



Department of Respiratory Care

Course Specification of Chest Radiology

Course No. (01 02 861)

2023/2024

This course equips respiratory therapy students with the essential knowledge and skills to interpret and utilize chest imaging in clinical practice. Beginning with the fundamentals of image acquisition, normal anatomy, and terminology, students will learn to identify normal and pathological findings on chest X-rays (CXR) associated with various lung diseases. The course then explores advanced imaging modalities like CT, MRI, and ultrasound, emphasizing the interpretation of complex studies and the differentiation between normal and abnormal results.

IV Course Content:

A – Theoretical Aspect: (if any)

S	Units/ Topics List	No. of Weeks	Contact hours	CILOs
1	Introduction to Chest Radiology:	1	2	a1
2	Fundamentals of CXR interpretation – ‘the basics’	2	2	a2, a3
3	CXR Pathology & Clinical and Radiographic Findings in Lung Diseases,	3	2	a3

4	Advanced CXR Interpretation & Postprocedural Chest Radiograph Evaluation,	○ Lung nodules and masses: characteristics, malignancy risk assessment ○ Cardiopulmonary complications: heart failure, pulmonary edema ○ Vascular disease: pulmonary embolism, thoracic aortic aneurysm <u>Skeletal and soft tissue abnormalities</u> ○ Tracheal Intubation, ○ Central Venous Pressure Line, ○ Pulmonary Artery Catheter Placement, ○ Nasogastric Feeding Tubes, Chest Tubes,	4	2	a2, a3
5	Computed Tomography, CTScan in Chest Imaging:	○ CT scan technology and principles ○ Advantages and limitations of CT over CXR ○ CT anatomy of the chest ○ Normal CT ○ CT applications in respiratory diseases: Pneumonia, Lung Cancer & Tumors	5	2	a2, a3
6	Computed Tomography, CTScan in Chest Imaging:	○ Pulmonary Embolism, ○ Chronic Interstitial Lung Disease, ○ Acquired Immunodeficiency Syndrome, ○ Occupational Lung Disease, ○ Chronic Obstructive Pulmonary Disease,	6	2	

	Chest Magnetic Resonance Imaging,	<u>MRI in Chest Imaging:</u> ○ MRI physics and applications in chest ○ Indications for chest MRI: vascular disease, tumors, interstitial lung disease ○ MRI interpretation basics: signal intensities, contrast enhancement	7	2	
8	Med-term exam		8	2	
9	Chest Ultrasound,	○ Ultrasound in Chest Imaging " Pocus" : ○ Principles of ultrasound technology ○ Pleural effusions: diagnosis, characterization, aspiration guidance ○ Lung ultrasound: pneumonia, atelectasis, interstitial lung disease	9	2	
10	Radionuclide Lung Scanning,	○ Fundamentals of Nuclear Medicine: ○ Radioactivity, gamma rays, and radiation detectors ○ Types of radionuclides used in lung scans ○ Radiation safety principles and dose optimization ○ Lung Anatomy and Physiology: ○ Review of ventilation and perfusion in the lungs ○ Importance of V/Q matching for normal lung function ○ Primary Indication: Diagnosis of Pulmonary Embolism (PE): ○ Chronic obstructive pulmonary disease (COPD): V/Q mismatch patterns and airway obstruction ○ Interstitial lung disease (ILD): V/Q mismatch and parenchymal lung abnormalities ○ Preoperative assessment: Lung transplant evaluation for V/Q match and perfusion ○ Therapy monitoring: Evaluating response to treatment for lung diseases	10	2	
11	Positron Emission Tomography, Pulmonary Angiography,	○ PET/CT in Chest Imaging: ○ Combining metabolic and anatomical information for cancer diagnosis and staging ○ PET/CT in lung cancer, lymphoma, other thoracic malignancies	11	2	

12	Fluoroscopy, Interventional Radiology,	- Fluoroscopy in Chest Imaging: - Dynamic imaging of the chest with fluoroscopy - Applications in respiratory care: bronchoscopy, tracheal intubation, diaphragmatic movement assessment	12	2	
13	Case Studies in Chest Radiology:	- Interactive session: applying knowledge to real-life CXR, CT, and other scans - Group discussion and diagnosis	13	2	
14	Radiation Safety,	- Radiation Safety and Dose Optimization: - Minimizing radiation exposure in patients and respiratory care personnel - Dose optimization strategies for different imaging modalities	14	2	
15	Review	- Review and Q&A: - Review key concepts from the course - Open forum for questions and discussion	15	2	
16	Final Exam		16	2	-
TOTAL			16	32	-
Number of Weeks /and Units Per Semester			16 weeks	2 Credits	-

B - Practical Aspect: (if any)

S	Tasks/ Experiments	Number of weeks	contact hours	CILOs
1	Not applicable	-	-	-
TOTAL		-	-	-
Number of Weeks /and Units Per Semester		-	-	-

VI. Teaching strategies of the course:

123. Lecture method
124. Brainstorming
125. Demonstration
126. Case study discussions

XXI. Schedule of Assessment Tasks for Students during the Semester
Theoretical part

No.	Assessment Method	Week Due	Mark	Proportion of Final Assessment	Aligned Course Learning Outcomes
1	Attendance and Activities	15th week	5	5%	a, b
2	Student assignment	5th and 12th week	5	5%	b
3	Mid-term exam	7th or 8th week	20	20%	a, b
4	Final exam	16th-17th week	70	70 %	a, b, c, d
Total Theory Weight			100	100%	