

Name of the Programme: M. A. Economics

Course Code: ECO-507

Title of the Course: Introduction to Econometrics

Number of Credits: 4

Effective from AY: 2022-23

<u>Prerequisites for the course:</u>	Students must have basic knowledge of Statistics and preferably an exposure to Mathematical methods in Economics	
<u>Objective:</u>	To provide students exposure to regression analysis with cross-section data.	
<u>Content:</u>	Module 1: Econometrics and Economic Data The Structure of Economic Data; Cross-Sectional Data; Time Series Data; Pooled Cross Sections; Panel or Longitudinal Data; Causality in Econometric Analysis The Simple Regression Model Ordinary Least Squares Estimates and Properties, Goodness-of-Fit, Functional Form; Incorporating Nonlinearities, Expected Values and Variances of Estimators; Unbiasedness, Estimating the Error Variance Module 2: Multiple Regression Analysis: Estimation The Model with Two or more Independent Variables, Interpretation Comparison of Simple and Multiple Regression, Omitted Variable Bias, Multicollinearity; Variances in Misspecified Models, Efficiency of OLS: The Gauss-Markov Theorem Multiple Regression Analysis: Inference Testing Hypotheses of single and Multiple Linear Restrictions: The F Test; Testing Exclusion Restrictions; Relationship between F and t Statistics; The F Statistic for Overall Significance of a Regression, Reporting Regression Results Module 3: Multiple Regression Analysis: OLS Asymptotics Consistency; Deriving the Inconsistency in OLS; Asymptotic Normality and Large Sample Inference; Other Large Sample Tests: The Lagrange Multiplier Statistic; Asymptotic Efficiency	15 15 15

	of OLS Multiple Regression Analysis: Further Issues More on Functional Form; Models with Interaction Terms; Adjusted R-Squared; Prediction and Residual Analysis; Confidence Intervals for Predictions; Residual Analysis Multiple Regression Analysis with Qualitative Information: Binary (or Dummy) Variables Describing Qualitative Information; A Single Dummy Independent Variable; Interactions among Dummy Variables; Allowing for Different Slopes; Binary Dependent Variable: The Linear Probability Model; More on Policy Analysis and Program Evaluation; Interpreting Regression Results with Discrete Dependent Variables Module 4: Heteroskedasticity Consequences of Heteroskedasticity for OLS; Heteroskedasticity-Robust Inference, Testing for Heteroskedasticity; Feasible GLS More on Specification and Data Issues Functional Form Misspecification; RESET as a General Test Using Lagged Dependent Variables as Proxy Variables; Measurement Error in an Explanatory Variable; Missing Data, Nonrandom Samples, and Outlying Observations; Missing Data; Nonrandom Samples; Outliers and Influential Observations; Least Absolute Deviations Estimation	15
<u>Pedagogy:</u>	• Chalk and talk aided by ICT enabled lectures • PC lab exercises • Assignments and presentations • Group activity • MOOC (or similar) Component	
<u>References/Read ings</u>	<u>Core Reading</u> C1. Wooldridge (2019), <u>Introductory Econometrics</u>, 7th edition, South Western College Publishing, Singapore. <u>Additional References</u> A1. Florian Heiss (2020) <u>Using R for Introductory Econometrics</u>, 2nd edition; Germany, ISBN: 979-8648424364	

	A2. Florian Heiss and Daniel Brunner (2020) <u>Using Python for Introductory Econometrics</u> , 1st edition, Germany, ISBN: 979-8648436763	
<u>Learning Outcomes</u>	The students will be able to a) Develop econometric models using cross-section data b) estimate econometric models using cross-section data and c) interpret econometric models d) draw the policy implications to help decision makers.	