Universidad Carlos III de Madrid
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COURSE: Multivariate Data Analysis		
MASTER: Financial and Actuarial Sciences Instructor: S. VELILLA	ECTS: 6	TERM: 2

WEEKLY PROGRAMMING

WEEK	SESSION	DESCRIPTION	GROUPS (mark X)		Special room for session (computer classroom, audio-visual classroom...)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS	HMWK HOURS (Max. 7h week)
1	1	**CHAPTER 1. INTRODUCTION.** (I) Datos Multivariantes. Estadísticos resumen	X			Study of the material of CHAPTER 1 (I)	**1,5**	**6**
1	2	**Tutorial 1:** Examples and applications with the computer		X	**Computer classroom**	Study of the material of CHAPTER 1 (I)	**1,5**	
2	3	**CHAPTER 1. INTRODUCTION.** (II) Linear combinations	X			Study of the material of CHAPTER 1 (II)	**1,5**	**6**
2	4	**Tutorial 2:** Statistical software for multivariate data		X	**Computer classroom**	Study of the material of CHAPTER 1 (II)	**1,5**	
3	5	**CHAPTER 2.** Principal **COMPONENTS** (I). Motivation and construction	X			Study of the material of CHAPTER 2 (I)	**1,5**	**6**

3	6	**Tutorial 3**: Principal components with Excel		X	**Computer classroom**	Study of the material of CHAPTER 2 (I)	**1,5**	
4	7	**CHAPTER 2.** Principal **COMPONENTS** (II). Standardized case	X			Study of the material of CHAPTER 2 (II)	**1,5**	**6**
4	8	**Tutorial 4**: Principal components with **R**		X	**Computer classroom**	Study of the material of CHAPTER 2 (II)	**1,5**	
5	9	**CHAPTER 3. CLUSTER** analysis (I). Measures of distance and similarities. Hierarchical procedures: Ward's method	X			Study of the material of CHAPTER 3 (I)	**1,5**	**6**
5	10	**Tutorial 5**: Hierarchical procedures with **R**		X	**Computer classroom**	Study of the material of CHAPTER 3 (I)	**1,5**	
6	11	**CHAPTER 3. CLUSTER** analysis (II). K – means method	X			Study of the material of CHAPTER 3 (II)	**1,5**	**6**
6	12	**Tutorial 6:** K – means method with **R**		X	**Computer classroom**	Study of the material of CHAPTER 3 (II)	**1,5**	
7	13	**CHAPTER 4. POPULATION** concepts and **SAMPLING**	X			Study of the material of CHAPTER 4	**1,5**	**6**
7	14	**Tutorial 7:** Review of previous material		X	**Computer classroom**	Study of the material of CHAPTER 4	**1,5**	
8	15	**CHAPTER 5.** Multivariate **NORMAL** distribution (I). Basic properties	X			Study of the material of CHAPTER 5 (I)	**1,5**	**6**
8	16	**Tutorial 8:** Multivariate normal with **R** (I)		X	**Computer classroom**	Study of the material of CHAPTER 5 (I)	**1,5**	
9	17	**CHAPTER 5.** Multivariate **NORMAL** Distribution (II). Simulation methods. Examples of application	X			Study of the material of CHAPTER 5 (II)	**1,5**	**6**
9	18	**Tutorial 9:** Multivariate normal with **R** (II)		X	**Computer classroom**	Study of the material of CHAPTER 5 (II)	**1,5**	
10	19	**CHAPTER 6. FACTOR** Analysis (I). Orthogonal factor model	X			Study of the material of CHAPTER 6 (I)	**1,5**	**6**
10	20	**Tutorial 10:** Factor analysis with **R** (I)		X	**Computer classroom**	Study of the material of CHAPTER 6 (I)	**1,5**	

11	21	**CHAPTER 6. FACTOR** analysis (II). Factor rotation	X			Study of the material of CHAPTER 6 (II)	**1,5**	**6**
11	22	**Tutorial 11:** Factor analysis with **R** (II)		X	**Computer classroom**	Study of the material of CHAPTER 6 (II)	**1,5**	
12	23	**CHAPTER 7. REGRESSION** analysis (I). Simple and multiple linear regression	X			Estudio del material del CHAPTER 7 (I)	**1,5**	**6**
12	24	**Tutorial 12**: Linear regression with **R** (I)		X	**Computer classroom**	Estudio del material del CHAPTER 7 (I)	**1,5**	
13	25	**CHAPTER 7. REGRESSION** analysis (II). Diagnostic techniques	X			Study of the material of CHAPTER 7 (II)	**1,5**	**6**
13	26	**Tutorial 13**: Linear regression with **R** (II)		X	**Computer classroom**	Study of the material of CHAPTER 7 (II)	**1,5**	
14	27	**CHAPTER 8. GENERALIZED** linear models	X			Study of the material of CHAPTER 8	**1,5**	**6**
14	28	**Tutorial 14**: Logistic regression with **R**		X	**Computer classroom**	Study of the material of CHAPTER 8	**1,5**	
						Subtotal 1	**42**	**84**
						Total 1 *(Hours of class plus student homework hours between weeks 1-14)*		**126**

15		**Pending classes and tutorials**						12
16								
17		**Preparation of final assessment. Exam.**					3	9
18								
						Subtotal 2	**3**	**9**
						Total 2 *(Hours of class plus student homework hours between weeks 15-18)*		**24**

TOTAL *(Total 1 + Total 2)*	**150**