	Economics and Finance

Course Name:	**Econometrics**	**Course No.:**	**ECON 625**
Prerequisite:	**N/A**	**Credit Hours:**	**3**

Brief Description:

This course aims to provide students with a thorough understanding of theory and application of econometrics in empirical research in economics, accounting and finance. In particular, the course aims to equip students with fundamental statistical methods and techniques to use real-time data to estimate models and make inferences. The main topics include simple and multiple regression models, least squares estimation of the regression model, hypothesis testing and inference procedures, relaxing the underlying assumptions and diagnostic checking, binary choice models (logit and probit) and panel data analysis (pooled regression, fixed and random effects, dynamic panel models, binary choice panel data). Emphasis is placed on time series analysis, such as stationary and non-stationary time-series, unit root testing, cointegration testing and estimating an error-correction model (ECM); vector autoregression analysis and vector error-correction models (VECM). All topics are accompanied with real data examples solved in E-Views and Microfit-5.

Course Objectives:

- Understand econometrics and describe the econometric methodology
- Explain the steps involved in empirical research or econometric research;
- Develop simple and multiple classical regression models and understand the underlying assumptions;
- Estimate simple and multiple regression models and interpret the results.
- Apply inference procedures based on t-statistic and F-statistic to test linear restrictions on regression parameters and the goodness of fit;
- Relax the assumptions of the classical regression model and describe the consequences of violation of each assumption;
- Discuss the conventional econometrics problems of non-normality, heteroscedasticity, autocorrelation, multicollinearity and simultaneous equation bias, explain their consequences for the OLS estimators and describe the tests to detect these problems;
- Apply appropriate methods to remedy the conventional econometric problems;
- Describe time series models, test a unit root in time series and apply methods to test for cointegration

Course Topics:

- Introduction to econometrics
- Simple linear regression model
- Estimation, goodness of fit and hypothesis testing
- Multiple regression analysis
- Assumptions, estimation, goodness of fit and hypothesis testing
- Relaxing assumptions and diagnostic testing
- Multicollinearity and its implications
- Heteroskedasticity, consequences, tests and remedies
- Autocorrelation, consequences, tests and remedies
- Simultaneous equation models and estimation
- Model misspecification and tests
- Time series and cointegration analysis

- Dynamic models with lagged dependent variables
- Panel data models

Text Book:

Gujarati, D.N. (2004), "Basic Econometrics", 4th edition, McGraw-Hill.

Additional References:

1. Wooldridge, J.M. (2012), "Introductory Econometrics: A Modern Approach", 5th edition, CENGAGE Learning Custom Publishing.
2. Kennedy, P., (2003), "A Guide of Econometrics," 5th Edition, Milt Press, USA.
3. Brooks, C. (2008), "Introductory Econometrics for Finance", 2nd edition, Cambridge: Cambridge University Press.

Online Resources:

- **https://en.wikipedia.org/wiki/Econometrics#Basic_models:_linear_regression**
- **https://en.wikipedia.org/wiki/Cointegration**
- **https://en.wikipedia.org/wiki/Time_series**

Measurement & Assessment Tools:

Objectives			Obj 1.1 &1.2	Obj 2.1	Obj 3.1
Assessment tools	Grade	Week (Time period)	1	2	3
Midterm Exam	20	9th	✖		
Case study	10	12th			✖
Individual Assignment	10	Monthly		✖	
Project	20	15th			✖
Final exam	40	As Dated	✖		
Total	100				

Tentative Course Outline:

Week	Hours	Topics	Readings
1	3	Econometrics and econometric methodology	Ch 1
2	3	Simple regression mode and assumptions: estimation	Ch 2,3,4
3	3	Simple regression model: inference	Ch 5, 6
4	3	Multiple regression model and assumptions: estimation	Ch 7
5	3	Multiple regression model: inference	Ch 8
6	3	Dummy variables regression models	Ch 9

7	3	Violations of assumptions: detection, consequences and remedies	Ch 10
8	3	Multicollinearity and Heteroscedasticity, consequences and remedial tests	Ch 10, 11
9	3	Autocorrelation, consequences and remedial tests	Ch 12
10	3	Panel data estimation methods	Ch 16
11	3	Simultaneous equation bias, identification and estimation methods	Ch 18,19,20
12	3	Times series analysis	Ch 21
13	3	Unit root and cointegration testing	Ch 21, 22
14	3	Error correction models	Ch 22

Approved by Dept. Chair: *Dr Fahad Al Mohaimeed*

Date of Approval:

Extra Information: *(Updated every semester and filled by course instructor)*

Course Instructor: **Dr Razzaque H Bhatti**
Office No:
Extension:
Email: bhatti.razzaque@gmail.com
Office Hours: