ETSIT
Escuela Técnica Superior de
Ingenieros de Telecomunicación

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)
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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

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Prerequisites: Good knowledge in maths and basic programming skills. Students will need to bring their own laptop.
Assessment: Assessment Instrument: • 90% Lab exercises (minimum: 50%). • 10% Attitude and participation in training activities (minimum: 50%). Resit: • The marks of attitude and participation in training activities of the ordinary call will be kept.