

Fundamentals of Machine Learning (FML)			
Code number:	75097	Number of ECTS:	6 ECTS
Semester:	Autumn	Language:	English
<b>Lecturer(s) and contact:</b> <ul style="list-style-type: none"> <li>• Dr. Miguel Ángel Martín Fernández (<a href="mailto:migmar@tel.uva.es">migmar@tel.uva.es</a>)</li> <li>• Dr. Lara del Val Puente (<a href="mailto:lara.val@uva.es">lara.val@uva.es</a>)</li> </ul>			
<b>Learning goals:</b> At the end of the course the student must be able to: <ul style="list-style-type: none"> <li>• Explain what machine learning is and enumerate the type of machine learning types.</li> <li>• Describe the basic theory of machine learning and its practical implications in system design.</li> <li>• Describe and apply various models of supervised and unsupervised machine learning.</li> <li>• Describe and apply regularization, validation and aggregation techniques in the development of systems based on machine learning.</li> <li>• Implement systems based on machine learning using Python.</li> </ul>			
<b>Contents:</b> 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: Recommender systems LESSON 15: Association rules			
<b>Prerequisites:</b> Good knowledge in maths and basic programming skills. Students will need to bring their own laptop.			