

Información del Plan Docente

Academic Year	2016/17
Academic center	100 - Facultad de Ciencias
Degree	538 - Master's in Physics and Physical Technologies
ECTS	5.0
Course	1
Period	Second semester
Subject Type	Optional
Module	---

1.Basic info**1.1.Recommendations to take this course****1.2.Activities and key dates for the course****2.Initiation****2.1.Learning outcomes that define the subject****2.2.Introduction****3.Context and competences****3.1.Goals****3.2.Context and meaning of the subject in the degree****3.3.Competences****3.4.Importance of learning outcomes****4.Evaluation****5.Activities and resources****5.1.General methodological presentation**

During the course, the student has to acquire theoretical and practical knowledge also about digital image processing and radiotherapy techniques. Therefore, the methodology to be developed It will be based on theoretical classes (2.5 ECTS), in which the physical and mathematical foundations are explained the different techniques of digital image processing and radiotherapy techniques, classes troubleshooting (1 ECTS), practical classes (1 ECTS), which will be put into practice techniques databases of images and commercial programs and practices in the laboratory (0.5 ECTS) with radiation detectors.

5.2.Learning activities

1. Lectures on the main concepts.
2. Practice in computer room, where one learns to handle tools appropriate to develop different processing techniques seen in theory. This includes implementation of different techniques programmatically and using programs specific for commercial image processing.
3. Resolution of exercises proposed for the practical classes.
4. Laboratory practice in which the student will characterize radiation detectors and its possible applications in radiotherapy and image production.

5.3.Program

1. INTRODUCTION TO DIGITAL IMAGE PROCESSING
2. CHANGES IN INTENSITY AND SPATIAL FILTERING
3. FILTERING IN THE FREQUENCY DOMAIN
4. IMAGE RESTORATION
5. IMAGE SEGMENTATION
6. IN COLOR IMAGE PROCESSING
7. APPLICATIONS OF DIGITAL IMAGE PROCESSING
8. IMAGE IN MEDICINE
9. RADIOTHERAPY TECHNIQUES

5.4.Planning and scheduling

The final schedule is determined. It was announced in advance.

5.5.Bibliography and recommended resources