COMSBC03 - Applied Econometrics

Master of Commerce
Skill Based Course: Econometrics

Course Type/ Course Code	Course Title	Lectures	Tutorials	Practical	Credit	Pre-requisites
COMSBC03	**Applied Econometrics**	1	0	1	2	NIL

Objective: The objective of this course is to acquaint learner with the application of econometric theory and methods to the economic relationships for informed decision making.

Learning Outcomes: On completion of this course, the learner should be able to:

- Comprehend the basic theories and methods of Econometrics.
- Apply the knowledge of econometric methods to solve real life problems.

Contents:

Unit I **(8 Hours)**
Introduction to Econometrics; Simple linear regression- two variable and multi variable; ordinary least square (OLS) Method and its assumptions; Dummy variable regression models.; Violation of Assumptions of OLS.

Unit II **(7 Hours)**
Introduction to qualitative response regression models- Logit and Probit; Introduction to time series econometrics- Stationarity and Unit Root, ARIMA

Practical Exercises: **(30 Hours)**
The learners are required to:

1. Download 10-year historical data of any bond. Construct an AR(1) mean equation. Determine if the regression errors are normally distributed using its descriptive statistics, Histogram and Jarque-Bera test.
2. Extract historical data for any index and test the presence of heteroskedasticity using White Test.
3. Collect data on the prices and customer ratings of smartphone models. Create a dummy variable Brand_Premium which equals 1 if the phone is from a premium brand and 0 otherwise. Run a regression of Price on Customer_Rating and Brand_Premium to analyze how both product quality perception and brand category affect pricing.
4. Survey 50 individuals about whether they purchased a specific product after seeing an online advertisement (Purchased: 1 = yes, 0 = no). For each respondent, record how many times they saw the ad (Ad_Views), their age (Age), and whether they follow the brand on social media (Follows_Brand: 1 = yes, 0 =

no). Run a logistic regression with Purchased as the dependent variable and Ad_Views, Age, and Follows_Brand as independent variables. Analyze which factors significantly influence the likelihood of a purchase decision.

5. Download past 15 years' quarterly data of India's GDP and GDP growth rate. Check for the stationarity of both the series using ADF test. Forecast the GDP for the next quarter using ARIMA.

Suggested Readings:

- Angrist, J. D., & Pischke, J.-S. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press.
- Athey, S., & Pakes, A. (2007). *Econometric tools for analyzing market outcomes*.
- Gujarati D.N. and Porter D.C. (2010). *Essentials of Econometrics*. McGraw Hill, International Edition
- Hill, R.C., Griffiths, W.E. and Lim, G.C. (2024). *Principles of Econometrics*. Wiley.
- Koutsoyiannis, A. (2001). *Theory of Econometrics*, Mc Millan Press Ltd.
- Maddala G.S. (1997) *Econometrics*. McGraw Hill.
- Studenmund A.H. (2017). *Using Econometrics: A Practical Guide*. Pearson Education Ltd.
- Wooldridge, J. M. (2025). *Introductory econometrics: A modern approach*. Cengage Learning.