

ECO220: Econometrics			
Faculty: Moumita Roy	Contact: moumita.roy@ahduni.edu.in	Office hours and location:	Wed: 2:30 - 4:00 p.m. School of Arts and Sciences, Central Campus, Room M-103
School	Amrut Mody School of Management		
Semester	Monsoon	Credits	3
Lecture Days; Time	Tues & Thurs: 11:00 – 12:30 a.m.	Location	School of Arts and Sciences, Central Campus, Room-204, Second Floor
Pre-requisites	STA101 Introductory Statistics. Students should have a basic knowledge of probability, statistics, and algebra.		
Anti-requisite	None		
Course Description	This course introduces students to the modern econometric techniques used to conduct empirical analysis in Economics. The course is designed to provide the students with the basic quantitative techniques needed to undertake applied research projects. Students will be introduced to both theoretical and applied econometrics so that by the end of this course, they can apply the formal theories they learn to analyse complex real-world problems. Students will also need to use an econometric software package, STATA, and different datasets in this course. This will enable them to learn and explore multiple estimation and forecasting techniques. Finally, the course also provides the base for more advanced optional courses in econometrics.		
Course Objectives	This course aims to provide an overview of various econometric methods. The focus is on understanding econometric theories and the underlying assumptions on the one hand, and application of econometric techniques on empirical data on the other. Broadly, we will cover topics including simple regression models, multiple regression models, panel data analysis and time series data analysis.		
Pedagogy	Students will be expected to read the required chapters and the articles before class. Each class will be interactive with students solving problems and answering questions in class. Students do not need to buy any software packages. It will be provided to them. Students will need to bring their devices to class in the sessions when STATA is being taught. Students will be informed about these particular sessions in advance.		
Learning Outcomes	1. Have a clear understanding of basic applied econometric methods and apply them to address real world issues.		
	2. Be able to analyse different economic datasets using STATA.		
	3. Be able to estimate econometric models and use them for simple forecasting exercises.		
Expectations from Students	All the material in this class is copyrighted. Please abstain from sharing material, such as slides, with students outside of this class. Students will be required to always follow three fundamental and rather simple principles: (1) all work submitted should be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular		

	assignment, ask for clarification. Students are expected to follow the University's code of conduct and maintain academic honesty and integrity. Over and above this, students are required to come to class on time. Students are expected to read the prescribed material prior to class and participate in the class discussion.
Assessment / Evaluation	· Quizzes (30%): There will be an in-class quiz every alternate week till the week before the final exam. · Problem Sets (20%): There will be 2 problem sets given during the duration of the course. The problem sets must be submitted to me on the day it is due. No late submissions will be accepted. · End Semester Exam (30%): The final exam is comprehensive. Anything that will be taught in the course is potential material for the final exam. · Project (20%): You will have to submit a group project (3/4 students) using the theories and tools of econometrics (that you learnt in the course). The project submissions will be in 2 parts: midterm submission (5%) and final submission (15%). More details about the project will be given during the course lectures.
Attendance Policy	Students are required to attend all the classes (100% attendance) and the Ahmedabad University attendance policy of grade drop would be applicable to students who have less than 80% attendance.
Course Material	• Econometric Analysis, Greene, William H., 8th Edition, Pearson Education Publication, 2018
References	• Basic Econometrics, Gujarati, Damodar N, Porter, Dawn C., and Gunasekar Sangeetha, 5th Edition, McGraw Hill Publication, 2017 • Introduction to Econometrics, Maddala, G.S., and Lahiri, Kajal, 4th Edition, Wiley Publications, 2012 Additional readings if required will be made available during lectures.

Session	Topic Title	Topic and subtopic details	Readings	Important Dates
1	Course Introduction	Introduction to economic and econometric modelling	Greene 1, Chapter 1 Maddala and Lahiri, Chapter 1	
2	Simple Linear Regression Model	Regression terminologies, specification of the relationship, two-variable linear regression model CLRM, OLS estimation, properties of least square estimators	Gujarati, Porter and Gunasekar, Chapter 1-4 Greene, Chapter 2-5	
3				Quiz 1
4				

5	Inference and Prediction	Hypothesis testing; linear and non-linear restrictions, Forecasting	Gujarati, Porter and Gunasekar, Chapter 5	
6				
7	Extensions of Simple Regression Model	Non-linearity in variables, extension of two-variable linear regression model	Greene, Chapter 6 Gujarati, Porter and Gunasekar, Chapter 6	Quiz 2
8				
9	Multiple Linear Regression Model	Model with two explanatory variables	Greene, Chapter 9 Gujarati, Porter and Gunasekar, Chapter 7, 8	
10				
11			Maddala and Lahiri, Chapter 4	Quiz 3, Problem Set 1 assigned
12	STATA practice session, Discussion of midterm project submission			
13	Violations of classical assumption: Heteroskedasticity	OLS estimation, testing for heteroskedasticity, solutions to heteroskedasticity, ARCH, GARCH	Greene, Chapter 11 Gujarati, Porter and Gunasekar, Chapter 11	
14				
15	Violations of classical assumption: Autocorrelation	Testing for autocorrelation, forecasting in the presence of autocorrelation, AR (1) disturbances	Greene, Chapter 12 Gujarati, Porter and Gunasekar, Chapter 12	Quiz 4 Project submission (Midterm)
16				Problem Set 1 due
17	Violations of classical assumption: Multicollinearity	Measures, problems with measuring multicollinearity, solutions to the multicollinearity problem	Gujarati, Porter and Gunasekar, Chapter 10 Maddala and Lahiri, Chapter 7	
18				

19	Dummy Variables	ANOVA models with qualitative variables, interaction effects using dummy variables	Greene, Chapter 7 Gujarati, Porter and Gunasekar, Chapter 9	Quiz 5
20				
21	STATA practice session			
22	Panel Data Models	Fixed effects, random effects, instrumental variables, dynamic panel data models	Greene, Chapter 13 Gujarati, Porter and Gunasekar, Chapter 16	
23				Quiz 6
24				Problem Set 2 assigned
25	Discrete Choice Models	Linear probability model, logit model, probit model.	Greene, Chapter 21 Gujarati, Porter and Gunasekar, Chapter 15	
26				Problem Set 2 due
27	Time Series Model	Stationary stochastic processes, Non-stationary processes, unit roots	Greene, Chapter 20 Gujarati, Porter and Gunasekar, Chapter 21	Project Submission (final)
28	Reflections/Review Session	Entire course		
29	Reflections/Review Session	Entire course		
30	End semester Examination	Entire course		