



COURSE: Machine Learning		
DEGREE: Computer Science	YEAR:2011-2012	TERM: 1st

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	GROUPS		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	Indicate YES/NO If the session needs 2 teachers : Maximum 4 sessions	WEEKLY PROGRAMMING FOR STUDENT		
			Large	Small			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS Maximum 7 H
1	1	Course introduction	X			NO	Bibliographical review	1,66	7
1	2	Introduction to machine learning and inductive learning	X			NO	Reading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Chapter 1: Introduction Lectura Alternativa: Artificial Intelligence, S. Russel y P. Norving. Prentice Hall, 2003.: Chapter 18: Learning from Observations. Secciones 18.1 y 18.2 Advanced Reading: The Discipline of Machine Learning. Tom M. Mitchell. July 2006. CMU-ML-06-108	1,66	
2	3	Decision trees: ID3	X			NO	Reading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Páginas 52-66, Chapter 3: Decision Tree Learning Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi Viñuela. Sanz y Torres 2006. Chapter 6. Técnicas inductivas mixtas. Section 6.1	1,66	7
2	4	Tutorial 1: Introduction to the practical case		X	Computer classroom	NO	Development of Tutorial	1,66	
3	5	Evaluation of decision trees: cross-validation	X			NO	Reading: Machine Learning. Tom Mitchell, McGraw	1,66	7

							Hill. 1997. Páginas 66-78, Chapter 3: Decision Tree Learning Lectura Alternativa: Artificial Intelligence, S. Russel y P. Norving. Prentice Hall, 2003. Chapter 18: Learning from Observations. Section 18.3 Advanced Reading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Chapter 5: Evaluating Hypothesis		
3	6	Tutorial 2: Data pre-process and classification tools		X	Computer classroom	NO	Development of Tutoriall	1,66	
4	7	Linear regression and decision trees	X			NO	Reading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Section 4.4: El perceptrón. Reading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Section 8.3: Locally Weighted Regression Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi Viñuela. Sanz y Torres 2006. Chapter 6. Técnicas inductivas mixtas. Section 6.2	1,66	7
4	8	Tutorial 3: Regression and batch evaluation		X	Computer classroom	NO	Development of Tutorial	1,66	
5	9	Instance based Learning	X			NO	RReading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Chapter 8	1,66	7
5	10	Practical case 1 (first session)		X	Computer classroom	NO	Development of practical case	1,66	
6	11	Unsupervised learning: clustering	X			NO	Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi Viñuela. Sanz y Torres 2006. Chapter 8. Técnicas de aprendizaje por agrupación no supervisada. Reading: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Chapter 6: Bayesian Learning. Section 6.12: The EM Algorithm Reading alternativa: An Algorithm for Vector Quantizer Design .Yoseph Linde and André Buzo and Robet M. Gray. IEEE Transactions on Communications, Vol1. Com-28, Nº 1. 1980. Advanced Reading: Vector Quantization and Signal Compression . Allen Gersho and Robert M.Gray. Kluwer Academic Publishers. 1992. k-means++: The advantages of careful seeding. Proceedings of the eighteenth annual ACM-SIAM symposium on Discrete algorithms. 1027-1035.	1,66	7
6	12	Practical case 1 (second session)		X	Computer classroom	NO	Development of practical case	1,66	
7	13	Associative Learning	X			NO	Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi	1,66	7

							Viñuela. Sanz y Torres 2006. Chapter 8. Técnicas de aprendizaje por agrupación no supervisada.		
7	14	Practical case 1 (second session)		X	Computer classroom	NO	Resolución del tutorial	1,66	
8	15	Reinforcement Learning	X			NO	Reading: Aprendizaje Automático: conceptos básicos y avanzados. Basilio Sierra Araujo. Pearson Prentice Hall. 2006. Chapter 11 Lectura Alternativa: Machine Learning. Tom Mitchell, McGraw Hill. 1997. Chapter 13 Advanced Reading: Reinforcement Learning: a Survey. Lelie Pack Kaelbling and Michael L. Littman and Andrew W. Moore. International Journal of Artificial Intelligence Research 4, 1996, pp 237-285 Advanced Reading: Reinforcement Learning: an introduction. R. Sutton y A. Barto. The MIT Press. 1998	1,66	7
8	16	Tutorial 4: Clustering and visualization tools		X	Computer classroom	NO	Development of practical case	1,66	
9	17	Ensemble of classifiers	X			NO	Reading: Aprendizaje Automático: conceptos básicos y avanzados. Basilio Sierra Araujo. Pearson Prentice Hall. 2006. Chapter 17. Combinación de clasificadores Advanced Reading: Ensemble Learning. Tomas Dietterich. The Handbook of Brain Theory and Neural Networks. MIT Press. 2002	1,66	7
9	18	Practical case 2 (first session)		X	Computer classroom	NO	Development of practical case	1,66	
10	19	Methodological aspects of machine learning	X			NO	Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi Viñuela. Sanz y Torres 2006. Chapter 2: Fundamentos	1,66	7
10	20	Practical case 2 (second session)		X	Computer classroom	NO	Development of Tutorial	1,66	
11	21	Inductive logic programming	X			NO	Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi Viñuela. Sanz y Torres 2006. Chapter 5: Enfoques mixtos puramente simbólicos. Section 5.3: Programación Lógica Inductiva	1,66	7
11	22	Practical case 2 (third session)		X	Computer classroom	SÍ	Development of practical case	1,66	
12	23	Machine learning for problem solving	X			NO	Reading: Aprendizaje Automático. Daniel Borrajo Millán, Jesús González Boticario y Pedro Isasi	1,66	7

							Viñuela. Sanz y Torres 2006. Chapter 4. Aprendizaje Deductivo		
12	24	Tutorial 5: Reinforcement Learning		X	Computer classroom	Sí	Development of practical case	1,66	
13	25	Solving machine learning problems	X			NO		1,66	7
13	26	Practical case 2 (first session)		X	Computer classroom	Sí	Project development	1,66	
14	27	Practical case 2 (second session)	X			NO	Solving practical cases and exam problems	1,66	7
14	28	Practical case 2 (third session)						1,66	
SUBTOTAL								48,33 + 98 =	
								146,33	
15		Tutorials, Handing in, etc					Course study and project development		10
16-18		Assessment					Exam preparation and execution	3	20
TOTAL								179,33	

LABORATORIES CLASSES PROGRAMMING*						
SES SION	WEE K	DESCRIPTION	LABORATORY	WEEKLY PROGRAMMING FOR STUDENT		
				DESCRIPTION	CLASS HOURS	HOME WORK HOURS Maxim um 7 H
1	13	Proyecto	Computer classroom	Project development	1.5	
2	13	Proyecto	Computer classroom	Project development	1.5	
3	14	Proyecto	Computer classroom	Project development	1.5	
4	14	Proyecto	Computer classroom	Project development	1.5	
TOTAL						

* 6 hours of complementary laboratories classes in EPS