions for specific alternatives
   - Examples of hypothesis tests
   - P-value

4. Predictions, Goodness of Fit, and Modeling Issues
   - Least squares prediction
   - Measuring goodness of fit
   - Modeling issues
   - Log-linear models

5. Multiple Regression Model

   - Introduction
   - Estimating the parameters of the multiple regression model
   - Sampling properties of the least squares estimator
   - Interval estimation
   - Hypothesis testing for a single coefficient
   - Measuring goodness-of-fit

6. Further Inference in the Multiple Regression Model

   - F-Test
   - Testing the significance of a model
   - Testing some economic hypotheses
   - Use of nonsample information
   - Model specification
   - Poor Data, collinearity, and insignificance

7. Nonlinear Relationship

   - Polynomials
   - Dummy variables
   - Applying dummy variables
   - Interactions between continuous variables
   - Log-linear models

8. Heteroscedasticity

   - Nature of heteroscedasticity
   - Using the LS estimator
   - GLS estimator
   - Detecting heteroscedasticity

9. Dynamic Models, Autocorrelation and Forecasting

- Introduction
- Lags in the error terms: autocorrelation
- Estimating an AR(1) error model
- Testing for the autocorrelation
- Introduction to forecasting: autoregressive models
- Finite distributed lags

Autoregressive distributed lags models

10. Simultaneous Equation Models

- Supply and demand Model
- Reduced form equations
- Failure of LS
- Identification Problem
- Two-stage LS, 2SLS Estimation

Examples of 2SLS estimation

11. Qualitative Dependent Variable Models

- Models with binary dependent variables
- Linear probability model
- Probit model
- Logit model for binary choice

Ordered choice models

Methods for Prior Learning Assessment and Recognition

As per TRU Policy

Last Action Taken

Implement by Submission Preview Subcommittee Chair Shelley Church