COURSE UNIT DESCRIPTION

Course unit title	Code
Fundamentals of radiology : General radiology and Dental radiology	**BROR 3115**

Lecturer(s)	Department(s)
Coordinating: **Oral (dental) radiology:** Assist. Prof. Dr. Deimantė Ivanauskaitė deimante.ivanauskaite@mf.vu.lt **Coordinating: General radiology:** Assoc. prof. dr. Birutė Gricienė birute.griciene@mf.vu.lt **Others: General radiology:** Prof.dr. Algirdas Edvardas Tamošiūnas algirdas.tamosiunas@mf.vu.lt Assoc. prof. dr. Jūratė Dementavičienė jurate.dementaviciene@mf.vu.lt Assist.prof. dr Andrius Brazaitis andrius.brazaitis@mf.vu.lt Assist.prof. dr. Mindaugas Matačiūnas mindaugas.mataciunas@mf.vu.lt Assist.prof. dr. Artūras Samuilis arturas.samuilis@mf.vu.lt	Institute of Dentistry Faculty of Medicine Vilnius university Žalgirio 117, Vilnius Department of Radiology, Nuclear Medicine and Medical Physics Medical faculty of Vilnius university Santariškių 2, Vilnius

Cycle	Level of the course unit	Type of the course unit
Integrated studies		Compulsory

Mode of delivery	Period of delivery	Language of instruction
Face-to-face	2 Year, 4 semester	English

Prerequisites and corequisites	
Prerequisites: A student must have completed the following courses: Human anatomy, Human histology	**Corequisites (if any):** Recommendable parallel study: Cariology, endodontics and periodontology; Prosthodontics; Dental materials

Number of ECTS credits allocated to the course unit	Total student's workload	Contact hours	Self-study hours
5	**134**	**67**	**67**

Purpose of the course unit Programme competences to be developed		
The purpose of the course unit – to develop the understanding of radiology in medicine practise and ability to use knowledge and skills in dental practise; to give fundaments of radiation protection in dentistry, radiological diagnosis; to introduce equipment and working principles with them in radiology; to mould understanding of occasion and validity of radiographic techniques for radiological examination. To train student skills to perform intraoral radiographs, to make interpretation of images in radiology and ability clearly explain the patient radiographic changes.		
Learning outcomes of the course unit	**Teaching and learning methods**	**Assessment methods**
Will understand the effect of radiation and will be able to use radiation protection and safety principles	Lectures; active training (brainstorm, discussion in group)	Test with multiple question chose
Will be knowledgeable in equipment and working principles with it in radiology	Lectures; active training (brainstorm, discussion in group); investigative methods (search of information, preparation and presentation of oral presentation), demonstrative practical training	
Will be knowledgeable in imaging of human body in radiology		
Will learn and develop manual skills and will able to perform intraoral radiographs	Lectures; practical training in pair	Test with multiple question chose Practical test
Will learn and develop manual skills and will able to perform panoramic radiographs	Lectures; demonstrative practical training in subdivision of radiology of training place of Institute of Odontology	Test with multiple question chose Practical test
Will make interpretation of normal and pathological changes in intraoral radiographs	Lectures; active training (brainstorm, discussion in group); practical training from radiographs	Test with multiple question chose Practical test in writing (written task)
Will learn about extraoral radiographic techniques	Lectures; demonstrative practical training in subdivision of radiology of training place of Institute of Odontology	Test with multiple question chose
Will make interpretation of anatomy in extraoral radiographs	Lectures; practical training from radiographs	Test with multiple question chose Practical test
Will understand the principles of cone beam computed tomography (CBCT) and will make interpretation of anatomy in dental-maxillofacial region	Lectures; practical training with computer	
Will know principles of radiological diagnostics in dentistry	Lectures; active training (brainstorm, discussion in group, practical training from radiographs)	Test with multiple question chose

Topics	Contact work hours							Time and tasks of self-study	
	Lectures	Consultations	Seminars	Practice	Laboratory work	Practical training	**Total contact hours**	**Self-study**	**Tasks**
General radiology	4			4			**8**	**14**	
1. Radiation protection and safety. Biological effect of ionisation radiation. History of Radiology. Conventional radiology in dentistry, clinical cases	2			2					Problem based discussion, Collection and reading of research literature, practical training in radiological diagnostic room, analysis of cases
2.Diagnosis, indication and contraindication of computed tomography (CT), magnetic resonance imaging(MRI), ultrasound (US), clinical cases	2			2					
Dental (oral) radiology	16		11	32			**59**	**53**	
3.Intraoral (bitewing, periapical, occlusal) radiography	4		4	10			**18**	**20**	Problem based discussion, Collection and reading of research literature, practical training in radiological diagnostic room
4. Anatomy of radiographic images of tooth and jaws and dental materials	2			2			**4**	**6**	
5. Diagnosis of caries, periapical and periodontal tissues	4		3	8			**15**	**8**	
6. Panoramic radiography	2			6			**8**	**7**	
7. Extraoral radiography and anatomy of radiographic images	2		2	4			**8**	**6**	
8 Digital radiography and cone beam computed tomography (CBCT) in dentistry	2		2	2			**6**	**6**	
Total	20		11	36			67	67	

Assessment strategy	Weight (%)	Assessment period	Assessment criteria
Exam	100%		Examination, when student perform task during semester. Cumulative score: Assessment of student during semester and 6 part of Exam. Examine teachers working with students during contact work hours and teachers from cariology, endodontics, periodontology, oral surgery and maxillofacial surgery disciplines
1. Evaluation of student after performance of tasks (accumulative score)	14.3 %	during semester	**10 points:** Excellent knowledge and ability **9 points:** Very good knowledge and ability **8 points:** Good knowledge and ability **7 points:** Enough good knowledge and ability **6 points:** Moderate knowledge and ability **5 points:** Minimal knowledge and ability **4 points:** Not enough minimal knowledge and ability
2. Theory – general radiology (test)	14.3 %	June	Test with 10 multiple question chose. 1 correct answer equal 1 point: **10 points:**Excellent knowledge. 10 correct answers **9 points:** Very good knowledge. 9 correct answers **8 points:** Good knowledge. 8 correct answers **7 points:** Enough good knowledge. 7 correct answers **6 points:** Moderate knowledge. 6 correct answers **5 points:** Minimal knowledge. 5 correct answers **4 points:** Not enough minimal knowledge. 1-4 correct answers
3. Theory – dental (oral) radiology	14.3 %	June	Test with 100 multiple question chose. 1 correct answer equal 1 point: **10 points:**Excellent knowledge. 95-100 correct answers **9 points:** Very good knowledge. 85-94 correct answers **8 points:** Good knowledge. 75-84 correct answers **7 points:** Enough good knowledge. 65-74 correct answers **6 points:** Moderate knowledge. 55-64 correct answers **5 points:** Minimal knowledge. 45-54 correct answers **4 points:** Not enough minimal knowledge. 0-45 correct answers
4. Interpretation of intraoral radiograph	14.3 %	June	**10 points:** Excellent knowledge and ability **9 points:** Very good knowledge and ability **8 points:** Good knowledge and ability

			7 points: Enough good knowledge and ability **6 points:** Moderate knowledge and ability **5 points:** Minimal knowledge and ability **4 points:** Not enough minimal knowledge and ability
5. Interpretation of extraoral radiograph	14.3 %	June	**10 points:** Excellent knowledge and ability **9 points:** Very good knowledge and ability **8 points:** Good knowledge and ability **7 points:** Enough good knowledge and ability **6 points:** Moderate knowledge and ability **5 points:** Minimal knowledge and ability **4 points:** Not enough minimal knowledge and ability
6. Evaluation and interpretation of Intraoral and/or panoramic radiograph (written task)	14.3 %	June	**10 points:** Excellent knowledge and ability **9 points:** Very good knowledge and ability **8 points:** Good knowledge and ability **7 points:** Enough good knowledge and ability **6 points:** Moderate knowledge and ability **5 points:** Minimal knowledge and ability **4 points:** Not enough minimal knowledge and ability
7. Practical task (performance of intraoral radiograph)	14.3 %	June	**10 points:** Excellent ability. No mistake **9 points:** Very good ability. 1 mistake **8 points:** Good ability. 2 mistakes **7 points:** Enough good ability. 3 mistakes **6 points:** Moderate ability. 4 mistakes **5 points:** Minimal ability. 5 mistakes **4 points:** Not enough minimal ability. 6 and more mistakes

Author	**Year of publication**	**Title**	**No of periodical or vol. of publication**	**Publication place and publisher or Internet link**
Required reading				
T.B. Moller, E. Reif	2000	Normal findings in CT and MRI	3-30 ir 87-117	Thieme. Stuttgart-New York
T.B. Moller, E. Reif, C. Bergman	2000	Pocket Atlas of Cross Sectional Anatomy CT and MRI	1-235	Thieme
SEDENTEXCT project	2011	Radiation Protection: Cone Beam CT for Dental and Maxillofacial Radiology. Evidence based guidelines	-	http://www.sedentexct.eu/content/guidelines-cbct-dental-and-maxillofacial-radiology
Whaites E.	2007	Essentials of dental radiography and Radiology	1-473	UK: Churchill Livingstone

White S.C, Pharoah M.J.	2009	Oral radiology. Principles and Interpretation	1-657	USA: Mosby
Recommended reading				
Pasler F.A., Visser H.	2007	Pocket Atlas of dental radiology	1-342	Stuttgart: Georg Thieme Verlag
	2001	Hygiene Standart HN 73:2001 “Basic Standard of Radiation Protection”	1-35	http://www.rsc.lt/index.php/pageid/445