

## Degree in Radiology diagnosing imaging and radiotherapy techniques

### Integrated Teaching: DIAGNOSTIC IMAGING TECHNIQUES II

SSD: MED/36, MED/50

CFU: 12

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MODULE: Diagnostic Imaging and radiotherapy

SSD: MED/36

CFU: 6

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MODULE: Medical Sciences and techniques I

SSD: MED/50

CFU: 6

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### PREREQUISITES

Minimum basic knowledge of human anatomy, general and atomic physics is required.

### LEARNING OBJECTIVES

The course aims to provide students with the specific skills to correctly use radiological equipment. The teaching, integrated with the study of radiographic techniques, is fundamental for the development of specific professional skills.

### LEARNING OUTCOMES

#### Knowledge and understanding

At the end of this course the student will have to know:

- Know the radiodiagnostic equipment and the physical principles of operation
- Describe the main components
- Know the physical principles of operation
- Explain the correct use of the equipment
- know and understand the main technical-practical notions, necessary for conducting traditional radiology, contrast X-ray and MRI tests in compliance with radiation protection regulations, and professional ethics.

### **Applying knowledge and understanding**

At the end of the course, the student will be able to:

- Use the equipment consciously
- Perform radiographic projections independently
- Use the knowledge acquired for the autonomous study of aspects relating to the specific field to which the student will dedicate himself in the professional activity;
- Know and apply the basic principles of the various radiological practices for carrying out in complete autonomy and a correct practical execution necessary for the radiological study.

### **Communication skills**

At the end of the course, the student must know:

- Use specific scientific terminology appropriately.
- be able to apply their knowledge and understanding skills in order to demonstrate a professional approach to work and have adequate skills both to devise and support arguments and to solve problems in their field of study
- Must be able to collaborate in teams in order to perform radiological practices in the field of technical competence, to be supportive and to be able to involve patients during the radiological study.

### **Making judgements**

At the end of the course, the student must know:

- carry out general evaluations relating to the topics covered.
- Know the main correctness criteria for a careful evaluation of all radiological practices treated during teaching.

## **COURSE SYLLABUS**

### **MODULE: Medical Sciences and techniques I**

- principles of TC operation
- CT image formation
- evolutions of CT
- software for TC retreading
- principles of operation of MRI
- RM image formation
- MRI security
- CT and MRI study techniques

### **MODULE: Diagnostic Imaging and radiotherapy**

CT and MRI study of the human body, osteoarticular, muscular, respiratory, digestive and osteoarticular systems. Diagnostics for neurological images, in urgency and stroke

## **COURSE STRUCTURE**

The module of IMAGE DIAGNOSTICS TECHNIQUES II is organized in lectures (120 hours) and theoretical-practical exercises. The lessons are held by projecting illustrative images (Power-Point) and through the use of paper material provided by the teacher.

## **COURSE GRADE DETERMINATION**

### **MODULE: Medical Sciences and techniques I**

The teaching module is integrated with another discipline always pertaining to radiological sciences. The student can take the test of applied medical technical sciences in a single session or in different sessions of the current academic year.

The test consists of a compulsory written test and an optional oral test. The written and oral tests are aimed at evaluating both the theoretical knowledge and the student's ability to solve problems.

### **MODULE: Diagnostic Imaging and radiotherapy**

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## **OPTIONAL ACTIVITIES**

Students will have the opportunity to carry out theoretical / practical exercises and participate in seminars. The teachers will provide constant support during and after the lessons

## **READING MATERIALS**

### **MODULE: Medical Sciences and techniques I**

- Diagnostic Radiology Physics: A Handbook for Teachers and Students. D.R. Dance, S. Christofides, A.D.A. Maidment, I.D. McLean, K.H. Ng. Technical Editors
- MRI The Basics. Christopher J. Lisanti, William G. Branley, Jr. WOLTERS KLUWER
- MDCT PHISICS The Basics. Technology, Image Quality, and Radiation Dose. Mahadevappa Mahesh  
WOLTERS KLUWER
- MDCT Anatomy-Body. Luigia Romano, Massimo Silva, Sonia Fulciniti, Antonio Pinto  
SPRINGER

### **MODULE: Diagnostic Imaging and radiotherapy**

- MRI in practice. Westbrook, Kaut Roth, Talbot. WILEY-BLACKWELL
- Computed Tomography. Samei, Pelc. SPRINGER