Program	59EC – Communications Electronic Engineering B. Eng. 59SC – Telecommunications Systems Engineering B. Eng. 59SO – Sound and Image Engineering B.Eng. 59TL – Telematics Engineering B. Eng.

Course code and name	
Code	595040066
Name	Introduction to Machine Learning
Semester	S7 [(September-January)]

Credits and contact hours	
ECTS Credits	3
Contact hours	30

Coordinator's name	Juárez Martínez, Eduardo [eduardo.juarez@upm.es]

Specific course information
Description of course content
The course is focused on introducing the basic concepts related to machine learning. As it is intended to provide an introduction, during the first part of the course the fundamentals related to the development of machine learning algorithms and some use-cases will be explained. The course approach is eminently practical and is based on a Neural Compute Stick module especially devoted to the development of neural networks for computer vision. The methodology of the course is project-based. The course is divided in two parts: In the first part, basic machine learning concepts will be introduced. Specifically, the fundamental ideas of neural networks will be reviewed. In addition, groups of students will be established to collaboratively review different parts of the project proposal. The results will be shared with the student colleagues in a presentation. The second part of the course will be focused on the project proposal. Besides a presentation, students are required to write a report of achieved results.
List of topics to be covered
1. Introduction to Machine Learning: basic concepts 2. Neural networks development with a Neural Compute Stick module 2.1. Neural networks basic concepts and use cases 2.2. Working environment based on OpenVINO 2.3. Movidius NCS module features 2.4. Movidius NCS module hands-on: examples 3. Neural network project
Prerequisites or co-requisites
None

Course category in the program	
☐ **R (required)**	☑ **E (elective)** *(elective courses may not be offered every year)*

Specific goals for the course
Specific outcomes of instruction
• RA1047 - Be able to use CAD tools to build neural networks • RA1048 – Be familiar with, understand and use neural networks within machine learning • RA1049 - Be able to use hardware accelerators to develop neural networks.

Further reading and supplementary materials
– Movidius Neural Compute Stick: https://software.intel.com/content/www/us/en/develop/articles/intel-movidius-neural-compute-stick.html

Teaching methodology			
_X_ **lectures**	__ **problem solving sessions**	_X_ **collaborative actions**	_X_ **laboratory sessions**
Other:			