

26710 - Physical diagnostic and therapeutic procedures I

Syllabus Information

Academic year: 2023/24

Subject: 26710 - Physical diagnostic and therapeutic procedures I

Faculty / School: 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 304 - Degree in Medicine

305 - Degree in Medicine

ECTS: 6.0

Year: 2

Semester: First semester

Subject type: Compulsory

Module:

1. General information

Goals of the subject

To understand the origin, physical basis and characteristics of the different types of ionizing radiation (X-rays, radioactive isotopes) and non-ionizing radiation (magnetic resonance, ultrasound) used in diagnosis and therapy, how the medical image is formed with them and the aspects of radiological protection. Principles of diagnostic and therapeutic nuclear medicine..

To know the radiological anatomy of the organism in the different imaging modalities (conventional radiology, ultrasound, CT, MRI...), defining the basic semiology criteria to be evaluated with these techniques.

To understand the concept of Physical Medicine and Rehabilitation, the criteria for the evaluation of functionality and the different therapeutic methods in rehabilitation and their indications.

Objectives aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 ([thehttps://www.un.org/sustainabledevelopment/es/](https://www.un.org/sustainabledevelopment/es/)): Goal 3: Health and wellness

2. Learning results

Identify the origin and characteristics of the different types of ionizing radiation used in diagnosis and therapy.

Describe the physical basis of imaging techniques using ionizing and non-ionizing radiation: produced in X-Ray generators, emitted by radioactive isotopes, with ultrasound and by Magnetic Resonance Imaging.

Identify and recognize the different organs of the human anatomy in the different types of diagnostic imaging.

List the basic semiology concepts of the most common imaging techniques.

Identify and compare the techniques of Diagnostic Imaging, Radiology and Nuclear Medicine, most commonly used today and their most frequent indications.

Know the basics of Nuclear, diagnostic and therapeutic medicine. Concept of radio pharmacy.

Indicate the basic aspects of radiation protection

Indicate the different types of existing treatment with ionizing radiation, the biological basis of radiotherapy, its general indications and the basis of radioisotope therapy and its indications

Identify the concept of Physical Medicine and Rehabilitation and the need of the Rehabilitation team in view of the contingency and prevalence of deficiencies, disabilities, handicap and dependence and list the most common syndromes on which it must act.

Identify the criteria for assessing the functionality and characteristics of normal human movement.

Analyse the bases of action of physical activity and its repercussion on the metabolism and on the global functions of the organism, both in normal and altered conditions.

Identify the main therapeutic means that can be used in Physical Medicine and Rehabilitation and describe their main applications.

3. Syllabus

Block 1. Physical basis of imaging techniques. Radiological Protection. Basic concepts on Nuclear Medicine and Radiotherapy

B.1.1. Physical basis of the use of ionizing radiation in medicine (4 lectures)

B.1.2. Physical basis of the use of non-ionizing radiation in medicine (2 lectures)

B.1.3. Radiation Protection (3 master classes)

B.1.4. Radiotherapy (2 master classes)

B.1.5. Nuclear Medicine (2 master classes)

Block 2. Radiological Anatomy and Semiology (12 lectures)

Block 3. Physical Medicine and Rehabilitation (7 topics to be developed)

4. Academic activities

- **Participative master classes:** 39 hours

Sessions in which the teacher explains the subject's syllabus

- **Seminars and hospital practices:** 21 hours

Sessions with small groups of students and theoretical-practical orientation. Student participation and resolution of problems is encouraged.

- **Hours of study and personal work:** 50 hours

- **Evaluation tests:** 5 hours

5. Assessment system

The student must demonstrate that they have achieved the intended learning results by means of the following assessment activities

Block 1: Physical basis of imaging techniques. Radiological Protection. Basic concepts of Nuclear Medicine and Radiotherapy

A. Examination with 40 multiple-choice questions 70%

B. Group work and public presentation: 30% .

Block 2: Radiological anatomy and semiology

A. Examination with 40 multiple-choice questions on case studies (images)

Block 3. Physical medicine and rehabilitation

A. Examination with 40 multiple-choice questions

The final grade of the subject is that of the three blocks that form it according to the weighted average number of credits corresponding to each one

It is necessary to pass each block with a minimum grade of 5 points (out of 10). If the student fails any block they can recover in the extraordinary exam period.

Students who have not passed the practical activities will have a practical exam in the global tests.

The grades of the different blocks are saved for other examinations.

The questions will have 4 possible answers and only one of them is true. The right answer will be valued with 1 point and 0.25 points will be deducted for each wrong answer.