

<b>Course title:</b> Advanced Econometrics				
<b>Course code:</b> MPE 179		<b>No. of credits:</b> 3	<b>L-T-P:</b> 28-7-14	<b>Learning hours:</b> 42
<b>Pre-requisite course code and title (if any):</b> None				
<b>Department:</b> Department of Policy Studies				
<b>Course coordinator:</b> Dr. Kavita Sharma			<b>Course instructor:</b> Dr. Kavita Sharma	
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<b>Course type:</b> Elective			<b>Course offered in:</b> Semester 3	
<b>Course description:</b> This is an advanced level course in the area of Applied Econometrics dealing with Panel Data and Nonlinear Models. The range of topics covered in the course will span a large part of econometrics generally, though we are particularly interested in those techniques as they are adapted to the analysis of “panel” or “longitudinal” data sets. The asymptotic distribution theory necessary for analysis of generalized linear and nonlinear models will be reviewed or developed as we proceed. The second half of the course will focus on nonlinear models. Topics covered will focus on micro-econometric methods, including binary and discrete choice modelling, limited dependent variables, and sample selection. Special emphasis is given to estimation methods including maximum likelihood and generalized methods of moments.				
<b>Practicals</b> This course places heavy emphasis on solving computer exercises in STATA. Practical will involve applications from the fields of labor economics, environmental economics, and agricultural economics.				
<b>Course objectives:</b> The objectives of this course is two-fold. Firstly, to learn and apply statistical methods for the analysis of data that have been observed for same cross-sections over time in panel data model. Secondly, to learn and apply methods for cross-sections when the underlying distribution is no longer linear in parameters in a non-linear regression model. This course would prepare students to empirically evaluate existing problems in applied microeconometrics.				
<b>Course contents</b>				
<b>Module</b>	<b>Topic</b>	<b>L</b>	<b>T</b>	<b>P</b>
1	<b>Linear Models : Panel Data Models Basic Linear Unobserved Effects Panel Data Models</b> 1.1 Estimating Unobserved Effects by Pooled OLS 1.2 Random Effects Methods 1.3 Fixed Effects Methods 1.4 First Differencing Methods 1.5 Comparisons of Estimators <b>Unobserved Effects Models without the Strict Exogeneity Assumption</b> 1.6 Models with Individual-Specific Slopes <b>1.7 GMM approaches to Linear Unobserved Effects Models</b>	<b>14</b> 2 2 2 1 1 3 3	<b>3</b>   1   2	<b>7</b> 2 2    1 2
2	<b>Nonlinear Models</b> <b>Discrete Response Models</b> 2.1 Index Models for Binary Response : Probit and Logit 2.2 Multinomial Response Models 2.3 Ordered Response Models <b>Cornered Solution Outcomes and Censored Regression Models</b> 2.4 Estimation and Inference with Censored Tobit 2.5 Sample Selection, Attrition, and Stratified Sampling. 2.6 Selection on the basis of the Response Variable :Truncated Regression 2.7 A Probit Selection Equation 2.8 A Tobit Selection Equation 2.9 Stratified Sampling	<b>14</b>  3  2 2 2 1 1 1	<b>4</b>  1   1 1 1 1	<b>7</b>  2   1 1 1
3	<b>Count Data and related Models</b> 2.10 Poisson Regression Models 2.11 Negative Binomial Regression Models	1 1	1	
	<b>Total</b>	<b>28</b>	<b>7</b>	<b>14</b>

<b>Evaluation criteria:</b>				
1. Minor tests (Module 1, and Module 2) : 30%				
2. Assignments and Lab Practicals (Module 1, Module 2, Module 3): 30%				
3. Final examination (Module 1, Module 2, and Module 3): 40%				
<b>Learning outcomes:</b>				
After completing this course the students will be able to				
Distinguish modelling issues relating to panel and non-linear regression modelling (Minor tests 1 and 2, and Finals)				
Will be able to analyse problems that seek solutions through panel and non-linear regression (Assignments and Lab practicals)				
<b>Pedagogical approach</b>				
Classroom teaching – Importance of practicals and software applications				
<b>Materials:</b>				
<b>Compulsory readings</b>				
Module 1				
Chapter 10; J.M. Wooldridge*, Econometrics Analysis of Cross Section and Panel Data				
Module 2				
Chapter 15, 16, and 17; J.M. Wooldridge*, Econometrics Analysis of Cross Section and Panel Data				
Module 3				
Chapter 19; J.M. Wooldridge*, Econometrics Analysis of Cross Section and Panel Data.				
Suggested Readings:				
1. William H. Greene, Econometric Analysis. New York: MacMillan. 1997.				
2. Maddala, G.S., Limited Dependent and Qualitative Variables in Econometrics. Cambridge: Cambridge University Press. 1983.				
3. Joshua D. Angrist and Alan B. Krueger, “Does Compulsory School Attendance Affect Schooling and Earnings?” The Quarterly Journal of Economics 106 (1991), pp. 979-1014.				
4. Bartik, T. J., “The Estimation of Demand Parameters in Hedonic Price Models,” Journal of Political Economy 95 (1987), pp. 81-88.				
5. Chamberlain, G., “Multivariate Regression Models for Panel Data,” Journal of Econometrics 18 (1982), pp. 5-46.				
6. Cornwell, C., and D Trumball, “Estimating the Economic Model of Crime with Panel Data,” Review of Economics and Statistics 76 (1994), pp. 360-366.				
7. Qian, H., and P. Schmidt, “Improved Instrumental Variables and Generalized Method of Moments Estimators,” Journal of Econometrics 91 (1999), pp. 145-169.				
8. Vella, F. “Estimating models with Sample Selection Bias in Censored and Discrete Choice models,” Journal of Applied Econometrics 7 (1992), pp. 413-421				
<b>Textbooks:</b>				
1. J.M. Wooldridge*, Econometrics Analysis of Cross Section and Panel Data. The MIT Press, Cambridge, Massachusetts. 2002.				
2. Baltagi, B.H., Econometric Analysis of Panel Data. New York: John Wiley. 1995.				
3. Cameron, A.C., and P.K. Trivedi, Microeconometrics: Methods and Applications. Cambridge University Press, New York. 2005.				
4. Hsiao, C., Analysis of Panel Data. Cambridge: Cambridge University Press. 1986				
Journals:				
Review of Economics and Statistics				
<b>Additional information (if any):None</b>				
<b>Student responsibilities:</b> Attendance, feedback, discipline: as per university rules.				

**Course reviewers:**

The course is reviewed and commented-on by the following experts.

1. Dr. Octavio Ramirez, Head and Professor, University of Georgia, USA.
2. Dr. Subrata Sarkar, Professor, IGIDR.
3. Dr. Abhiroop Mukhopadhyay, Associate Professor, ISI, Delhi.