Statistical Learning

Academic Year: (2019 / 2020)   **Review date: 20-04-2020**

Department assigned to the subject: Statistics Department

Coordinating teacher: NOGALES MARTIN, FRANCISCO JAVIER

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

OBJECTIVES

Become familiar with different analytical tools, based on data, to make business decisions

Capacity to develop skills to analyze and find relationships between many variables/features

Know how to evaluate supervised-learning models

Develop skills to classify observations based on probabilistic learning and machine learning tools

Handle the R language for statistical-learning tools

DESCRIPTION OF CONTENTS: PROGRAMME

Introduction to Statistical Learning

Performance Evaluation of Learning Models

Bayesian Learning

Bayes Rule and Cost-Sensitive Learning

k-NN

Support Vector Machines

Decision Trees and Random Forests

Neural Networks

LEARNING ACTIVITIES AND METHODOLOGY

Lectures (50% of the sessions): the contents of the course will be introduced, explained and illustrated with examples. Teaching materials will be provided on Aula Global.

Computer Labs (50% of the sessions): Examples and cases studies with the R language.

% end-of-term-examination:	50
% of continuous assessment (assigments, laboratory, practicals…):	50

BASIC BIBLIOGRAPHY

 - G. James, D. Witten, T. Hastie and R. Tibshirani An Introduction to Statistical Learning with Applications in R, Springer, 2013
 - Kevin P. Murphy Machine Learning: A Probabilistic Perspective, The MIT Press, 2012
 - Machine Learning with R Brett Lantz, Packt Publishing, 2015