

Fundamentals of Machine Learning (FML)			
Code number:	75097	Number of ECTS:	6 ECTS
Semester:	Autumn	Language:	English
Lecturer(s) and contact: - Dr. Miguel Ángel Martín Fernández (migmar@tel.uva.es) - Dr. Lara del Val Puente (lara.val@uva.es)			
Learning goals: At the end of the course the student must be able to: - Explain what machine learning is and enumerate the type of machine learning types. - Describe the basic theory of machine learning and its practical implications in system design. - Describe and apply various models of supervised and unsupervised machine learning. - Describe and apply regularization, validation and aggregation techniques in the development of systems based on machine learning. - Implement systems based on machine learning using Python.			
Contents: LESSON 0: Presentation and Introduction to Python LESSON 1: Introduction to machine learning LESSON 2: Is it feasible to learn? (First part) LESSON 3: The linear model: Classification and linear regression LESSON 4: Is it feasible to learn? (Second part) LESSON 5: The linear model: Logistic regression LESSON 6: Regularization LESSON 7: Validation LESSON 8: Neural networks LESSON 9: Support vector machines (SVM) LESSON 10: Decision trees LESSON 11: Some aspects to take into account in the design of supervised learning systems LESSON 12: Clustering LESSON 13: Dimensionality reduction LESSON 14: Deep Learning			

Prerequisites:

Good knowledge in maths and basic programming skills. Students will need to bring their own laptop.

Assessment:

Assessment Instrument:

- 90% Test exercises (minimum: 50%).
- 10% Attitude and participation in training activities (minimum: 50%).

Extraordinary call:

- The marks of attitude and participation in training activities of the ordinary call will be kept.