COURSE UNIT DESCRIPTION

Course unit title	Code
Radiology	

Lecturer(s)	Department(s)
Coordinator: Professor A. E. Tamošiūnas **Others:** **Prof. N. R. Valevičienė** **Assoc. prof. J. Dementavičienė** **Assoc. prof. B. Gricienė** **Assoc. prof. A. Samuilis** **Assoc. prof. D. Valančienė** **Assist. prof. A. Brazaitis** **Assist. prof. D. Palionis** **Assist. prof. M. Matačiūnas** **Assist. prof. J. Ušinskienė** **Assist. prof. M. Kurminas** **Assist..prof. R. Lukšaitė-Lukštė** **Teaching assist. R. Komiagienė** **Teaching assist. J. Jarašūnas** **Teaching assist. I.Zeleckienė** **Teaching assist.K.Gaižauskienė** **Teaching assist. G.Lengvenis** **Lecturer R. Baltagalvienė** **Lecturer V. Augustinavičius** **A.Untanas**	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	
Prerequisites: Students must have been completed following courses: Human anatomy, Physiology, Propaedeutics of internal diseases, and other mandatory basic medicine courses.	**Corequisites (if any):No**

Number of ECTS credits allocated to the course unit	Total student's workload	Contact hours	Self-study hours
5	133	66	67

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.

Learning outcomes of the course unit	Teaching and learning methods	Assessment methods
General competences. 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 and self-critically, be creative, take the initiative, 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 organise 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
Subject competences. Upon successful completion of this course, the student will be able to:		
evaluate patients' situation before radiological examination: collect anamesis 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	
	Lectures	Consultations	Seminars	Practice	Laboratory work	Practical training	**Total contact hours**	**Self-studying**	**Tasks**
1. Radiological diagnostics of abdominal diseases. *Assoc.prof. A. Samuilis, Assoc. Prof. D.Valančienė, Dr.assist. R. Lukšaitė-Lukštė*	2		2	3			**12**	**15**	To prepare for practice on: radiological diagnostics of abdominal diseases. Applied methods, radiological anatomy. Analyze the submitted radiological examination (for the seminar)
2. Radiological diagnostics of pelvic diseases *Dr. asist.. R. Briedienė, dr. asist. J. Ušinskienė, A.Untanas*			2	3			**5**	**5**	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. *Doc. J. Dementavičienė, dr. asist. M. Matačiūnas, Prof. N.Valevičienė, dr.asist. D.Palionis, teaching assist. I.Zeleckienė*	2		2	3			**7**	**5**	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. *prof. N. Valevičienė,prof. A. E. Tamošiūnas, dr.asist. M. Kurminas, dr.asist. D.Palionis, teaching assist. K.Gaižauskienė*	2		2	3			**7**	**5**	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. *Dr.asist. A. Brazaitis, lect. R.Baltagalvienė, lekt. V.Augustinavičius*	2		2	3			**7**	**4**	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. *Assoc. prof. J. Dementavičienė, lect. R. Baltagalvienė, dr.asist M. Kurminas, Jr.asist.G.Lengvenis*	2		2	3			**7**	**5**	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. *Assoc.prof. A. Samuilis, dr. assist.. A. Brazaitis, dr. Assist . R. Lukšaitė, lect.*	2		2	3			**7**	**5**	To prepare for practice on research methods of acute conditions: indications, methodologies, specifics.

V.Augustinavičius									
8. Interventional radiology *Dr.asist. M.Kurminas, Jr.asist. J.Jarašūnas, Jr.asist. G.Lengvenis*	2		2	3			**3**	**5**	To prepare for practice on interventional radiology: applied methodologies, classification, indications. Analyze the given radiological examination (for a seminar).
9. Nuclear medicine and radiological research methods in clinical diagnostics *prof. A. E. Tamošiūnas, dr. asist.. A. Samuilis, Jr. asist. R.Komiagienė,*	2		2	3			**7**	**5**	To prepare for practice on joint radiological research methods: methodologies, specifics, areas of application. Analyze the given radiological examination (for the seminar).
10. Radiation safety, *Doc. B.Gricienė , Prof. A.Tamošiūnas, Jr.asist. R.Komiagienė, Jr.asist. R.Kliokytė*			2	3			**5**	**13**	To be able to analyze research images: radiological anatomy, signs of pathology, specifics of methodologies.
Total	16		20	30			**66**	**67**	

Assessment strategy	Weight (%)	Assessment period	Assessment criteria
Remote or in-person practice in the classrooms with radiological images, in diagnostic offices.		During the course.	**Student's ability to perform these tasks:** - interviewing patient before radiological exam; - report and differentiate images of different radiological examinations; - understand basic clinical picture and indications for imaging; - understanding of different modalities and protocols, indications and contraindications in different clinical situations; - indications and contraindications of contrast media applications.
Exam (in computer class or remote)	100%	End of course according to timetable provided by Deans office.	60 close questions. Test is being held in a computer class. Questions are rated with one or two points according to the level of difficulty; each student receives 50% of questions of difficulty 1 and 50% - difficulty 2; maximum number of collected points - 90 points = 100%. The results are scored in following way: **10 (Excellent)** Excellent performance, outstanding knowledge and skills. 100-88 percentage of correct answers. **9 (Very good)** Strong performance, good knowledge and skills. 87-78 percentage of correct answers **8 (Good)** Above the average performance, knowledge and skills. 77-68 percentage of correct answers. **7 (Highly satisfactory)** Average performance, knowledge and skills with unessential shortcomings. 67-58 percentage of correct answers. **6 (Satisfactory)** Below average performance, knowledge and skills with substantial shortcomings. 57-50 percentage of correct answers. **5 (Sufficient)** Knowledge and skills meet minimum criteria. 49-45 percentage of correct answers. **4, 3, 2, 1 (Insufficient)** Knowledge and skills do not meet minimum criteria/below minimum criteria. 44-0 percentage of correct answers.

Author	Year of publication	Title	No of periodical or vol. of publication	Publication place and publisher or Internet link
Required reading				
Basevičius A. ir bendraautoriai	2004	Radiologjos pagrindai		Kaunas
Koord. 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		https://www.myesr.org/