Universidad Carlos III de Madrid

SUBJECT:	ECONOMETRICS I		
MASTER DEGREE: MASTER IN ECONOMICS / MASTER IN INDUSTRIAL ORGANIZATION AND MARKETS		ECTS: 6	QUARTER: 1

TIMETABLE FOR THE SUBJECT

WEEK	SESSION	DESCRIPTION OF EACH SESSION	GROUP (X mark) 1	GROUP (X mark) 2	Indicate if a different lecture room is needed (computer, audiovisual, etc.)	HOMEWORK PER WEEK DESCRIPTION	ATTENDING HOURS	HOMEWORK Max. 7H/WEEK
1	1	Review of Probability 1				Basic definitions. Random variables. Probability. Expectations.	1.5	3.5 h
1	2	Review of Probability 2				Multivariate distributions. Conditional distributions. Independence. Measures of association. Conditional expectations. Sampling. Estimation.	1.5	3.5 h
2	3	The Simple Linear Regression Model				Motivation. Regression. Assumptions. Parameter interpretation. Estimation. The analog principle. OLS estimation.	1.5	5 h
2	4	Stata Basics 1			Computer Room	Introduction to Stata. Loading data and managing Stata files. Writing and executing do-files. Managing output.	1.5	2 h
3	5	Recitation Problem Set 1				Exercises on Probability.	1.5	3 h
3	6	The Multiple Linear Regression Model (MRM)				Introduction: Omitted Variable Bias. Interpretation of parameters in the MRM. Assumptions. Simple vs Multiple regression.	1.5	4 h
4	7	Model Specification				Introduction. Elasticities. Usual transformation. Linear, semi-logarithmic and (double) logarithmic models. Polynomial and other nonlinear functions.	1.5	4 h
4	8	Recitation Problem Set 2				Exercise on Linear Regression.	1.5	3 h
5	9	Stata Basics 2			Computer Room	Data management. Programming with Stata.	1.5	2 h
5	10	The MRM: Estimation				OLS with the MRM. Example. Properties of the OLS estimators. Variance estimation. Goodness-of-fit.	1.5	5 h

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6	11	OLS in Stata			Computer Room	Introduction. The regress command. Post estimation.	1.5	2 h
6	12	The MRM: Inference				OLS estimators under the classical regression assumptions. Tests on a single parameter. Tests on linear combinations of parameters. Testing exclusion restrictions.	1.5	5 h
7	13	Computer Practice: Linear regression			Computer Room	Using real data sets to estimate economically relevant specifications.	1.5	4
7	14	Recitation Problem Set 3			Computer Room	Practical exercises on MRM estimation and inference.	1.5	3
8	15	Void					1.5	
8	16	Midterm Exam					1.5	
9	17	Instrumental Variables ¡ 1				Motivation. Endogeneity. Consequences on OLS estimation. Instruments and conditions for validity. Examples.	1.5	3
9	18	Instrumental Variables 2				Instrumental Variables (IV) estimation. Properties. IV vs OLS estimators. Inference.	1.5	4
10	19	Instrumental Variables in Stata			Computer Room	The ivregress command. Example.	1.5	2
10	20	Two-Stage Least Squares (2SLS)				Motivation. Reduced form equations. 2SLS. IV and GMM.	1.5	5
11	21	Recitation Problem Set 4			Computer Room	Practical exercises on IV and 2SLS estimation.	1.5	3
11	22	Sources of endogeneity				Motivation. Errors in variables. Simultaneity.	1.5	4
12	23	Testing endogeneity and overidentification				Motivation. Matrix notation. Testing endogeneity: Hausman test. Testing overidentifying restrictions: Hansen-Sargan test.	1.5	4
12	24	Sample selection				Motivation. Sample selection. The Heckman model.	1.5	3
13	25	Computer Practice: Demand estimation				Using real data sets to practice IV estimation techniques.	1.5	3
13	26	Void					1.5	4

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14	27	Weak instruments				Motivation. Detection of weak instruments. Best practice.	1.5	4
14	28	Computer Practice: 2SLS			Computer Room	Using real data sets to practice 2SLS estimation techniques.	1.5	3
15	29	Computer Practice: weak instruments			Computer Room	Using real data sets to understand the weak instruments problem.	1.5	3
15	30	Recitation Problem Set 5			Computer Room	Using real data sets to practice 2SLS estimation techniques.	1.5	3
TOTAL HOURS							45	97