DISCIPLINE SHEET

ACADEMIC YEAR

2022 - 2023

1. DATA ABOUT THE STUDY PROGRAM

1.1 Institution of higher education	UNIVERSITY OF MEDICINE AND PHARMACY OF CRAIOVA
1.2 Faculty	**MEDICINE**
1.3 Department	**4**
1.4 Study Domain	HEALTH
1.5 Study cycle	LICENCE
1.6 Study program/Qualification	MEDICINE

2. DATA ABOUT THE DISCIPLINE

2.1 DISCIPLINE NAME	**RADIOLOGY AND MEDICAL IMAGISTICS**				
2.2. Discipline code	MED4108				
2.3 The holder of course activities	Ioana Andreea Gheonea / Mihai Popescu / Cristian Constantin / Teodor Nicușor Sas				
2.4 The holder of seminar activities	Ioana Andreea Gheonea / Mihai Popescu / Cristian Constantin / Teodor Nicușor Sas / Georgiana Camen / Lucian Mihai Florescu				
2.5.Academic degree	**Course:** Prof. / Assoc.Prof. / Assoc.Prof. Lecturer **Seminar activities:** Prof. / Assoc.Prof. / Assoc.Prof. / Lecturer / Assistant Prof. / Assistant Prof.				
2.6. Employment (base norm/associate)	Base norm				
2.7. Year of study	**IV**	2.8. Semester	**I**	2.9. Course type (content) 2.10. Regime of discipline (compulsoriness)	**CDD**

3. TOTAL ESTIMATED TIME (teaching hours per semester)

3.1 Number of hours per week	**4**	3.2 From which - course	**2**	3.3 seminary/laboratory	**2**
3.4 Total hours in curriculum	**56**	3.5 From which - course	**28**	3.6 seminary/laboratory	**28**
Time found distribution (hours)					
Study by manual, course support, bibliography, and notes					**9**
Additional documentation in the library, specialized electronic platforms and, on the field					**11**
Training seminars / labs, homework, reports, portfolios, and essays					**7**
Tutoring					**4**
Examinations					**6**
Other activities, counselling, student circles					**7**

3.7 Total hours of individual study	**44**
3.9 Total hours per semester	**100**
3.10 Number of credits	**4**

4. PREREQUISITES (where appropriate)

4.1 curriculum	Students must have a solid knowledge of anatomy, physiopathology, internal medicine, surgery
4.2 competency	-

5. CONDITIONS (where appropriate)

5.1. of curse deployment	Lecture Hall with projector / online
5.2. of seminary/ lab deployment	Radiology Lab / online

6. SPECIFIC COMPETENCES ACCRUED

PROFESSIONAL COMPETENCES	**C1** - Identifying the state of ill-health and accurately diagnosing the condition(s). **C4** - Approaching the health/ill-health issues from the point of view of the characteristics of the community, in direct relation with the social, economic and/or cultural conditions of the respective community. **C5** - Initiating and performing scientific research and/or training activity in the respective domain of competence.

TRANSVERSAL COMPETENCES	C6 – Autonomy and responsability • acquiring moral guidelines, training of professional and civic attitudes that enable students to be fair, honest, non-confrontational, cooperative and understanding in the face of suffering, available to help people, interested in the community development; • to know, respect and contribute to the development of moral values and professional ethics; • to learn to recognize when a problem arises and provide responsible solutions to solve it. C7 – Social Interaction: • to recognize and have respect for diversity and multiculturalism; • to possess or learn how to develop teamwork skills; • to communicate orally and in writing the requirements, working methods, results, to consult with the team; • to get involved in volunteering, to know the essential problems of the community. C8 – Personal and Professional Development • to be open to lifelong learning; • to appreciate the need for individual study as the basis of personal autonomy and professional development; • to exploit their potential within collective activities; • to know how to use information and communication technology.

7. DISCIPLINE OBJECTIVES (based on the grid of specific competences acquired)

7.1 The general objective of the discipline	The goal of the Radiology and Medical Imaging Department is to provide fourth year students with the necessary informational and logistical support to acquire a series of basic notions that will allow students to later recognize normal and pathological radio-imaging aspects encountered in various diseases. We wish to encourage students to correlate the patient's radio-imaging data with the information obtained from the anamnesis and clinical examination in order to establish a correct diagnosis.
7.2 The specific objectives of the discipline	Through the curriculum adapted to the European quality standards, through the teaching and evaluation methods used, through the involvement of students in patient evaluation activities, the radiology discipline aims to develop cognitive skills, habits and attitudes that underlie any medical act of diagnostic. Upon completion of the discipline the student will be able to learn ***COGNITIVE SKILLS***, which will allow them to: • recognize the type of examination, radiography, computed tomography; • develop the student's skills to observe elements of radiological and imaging semiology, both general notions of radiology and medical imaging, knowledge regarding how X-rays are produced and their properties, and specific radiodiagnosis on devices and diseases; • identify elementary radiological lesions; • corroborate the clinical and paraclinical elements with the radiological ones in order to elaborate a diagnosis for the diseases included in the curriculum; • distinguish the essential elements from the data obtained by analyzing radiological films; • develop the ability to deduce in each student, through observation and questioning; • correctly formulate the diagnosis (by the student) and develop the capacity to decide which clinical specialty would be most appropriate for the patient to be sent to further on; ***PRACTICAL SKILLS:*** • to recognize a radiological examination, CT or MRI; • to distinguish the type of examination performed for each device or condition existing in the curriculum; • to know the indications, contraindications, possibilities and limits of the imaging methods; • to select the examination requests adapted to each clinical case; • to interpret from a radiological point of view a radiological film or

	computed tomography; • to formulate a radiological bulletin; • infirm or confirm a clinical diagnosis; • formulate and argue a presumptive diagnosis; ***ATTITUDES:*** • to be open to acquiring moral guidelines, developing professional and civic attitudes, which allow students to be fair, honest, non-conflicting, cooperative, understanding in the face of suffering, available to help people interested in community development; • to know, respect and contribute to the development of moral values and professional ethics; • learn to recognize a problem when it arises and provide responsible solutions to solve it; • to recognize and respect diversity and multiculturalism; • to have or learn to develop teamwork skills; • to communicate orally and in writing the requirements, working methods, results, to consult with the team; • to get involved in volunteer actions, to know the essential problems of the community; • to be open to lifelong learning; • to be aware of the need for individual study as the basis for personal autonomy and professional development; • to exploit their own potential both optimally and creatively in collective activities; • to know how to use information and communication technology; • to have initiative, to become involved in the educational and scientific activities of the discipline.

8. CONTENTS

8.1 Course (content units)	No. hours
1. PRINCIPLES OF ROENTGEN RADIATION - X-ray characteristics; - Effects of ionizing radiation; - Components of an X-ray device; - Conventional radiography, fluoroscopy, mammography, computed tomography, magnetic resonance imaging, ultrasonography.	**2**
2. RADIOPROTECTION AND CONTRAST MEDIA - Radioprotection; - ALARA concept; - Iodinated contrast agents; - Contrast agents used in ultrasonography; - Contrast agents used in magnetic resonance imaging.	**2**
3. CHEST RADIOLOGY – PART I - Medical imaging methods; - Criteria for a correctly acquired chest X-ray; - Semiological changes in lung transparency; - Acute infectious pneumopathies; - Lung parasitosis; - Lung micosis; - Pulmonary emphysema; - Pneumoconiosis; - Atelectasis and lung collapse; - Lung infarction; - Acute pulmonary edema.	**2**

4. CHEST RADIOLOGY – PART II - Pulmonary tuberculosis; - Benign lung tumors; - Malignant lung tumors; - Thoracic trauma; - Pleural pathology; - Mediastinal pathology.	**2**
5. CARDIOVASCULAR IMAGING - Medical imaging methods; - Radiological anatomy of the heart and great vessels; - Changes affecting the pulmonary circulation; - Aortic pathology; - Cardiac congenital disorders; - Valvular cardiac disorders; - Cardiac tumors; - Pericardial pathology.	**2**
6. GASTROINTESTINAL AND ABDOMINAL IMAGING – PART I - Medical iamging methods; - Functional radiological changes of the digestive tract; - Morphological radiological changes of the digestive tract; - Esophageal pathology; - Gastric pathology; - Small bowel and colon pathology.	**2**
7. GASTROINTESTINAL AND ABDOMINAL IMAGING – PART II - Liver pathology; - Biliary tract pathology; - Pancreatic pathology; - Spleen pathology.	**2**
8. UROGENITAL IMAGING - Medical imaging methods; - Congenital disorders; - Urinary lithiasis; - Hydronephrosis; - Benign renal tumors; - Malignant renal tumors; - Acute renal infections; - Renal trauma; - Bladder pathology; - Basic radio-imaging aspects of the prostate - Adrenal gland pathology.	**2**
9. MUSCULOSKELETAL IMAGING - Medical imaging methods; - Basic bone radiological changes; - Traumatology; - Inflammatory-infectious disorders of the musculoskeletal system; - Arthrosis; - Aseptic osteonecrosis of the femoral head; - Benign tumors; - Malignant tumors.	**2**
10. NEURORADIOLOGY. HEAD AND NECK IMAGING - Medical imaging methods; - Cerebrovascular disease; - Skull and brain trauma; - Inflammatory and infectious brain disorders; - Multiple sclerosis; - Brain tumors; - Introductive data about thyroid imaging; - Introductive data about rhinopharynx and paranasal sinuses; - Introductive data about oropharynx and parotid glands; - Introductive data about hypopharynx and larynx.	**2**

11. PEDIATRIC IMAGING - Medical imaging methods used in pediatric patients; - Brain and spine pathology; - Thorax pathology; - Abdominal pathology; - Osteoarticular pathology.	**2**
12. BREAST IMAGING - Medical imaging methods; - Benign breast lesions; - Malignant breast lesions; - Particular aspects in malignant breast lesions; - Breast pathology in men.	**2**
13. GYNECOLOGICAL AND OBSTETRIC RADIOLOGY - Medical imaging methods; - Congenital disorders of the uterus; - Benign myometrial tumors; - Malignant myometrial tumors; - Benign endometrial tumors; - Endometrial hyperplasia; - Endometrial carcinoma; - Cervical cancer; - Radio-imaging diagnosis of the acute abdomen in pregnant women; - Benign ovarian cysts; - Malignant ovarian cysts; - Benign ovarian tumors; - Malignant ovarian tumors.	**2**
14. INTERVENTIONAL RADIOLOGY - Arterial and venous puncture using Seldinger technique; - Angiography of the peripheral vessels; - Aortography; - Flebography; - Using angiography for diagnosis purposes; - Percutaneous transluminal balloon angioplasty technique; - Selective embolization; - Biopsy and termoablation; - Hepato-biliary interventions.	**2**
BIBLIOGRAPHY 1. Ioana Gheonea. Radiologie Imagistică Medicală. Editura Medicală Universitară, 2020; 2. Cursul predat; 3. Ioana Gheonea. Diagnostic Radiology and Imaging. Editura Medicală Universitară, 2017; 4. Dudea et al. Radiologie. Imagistică Medicală. Editura Medicală București, 2016; 5. Mihai Popescu. Curs de radiologie și imagistică medicală, curs pentru studenți. Editura Medicală Universitară, Craiova 2006; 6. The Radiology Assistant: https://radiologyassistant.nl/ 7. Radiopaedia: https://radiopaedia.org/	
8.2 Practical work (topics / themes)	No. hours
1. INTRODUCTION IN RADIOLOGY AND MEDICAL IMAGING - Description of the radiology and medical imaging laboratory; - Rules for safety work in the laboratory; - Rules of the Radiology and Medical Imaging Department.	**2**
2. RADIOPROTECTION AND CONTRAST MEDIA - Radioprotection equipment used in the radiology and medical imaging laboratory; - Contrast agents in radiology and medical imaging – indications and contraindications.	**2**
3. CHEST RADIOLOGY – PART I - Medical imaging methods; - Criteria for a correctly acquired chest X-ray; - Identify semiological changes in lung transparency; - Recognize the main radio-imaging semiological changes in lung diseases.	**2**
4. CHEST RADIOLOGY – PART II - Recognize the main radio-imaging semiological changes in pleuro-pulmonary and pleural diseases.	**2**

5. CARDIOVASCULAR IMAGING - Medical imaging methods; - Recognize radiological anatomy landmarks of the heart and great vessels; - Recognize the main radio-imaging semiological changes in cardio-vascular disorders.	**2**
6. GASTROINTESTINAL AND ABDOMINAL IMAGING – PART I - Medical imaging methods; - Recognize functional radiological changes of the digestive tract; - Recognize morphological radiological changes of the digestive tract; - Recognize the main radio-imaging semiological changes in esophageal, gastric, small bowel and colon disorders.	**2**
7. GASTROINTESTINAL AND ABDOMINAL IMAGING – PART II - Recognize the main radio-imaging semiological changes in liver, biliary tract, pancreas and spleen disorders.	**2**
8. UROGENITAL IMAGING - Medical imaging methods; - Recognize the main radio-imaging semiological changes in adrenal gland, kidney, urinary tract and bladder disorders.	**2**
9. MUSCULOSKELETAL IMAGING - Medical imaging methods; - Recognize basic bone radiological changes; - Recognize the main radio-imaging semiological changes in musculoskeletal disorders.	**2**
10. NEURORADIOLOGY. HEAD AND NECK IMAGING - Medical imaging methods; - Recognize the main radio-imaging semiological changes in head and neck disorders.	**2**
11. PEDIATRIC IMAGING - Medical imaging methods; - Recognize the main radio-imaging semiological changes in the most frequently encountered pediatric disorders.	**2**
12. BREAST IMAGING - Medical imaging methods; - Recognize the main radio-imaging semiological changes in breast disorders.	**2**
13. GYNECOLOGICAL AND OBSTETRIC RADIOLOGY - Medical imaging methods; - Recognize the main radio-imaging semiological changes in gynecological disorders.	**2**
14. INTERVENTIONAL RADIOLOGY - Angiography of the peripheral vessels; - Aortography; - Flebography; - Arterial and venous puncture using Seldinger technique; - Percutaneous transluminal balloon angioplasty technique; - Selective embolization; - Biopsy and termoablation.	**2**
BIBLIOGRAPHY 1. Ioana Gheonea. Radiologie Imagistică Medicală. Editura Medicală Universitară, 2020; 2. Lucrările practice predate; 3. Ioana Gheonea. Diagnostic Radiology and Imaging. Editura Medicală Universitară, 2017; 4. Dudea et al. Radiologie. Imagistică Medicală. Editura Medicală București, 2016; 5. Mihai Popescu. Curs de radiologie și imagistică medicală, curs pentru studenți. Editura Medicală Universitară, Craiova 2006; 6. The Radiology Assistant: https://radiologyassistant.nl/ 7. Radiopaedia: https://radiopaedia.org/	

9. CORROBORATING THE DISCIPLINE CONTENT WITH THE EXPECTATIONS OF EPISTEMIC COMMUNITY REPRESENTATIVES, PROFESSIONAL ASSOCIATIONS AND EMPLOYEE REPRESENTATIVES RELATING TO THIS PROGRAM

- The Department of Radiology is a fundamental discipline, mandatory for a student to become a doctor.
- The knowledge, practical skills and attitudes learned in this discipline offer the possibility to identify radiological. elements for developing radiological diagnosis of common conditions and making correlations with other clinical specialties.
- In order to elaborate the contents and choose the appropriate teaching / learning methods, the head of the discipline analyzed the European curriculum and consulted with representatives of SRIM and physicians specialized in Radiology and Medical Imaging, aiming to identify the needs and expectations of medical fields employers and coordinate with other similar programs from different medical faculties.

10. METHODOLOGICAL LANDMARKS

Types of activity	Techniques of teaching / learning, materials, resources: lecture, interactive group work, learning based problems / projects audio-video recordings, etc.
Course	In case of special situations (alert states, emergency states, other types of situations that limit the physical presence of people) the activity can be carried out online using computer platforms approved by the faculty / university. The online education process will be adapted accordingly to ensure the fulfillment of all the objectives set out in the discipline sheet.
Practical work	The following combined methods are used: lecture, debate, problematization.
Individual study	▪ Before each course and each practical work; ▪ For the online version: lecture, debate, problematization based on materials provided in advance.

11. RECOVERY PROGRAM

	No. absences that can be recovered	Location of deployment	Period	In charge	Scheduling of topics
Absences recovery	**3**	• Radiology and Medical Imaging Department, Emergency Clinical County Hospital Craiova • Medical Imaging Center, UMF Craiova	Last week of the semester	Teaching assistant	According to the internal schedule
Schedule consultations / Students' Scientific Program	**2** hours / week	• Radiology and Medical Imaging Department, Emergency Clinical County Hospital Craiova • Medical Imaging Center, UMF Craiova	Weekly	All teaching assistants	The theme of the week
Program for students poorly trained	**2** hours / week	• Radiology and Medical Imaging Department, Emergency Clinical County Hospital Craiova • Medical Imaging Center, UMF Craiova	Weekly	All teaching assistants	According to the situation of each student Theme from that specific week

12. ASSESMENT

Activity	Types of assessment	Methods of evaluation	Percentage from final grade
Lecture	Formative assesment through essays, projects and surveys during the semester Summative assesment during the exam	Multiple Choice Questions Answering System (MCQ)/MCQ with the help of the IT platform in the online version.	60%
Practical work	Formative assesment through Multiple Choice Questions Answering System (MCQ) or/and descriptive, projects, survey during the semester. Periodic assesment during the semester Summative assesment during the exam	Multiple Choice Questions Answering System (MCQ) simultaneously with the one from the course / with the help of the video platform in the online version.	30%
Periodic assessment			5%
Assessment of individual activity			5%
Minimum performance standard	At least 50% for each component of the evaluation		

13. GUIDANCE AND PROFESSIONAL COUNSELLING PROGRAMS		
Professional guidance and counselling programs (2 hours/month)		
Schedule	**Place of deployment**	**In charge**
Every last Thursday of the month	• Radiology and Medical Imaging Department, Emergency Clinical County Hospital Craiova • Medical Imaging Center, UMF Craiova • online	Lecture holders

Endorsement date in the department: 20.09.2022

Department Director,	**Study program coordinator,**	**Discipline holder,**
Prof. dr. Paul Mitruț	**Prof. dr. Marius Eugen Ciurea**	**Prof. dr. Ioana Andreea Gheonea**