

Course: Econometrics I		
MASTER: Master in Economic Analysis	YEAR: 1	SEMESTER: 2

COURSE CRONOGRAM								
Week	Lecture	DESCRIPTION OF THE LECTURE'S TOPICS	GROUP (Mark X)		Classroom	STUDENT WORK DURING THE WEEK		
			Lecture	Recitation		DESCRIPTION	Number of Lecture Hours	Number of Hours of Work per Week
1	1	Sigma-fields and measures	X			Reading lecture notes and solving exercises assigned.	1,5	10
1	2	Measurability	X			Reading lecture notes and solving exercises assigned.	1,5	
1	3	Problems on Sigma-fields, measures and measurability		X		Presenting and discussing the solutions to exercises and homework.	1,5	
2	4	Integration. Properties	X			Reading lecture notes and solving exercises assigned.	1,5	10
2	5	Radon-Nikodym derivative	X			Reading lecture notes and solving exercises assigned.	1,5	
2	6	Problems on integration and differentiation		X		Presenting and discussing the solutions to exercises and homework.	1,5	
3	7	Distributions and probability densities. Transformations	X			Reading lecture notes and solving exercises assigned.	1,5	10

3	8	Moments and inequalities. Moment generating and characteristic functions	X			Reading lecture notes and solving exercises assigned.	1,5	
3	9	Problems on distributions		X		Presenting and discussing the solutions to exercises and homework.	1,5	
4	10	Conditional expectations	X			Reading lecture notes and solving exercises assigned.	1,5	10
4	11	Independence. Conditional distributions	X			Reading lecture notes and solving exercises assigned.	1,5	
4	12	Problem Set 2. Problems on conditional distributions		X		Presenting and discussing the solutions to exercises and homework.	1,5	
5	13	Markov chains and martingales	X			Reading lecture notes and solving exercises assigned.	1,5	10
5	14	Convergence modes and stochastic orders	X			Reading lecture notes and solving exercises assigned.	1,5	
5	15	Problems on martingales and convergence		X		Presenting and discussing the solutions to exercises and homework.	1,5	
6	16	Relationship among convergence models and uniform integrability	X			Reading lecture notes and solving exercises assigned.	1,5	10
6	17	Weak convergence.	X			Reading lecture notes and solving exercises assigned.	1,5	
6	18	Problems on (weak) convergence		X		Presenting and discussing the solutions to exercises and homework.	1,5	
7	19	Convergence of Transformations. Slutsky's theorem and delta-method	X			Reading lecture notes and solving exercises assigned.	1,5	10
7	20	The law of large numbers. The central limit theorem.	X			Reading lecture notes and solving exercises assigned.	1,5	
7	21	Problems on LLN and CLT.		X		Presenting and discussing the solutions to exercises and homework.	1,5	
8		Midterm Exam. Problem Set 4. Studying for the Midterm						10
9	22	Populations and samples	X			Reading lecture notes and solving exercises assigned.	1,5	10
9	23	Parametric and nonparametric models. Exponential and location-scale families	X			Reading lecture notes and solving exercises assigned.	1,5	

9	24	Problems on samples and models		X		Presenting and discussing the solutions to exercises and homework.	1,5	
10	25	Statistical Inference: point estimators	X			Reading lecture notes and solving exercises assigned.	1,5	10
10	26	Statistical Inference: hypotheses tests, confidence sets	X			Reading lecture notes and solving exercises assigned.	1,5	
10	27	Problems on statistical inference		X		Presenting and discussing the solutions to exercises and homework.	1,5	
11	28	Asymptotic criteria and inference: consistency	X			Reading lecture notes and solving exercises assigned.	1,5	10
11	29	Asymptotic criteria and inference: asymptotic bias, variance and mse	X			Reading lecture notes and solving exercises assigned.	1,5	
11	30	Problems on asymptotic inference		X		Presenting and discussing the solutions to exercises and homework.	1,5	
12	31	Information inequality. Cramer-Rao bound	X			Reading lecture notes and solving exercises assigned.	1,5	10
12	32	Estimation in parametric models: method of moments	X			Reading lecture notes and solving exercises assigned.	1,5	
12	33	Problem Set 3. Problems on information and moments		X		Presenting and discussing the solutions to exercises and homework.	1,5	
13	34	Estimation in parametric models: maximum likelihood	X			Reading lecture notes and solving exercises assigned.	1,5	10
13	35	MLE: examples, asymptotic efficiency	X			Reading lecture notes and solving exercises assigned.	1,5	
13	36	Problems on MLE		X		Presenting and discussing the solutions to exercises and homework.	1,5	
14	37	Variance estimation: bootstrap	X			Reading lecture notes and solving exercises assigned.	1,5	10
14	38	Hypothesis tests: Neyman-Pearson Lemma	X			Reading lecture notes and solving exercises assigned.	1,5	
14	39	Problems on bootstrap and UMP tests		X		Presenting and discussing the solutions to exercises and homework.	1,5	
15	40	Likelihood Ratio tests	X			Reading lecture notes and solving exercises assigned.	1,5	10
15	41	Construction of confidence sets: Pivotal quantities, inverting acceptance regions of tests, Bootstrap	X			Reading lecture notes and solving exercises assigned.	1,5	

15	42	Problems on LR tests and confidence sets.		X		Presenting and discussing the solutions to exercises and homework.	1,5	
SUBTOTAL							150	
16		Final exam/ Studying for the final exam. Problem Set 4.					10	
TOTAL							160	