Clinical Radiology
Code: 102929
ECTS Credits: 6

<table>
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<th>Degree</th>
<th>Type</th>
<th>Year</th>
<th>Semester</th>
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<tr>
<td>2502442 Medicine</td>
<td>OB</td>
<td>3</td>
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</tbody>
</table>

Contact
Name: Ignasi Carrio Gasset
Email: Ignasi.Carrio@uab.cat

Use of Languages
Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites
It is advisable to have "Biofísica and Anatomia Humana I and II" completed.

The student will commit to preserve the confidentiality and professional secrecy of the data he or she may access during clinical training. The student will be have according to professional and ethical standards.

Objectives and Contextualisation
"RADIOLOGIA I MEDICINA FÍSICA"


ABILITIES: The student will be able to identify the normal anatomic structures and to detected abnormalities in the thorax X-RAY, abdomen and bone structures.

To identify basic semiology in abdominal echography, CT and MR of the thorax, abdomen, and brain. To describe measures of radioprotection.

Under appropriate tutorship, the student will identify the radiological signs of the most prevalent diseases, and will stablish the diagnosis in case of vital risk.
The student will follow procedures of interventional radiology performed by an expert. The student will evaluated radiation therapy fields in various tumors.

The student will evaluated safety and protection in a radiology and nuclear medicine departments.

The student will developed professional and ethical values, and communication skills. The student will learn to handle properly information and will develop critical analysis and research skills.

**Competences**

- Communicate clearly, orally and in writing, with other professionals and the media.
- Convey knowledge and techniques to professionals working in other fields.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate an understanding of the fundamentals of action, indications, efficacy and benefit-risk ratio of therapeutic interventions based on the available scientific evidence.
- Demonstrate basic research skills.
- Demonstrate knowledge and understanding of descriptive and functional anatomy, both macro- and microscopic, of different body systems, and topographic anatomy, its correlation with basic complementary examinations and its developmental mechanisms.
- Demonstrate understanding of the manifestations of the illness in the structure and function of the human body.
- Demonstrate understanding of the structure and function of the human organism in illness, at different stages in life and in both sexes.
- Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Indicate the basic diagnosis techniques and procedures and analyse and interpret the results so as to better pinpoint the nature of the problems.
- Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
- Use information and communication technologies in professional practice.

**Learning Outcomes**

1. Apply the criteria of radiation protection in diagnostic and therapeutic procedures with ionising radiation.
2. Assess the indications and contraindications of radiological studies.
3. Communicate clearly, orally and in writing, with other professionals and the media.
4. Convey knowledge and techniques to professionals working in other fields.
5. Demonstrate basic research skills.
6. Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
7. Describe the basic radiological semiology of the different body systems.
8. Describe the principles behind the interaction of radiation with the human organism.
9. Differentiate between images of normality and those of abnormality.
10. Explain the use of the different imaging techniques.
11. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
12. Identify images that do not correspond to normal variants.
13. Identify the indications of imaging tests.
14. Identify the principles and indications of radiotherapy.
15. Indicate diagnostic imaging tests.
16. Indicate other techniques for obtaining diagnostic images.
17. Interpret a radiological image by systematic reading.
18. Interpret diagnostic imaging reports (radiological image, among others).
19. Maintain and sharpen one's professional competence, in particular by independently learning new material and techniques and by focusing on quality.
20. Make correct use of information sources, including textbooks, atlas images, internet resources and other specific bibliographic databases.
21. Make correct use of the international nomenclature.
22. Perform and interpret and electrocardiogram and an electroencephalogram.
23. Understand the basic principles of diagnostic imaging.
24. Use information and communication technologies in professional practice.

Content

1. General descriptions
2. Topics in radiology
3. Topics in nuclear medicine
4. Topics in radiotherapy
   - Introduction to radiology
   - Ionizing radiation
   - Nuclear Medicine
   - Radiology I
   - Radiology II
   - CT
   - Ultrasound
   - MR
   - Radiotherapy and radioprotection
   - Radiobiology
   - The normal thorax
   - Heart and mediastinum
   - Abdomen
   - Abdominal organs
   - Anatomy of the kidney and urinary tract
   - Bone and joints
   - The skull
   - Semiology of the lungs I
   - Semiology of the lungs II
   - Semiology of the lungs III
   - The pleura
• The diaphragm and other structures of the thorax
• The mediastinum
• The heart and the aorta
• Nuclear cardiology
• Abdominal diseases
• Gastrointestinal tract I
• Gastrointestinal tract II
• The liver
• Nuclear medicine in the abdomen
• The brain
• The spinal cord
• Diseases of the kidney
• Nuclear medicine of the kidney and urinary tract
• Diseases of the bones
• Diseases of the spine and joins
• Nuclear medicine in bone and joins
• Nuclear medicine in endocrinology

Seminars

All seminars consists on clinical cases for groups of 10-12 students.

1. Radioprotection
2. Breast and gynecology
3. Retro peritoneum and large vessels
4. Pediatric radiology
5. Interventional radiology
6. Nuclear medicine
7. Radiotherapy

Methodology

This guide describes the frame, contents, methods and general rules of Clinical Radiology, following the current plan in the University. The organization of Clinical Radiology regarding the size and number of groups, calendar distribution, evaluation dates, evaluation criteria, and evaluation reviews will be define in each of the "Unitats Docents Hospitalaries (UDH). Such rules will be available on the respective web sites and will be explaine the first day of the course by the responsible professors in the respective UDHs. Currently, the responsible professors as
Activities

<table>
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<th>Title</th>
<th>Hours</th>
<th>ECTS</th>
<th>Learning Outcomes</th>
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<td><strong>Type: Directed</strong></td>
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<tr>
<td>Clinical care practices (PCAh)</td>
<td>15</td>
<td>0.6</td>
<td>1, 3, 5, 6, 9, 4, 23, 22, 13, 16, 15, 18, 17, 21, 20, 24</td>
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<tr>
<td>Clinical case seminars (SCC)</td>
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<td>1, 8, 7, 9, 23, 10, 14, 12, 13, 16, 15, 18, 17, 20, 2</td>
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<td>Contents given as oral lectures (Theory)</td>
<td>38</td>
<td>1.52</td>
<td>1, 8, 7, 9, 23, 10, 11, 14, 12, 13, 16, 15, 18, 17, 2</td>
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<td><strong>Type: Autonomous</strong></td>
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<tr>
<td>Preparations for written works, self-study and reading articles/reports of interest</td>
<td>74.5</td>
<td>2.98</td>
<td>8, 9, 23, 22, 11, 13, 16, 17, 19, 21, 20, 24</td>
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Assessment

Two evaluations will be performed during the calendar year. Such evaluations will consist of a writing part with multiple-choice questions in both evaluations, and a practical part of short questions only in the second evaluation. Each writing part will account for 35% of the final qualification. If a student does not come for the evaluation will be consider "non-evaluable". A final exam will be offerer if necessary. The preparation and presentation of topics will be evaluate by the tutors on individual basis.

Assessment Activities

<table>
<thead>
<tr>
<th>Title</th>
<th>Weighting</th>
<th>Hours</th>
<th>ECTS</th>
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<td>Practical evaluations: Objective and</td>
<td>30%</td>
<td>4</td>
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<tr>
<td>Written evaluations: objective tests: Multiple choice questions</td>
<td>70%</td>
<td>3.5</td>
<td>0.14</td>
<td>1, 5, 6, 8, 7, 9, 4, 23, 10, 14, 12, 19, 21, 20, 24, 2</td>
</tr>
</tbody>
</table>
Bibliography


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- Aby Agudo Felson B, Ed Toray

- Fundamentos de Radiología Novelina RA. Marban, Barcelona, 2000

- Radiología del Sistema óseo Edeiken J. Ed Salvat, 1997

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- http://campusvirtual.uma.es/rgral/ameram.html


- http://www. e-anatomy.org

- http://www.e-mri.org

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