Course code: MPE 178 No. of credits: 4 L-T-P: 46-0-28 Learning hours: 60 Pre-requisite course code and tille (if any): MPE 172 or equivalent Department: Department: Sardana Course instructor: Dr Kavita Sardana Course coordinator: Dr Kavita Sardana @tcrisas.ac.in Course description: The aim of this course is to provide students with the essential expertise to handle modern time series techniques. Idea is to introduce students to comprehensive set of tools and techniques for analysing various forms of univariate and multivariate time series and for understanding the current literature in applied time series. After the course students will also be able to appreciate and apply key concepts of estimation and forecasting in a time series context. Endeavor will be to provide simple examples that illustrate how the theoretical results are used and applied in Practice. Lab Practicals This course places heavy emphasis on solving computer exercises. Practicals will involve applications from the fields of macroeconomics with a focus on issues relating to environment and resource. Course objectives: 1 To understand violation of classical linear model assumptions when continuous random variables charge over time. It T P 1 Module Topic L T P 1 Model Specification It T P 1 Model Specification It		: Time series and regression analysis	8					
Department: Department of Policy Studies Course coordinator: Dr Kavita Sardana Course instructor: Dr Kavita Sardana Contract details: kavita.sardana@terias.ac.in Course offered in: Semester 3 Course description: The aim of this course is to provide students with the essential expertise to handle modern time series techniques. Idea is to introduce students to comprehensive set of tools and techniques for analysing various forms of univariate and multivariate time series and for understanding the current literature in applied time series. After the course students will also be able to appreciate and apply key concepts of estimation and forecasting in a time series context. Endeavor will be to provide simple examples that illustrate how the theoretical results are used and applied in Practice. Lab Practicals This course blaces heavy emphasis on solving computer exercises. Practicals will involve applications from the fields of macroeconomics with a focus on issues relating to environment and resource. Course objectives: 1 To understand violation of classical linear model assumptions when continuous random variables change over time. 2. To learn about theoretical and empirical solutions when assumptions are violated. I Module Topic L T P 1 Theory of Univariate Time Series 14 6 1. Module Topic L T P 1 Theory				L-T-P: 46-0-28	Learning	hour	s: 60	
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Contact details: kavita.sardan@terisas.ac.in Course offered in: Semester 3 Course stype: Elective Course offered in: Semester 3 Course description: The aim of this course is to provide students with the essential expertise to handle modern time series techniques. Idea is to introduce students to comprehensive set of tools and techniques for analysing various forms of univariate and multivariate time series and for understanding the current literature in applied time series. After the course students will also be able to appreciate and apply key concepts of estimation and forecasting in a time series context. Endeavor will be to provide simple examples that illustrate how the theoretical results are used and applied in Practice. Lab Practicals This course places heavy emphasis on solving computer exercises. Practicals will involve applications from the fields of macroeconomics with a focus on issues relating to environment and resource. Course objectives: 1. To understand violation of classical linear model assumptions when continuous random variables change over time. 2. To learn about theoretical and empirical solutions when assumptions are violated. Course objectives: 1. To heary of Univariate Time Series 1 Theory of Univariate Time Series 1 Thoot Specification Normal (Gaussian) White Noise AR (1) Process AR (1) Process AR(0) Process AR (2)								
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1. Cointegration Analysis		1. Cointegration Analysis						
The Engel-Granger (EG) Approach		The Engel-Granger (EG) Appro	ach					

The Johansen Approach Identification of the beta coefficient and Restriction Tests: Withone or more cointegrating vector(s) Vector Error Correction Models (VECM) 3 The Econometric Forecasting: Theory and Application Modelling Trends, Seasonality and Cycles	21	18
Graphic Method of Forecasting One-step-ahead forecast Point forecast Forecast Interval Vector Autoregressive Model Granger Causality Scenarios Analysis and Impulse Response Functions		
Total	46	28
Lab Practical Major Exam- (Test 2)25% [Modules 1-3]- (Test 3)50% [Modules 1-3]		
 Learning outcomes: After completing this course, the students will be able to Distinguish problems in econometrics relating to cross-section and time series [Tests 1 To theoretically and empirically formulate problems that can be resolved using time series Proficiency in use of statistical package [Test 2] Materials: Core Reading		[Test 2]
 Wooldridge, J.M., 2015. Introductory econometrics: A modern approach. Nelson Educ and 18 	ation. Chapte	er 10-12
Other Readings Module 1 and Module 2 1. Stock, J.H. and Watson, M.W., 2007. <i>Econometrics</i> . Addison Wesley. Chapter 12-16 2. Greene, W.H., 2003. <i>Econometric analysis</i> . Pearson Education India. Chapter 11, 12, 19, 20		
Student responsibilities: Attendance, feedback, discipline: as per university rules.		

Course reviewers:

Prof. Bharat Ramaswami Indian Statistical Institute
 Prof. Abhiroop Mukhopadhyay, Indian Statistical Institute