Universidad Carlos III de Madrid

COURSE: Artificial Neural Networks								
DEGREE: Informatics Engineering						YEAR: 4		TERM: 1
WEEKLY PROGRAMMING								

WEEK	SESSION	DESCRIPTION	GROUPS		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	Inidicate YES/NO If the session needs 2 teachers: Maximum 4 sessions	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURE	SEMINAR			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS Maximum 7 H
1	1	Introduction to the course	X				Reading the recommended literature	1,66	2
1	2	Unit 1: Introduction to Artificial Neural Networks Biological Foundations Computation Model Learning and Generalization History of Neural Networks	X			NO	Study the contents explained in the theoretical session Reading the recommended literature	1,66	
2	3	Unit 2. Early computation models (1) Simple Perceptron. Linear Classification Exercises	X				Study the contents explained in the theoretical session Reading document about "Data Processing"	1,66	4
2	4	Data Processing Presentation of Practice I		X	Computer class room	NO	Study Data Processing Practice I	1,66	
3	5	Unit 2. Early computation models (2) Adaline. Linear Regression Unit 3. Multilayer Perceptron (1) Introduction	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	5

3	6	Guided work Practice I		X	Computer class room	NO	Practice I	1,66	
4	7	Unit 3. Multilayer Perceptron (2) Architecture Learning algorithm Exercises	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	5
4	8	Guided work Practice I		X	Computer class room	NO	Practice I	1,66	
5	9	Unit 3. Multilayer Perceptron (3) Learning Process Learning characteristics Non Linear Classification and Regression Exercises	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	5
5	10	Guided work Practice I		X	Computer class room	YES	Practice I	1,66	
6	11	Unit 4: Unsupervised learning (1) Basic characteristics Kohonen self-organizing maps Exercises	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	5
6	12	Guided work Practice I Guide lines for the Practice report		X	Computer class room	NO	Practice I Report for Practice I	1,66	
7	13	Unit 4: Unsupervised learning (2) Other clustering algorithms Exercises	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	5
7	14	Guided work Practice I		X	Computer class room	NO	Practice I. Report for Practice I	1,66	
8	15	Solve the pending exercises Partial Test Preparation	X				Study for Partial Test	1,66	6
8	16	Guided work Practice I		X	Computer class room	NO	Practice I. Report for Practice I	1,66	

9	17	Partial Test	X				Practice I. Report for Practice I	1,66	6
9	18	Finnish Practice I		X	Computer class room	YES	Finnish Practice I and the report. Deliver of Practice I	1,66	
10	19	Unit 5. Radial Basis Neural Networks (1) Introduction Architecture Learning method (1)	X				Study the contents explained in the theoretical session Reading the recommended literature	1,66	5
10	20	Presentation of Practice II Guided work Practice II		X	Computer class room	NO	Practice II	1,66	
11	21	Unit 5. Radial Basis Neural Networks (2) Learning method (2) Radial basis networks versus multi-layer perceptron Exercises	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	5
11	22	Guided work Practice II		X	Computer class room	NO	Practice II	1,66	
12	23	Unit 6. Introduction to Deep Learning (1) Vanishing Gradient Problem. Some solutions Convolutional Neural Networks (CNN) (1)	X				Study the contents explained in the theoretical session Reading the recommended literature	1,66	5
12	24	Guided work Practice II		X	Computer class room	YES	Practice II	1,66	
13	25	Unit 6. Introduction to Deep Learning (2) Convolutional Neural Networks (CNN) (2) Hyper-parameters of CNNs Examples of application of the CNN	X				Study the contents explained in the theoretical session Reading the recommended literature	1,66	5
13	26	Guided work Practice II Guide lines for the Practice report		X	Computer class room	NO	Practice II Report for Practice II	1,66	
14	27	Unit 7. Time Series Prediction Introduction Prediction Problem Static Neural Models	X				Study the contents explained in the theoretical session Reading the recommended literature Solve the proposed exercises	1,66	6

		Dynamic Neural Models: an introduction to recurrent neural networks							
14	28	Guided work Practice II	X		Computer class room	NO	Practice II and the report	1,66	
	29	Guided work Practice II			Computer class room	YES	Finnish Practice II and the report.	1,66	
SUBTOTAL								**48,14 + 69 = 117,14**	
15		Tutorials, Deliver of Practice II						3	
16-18		Assessment						**3**	26
								6	26
TOTAL								**149,14**	