MEDICAL IMAGING I

1	Course Title:	MEDICAL IMAGING I	
2	Course Code:	TGTZ109	
3	Type of Course:	Compulsory	
4	Level of Course:	Short Cycle	
5	Year of Study:	1	
6	Semester:	1	
7	ECTS Credits Allocated:	7.00	
8	Theoretical (hour/week):	4.00	
9	Practice (hour/week):	4.00	
10	Laboratory (hour/week):	0	
11	Prerequisites:	None	
12	Language:	Turkish	
13	Mode of Delivery:	Face to face	
14	Course Coordinator:	Öğr. Gör. Dr. SEFA IŞIKLAR	
15	Course Lecturers:	Öğr.Gör. Sefa IŞIKLAR Öğr. Gör. Arzu Öden ACAR Öğr.Gör. İmren DEMİR	
16	Contact information of the Course Coordinator:	e-posta:sefaisiklar@uludag.edu.tr tlf: 02242940658 Uludağ Üniversitesi, Sağlık Hizmetleri Meslek Yüksekokulu, Bursa. e-mail: sefaisiklar@uludag.edu.tr Phone number: 0224-2940658 Uludag University Vocational School of Health Services / Bursa.	
17	Website:		
18	Objective of the Course:	In this course, it is aimed to make gain the knowledge, skills and abilities to take radiography.	
19	Contribution of the Course to Professional Development:	With the Medical Imaging I course, adaptation to the physical knowledge of the X-ray device and the radiological anatomy in the images obtained through this device is provided, and it is ensured that the images are suitable for diagnostic evaluation and the difference of the pathological structure from the normal anatomy.	
20	Learning Outcomes:		
		1	Make preparations for radiographic examination
		2	Get head radiographies
		3	Get face radiographies
		4	Get vertebra radiographies
		5	Get thorax and abdomen radiographies
		6	Get upper extremity radiographies
		7	Get lower extremity radiographies
		8	Get lung and heart radiographies
		9	Make preparations to develop films
		10	Print films, Make quality control processes of rdiography and dark room
21	Course Content:		
	Course Content:		

Week	Theoretical	Practice
1	X-Ray Physics Course: Basic physics concepts Medical Imaging Course: Roentgenographic Terminology	Observation and application of the processes of radiologic examination
2	X-Ray Physics Course: Structure of atom Nomenclature of atoms Ionization and ion Medical Imaging Course: AC PA-AP Radiographic Imaging Technique	For Thorax / Lung PA and AP Imaging; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings
3	X-Ray Physics Course: Electromagnetic radiation Particle radiation Medical Imaging Course: Thorax PA-AP Radiographic Imaging Evaluation Criteria and Radiographic Anatomy	Thorax / Lung PA-AP Radiographic Imaging Evaluation Criteria and Radiographic Anatomy
4	X-Ray Physics Course: Sources of radiation Discovery of X-rays Medical Imaging Course: Lung Lateral Radiography Apyclordotic Lung Radiography Right and Left A-P Oblique Lung Radiography	For Lung Lateral Radiography Apyclordotic Lung Radiography Right and Left AP Oblique Lung Radiography Tele PA / Lateral Radiography Standing Abdominal Radiography Direct Urinary System Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors
5	X-Ray Physics Course: Basic parts of X-ray equipment-1 Medical Imaging Course: Cranium PA (Occibito-Frontal) Cranium Lat Submento-vertex Vertiko-submental Town (AP Axial Sella Tursika) Schuller Stenvers Basic parts of X-ray equipment-2 X-Ray tube evaluation rulers Medical Imaging Course: Orbita PA Orbita Lateral Optical Foramen Nasal Lateral Mandible P-A Mandible Lat Oblique Mandible TMJ Waters (Parietoacantial) Caldwell	Atlas Axis (Sevikal 1st and 2nd Vertebrae) AP Cervical Vertebrae A-P (3-7) Cervical Vertebrae Oblique Lateral Cervicothoracic (Swimmers View) Thoracic / Dorsal Vertebras Lat For Oblique Radiography of Thoracic / Dorsal Vertebrae; • Landmark Points • Collimation and Image Recorder Factors • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy Lumbar Vertebrae AP Lumbar Vertebras Lat Lumbosacral Vertebras Lat Oblique Lumbar Vertebrae Lumbosacral Vertebrae Oblique Sacrum AP Sacrum Lat Coccyx AP For coccyx Lat radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	2.00	28.00
Practicals/Labs	14	4.00	56.00
Self study and preperation	14	7.00	98.00
Homeworks	1	12.00	12.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	6.00	6.00
Others	0	0.00	0.00
Final Exams	1	12.00	12.00
Total Work Load			218.00
Total work load/ 30 hr			7.07
ECTS Credit of the Course			7.00

7	X-Ray Physics Course: Obtaining X-rays Properties of X-rays Medical Imaging Course: Atlas Axis (Cervical 1st and 2nd Vertebrae) AP Cervical Vertebrae AP (3-7) Cervical Vertebrae Lateral Cervical Vertebrae Oblique Lateral Cervicothoracic (Swimmers View) Thoracic / Dorsal Vertebrae AP Thoracic / Dorsal Vertebras Lat Thoracic / Dorsal Vertebrae Oblique	X-ray machine Console / control panel X-ray generator Cranium PA (Occipito-Frontal) Cranium AP (Fronto-Occipital) Cranium Lat Submento-vertex (Head Base, Head Axial) Vertiko-submental Town (AP Axial Sella Tursika) Sella Tursika Lateral Schüller For Stenvers Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy
8	X-Ray Physics Course: X-ray quantification Quality of X-rays Medical Imaging Course: Lumbar Vertebrae AP Lumbosacral Vertebras AP Lumbar Vertebras Lat Lumbosacral Vertebras Lat Oblique Lumbar Vertebrae Lumbosacral Vertebrae Oblique Sacrum AP Sacrum Lat Coccyx AP Coccyx Lat	Obtaining X-rays Orbita PA Orbita Lateral Optical Foramen Nasal Lateral Mandible P-A Mandible Lat Oblique Mandible TMA Waters (Paretoacantial) For Caldwell Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy
9	X-Ray Physics Course: Interaction of X-rays with matter Medical Imaging Course: Scapula AP Scapula Lateral Clavicula AP Clavicula - AP 30 ° (Axial) Acromioclavicular Joint AP Ant Oblique in Sternoclavicular Joint Shoulder AP Shoulder AP Apical Oblique Axial Shoulder Supraspınatus Outlet Shoulder Scapular Y Lateral	Factors affecting the quantity and quality of X-rays Scapula AP Scapula Lateral Clavicula AP Clavicula - AP 30 ° (Axial) Acromioclavicular Joint AP Ant Oblique in Sternoclavicular Joint Shoulder AP Shoulder AP Apical Oblique Axial Shoulder Supraspınatus Outlet For Shoulder Scapular Y Lateral Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy

10	X-Ray Physics Course: Diagnostic methods Image formation Radiological image formation Computerized radiography (CR) Medical Imaging Course: Shoulder Sulcus Intertubercularis Tangential Shoulder Posterior Oblique (Cavitas glenoidalis) Shoulder Inferosuperior Axial Projection Shoulder AP Abduction Humerus Transthoracic Lateral Humerus AP Humeral Lateromedial Humeral Mediolateral (Rotational) Elbow AP Elbow Lateral Coyle Method Elbow Acute Flexion AP Projection	Interaction of X-rays with matter Shoulder Sulcus Intertubercularis Tangential Shoulder Posterior Oblique (Cavitas glenoidalis) Shoulder Inferosuperior Axial Projection Shoulder AP Abduction Humerus Transthoracic Lateral Humerus AP Humeral Lateromedial Humeral Mediolateral (Rotational) Elbow AP Elbow Lateral Coyle Method Elbow Acute Flexion AP Projection • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy
11	X-Ray Physics Course: Radiological image formation Digital radiography (DR) Medical Imaging Course: Forearm AP Forearm Lateral Wrist PA Lateral Wrist Wrist Lateral Flexion / Extension Wrist Oblique Wrist Radiocarpal Joint Wrist Dorsal Angled Ulnar Wrist on Deviation Wrist Radial Deviation Wrist PA Axial Scaphoid Wristband AP Carpal Tunnel Radiogram El PA Hand Lateral Hand Oblique Phalanx AP	Image formation Forearm AP Forearm Lateral Wrist PA Lateral Wrist Wrist Lateral Flexion / Extension Wrist Oblique Wrist Radiocarpal Joint Wrist Dorsal Angled Ulnar Wrist on Deviation Wrist Radial Deviation Wrist PA Axial Scaphoid Wristband AP Carpal Tunnel Radiogram Hand PA Hand Lateral Hand Oblique Phalanx for AP Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy

12	X-Ray Physics Course: Distinguishable structures by radiographic imaging Radiographic quality Medical Imaging Course: Pelvis AP Pelvis Superoinferior Axial "Inlet" Pelvis AP Axial "Outlet" Pelvis Lateral Pelvis Oblique Pelvis Obturator Oblique (Judet) Pelvis Iliac Oblique (Judet) Hip Joint AP Hip Joint Lateral Axiolateral Projection Hip AP Oblique (Frog Leg) Projection Andren-von Rosen Radiography SIJ AP SIJ PA SIJ Oblique	Radiological image formation Computerized radiography (CR) Digital radiography (DR) Pelvis AP Pelvis Superoinferior Axial "Inlet" Pelvis AP Axial "Outlet" Pelvis Lateral Pelvis Oblique Pelvis Obturator Oblique (Judet) Pelvis Iliac Oblique (Judet) Hip Joint AP Hip Joint Lateral Axiolateral Projection Hip AP Oblique (Frog Leg) Projection Andren-von Rosen Radiography SIJ AP SIJ PA For SIJ Oblique Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy
13	Medical Imaging Course: Femur AP Femur Lat Femur Lateral Mediolateral / Lateromedial Knee AP Knee Lateral Mediolateral / Lateromedial Knee Oblique Internal / External Knee PA (Standing) Pressing (Rosenberg Method) Knee Tunnel (Intercondiller Fossa)	Femur AP Femur Lat Femur Lateral Mediolateral / Lateromedial Knee AP Knee Lateral Mediolateral / Lateromedial Knee Oblique Internal / External Knee PA (Standing) Pressing (Rosenberg Method) For Knee Tunnel (Intercondylar Fossa) Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy
14	Medical Imaging Course: Patella Tangential Cruris AP Cruris Lateral Ankle AP Ankle AP Mortise Ankle AP Oblique Ankle Lateral Ankle AP Stress Foot AP (+ standing) Foot Lateral (+ standing) Foot Oblique Calcaneus Axial Calcaneus Lateral Phalanx AP Sesamoid Tangential	Patella Tangential Cruris AP Cruris Lateral Ankle AP Ankle AP Mortise Ankle AP Oblique Ankle Lateral Ankle AP Stress Foot AP (+ Pressing) Foot Lateral (+ Pressing) Foot Oblique Calcaneus Axial Calcaneus Lateral Phalanx AP For Sesamoid Tangent Radiography; • Patient Preparation • Landmark Points • Collimation and Image Recorder Factors • Patient Positioning • Technical Factor Settings • Evaluation Criteria and Radiographic Anatomy

22	Textbooks, References and/or Other Materials:	Main resource: --- Aiding resources: -Basic Radiology Technique, Prof. Dr. Tamer KAYA -Introduction to radiology, Prof. Dr. Ercan TUNCEL -Course notes of medical imagining 1 Prof. Dr. Müfit PARLAK, Academician Sefa Işıklar

23 Assesment

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	1	25.00
Quiz	1	15.00
Home work-project	0	0.00
Final Exam	1	60.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Evaluations are made by evaluating their answers to the verbal-written-visual questions asked by the students during the semester; At the end of the semester, traditional (test or written exams) and alternative assessment and evaluation (visual exams) methods will be used.

24 ECTS / WORK LOAD TABLE

25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS

	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	5	1	5	2	3	1	1	5	1	1	1	1	0	0	0	0
ÖK2	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK3	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK4	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK5	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK6	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK7	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK8	5	1	5	2	3	3	1	5	5	1	2	1	0	0	0	0
ÖK9	5	1	5	2	3	1	1	5	1	1	1	1	0	0	0	0
ÖK10	5	1	5	2	3	1	1	5	1	1	1	1	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	1 very low	2 low	3 Medium	4 High	5 Very High