INTERNATIONAL HIGHER SCHOOL OF MEDICINE

Department of Introduction to therapy & family medicine

SYLLABUS

Respiratory system

2026-2027 academic year
for students of medical faculty
2 course 4 semester groups 1-3 according to timetable
4 credits (120 h, including auditoria 80 h, independent work – 40 h)

Lecture

Introduction to internal medicine	Semetei kyzy Aigul (+996705121500 whatsapp, aigul9206@mail.ru)
Introduction to pediatrics	Nazhimidinova Gulmira Tashalievna (+996700160061)
Topographic anatomy	Imankulov Daniyar Arturovich (+996705909050, dannnnic@gmail.com).
Pathophysiology	Turdakunova Raushan Mahmudovna (+996550608050, raushan.turdakunova@mail.ru
Radiology	Oksana Skorobogatova (+996559755559, skorobogatova_ok@mail.ru)
Venue:	Zoom

Practical:

Introduction to internal medicine	Semetei kyzy Aigul – (+996705121500, Vedanta internal medicine, room 209)
Venue:	**Vedanta internal medicine - Alybaeva 96**
Introduction to pediatrics	As per timetable
Topographic anatomy	As per timetable
Pathophysiology	Turdakunova Raushan Mahmudovna +996550608050, email: raushan.turdakunova@mail.ru
Venue:	**Dagestanskaya 6, Vedanta pathology**

Radiology	Ahmedova Irina	+996773532152	akhmedovairina1@gmail.com
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Venue	**Vedanta University Clinic, 6 floor, rooms 606-611.**		

The Syllabus is considered
at the meeting of the department of Introduction to therapy & family medicine
Protocol № 1 dated 27.08.2026
Head of the department _____ A.A.Kamchybekova

Course Objective: Based on comprehensive understanding of mechanisms of the common respiratory system disorders, to learn main symptoms and pathological syndromes, physical examination techniques as well as laboratory and instrumental methods of diagnostics of common respiratory system disorders in adults and children.

After study of the discipline the student must have:

Knowledge:

- Causes, physical examination findings, results of laboratory and instrumental investigations of patients with most common respiratory system disorders;
- Pathophysiology and mechanisms of development of common pathological symptoms and syndromes of respiratory system, and justification of pathogenetically approved diagnostic methods used in different age groups of patients with common respiratory disorders;
- Pathophysiology and mechanisms of development of basic symptoms and syndromes and their diagnostics;
- Understanding the basics of common laboratory and functional investigations of adults and children with respiratory disorders;
- Etiology, pathogenesis, clinical and laboratory criteria and main treatment principles of common acute and not emergent exacerbations of chronic respiratory system disorders.

Skills:

- Collect necessary information, describe all sections of the "student's" medical history carefully and competently, recording all the necessary data reflecting the course of clinical thinking in the process of diagnostics and choosing treatment strategy for patient with respiratory disorders.
- Analyze and synthesize information about identified pathological symptoms and syndromes of respiratory disorders and prescribe an adequate examination for the purpose of reliable diagnosis;
- Identify the main symptoms using physical examination and group them into syndromes based on knowledge of the anatomical and physiological characteristics and patterns of functioning of respiratory system;
- Analyze the results of clinical, laboratory and functional investigation of adults and children, considering their specifics in order to diagnose the main diseases of respiratory system;
- Perform examination of patient for diagnosis of the common acute and not emergent exacerbations of chronic respiratory system diseases.

Attitude:

- Demonstrate practical skills of interviewing, history taking, physical examination of patient according to medical history chart at the bedside of a patient with respiratory disorders;
- Skills of diagnostic methods of the main pathological symptoms and syndromes for proper diagnostics of respiratory system disorders;
- Skills of physical examination of patients aimed at identifying the main pathological symptoms and syndromes of respiratory system for the purpose of proper diagnosis of diseases;
- Skills in conducting basic clinical, laboratory and functional examinations of adults and children;
- Skills of using the main diagnostics methods and treatment strategies of common acute and exacerbations of chronic not emergent pathological conditions of respiratory system.

- **Pre-requisites.**

- Normal anatomy of respiratory system
- Normal physiology of respiratory system
- Basic pharmacology
- Nursing

- **Post-requisites.**

- Internal medicine
- Occupational diseases
- Polyclinic therapy
- Family medicine

THEMATIC PLAN OF LECTURES

№	UNIT	Theme of lectures	Hours	Date	Subject
1.	**Unit 1.** Introduction to the respiratory system.	L 1: Introduction to the respiratory system: normal and pathological physical examination findings.	2	According to the timetable	Therapy
		L 2: Topographic anatomy of the respiratory system (thoracic cavity, lungs, pleura and bronchi).	2	According to the timetable	Topographic anatomy
		L 3: Pathophysiology of diffusion, ventilation and perfusion abnormalities.	2	According to the timetable	Therapy

		L 4:X-ray anatomy of thorax. X-ray sings of changes of respiratory system.	2	According to the timetable	Radiology
2.	**Unit 2.** Obstructive and restrictive lung diseases.	L 5: Pathogenesis of obstructive and restrictive syndromes (morphology, stages, types, evaluation).	2	According to the timetable	Pathophysiology
		L 6: The syndrome of bronchial obstruction (COPD, bronchial asthma)	2	According to the timetable	Therapy
		L 7: Pneumonia. Restrictive lung diseases.	2	According to the timetable	Therapy
3.	**Unit 3.** Pathological syndromes accompanied by respiratory failure.	L 8: Pulmonary circulation, pathophysiology of lung edema.	2	According to the timetable	Pathophysiology
		L 9: The syndrome of accumulation of air and fluid in pleural cavity: pleural effusion, pneumothorax. Lung abscess.	2	According to the timetable	Therapy
		L 10: The syndrome of respiratory failure, pulmonary embolism, pulmonary hypertension.	2	According to the timetable	Therapy
4.	**Unit 4.** Respiratory system features in children.	L 11. Anatomy and physiology of respiratory system in children.	2	According to the timetable	Pediatrics
		L 12. Physical examination of respiratory system in children.	2	According to the timetable	Pediatrics
		L 13. Main clinical syndromes of respiratory pathology in children.	2	According to the timetable	Pediatrics
		L 14. Laboratory and instrumental investigations of respiratory system in children.	2	According to the timetable	Pediatrics
	Total		**28**		

THEMATIC PLAN OF PRACTICAL CLASSES

№	Unit	Theme of practical class	Hours	Date	Subject
1.	**Unit 1.** Introduction to the respiratory system.	PC 1: Topographic anatomy of thorax and diaphragm.	2	By timetable	Topographic anatomy
		PC 2: Topographic anatomy of thoracic cavity and it's organs.	2	By timetable	Topographic anatomy
		PC 3: Physical examination of the adult's respiratory system: general examination and appropriate examination of the lungs that establishes the diagnosis, complications and severity of disease.	2	By timetable	Therapy
		PC 4: Unit 1 submission	2	By timetable	Therapy
2.	**Unit 2.** Obstructive and restrictive airway disease.	PC 5: Pathophysiology of obstructive and restrictive airway disease (morphology, stages, types, evaluation).	2	By timetable	Pathophysiology
		PC 6: Obstructive airway diseases (COPD – chronic bronchitis, emphysema, bronchial asthma). Definition, etiology, pathogenesis, clinical presentation, evaluation.	4	By timetable	Therapy

		PC 7: Pneumonia (community acquired, nosocomial, aspiration pneumonia - pathogenesis, presentation, natural history and complications of pneumonia.). Restrictive airway diseases.	4	By timetable	Therapy
		PC 8: X-ray findings of consolidation of the lungs.	2	By timetable	Radiology
		PC 9: X-ray findings of hyperinflation of the lungs.	2	By timetable	Radiology
		PC 10: Unit 2 submission.	2	By timetable	Therapy
3.	**Unit 3.** Pathological syndromes accompanied by respiratory failure.	PC 11: Pulmonary circulation. Pathophysiology of lung congestion.	2	By timetable	Pathophysiology
		PC 12: Pathophysiology of the respiratory failure.	2	By timetable	Pathophysiology
		PC 13: Pleural space occupying diseases (pneumothorax, pleural effusion, lung abscess).	2	By timetable	Therapy
		PC 14: Pulmonary embolism, pulmonary hypertension. Respiratory failure, ARDS.	2	By timetable	Therapy
		PC 15: X-ray sings of pleural space occupying diseases (pleural effusion and pneumothorax).	2	By timetable	Radiology
		PC 16: Unit 3 submission.	2	By timetable	Therapy
4.	**Unit 4.** Respiratory system features in children.	PC 17: Anatomy and physiology of the respiratory system in children.	2	By timetable	Pediatrics
		PC 18: Physical examination of the respiratory system in children.	4	By timetable	Pediatrics
		PC 19: Main clinical syndrome of respiratory pathology in children.	4	By timetable	Pediatrics
		PC 20: Laboratory and instrumental investigations of respiratory system in children.	2	By timetable	Pediatrics
		PC 21: Unit 4 submission.	2	By timetable	Pediatrics
	Total		**52**		

THEMATIC PLAN OF INDEPENDENT WORK OF STUDENTS

№	Unit	Name of the task	Hours	Date
1.	Introduction to the respiratory system.	1. To make a table of physical examination findings (palpation, percussion, auscultation) in different pathological syndromes of respiratory system. 2. To illustrate charts of ventilation, perfusion and diffusion abnormalities.	6	According to the timetable

		3. To make a table of differences of respiratory acidosis and alkalosis. 4. To list anomalies of lung development and their X-ray signs.		
2.	Obstructive and restrictive lung diseases.	1. To make a table of differences between obstructive and restrictive lung diseases. 2. To illustrate charts of pulmonary function tests and flow-volume loops in obstructive and restrictive lung diseases. 3. To make a table of differences between typical and atypical pneumonia. 4. To make a table of X-ray differences between syndrome of hyperinflation and consolidation of lungs. 5. To make an abstract of the topic "Idiopathic pulmonary fibrosis". 6. To make a clinical case of patient with an exacerbation of bronchial asthma.	12	According to the timetable
3.	Pathological syndromes accompanied by respiratory failure.	1. To make a clinical case of patient with pulmonary embolism and illustrate on A1 page. 2. To make a clinical case of patient with spontaneous pneumothorax and illustrate on A1 page. 3. To make a table of differences between different types of pneumothorax. 4. To make a table of differences of exudate, transudate and chylous effusion. 5. To make a thesis of topic "X-ray diagnosis of pleural diseases". 6. To make a table of differences between cardiogenic and non-cardiogenic pulmonary edema.	12	According to the timetable
4.	Respiratory system features in children.	1. To make a thesis of the topic "Physiology of respiration in children". 2. To make a clinical case of child patient with an acute respiratory distress syndrome. 3. To illustrate on A1 page the main features of acute respiratory distress in children.	6	According to the timetable
Total			**40**	

Recommended reading for the discipline:

Basic:

Topographic anatomy:

1. B.D.Chaurasia. Human Anatomy Vol. 1, 48th edition, 2020.
2. NETTER'S CLINICAL ANATOMY, FOURTH EDITION, Carlos A.G. Machado, MD John A. Craig, MD, 2019.
3. Ross & Wilson Anatomy and Physiology in Health and Illness, 13th Edition 2018.

Pathophysiology:

1. Robbins “Basic Pathology” 10th edition, 2018.
2. Harsh Mohan «Textbook of Pathology» 8th edition, 2019.
3. Kumar Abbas «Essential Pathology» 2021.

Propedtherapy:
1. Bickley L.S. Szilagyi P.G. Bates` quide to physical examination and history taking, 2023.
2. Harrison's principles of Internal Medicine, 2023.
3. Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.
4. Anthony W. Alfrey. Goljan rapid review pathology, 2023.

Pediatrics:
1. O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
2. Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 20th ed.2015.

Radiology:
1. Mayur Arun Kulkarni, Saurabh S Patil, Amit M Shetty. Conceptual Review of Radiology. Nothing beyond for PGMEE, 2018.
2. E. Scott Pretorius, Jeffrey A. Solomon. Radiology Secrets Plus (3d edition), 2011.

Additional:
1. Frank H. Netter. MD- Atlas of human anatomy, 2019.
2. Jerry L. Prince, Jonathan M. Links. Medical Imaging Signals and Systems. 2nd edition, 2015.
3. John Barone MD, Manuel A. Castro, MD, AAHIVS «Preclinical Pathology review» 2023.

Grading policy and procedures for all types of work:
For the period of studying the discipline, the student gains points for the relevant parameters (per unit):
- current score - 20 points
- independent work - 20 points
- unit / module - 20 points
- the overall score - 60 (20+20+20)

For violations of t**he conduct policy**, the overall discipline score will be reduced by a maximum of 10 points.
For violations of **the academic ethics policy**, the overall score in the discipline is reduced by a maximum of 10 points.

Grading system for student’s achievements

Grading criteria per discipline				
Maximum score	Intervals			
	«unsatisfactory»	«satisfactory»	«good»	«excellent»
Current control - 40	0-23	24-30	31-35	36-40
Interval description	The student refuses to answer or when trying to answer demonstrates a complete lack of knowledge of the material. No clinical task has been solved, no practical task has been completed.	The student knows the educational material partially. Incorrectly performs or disrupts the sequence of clinical examination of the patient. Can apply his knowledge only in a typical familiar situation, and experiences difficulty when changing the question.	The student knows program material fluently in a familiar situation and makes two or three mistakes when answering. The student confidently answers additional questions. Able to apply knowledge and relevant clinical skills to a range of routine tasks.	The student is fluent in educational material of varying complexity and uses information from other disciplines. The student demonstrates the ability to think and perform practical work independently. All tasks of the practical part were completed at a high level, clinical thinking and a non-standard

		There are also difficulties in using special skills. Can only solve typical clinical problems and has poor communication skills.	There are minor errors in the preparation of the medical history or situational task. Good confidence in communication skills and ability to conduct effective dialogue.	approach to problem solving were demonstrated. He is fluent in communication skills.
Independent work - 20	0-11	12-15	16-17	18-20
Interval description	As above	As above	As above	As above
	The following are additionally considered – compliance with the expected answers; – correct using of the algorithm for performing actions (methodology, technology, etc.); – logic of reasoning; – original approach to the solution.			
Description of criteria by intervals	Given to the student if he does not possess the listed skills.	Given to the student if he demonstrates knowledge and understanding of most of the assignment. The student knows the categorical apparatus, can give calculation formulas, and calculate the task.	Given to the student if the task is completed with minor errors. The student masters the categorical apparatus, can classify the factors of a phenomenon, solve the problem and analyze the results obtained	Given to the student if the task is completed in full. The student knows the categorical apparatus, can classify the factors of a phenomenon, solve the problem and analyze the results obtained, explain the reasons for deviations from the desired result, defend his point of view, citing facts.
Control work (module) - 40	0-23	24-30	31-35	36-40
Interval description	Number of correct answers to MCQs –49% or less	Number of correct answers to MCQs – 50-75 %	Number of correct answers to MCQs – 76-89%	Number of correct answers to MCQs – 90% and above

Exam 100 points.
The exam is carried out in a form of MCQ.

Grand total score for the discipline (average score for units 100 + exam score 100 / 2) = 100 points
Grand total score for the discipline is signed into the record book.

Conduct Policy: (lateness, absence, behavior in the auditorium, late submission of work).
- Punctuality and completion of tasks.
- Mandatory attendance of classes.
- Attending class in a clean medical uniform.
- Eliminating conversations on a cell phone in the classroom.
- Active participation in the learning process.
- Doing homework on time.
- Academic detention at the time specified by the teacher.

For violations of the Conduct Policy, the total points for discipline might be reduced to 1-10 points.

Academic Ethics Policy.
- Be tolerant, respect the opinions of others.

- Formulate objections in the correct form.
- Constructively support feedback in all classes.
- Plagiarism and other forms of dishonest work are unacceptable. Plagiarism includes the following: the absence of references when using printed and electronic materials, quotes, thoughts and works of other authors or students.
- Prompting and cheating during tests, exams, classes is unacceptable as well as passing an exam for another student, unauthorized copying of materials.
For violations of the Academic Ethics Policy, the total points for the discipline may be reduced to 1-10 points.

Guidelines for lessons of the discipline:

Unit I. Key questions covered in lesson 1: Topographic anatomy of thorax and diaphragm.

1. The cavity of the nose, the feature structure characteristic.
2. Blood supply, innervation.
3. The feature characteristic of the paranasal sinuses.
4. The feature structure, blood supply, innervation of the larynx.
5. Anatomical structure of the vocal sounds.
6. The feature characteristic of the trachea, bronchi, lymphatic vessels of the trachea and bronches.

Recommended reading for this discipline:
[1] Davi Ellen Chabner- The language of medicine. M. 2017.828-880 p.
[2] B.D.Chaurasia . Human Anatomy. Volume 1. New Delhi. 2009.V-2. 225-248 p., V-1. 229-240 p.
[3] Lecture materials.

Unit I. Key questions covered in lesson 2: Topographic anatomy of thoracic cavity and it's organs.
1. Structure, function of the lungs, the lobes, surfaces.
2. The parts of the pleura, the pleural sacs.
3. The lymphatic vessels of the trachea and bronchi.
4. Blood vessels of the lungs.

Recommended reading for this discipline:
[1] Abaeva T.S. Text book Human anatomy. V 1. 2014. 240-255 p.
[2] Frank H. Netter. MD- Atlas of human anatomy 348-399 p.
[3] Lecture materials.

Unit 1. Key questions covered in lesson 3: Physical examination of the adult's respiratory system.

1. Signs and symptoms of respiratory diseases.
2. Inspection of respiratory system: pathological types of breathing, chest wall abnormalities.
3. Palpation: how changes tactile fremitus in different respiratory syndromes.
4. Percussion: types of percussion sounds in different respiratory syndromes.
5. Auscultation: basic and adventitious types of breath sounds.
6. Investigations: sputum analysis, arterial blood gas analysis, spirometry, pulmonary function test.

Recommended reading for this discipline:
[1] Bickley L.S. Szilagyi P.G. Bates` quide to physical examination and history taking, 8th ed., 2009.

Unit 1. Key questions covered in lesson 4: Unit 1 control.
1. Normal anatomy and physiology of respiratory system.
2. Normal arterial blood gas analysis – respiratory acidosis and alkalosis.
3. Perfusion and diffusion abnormalities.
4. Physical examination of the respiratory system in adults: inspection, palpation, percussion, auscultation.
5. Laboratory investigations: CBC, sputum analysis, ABGA, spirometry, PFT – Tiffno index, chest X-ray.

Recommended reading for this discipline:
[1] References listed above
[2] Lecture notes

Unit 2. Key questions covered in lesson 5: Pathogenesis of obstructive and restrictive syndromes.
1. Obstructive lung disorders. COPD
2. Pathophysiology of asthma
3. Pathogenesis and pathophysiology of emphysema
4. Pathophysiology of chronic bronchitis

5. Restrictive lung disorders

Recommended reading for this discipline:
[1] Kumar V., Abbas A.K., Aster J.A. Robins and Cotran Pathologic Basis of Disease. 2015
[2] Harsh Mohan Textbook of Pathology 2015
[3] Calor Mattson Porth. Essentials of pathophysiology. 2019
[4] Lecture materials

Unit 2. Key questions covered in lesson 6: The syndrome of obstructive airway disease (COPD, bronchial asthma).
1. Common features of obstructive lung diseases.
2. Chronic bronchitis: clinical features, physical examination, diagnostics.
3. Emphysema: clinical features, physical examination, diagnostics.
4. Bronchial asthma: clinical features, physical examination, diagnostics.

Recommended reading for this discipline:
[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.

Unit 2. Key questions covered in lesson 7: Restrictive lung diseases, the syndrome of consolidation of pulmonary tissue (community acquired pneumonia, nosocomial pneumonia, aspiration pneumonia).
1. Differences between obstructive and restrictive lung diseases.
2. Pneumonia: classification, types - lobar, bronchopneumonia, interstitial pneumonia – clinical features, physical examination, diagnostics.
3. Atelectasis: types, clinical features, physical examination, diagnostics.

Recommended reading for this discipline:
[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.

Unit 2. Key questions covered in lesson 8: X-ray findings of consolidation of lungs.
1. Bacterial and viral pneumonia
2. Atelectasis
3. CT signs of pulmonary embolism
4. X-ray signs of sarcoidosis
5. X-ray signs of central and peripheral lung cancer
6. Lung abscess
7. Pneumoconiosis
8. Analysis of opacities on X-ray.

Recommended reading for this discipline:
[1] Mayur Arun Kulkarni, Saurabh S Patil, Amit M Shetty. Conceptual Review of Radiology. Nothing beyond for PGMEE, 2018.

Unit 2. Key questions covered in lesson 9: X-ray findings of hyperinflation of lungs.
1. Bronchial obstruction, classification based on mechanism. Emphysema.
2. X-ray and CT signs of bronchiectasis, bullae.
3. Analysis of hyperinflation on X-ray.

Recommended reading for this discipline:
[1] E. Scott Pretorius, Jeffrey A. Solomon. Radiology Secrets Plus (3d edition), 2011.

Unit 2. Key questions covered in lesson 10: Unit 2 control.
1. Obstructive lung diseases – COPD – chronic bronchitis + emphysema, bronchial asthma. Causes, pathogenesis, clinical features, diagnostics. Causes, pathogenesis, clinical features, physical examination findings, diagnostics.
2. Restrictive lung diseases: causes, types, pathophysiology, differences with obstructive.
3. Pneumonia: lobar, bronchopneumonia, interstitial. Pathological stages of pneumonia. Diagnosis, physical examination findings.
4. Atelectasis, main types, diagnostics.

Recommended reading for this discipline:
[1] References listed above
[2] Lecture notes

Unit 3. Key questions covered in lesson 11: Pulmonary circulation. Pathophysiology of lung congestion.

1. Major pulmonary vascular disorders
2. Pulmonary embolism
3. Pulmonary hypotension
4. Pulmonary hypertension
5. Pulmonary edema

Recommended reading for this discipline:

[1] Kumar V., Abbas A. K., Aster J.A. Robins and Cotran Pathologic Basis of Disease. 2015
[2] Harsh Mohan Textbook of Pathology 2015
[3] Calor Mattson Porth. Essentials of pathophysiology. 2019
[4] Lecture materials

Unit 3. Key questions covered in lesson 12: Pathophysiology of the respiratory failure.

1. Definition, etiology, pathogenesis and classification of respiratory failure
2. Type I respiratory failure. Etiology, pathogenesis
3. Type II respiratory failure. Etiology, pathogenesis

Recommended reading for this discipline:

[1] Kumar V., Abbas A.K., Aster J.A. Robins and Cotran Pathologic Basis of Disease. 2015
[2] Harsh Mohan Textbook of Pathology 2015
[3] Calor Mattson Porth. Essentials of pathophysiology. 2019
[4] Lecture materials

Unit 3. Key questions covered in lesson 13: Pleural space occupying diseases (pneumothorax, pleural effusion, lung abscess).

1. Pneumothorax: types – open, closed, tension, spontaneous; causes, clinical features, physical examination, diagnostics.
2. Pleural effusion: exudate and transudate, clinical features, physical examination, diagnostics.
3. Lung abscess: causes, types, clinical features, physical examination, diagnostics.

Recommended reading for this discipline:

[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.

Unit 3. Key questions covered in lesson 14: Pulmonary embolism, pulmonary hypertension, cor pulmonale. Respiratory failure, ARDS.

1. Pulmonary embolism: risk factors, pathophysiology, clinical features, diagnostics – ventilation to perfusion ratio, X-ray findings, ABGA.
2. Pulmonary hypertension: etiology, pathophysiology, clinical features, diagnostics.
3. Pulmonary edema – cardiogenic, non-cardiogenic. ARDS: causes, clinical features, diagnostics.

Recommended reading for this discipline:

[1] Braunwald E. Harrison's principles of Internal Medicine.Vol.2, 2005.
[2] Ralston S.H. Davidson's Principles and Practice of Medicine, 23th ed., 2018.

Unit 3. Key questions covered in lesson 15: X-ray sings of pleural effusion and pneumothorax.

1. Analysis of bronchovascular markings and hilum. Differential diagnosis of pulmonary venous and arterial hypertension.
2. Mechanisms and X-ray signs of pulmonary edema.
3. ARDS
4. Types and X-ray signs of hydrothorax and pneumothorax.

Recommended reading for this discipline:

[1] E. Scott Pretorius, Jeffrey A. Solomon. Radiology Secrets Plus (3d edition), 2011.

Unit 3. Key questions covered in lesson 16: Unit 3 submission.

1. Pneumothorax – types, causes, pathophysiology, clinical presentation, physical examination findings, diagnostics.
2. Pleural effusion – exudate, transudate, chylous effusion, pathophysiology, clinical presentation, physical examination findings, diagnostics.
3. Pulmonary embolism – risk factors, pathway of blood clot travelling. Hemodynamics. How changes V/Q ratio. Clinical presentation, diagnostics – chest X-ray findings.

4. Pulmonary hypertension – causes, types, hemodynamics. Clinical presentation, diagnostics.
5. Pulmonary edema – cardiogenic and non-cardiogenic. Hemodynamics.

Recommended reading for this discipline:
[1] References listed above
[2] Lecture notes

Unit 4. Key questions covered in lesson 17: Anatomy and physiology of the respiratory system in children.
1. The anatomical and physiological features of the respiratory system in children (Nose, pharynx, larynx, trachea, bronchi and bronchioles, alveoli).
2. Breathing rate at different age in children.

Recommended reading for this discipline:
[1] O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
[2] Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 20th ed. 2015.

Unit 4. Key questions covered in lesson 18: Physical examination of the respiratory system in children.
1. Taking history: complaints, history of present illness, history of past medical history of children with respiratory diseases.
2. Estimation of chest excursion and mobility of lower edge of lung.
3. Peculiarities of chest percussion in children of different age groups.
4. Breath sounds: normal – vesicular, bronchial and bronchovesicular sounds, additional sounds – wheeze, rales, crackles.

Recommended reading for this discipline:
[1] O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
[2] Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 20th ed.2015.

Unit 4. Key questions covered in lesson 19: Main clinical syndrome of respiratory pathology in children.
1. Taking history: complaints, history of present illness, past medical history of children with obstruction of upper respiratory tract.
2. Clinical features, investigations, and management principles of upper respiratory infections: common cold, pharyngitis, epiglottitis, retropharyngeal abscess, foreign bodies aspiration.

Recommended reading for this discipline:
[1] O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
[2] Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 20th ed.2015.

Unit 4. Key questions covered in lesson 20: Laboratory and instrumental investigations of respiratory system in children.
1. Taking history: complaints, history of present illness, history of past medical history of children with lower respiratory tract diseases.
2. Sputum analysis, arterial blood gas analysis, chest X-ray, bronchoscopy, spirometry (the lung function test), pulse oximetry, peak flowmetry.

Recommended reading for this discipline:
[1] O.P. Ghai. Essential Pediatrics- 8th Edition 2015.
[2] Nelson. Essentials of Pediatrics / Richard E. Berhman, Robert M. Kliegman – 20th ed.2015.

Unit 4. Key questions covered in lesson 21: Unit 4 control.
1. The anatomical and physiological features of the respiratory system in children (Nose, pharynx, larynx, trachea, bronchi and bronchioles, alveoli).
2. Physical examination of the respiratory system in children.
3. Upper airway obstruction in children, causes, clinical presentation.
4. Lower respiratory tract pathology – ARDS.
5. Laboratory and instrumental investigation of respiratory system in children: sputum analysis, arterial blood gas analysis, chest X-ray, bronchoscopy, spirometry (the lung function test), pulse oximetry, peak flowmetry.

Recommended reading for this discipline:
[1] References listed above
[2] Lecture notes

Methodological instructions for the implementation of independent work on the discipline

Methodological instructions for making an abstract:

1. To study the curriculum and the working curriculum.
2. Determine the place of the topic of this lecture in the structure of the discipline according to the thematic plan.
3. Find out all the issues that need to be studied.
4. To study material, which is in the syllabus, to clarify the amount of missing material on the basis of control questions, tasks for control work and questions submitted for the module (see the program discipline and the working curriculum).
5. Determine the literature in which there is the necessary educational material, and the sequence of its assimilation.
6. To process each educational material in the following way.
7. Read it in dynamics to understand the general essence.
8. Read the study material a second time, understanding each word and sentence
9. For the third time to identify the basic concepts, the essence of phenomena and processes, their structure and content, as well as the links between them.
10. Write it all down in a synopsis.
11. To establish a connection with the previous educational material.
12. Independently answer all control questions on this topic.

Methodological instructions for independent work:

1. Study the theoretical material well; master the method of applying knowledge in practice.
2. Be able to use the necessary equipment, materials, equipment for measurements.
3. To study the recommendations for specific laboratory or practical work, which are set out in textbooks and methodological developments.
4. Plan for laboratory or practical work.
5. Prepare the necessary material.
6. Perform tasks of laboratory or practical work.
7. Interpret the results and describe the identified phenomena.
8. Draw conclusions.
9. Draw up everything accordingly.