FACULTY OF MEDICINE

STUDY PROGRAM 0912.1 MEDICINE

DEPARTMENT OF RADIOLOGY AND IMAGING

APPROVED

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum Faculty Medicine II

Minutes No. ___1___ of _16. 09. 21_____

Chairman, PhD, Professor

Suman Serghei_____

APPROVED

at the Council meeting of the Faculty Medicine

Minutes No. ___1___of _21.09.21___

Dean of Faculty of Medicine,
PhD, Professor.

Plăcintă Gheorghe _____

APPROVED

at the meeting of the Chair of Radiology and Imaging

Minutes No. 5 of 10.09.2021

Head of Chair Ph.D., Associate Professor
Codreanu Ion _____

SILLABUS

DISCIPLINE CLINICAL RADIOLOGY

Integrated studies

Type of course: **Optional discipline**

Curriculum developed by the team of authors:

Malîga Oxana, PhD of med., associate professor
Codreanu Ion, PhD of med., associate professor

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I. INTRODUCTION

- General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional / specialty training program.

  The "Clinical Radiology" discipline is welcome for international students of the Medicine II faculty. It is a clinical discipline in the process of preparing the future specialist, especially in the interpretation of standard radiographs of nozological units most commonly encountered in pathologies of the respiratory system, digestive tract, osteo-articular and urinary system. The material of the discipline is based on the knowledge of the students obtained by studying anatomy, physiology, materials of the courses "Radiology and radioprotection" and "Medical imaging", internal medicine, general surgery, and it is exposed in close connection with the clinical disciplines.

- Mission of the curriculum (aim) in professional training:

  Preparing students for the interpretation of standard radiographs in pathologies most commonly encountered in current medical practice with the setting of radiological diagnosis.

- Language (s) of the course: Romanian, English;

- Beneficiaries: 6st year students, Faculty of Medicine.

II. MANAGEMENT OF THE DISCIPLINE

Code of the discipline		S.11.A.098.1	
Name of the discipline		**Clinical Radiology**	
Person(s) in charge of the discipline		dr. în medicină, conf. univ. **Oxana Malîga** dr. hab. în medicină, conf. univ. **Ion Codreanu**	
Year	**VI**	Semester	**XI**
Total number of hours, including:			**30**
Curs	**10**	Practical work	**10**
Seminars		Self-training	**10**
Form of assessment	**E**	Number of credits	**1**

III. TRAINING AIMS WITHIN THE DISCIPLINE

At the end of the discipline study, the student will be able to:

- *at the level of knowledge and understanding:*
  - ✓ to know the particularities of applying the standard radiographic views according to suspected pathology,
  - ✓ to know the peculiarities of the radiological anatomy of the lungs, digestive system, renal system, osteo-articular apparatus in the case of normal developmental variants and developmental anomalies,
  - ✓ to understand the indications and contraindications of standard radiographic examination based on suspected pathology,
  - ✓ to know the standard radiological semiology of nozological units frequently encountered in current medical practice,
  - ✓ to know the rules for the interpretation of standard radiographs according to the investigated region and suspected pathology.

- *at the application level:*
  - ✓ to appreciate the quality of standard radiograph,
  - ✓ to recognize the normal and pathological anatomical features of the examined region,
  - ✓ to be able to establish the nozological unit of pathology of lungs, digestive tract, renal apparatus, osteo-articular apparatus in standard radiography,
  - ✓ be able to perform the standalone interpretation of standard radiographs in pathologies most commonly encountered in current medical practice with the establishment of radiological diagnosis.

- *at the integration level:*
  - ✓ to appreciate the importance of Clinical Radiology in the context of Medicine.
  - ✓ to approach creatively the diagnostic problems at the level of nozological unit.
  - ✓ to have skills to implement and integrate the accumulated knowledge into clinical disciplines.

IV. PROVISIONAL TERMS AND CONDITIONS

- knowledge of human anatomy and physiology,
- knowledge of Radiology and Radioprotection and Medical Imaging courses,
- knowledge of the clinical and paraclinical signs of the diseases studied in the respective clinical disciplines.

V. THEMES AND ESTIMATE ALLOCATION OF HOURS

Lectures, practical hours/ laboratory hours/seminars and self-training

Nr. d/o	THEME	Number of hours		
		Courses	Practical work	Self-training
1.	Radiographic investigation in respiratory pathology.	4	4	3
2.	Radiographic investigation in digestive tract pathology.	2	2	3
3.	Radiographic investigation in the pathology of the osteo-articular apparatus.	2	2	3
4.	Radiographic investigation in the pathology of the urinary system.	2	2	1

Nr. d/o	THEME	Number of hours		
		Courses	Practical work	Self-training
	Total	**10**	**10**	**10**

VI. PRACTICAL SKILLS PURCHASED AT THE END OF THE COURSE

Mandatory essential practical skills are:
- Interpretation of the radiographic image: Pleural effusion.
- Interpretation of the radiographic image: Pneumonia.
- Interpretation of the radiographic image: Lung cancer.
- Interpretation of the radiographic image: Pneumothorax.
- Interpretation of the radiographic image: Bowel occlusion.
- Interpretation of the radiographic image: Perforation of an abdominal cavity organ.
- Interpretation of the radiographic image: Esophageal diverticulum.
- Interpretation of the radiographic image: Gastric ulcer.
- Interpretation of the radiographic image: Gastric cancer.
- Interpretation of the radiographic image: Cancer of colon.
- Interpretation of the radiographic image: Fracture.
- Interpretation of the radiographic image: Luxation.
- Interpretation of the radiographic image: Bone tumor.
- Interpretation of the radiographic image: Urolithiasis.
- Interpretation of the radiographic image: Kidney development abnormality.
- Interpretation of the radiographic image: Mass of the urinary system.

VII. REFERENCE OBJECTIVES AND CONTENTS UNITS

Objectives	Content units
Theme (Chapter) 1. Radiographic investigation in respiratory pathology.	
• to know the radiological anatomy, the normal variants and the developmental anomalies of the respiratory apparatus • to be able to establish the nozological unit of respiratory pathology in standard radiography • to demonstrate the ability to stand-alone interpretation of standard radiographs in pulmonary pathologies most commonly encountered in current medical practice with formulation of radiological diagnosis • to integrate the gained knowledge in clinical disciplines	1. Particularities of the standard radiological examination of the respiratory apparatus.
	2. Algorithm of positive and differential standard radiological diagnosis in inflammatory diseases of the respiratory apparatus.
	3. Algorithm of positive and differential standard radiological diagnosis in pleurisy.
	4. Algorithm of positive and differential standard radiological diagnosis in pulmonary tuberculosis.
	5. Algorithm of positive and differential standard radiological diagnosis in lung cancer.
	6. Algorithm of positive and differential standard radiological diagnosis in pneumothorax and pulmonary emphysema.

Objectives	Content units

Theme (Chapter) 2. Radiographic investigation in digestive tract pathology.

Objectives	Content units
• to know the radiological anatomy, the normal variants and the developmental anomalies of the digestive tract • to be able to establish the nozological unit of digestive tract pathology in standard radiography • to demonstrate the ability to stand-alone interpretation of standard radiographs in digestive tract pathology, most commonly encountered in current medical practice with formulation of radiological diagnosis • to integrate the gained knowledge in clinical disciplines	1. Particularities of the standard radiological examination of the digestive tract.
	2. Algorithm of positive and differential standard radiological diagnosis in esophagus pathology.
	3. Algorithm of positive and differential standard radiological diagnosis in pathology of stomach and duodenum.
	4. Algorithm of positive and differential standard radiological diagnosis in pathology of small intestine.
	5. Algorithm of positive and differential standard radiological diagnosis in pathology of colon.
	6. Algorithm of positive and differential standard radiological diagnosis in acute abdominal syndrome.

Theme (Chapter) 3. Radiographic investigation in the pathology of the osteo-articular apparatus.

Objectives	Content units
• to know the radiological anatomy, the normal variants and the developmental anomalies of the osteo-articular apparatus • to be able to establish the nozological unit of the pathology of the osteo-articular apparatus in standard radiography • to demonstrate the ability to stand-alone interpretation of standard radiographs in osteo-articular apparatus diseases, most commonly encountered in current medical practice with formulation of radiological diagnosis • to integrate the gained knowledge in clinical disciplines	1. Particularities of the standard radiological examination of the osteo-articular apparatus.
	2. Algorithm of standard positive and differential radiological diagnosis in bone trauma.
	3. Algorithm of positive and differential standard radiological diagnosis in inflammatory diseases of the osteo-articular apparatus.
	4. Algorithm of standard positive and differential radiological diagnosis in bone tumors.

Theme (Chapter) 4. Radiographic investigation in the pathology of the urinary system.

Objectives	Content units
• to know the radiological anatomy, the normal variants and the developmental anomalies of the urinary system • to be able to establish the nozological unit of the pathology of the urinary system in standard radiography • to demonstrate the ability to stand-alone interpretation of standard radiographs in urinary pathologies most commonly encountered in current medical practice with formulation of	1. Particularities of the standard radiological examination of the urinary system.
	2. Algorithm of positive and differential standard radiological diagnosis in congenital malformations of the urinary system.
	3. Algorithm of positive and differential standard radiological diagnostic in cysts and tumors of kidney and urinary bladder.
	4. Algorithm of positive and differential standard radiological diagnosis in urolithiasis.
	5. Algorithm of positive and differential standard radiological diagnosis in hydronephrosis.
	6. Algorithm of positive and differential standard radiological diagnosis in nephrophthosis.

Objectives	Content units
radiological diagnosis • to integrate the gained knowledge in clinical disciplines	

VIII. PROFESSIONAL (SPECIFIC (SC)) AND TRANSVERSAL (TC) COMPETENCES AND STUDY OUTCOMES

✓ **Professional (specific) (SC) competences**

✓ **PC1.** Responsible execution of professional tasks with the application of the values and norms of professional ethics, as well as the provisions of the legislation in force.

✓ **PC2.** Adequate knowledge of the sciences about the structure of the body, physiological functions and behavior of the human body in various physiological and pathological conditions, as well as the relationships between health, physical and social environment.

✓ **PC3.** Resolving clinical situations by developing a plan for diagnosis, treatment and rehabilitation in various pathological situations and selecting appropriate therapeutic procedures for them, including providing emergency medical care.

• **PC5.** Interdisciplinary integration of the doctor's activity in a team with efficient use of all resources.

✓ **Transversal competences (TC)**

• **TC1.** Autonomy and responsibility in the activity.

✓ **Study outcomes**

Upon completion of the study, the student will be able to:

• to know the normal variants and the anomalies of radiological anatomy of the lungs, digestive system, urinary system, osteo-articular apparatus,

• to understand the indications and contraindications of radiographic examination based on suspected pathology,

• to know the particularities of applying the standard radiographic views according to suspected pathology,

• to appreciate the quality of standard radiograph,

• to perform the standalone interpretation of standard radiographs in pathologies most commonly encountered in current medical practice with the establishment of radiological diagnosis.

IX. STUDENT'S SELF-TRAINING

Nr.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	Problem report	Oral communication, Power Point Presentation,	Knowing and mastering the theme, The completeness of the elucidation of the question raised for the	For practical lesson

			referral, Ability to highlight the essence of the theme, The representativeness of the images used to illustrate the theme, Answer questions, Compliance with the prescribed regulation	
2.	Homework	Written work in the workbook depending on the question or problem formulated.	The correctness of solving the problem	To be ready for practical lesson
3.	Working with information sources	Read the lecture and the material in the manual to the theme carefully. To get acquainted with the list of additional information sources on the topic. Select the source of additional information for that theme. Wording of generalizations and conclusions related to the theme of the lesson.	The ability to extract the essential, Interpretative ability, The volume of work	During the semester

X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

- *Teaching and learning methods used:*
- Course
    - introductive
    - current
    - synthesis
    - theoretical and practical
    - debates
- Practical lessons
    - synthesis
    - repetitive
    - debates
- Traditional methods
    - case study
    - role playing
    - interactive
    - tests

- *Applied teaching strategies / technologies* *(specific to the discipline)*

Interpretation of standard radiographs with pathologies most commonly encountered in current medical practice at each practical lesson, with the establishment of a radiological diagnosis at the level of

nozological unit.

- ***Methods of assessment*** *(including the method of final mark calculation)*

Current: each student's knowledge will be evaluated at each practical lesson in one or several ways: oral, test, control work, image interpretation, clinical case resolution. 20% of the mark is assigned to the individual work of the student.

Final: semester XI, at the end of the module - exam. The students, having the average mark for module under the grade "5" or have not recovered absences from practical lessons by the end of the module, are not admitted to the colloquium. The colloquium consists of written interpretation of standard radiographs (3 standard radiographs, from different systems and different nozologies), each valued at points from 0 to 10. The final colloquial note is the average mark for the three radiographs interpreted. The final grade for the discipline consists of 0.5 of the average mark on the module and 0.5 of this obtained by the colloquium.

Method of mark rounding at different assessment stages

Intermediate marks scale (annual average, marks from the examination stages)	National Assessment System	ECTS Equivalent
1,00-3,00	**2**	**F**
3,01-4,99	**4**	**FX**
5,00	**5**	**E**
5,01-5,50	**5,5**	
5,51-6,0	**6**	
6,01-6,50	**6,5**	**D**
6,51-7,00	**7**	
7,01-7,50	**7,5**	**C**
7,51-8,00	**8**	
8,01-8,50	**8,5**	**B**
8,51-8,00	**9**	
9,01-9,50	**9,5**	**A**
9,51-10,0	**10**	

The average annual mark and the marks of all stages of final examination (computer assisted, test, oral) - are expressed in numbers according to the mark scale (according to the table), and the final mark obtained is expressed in number with two decimals, which is transferred to student's record-book.

Absence on examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations.

XI. RECOMMENDED LITERATURE:

A. Compulsory:

1. David Sutton. Textbook of radiology and imaging, 7th edition.
2. Materials of the Courses of Radiology and Radioprotection, Medical Imaging and Clinical radiology, Department of Radiology and Medical Imaging.
3. Malîga O., Rotaru N., Obadă A. Medical imaging in tables and algorithms. Guidelines. Chișinău, 2015.

B. Additional (available in electronic form at the chair):

1. Hugue Ouellette, Patrice Tetreault – Clinical radiology, made ridiculously simple. Miami, 2002.
2. Corne J. et al. Chest X-ray made easy, Ed. Churchill Livingstone, 2002.