

## COO3A1 Econometrics for Finance [4 Credits]

**Learning Objective:** The course is designed to introduce basic econometric theory and models for finance

students to equip with the necessary skills, knowledge and techniques for data analysis. The usage of various statistical software packages during the course will help in simplifying complex data and serve as a basis for empirical research analysis.

### UNIT 1: Introduction (12 Hours)

Meaning of econometrics, structure of data, CLRM – Assumption, properties of OLS estimation - Co-efficient of determination –  $R^2$  and Adjusted  $R^2$ , Testing of Hypothesis- Application of tools [Applications of above tools using Market Data]

### UNIT 2: Violation of CLRM Assumptions

(12 Hours) Multicollinearity, Heteroscedasticity, Autocorrelation – Spurious Regression (Nature, estimation, detection, remedial measures). Model specification and diagnostic testing. [Applications of above tools using Market Data]

### UNIT 3: Multiple regression analysis (12 Hours)

The three-variable model Interpretation – Estimation, Multiple co-efficient of determination  $R^2$ , testing individual coefficient, over all significance – F test. Problems of inference [Applications of above tools using Market Data]

### UNIT 4: Time Series and Panel Data Analysis

(12 Hours)

Time Series – Stationarity – Unit Root – VAR - Co-integration– Random Walk Model – ARIMA – ARCH – GARCH – Granger Causality – Cross Section and Panel data analysis – Fixed Effects and Random Effects Models – Applications of Panel Data [Applications of above tools using Market Data]

### UNIT 5: Qualitative response Regression models

(12 Hours) Qualitative response regression models – Application of dummy variable; modeling on dummy dependent and independent variable – The linear probability model (LPM) and application – The Logit, Probit and Tobit models. [Applications of above tools using Market Data]

**Suggested**

**Readings:**

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1. Brooks, C., Introductory Econometrics for Finance, 2008, Cambridge University Press
2. Dimitriou Asteriou & Stephen G. Hall, Applied Econometrics, 2011, Palgrave Macmillan
3. Gujarati, D., Basic Econometrics, 2003, Mc Graw-Hill
4. Gujarati, D., Essentials of Econometrics, 2006, Mc Graw- Hill
5. Greene, W., Econometric Analysis, 2003, Prentice Hall
6. Maddala & Lahiri, Introduction to Econometrics, 2009, Wiley India Edition
7. Ramanathan., Introductory Econometrics with applications, 2002, Thomson South-Western
8. Wooldridge J., Introductory Econometrics A modern Approach, 2002, South Western