



## COURSE UNIT DESCRIPTION

Course unit title	Code
Radiology	

Lecturer(s)	Department(s)
<b>Coordinator: Professor A. E. Tamošiūnas</b>  <b>Other:</b> Professors of Department of Radiology Nuclear Medicine and Medical Physics	Vilnius University Department of Radiology Nuclear Medicine and Medical Physics.

Cycle	Level of the course unit	Type of the course unit
cycle (integrated studies)		Compulsory

Implementation	Period	Language
Lectures and seminars remotely or in-person. When possible, practical classes in diagnostic rooms at the Radiology and Nuclear Medicine Center. Self-studying.	V semester	English

Prerequisites and corequisites	
<b>Prerequisites:</b> Students must have been completed following courses: Human anatomy, Physiology, Propaedeutics of internal diseases, and other mandatory basic medicine courses.	<b>Corequisites (if any):</b> No

Number of ECTS credits allocated to the course unit	Total student's workload	Contact hours	Self-study hours
5	135	66	69

Purpose of the course unit Programme competences to be developed
After completing clinical radiology course students should know: the application of radiology methods/examinations (x-ray, computed tomography, magnetic resonance tomography, ultrasound, nuclear medicine) in different clinical specialities diagnosing and differentiating diseases. The indications and contraindications of radiology methods/examinations in clinical applications. Information analysis algorithms and signs of diseases of diagnostic imaging must be learned. Communication with students will be carried out through the VU VMA environment.

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
<b>General competences.</b> Upon successful completion of this course, the student should be able to:		
act fairly and according to ethical obligations, apply good medical practice principles at work, be emphatic, think critically, be creative, take initiatives, communicate with others;	Practice and seminars at Radiology and Nuclear Medicine center remotely or in-person.	Practice at the Radiology and Nuclear Medicine Center, X-ray diagnostics, magnetic resonance imaging, nuclear medicine, ultrasound diagnostics departments
make an assessment within the scope of one's competence and, if necessary, ask for help, to act in new situations and adapt to them, to act independently, to solve problems, to make judgements, to work with specialists of other fields, to organize and plan	Practice and seminars at Radiology and Nuclear Medicine center remotely or in-person.	Practice or seminars at the Radiology and Nuclear Medicine Center, X-ray diagnostics, magnetic resonance imaging, nuclear medicine, ultrasound diagnostics departments
<b>Subject competences.</b> Upon successful completion of this course, the student will be able to:		
evaluate patients' situation before radiological examination: collect anamnesis data, get acquainted with clinical evaluation and make decision regarding methods of imaging, provide information for the patient regarding examination;	Practice and seminars at Radiology and Nuclear medicine Center remotely or in-person. Self-studying.	Discussion of the practical situation.
choose the best and most effective method of radiological examination according to the indications for the patient, be able to form a preferred sequence of radiological examinations when more than one examination is needed;	Practice and seminars at Radiology and Nuclear medicine Center remotely or in-person. Self-studying.	Practice or seminars at the Radiology and Nuclear Medicine Center, X-ray diagnostics, magnetic resonance imaging, nuclear medicine, ultrasound diagnostics departments. At the end of the course – exam.
apply most appropriate scanning protocol;	Practice and seminars at Radiology and Nuclear medicine Center remotely or in-person.	Practice or seminars at the Radiology and Nuclear Medicine Center, X-ray diagnostics, magnetic resonance imaging, nuclear medicine, ultrasound diagnostics departments. At the end of the course – exam.
evaluate radioanatomical signs, pathological changes by examining patient with various radiological methodologies;	Lectures, practice at Radiology and Nuclear medicine Center remotely or in-person. Self-studying.	Practice or seminars at the Radiology and Nuclear Medicine Center, X-ray diagnostics, magnetic resonance imaging, nuclear medicine, ultrasound diagnostics departments. At the end of the course – exam.
evaluate the quality of images, sources of artefacts. To make radiological conclusion;	Lectures, practice at Radiology and Nuclear medicine Center remotely or in-person. Self-studying.	Practice or seminars in the Radiology and Nuclear Medicine Center, X-ray diagnostics, magnetic resonance imaging, nuclear medicine, ultrasound diagnostics departments.

		At the end of the course – exam.
understand the principles of effective communication in medical practice: communicate with patients, patient relatives, colleagues;	Lectures, practice at Radiology and Nuclear medicine Center remotely or in-person.	Practice or seminars in the Radiology and Nuclear Medicine Center
be able to store medical records; to use a computers and search for information sources; store and update information.	Lectures, practice at Radiology and Nuclear medicine Center remotely or in-person.	Practice or seminars in the Radiology and Nuclear Medicine Center

Topics	Contact work hours						Time and tasks of self-study		Tasks
	Lectures	Consultations	Seminars	Practice	Laboratory work	Practical training	Total contact hours	Self-studying	
1. Radiological diagnostics of abdominal diseases.	2		2	3			7	8	To prepare for practice for radiological diagnostics of abdominal diseases.; applied methods and radiological anatomy. Analyze the submitted radiological examination (for the seminar)
2. Radiological diagnostics of pelvic diseases			2	3			5	7	To prepare for practice on: radiological diagnostics of pelvic diseases. Applied methods, radiological anatomy. Analyze the submitted radiological examination (for the seminar)
3. Radiological diagnostics of lung and mediastinal diseases.	2		2	3			7	7	To prepare for practice on radiological diagnostics of diseases of and mediastinum. Repeat on research methodologies, analyze the submitted radiological examination (for the seminar)
4. Radiological diagnostics of cardiovascular and peripheral vascular diseases.	2		2	3			7	7	To prepare for practice on radiological diagnostics of cardiovascular and peripheral vascular diseases: anatomy, methods, indications, specifics. Analyze the given radiological examination (for the seminar).
5. Radiological diagnostics of musculoskeletal diseases.	2		2	3			7	7	To prepare for practice on radiological diagnostics of diseases of the musculoskeletal system: methods, anatomy. Analyze the given radiological examination (for the seminar).
6. Radiological diagnostics of neurological and neurosurgical diseases.	2		2	3			7	7	To prepare for practice on radiological diagnostics of diseases of the central nervous system, head and spine: anatomy, methods, indications. Analyze the given radiological examination (for the seminar).
7. Radiological diagnostics in emergency medicine.	2		2	3			7	7	To prepare for practice on research methods of acute conditions: indications, methodologies, specifics.

8. Interventional radiology	2		2	3			7	7	To prepare for practice on interventional radiology: applied methodologies, classification, indications.
9. Nuclear medicine and radiological research methods in clinical diagnostics	2		2	3			7	7	To prepare for practice on joint radiological research methods: methodologies, specifics, areas of application.
10. Radiation safety			2	3			5	5	To prepare for practice on joint radiological methods causing ionizing radiation expose, to evaluate recommended doses.
<b>Total</b>	16		20	30			66	69	

Assessment strategy	Weight (%)	Assessment period	Assessment criteria
Work during lectures, practical classes and seminars.		During semester	Attendance of more than 80 % of seminars and practicals of Fundamentals of Radiology part is required (i.e. up to 20 % can be missed with a justifiable reason). Active attendance of lectures is welcomed, as well as performance of additional tasks given in lectures or seminars.
Exam of Fundamentals of Radiology	100	After semester.	<p>Theoretical and practical knowledge is assessed during the exam of Fundamentals of Radiology. The exam consists of 80 questions, each correct answer is worth one point. A binary scoring system is used: a point is awarded only for a completely correctly completed task. Partial points for incompletely answered questions or partially correct choices are not provided. The final score is the sum of the values of the fully completed tasks.</p> <p>Exam of Fundamentals of Fundamentals of Radiology is credited at the end of the course, if the student meets the attendance requirements. Exam score (final grade) of the subject is determined according to the scheme as follows:</p> <ul style="list-style-type: none"> <li>10 – if the total score is <math>\geq 72</math> points</li> <li>9 – if the total score is <math>\geq 67</math> points</li> <li>8 – if the total score is <math>\geq 60</math> points</li> <li>7 – if the total score is <math>\geq 52</math> points</li> <li>6 – if the total score is <math>\geq 44</math> points</li> <li>5 – if the total score is <math>\geq 40</math> points</li> <li>4 – if the total score is <math>&lt; 40</math> points (not passed)</li> </ul> <p>Rounding the score to the nearest whole number (percentage).</p>

Author	Year of publication	Title	No of periodical or vol. of publication	Publication place and publisher or Internet link
<b>Required reading</b>				
Basevičius A. ir bendraautorai	2004	Radiologijos pagrindai		Kaunas
Assoc. Prof. J.Dementavičienė	2022	e-mokymai		
William Herring	2019	Learning Radiology recognizing the basics. 4th edition		Elsevier
Justin Shafa & Stephen T Kee	2019	Learning Interventional Radiology, 1st Edition		Elsevier
		European society of radiology website		<a href="https://www.myesr.org/">https://www.myesr.org/</a>