

Radiology diagnosing imaging and radiotherapy techniques

INTEGRATED COURSE: 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

MEDICAL SCIENCES AND TECHNIQUES

- *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

DIAGNOSTIC IMAGING

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

The exam is unique for the entire integrated course, it is not possible to take exam tests for the individual modules.

The exam consists of a compulsory written test and an oral integration test. The teaching module is integrated with another discipline always related to radiological sciences.

The test consists of a compulsory written test and an optional oral test. The written and oral tests are aimed at assessing both the theoretical knowledge and the student's ability to solve problems. The written test includes a multiple choice quiz and open-ended questions for some radiological procedures.

The oral exam is not compulsory but chosen by the student to improve the grade. You can access the oral exam if the minimum score for the written test is 18/30. The student can be sent back to the oral even if he has passed the written test.

The final exam grade will be calculated according to the following criteria:

Not suitable: Poor or lacking knowledge and understanding of the topics; limited capacity for analysis and synthesis, frequent generalizations of the requested contents; inability to use technical language.

18-20: Just sufficient knowledge and understanding of the topics, with obvious imperfections; just sufficient capacity for analysis, synthesis and autonomy of judgment; poor ability to use technical language.

21-23: Sufficient knowledge and understanding of the topics; sufficient ability to analyze and synthesize with the ability to reason with logic and coherence the required contents; sufficient ability to use technical language.

24-26: Fair knowledge and understanding of the topics; discrete ability to analyze and synthesize with the ability to rigorously argue the required contents; good ability to use technical language

27-29: Good knowledge and understanding of the required contents; good ability to analyze and synthesize with the ability to rigorously argue the required contents; good ability to use technical language.

30-30L: Excellent level of knowledge and understanding of the required contents with an excellent ability to analyze and synthesize with the ability to argue the required contents in a rigorous, innovative and original way; excellent ability to use technical language.

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

MEDICAL SCIENCES AND TECHNIQUES

- 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

DIAGNOSTIC IMAGING

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