

Guía docente

300099 - STCPYTH - Programación Avanzada en Python

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Unidad responsable: Escuela de Ingeniería de Telecomunicación y Aeroespacial de Castelldefels
Unidad que imparte: **Titulación:** MÁSTER UNIVERSITARIO EN INTELIGENCIA ARTIFICIAL PARA INDUSTRIAS CONECTADAS (AI4CI) (Plan 2025). (Asignatura optativa).

Curso: 2026 **Créditos ECTS:** 3.0 **Idiomas:** Inglés

PROFESORADO

Profesorado responsable: Mario Patetta (CNAM Paris), Eulalie Verhulst (CNAM Paris), Reinhol von Schwerin (Univ. Ulm)

Otros: Mario Patetta (CNAM Paris), Eulalie Verhulst (CNAM Paris), Reinhol von Schwerin (Univ. Ulm)

CAPACIDADES PREVIAS

Standard computer science/engineering bachelor's degree bases

REQUISITOS

Standard computer science/engineering bachelor's degree bases

METODOLOGÍAS DOCENTES

Lectures, Assignments, autonomous work, project

OBJETIVOS DE APRENDIZAJE DE LA ASIGNATURA

The aim of the course is to refresh the basics of Python programming (beginner) to then learn how to perform object-oriented programming with Python (advanced) as well as traffic analysis and generation tools in Python. At the end of the course, students would be able to write computer programs in Python using popular packages.

HORAS TOTALES DE DEDICACIÓN DEL ESTUDIANTE

Tipo	Horas	Porcentaje
Horas grupo grande	27,0	36.00
Horas aprendizaje autónomo	48,0	64.00

Dedicación total: 75 h

CONTENIDOS

Advanced Python Programming

Descripción:

Python programming (beginner): Programming in Python (variables, conditional structures, lists, arrays, loops, etc.). Writing functionalities in the Python environment.

Object-oriented programming (advanced): Principles of object-oriented programming in Python (classes, abstraction, etc.).

Files and data structures in Python: Read and write files using different data formats (csv, json...)

Use of packages: Discover virtual machines and libraries in Python. Realize Data manipulation and data visualization using specialized packages (Pandas, Numpy, Matplotlib).

Writing a report using Jupyter Notebook. Manipulate packets using Scapy.

Dedicación: 75h

Grupo grande/Teoría: 27h

Aprendizaje autónomo: 48h

SISTEMA DE CALIFICACIÓN

Individual project oriented toward AI for connected systems.