

CURSOS:	INSTRUMENTACIÓN Y EQUIPAMIENTO EN RADIOTERAPIA
TRADUCCIÓN:	INSTRUMENTATION AND EQUIPMENT IN RADIOTHERAPY
SIGLA:	FMD3018
CRÉDITOS:	15
MÓDULOS:	2
REQUISITOS:	SIN REQUISITOS
CONECTOR:	Y
RESTRICCIONES:	ALUMNO DE DOCTORADO EN FÍSICA (CURRÍCULO 030501), ALUMNO DE MAGISTER EN FÍSICA (CURRÍCULO 030401), ALUMNO DE MAGISTER EN FÍSICA MÉDICA (CURRÍCULO 030801, 030802 Y 030803).
CARÁCTER:	OPTATIVO
TIPO:	CÁTEDRA
CALIFICACIÓN:	ESTÁNDAR
DISCIPLINA:	FÍSICA
PALABRAS CLAVE:	FÍSICA MÉDICA, INSTRUMENTACIÓN, EQUIPAMIENTO, RADIOTERAPIA
NIVEL FORMATIVO:	NIVEL MAGISTER

I. DESCRIPTION

This course provides the student with knowledge about the technical aspects related to instrumentation and basic and advanced equipment in radiotherapy.

II. GOALS

- Know the technical aspects of the equipment currently available for the generation of ionizing radiation beams.
- Know the technical aspects of the equipment currently available for the simulation and planning of radiotherapy treatments.
- Know the technical aspects of the equipment currently available for the generation of images used directly in the application of the treatment.

III. GOALS

- Beam generating devices
 - o Cobalt-60
 - o Linear accelerators
 - o X-ray generators
 - o Neutron generators
 - o Cyclotron / Synchrotron
 - o Cyberknife
 - o Gammaknife
 - o Tomotherapy

- Devices for simulation and planning

- o Simulation

- Virtual

- Real

- o Planning

- CT

- PET

- MRI

- Imaging devices during treatment

- o EPID

- o CT with cone beams

IV. METHODOLOGY

Theoretical classes and practical experiences.

V. EVALUATION

2 tests (60%) and a final exam (40%).

VI. BIBLIOGRAPHY

- Greene, D. and Williams, P.C. Linear Accelerators for Radiation Therapy, 2nd ed. Institute of Physics Publishing, London, 1997.

- Hazle, J.D. and Boyer, A. (eds.). Imaging in Radiation Therapy. AAPM Monograph No. 24. Medical Physics Publishing, Madison, 1998.

- Hendee, W. R., Ibbott, G. S. and Hendee, E. G. Radiation Therapy Physics, 3rd ed. Wiley- Liss, Hoboken, 2004.

- Levitt, S. H. (ed.). Technical Basis of Radiation Therapy: Practical Clinical Applications. Springer, Berlin, 2008.

- Mayles P., Nahum A. E., Rosenwald J. C. (eds.), Handbook of Radiotherapy Physics: Theory and Practice, Boca Raton, CRC Press, 2007.

- Sprawls, P. Magnetic resonance imaging: principles, methods, and techniques. Medical Physics Publishing, Madison, 2000.

- Sprawls, P. Physical principles of medical imaging. Medical Physics Publishing, Madison, 1995.

- Van Dyk, J., The Modern Technology of Radiation Oncology, Volume 2. Medical Physics Publishing, Wisconsin; 2008

- Wolbarst, A. B., Massman, K. L., Hendee, W. R. Advances in Medical Physics. Medical Physics Pub., Madison, 2008.