



**48SJ-DI12**  
**ECTS: 2.00**  
**CYCLE: 2023L**

## Course syllabus - part A Diagnostic Imaging 1/2

### SUBJECT MATTER CONTENT

#### SEMINAR

Diagnostic imaging including types of examinations, their diagnostic value, radiological signs in particular radiological methods in selected diseases of: - head including CNS diseases (post-traumatic lesions, stroke, inflammatory, demyelinating lesions, neoplasms, vascular, degenerative diseases), diseases of the pituitary gland, orbit, face, neck including oncology - the thorax including lung and pleura, mediastinum. Recognizing and differentiating pneumonia, lung tumor, emphysema, atelectasis, and pleural and pericardial cavity fluid. Recognition of basic diseases of the heart, vasculature, including pulmonary embolism, aortic aneurysm and dissection, heart defects. - Abdominal cavity with particular emphasis on selected diseases of the liver (focal benign and malignant lesions), biliary tract (lithiasis, neoplasms), pancreas (benign and malignant lesions, inflammatory lesions), spleen (trauma, focal lesions), kidney (inflammatory, focal lesions, lithiasis), adrenal glands (focal lesions), retroperitoneal space (pathologies of lymph nodes, vessels).

#### CLASSES

Introduction and background information on radiology and diagnostic imaging. Familiarization with the organization and operation of the laboratory: X-ray, ultrasound, mammography, vascular laboratory and CT and MR. Types of examinations performed in the various laboratories, taking into account their specifics and patient cooperation. Principles of operation of the laboratory, cooperation with the electroradiology technician, nurse. Hospital information systems. Teleradiology. Radiology diagnostic stations, radiology software. Radiological anatomy including radiological images in different imaging methods. Correct radiological images, radiological examinations without changes.

#### LECTURE

Introduction to radiology and diagnostic imaging, methods of diagnostic imaging: X-ray, mammography, ultrasound, CT and MRI, angiography, physical and technical basics of the functioning of the instruments, the principle of obtaining images, artifacts, errors in the performance of the examination. Principles of radiological protection, biological effects. Preparation for X-ray, mammography, CT, MRI, ultrasound, vascular examinations and procedures, indications and contraindications for each type of examination. Contrast agents in radiology - types, use, indications, contraindications, adverse effects. Introduction to modern methods of radiology and diagnostic imaging, radiology vs. artificial intelligence. Basic radiological images of diseases. Screening, preventive programs in radiology. Emergency radiology. Interventional radiology.

#### TEACHING OBJECTIVE

Acquire knowledge of the types of examinations performed in radiology and diagnostic imaging and their application to clinical cases. To learn about the principles of operation of instruments, including the safety of their use, radiological protection, physical principles of formation of

**Legal acts specifying learning outcomes:** 672/2020, 311/2023  
**Disciplines:** medical sciences  
**Status of the course:** Obligatory  
**Group of courses:** B - przedmioty kierunkowe  
**Code:** ISCED 0912  
**Field of study:** Medicine, Medicine  
**Scope of education:**  
**Profile of education:** General academic  
**Form of studies:** full-time  
**Level of studies:** uniform master's studies  
**Year/semester:** 3/6

**Types of classes:** Seminar, Classes, Lecture  
**Number of hours in semester:** Seminar: 10.00, Classes: 10.00, Lecture: 10.00  
**Language of instruction:** English  
**Introductory subject:** Radiological and clinical anatomy, biophysics, pathophysiology  
**Prerequisites:** Review knowledge about radiological and clinical anatomy and biophysics

**Name of the organisational unit conducting the course:** Katedra Radiologii  
**Person responsible for the realization of the course:** dr n. med. Grzegorz Wasilewski, dr hab. n. med. Anna Żurada  
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**Additional remarks:**

radiological images in individual imaging methods (x-ray, tk, mr, ultrasound, mammography, vascular laboratory, surgical radiology). To learn the basics of radiological symptoms, interpretation of examinations, radiological images in various disease entities. Getting acquainted with the diagnostic pathways in selected disease entities, with indications and contraindications to perform, ordering individual radiological examinations.

## **DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:**

### **Symbols for outcomes related to the discipline:**

M/NM+++ , M/NMA\_P7S\_KO+++ ,  
M/NMA\_P7S\_KR+++ , M/NMA\_P7S\_UW+++ ,  
M/NMA\_P7S\_WG+++

### **Symbols for outcomes related to the field of study:**

M/NM\_K.8.+ , B.U2.++ , K.5.++ , K.7.+ ,  
KA7\_UW3++ , M/NM\_K.7.+ , A.U4.++ ,  
KA7\_WG2++ , F.W10.++ , KA7\_WG1++ , K.8.+

## **LEARNING OUTCOMES:**

### **Knowledge:**

W1 - Graduate knows and understands: F.W10. the problems of currently used imaging tests, in particular: 1) radiological symptomatology of basic diseases, 2) instrumental methods and imaging techniques used to perform medical procedures, 3) indications, contraindications and preparation of the patient for particular types of imaging tests and contraindications to the use of contrast agents;

W2 - Graduate knows and understands: KA7\_WG2 knows the physical basics of selected imaging techniques in medicine and the principles of radiological protection, including radioisotope, functional diagnostics and structural diagnostics in nuclear medicine

W3 - Graduate knows and understands: KA7\_WG1. human body structure based on vital diagnostic examinations, in particular x-rays, ultrasound images, computed tomography and magnetic resonance imaging;

### **Skills:**

U1 - Graduate can: KA7\_UW3 applies to the rules of radiological protection, draws conclusions about the presence of a pathological process on the basis of selected imaging tests, carries out differential diagnosis

U2 - Graduate can: B.U2. assess the harmfulness of ionizing radiation dose and follow the rules of radiation protection;

U3 - Graduate can: make conclusions about the relationships between anatomical structures on the basis of vital diagnostic examination, in particular in the field of radiology (radiological examinations, examinations with the use of contrast agents, computed tomography and nuclear magnetic resonance);

### **Social competence:**

K1 - Graduate has the ability to: K.5. perceiving and recognizing own limitations and self-assessment of deficits and educational needs;

K2 - Graduate has the ability to: M/NM\_K.8. formulating conclusions from own measurements or observations;

K3 - Graduate has the ability to: M/NM\_K.7. of objective sources of information;

## **TEACHING FORMS AND METHODS:**

Classes(W1;W2;W3;U1;U2;U3;K1;K2;K3;):Analysis and interpretation of

selected imaging examinations

## **FORM AND CONDITIONS OF VERIFYING LEARNING**

### **OUTCOMES:**

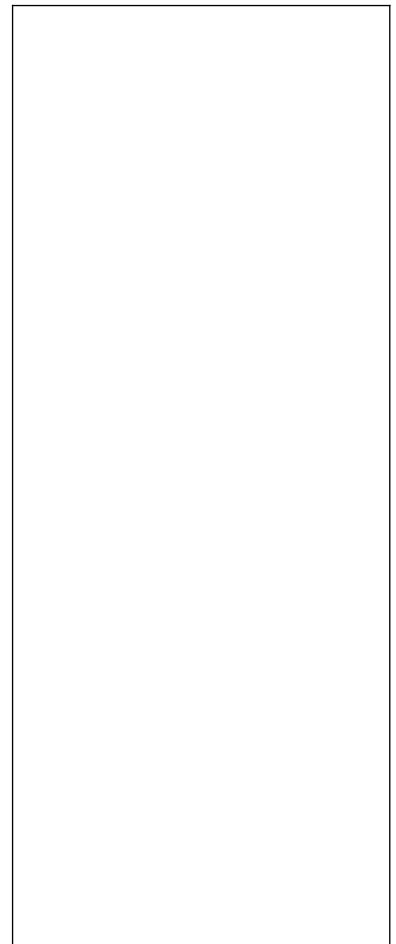
Seminar (Part in the discussion) - active participation in the discussion -  
Classes (Competention test) - Evaluation of the work and cooperation in the group - Skills assessment discussion and cooperation in the group including the assessment of the various methods and skills during analysis of various clinical cases test. Final test with 20 clinical cases in the form of OSCE using multimedia methods, Passing from 60% -  
Lecture (Part in the discussion) - active participation in the discussion -

### **BASIC LITERATURE:**

1. Lange S. Walsh G.Herring William., *Learning Radiology, 2nd Edition. Recognizing the Basics .*, Wyd. Elsevier, R. 2011
2. Geraldine Walsh, Sebastian Langemil Reif, *Radiology of Chest Diseases*, Wyd. Thieme, R. 2007

### **SUPPLEMENTARY LITERATURE:**

1. Richard B. Gunderman, *Essential Radiology: Clinical Presentation, Pathophysiology, Imaging*, Wyd. Thieme, R. 2006
  2. William E Brant, Clyde Helms, *Fundamentals of Diagnostic Radiology*, Wyd. LWW, R. 2012
  3. Andy Adam, Adrian K. Dixon, Jonathan Gillard, Cornelia Schaefer-Prokop, Ronald G. Grainger, *GRAINGER ALLISON'S DIAGNOSTIC RADIOLOGY 6TH EDITION*, Tom I-II, Wyd. Medipage, R. 2014
1. <https://radiopaedia.org/>



## Detailed description of ECTS credits awarded - part B

**48SJ-DI12**

**ECTS: 2.00**

**CYCLE: 2023L**

### Diagnostic Imaging 1/2

The number of ECTS credits awarded consists of:

1. Contact hours with the academic teacher:

- participation in: Seminar	10.0 h
- participation in: Classes	10.0 h
- participation in: Lecture	10.0 h
- consultation	2.0
	Total: 32.0 h.

2. Independent work of a student:

independent student work	18.00 h
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Total: 18.0 h

contact hours + independent work of a student Total: 50.0 h

1 ECTS credit = 25-30 h of an average student's work, number of ECTS credit = 50.0 h : 25.0 h/ECTS = 2.00 ECTS on average: 2.0 ECTS

- including the number of ECTS credits for contact hours with the direct participation of an academic teacher: 0,00 ECTS points,

- including the number of ECTS credits for hours of independent work of a student: