

69326 - Radiotherapy technologies

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	547 - Master's in Biomedical Engineering
ECTS	3.0
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

The teaching methodology is the Problem Based Learning (PBL). Problem-based learning is a student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem.

5.2.Learning activities

The main teaching activities are:

69326 - Radiotherapy technologies

- A01 Theoretical classes with the active involvement of the student, where the main course contents are presented.
- A02 Development of practical tasks. Different activities/tasks are proposed related with the main contents of the course.
- A03 Computer lab sessions. Different lab sessions are carried out.
- A04 Visit to a clinical center
- A05 Development of practical work on research. Students must submit a written report on a research topic
- A09 Assessment. The reports derived from the practical activities and the final exam will be evaluated.

5.3.Program

The course covers the following basic contents: Basic concepts of radiation therapy, Radiation models and Techniques associated with planning and administration of radiation therapy.

Module 1. Introduction and general concepts

Module 2. Radiation Models. Pencil Beam Dose Calculation Algorithm.

Module 3. IMRT Plan Optimization. Constrained Optimization

Module 4. Delivery of Fluence Map. Multileaf collimator: Segments and Monitor Unit.

5.4.Planning and scheduling

The course calendar is defined by the Escuela de Ingeniería y Arquitectura calendar.

5.5.Bibliography and recommended resources

BC	Ling,C. A practical guide to intensity-modulated radiation therapy / C. Ling et al. Madison : Medical Physics Publishing, 2003
BC	Van Dyk, J. The modern technology of radiation oncology / J. Van Dyk et al. Madison : Medical Physics Publishing, 2005

LISTADO DE URLs:

"A Tutorial on Radiation Oncology and Optimization", Tutorials on Emerging Methodologies and Applications in Operations Research, H. Greenberg, 2004
[http://digitalcommons.trinity.edu/cgi/viewcontent.cgi?article=1037&context=math_

69326 - Radiotherapy technologies

"Descripción de equipos de última
generación en radioterapia externa", S.
Pellejero, S. Lozares, F. Mañeru, 2009.

[http://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1137-6627200900040000]