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FACULTY OF MEDICINE

STUDY PROGRAM S.07.O.060 MEDICINE

DEPARTMENT OF INTERNAL MEDICINE

APPROVED

at the meeting of the Commission for Quality Assurance and Evaluation of the Curriculum Faculty of Medicine
Meeting Protocol No 1 from 16.09.2021
Chairman, doctor habilitatus in medicine, professor
Suman Serghei

APPROVED

by the Council of Medicine Faculty No. 1
Meeting Protocol No. _1_ from 21.09.2021
Dean of Medicine Faculty No.1,
doctor habilitatus in medicine, associate professor
Gheorghe Plăcintă

APPROVED

at the meeting of Pneumology and Allergology Discipline

Meeting Protocol No. _2_ from _14.09.2021

Head of chair, doctor habilitatus in medicine, professor

Botnaru Victor

(signature)

SYLLABUS (Analytical Program) Pneumology Discipline Integrated studies

Type of course: **Compulsory**

Curriculum developed by a group of authors:

Botnaru Victor, doctor habilitatus in medicine, professor

Calaraș Diana, Ph.D., associate professor

Chișinău, 2021



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I. INTRODUCTION

- **General presentation of the discipline: place and role of the discipline in the formation of the specific competences of the professional training program.**

Pulmonology is an integrative, interdisciplinary medical discipline, is one of the major medical specialties in the undergraduate training of doctors regardless of the specialty they choose later. The topics discussed at this discipline will give the opportunity to gain the necessary knowledge and skills for identifying and confirming the correct diagnosis based on history, physical examination and instrumental investigations results, identify the diseases for the differential diagnosis, gain necessary skills for emergency cases, and to earn expertise in the treatment and prevention of lung diseases.

- **Mission of the curriculum in professional training**

Gaining necessary knowledge and skills to establish the correct diagnosis, to prescribe the optimal treatment and give recommendation for prevention of lung disease, as well as for social reintegration of these patients.

- Languages of the course: Romanian, English;
- Beneficiaries: students of the 4th year, Faculty of Medicine No 1 and No 2, specialty Medicine.

II. MANAGEMENT OF THE DISCIPLINE

Code of the discipline	S.07.O.060		
Name of the discipline	Pneumology		
Person in charge of the discipline	doctor habilitatus in medicine, professor Victor Botnaru		
Year	IV	Semester/Semesters	7/8
Total number of hours, including:			120
Lectures	30	Practical/laboratory hours (just one)	24
Seminars	24	Self-training	42
Form of assessment	E	Number of credits	4

III. TRAINING AIMS OF THE DISCIPLINE

At the end of the course study, the student will be able to:

At the level of knowledge and understanding:

- to know and to use correctly the specific terms for pneumology discipline
- to identify the links between the pathological and clinical aspect of lung disease
- to gain knowledge in clinical aspects and treatment of respiratory disease



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At the implementation level:

- to perform physical examination of a patient with lung diseases
- to give an interpretation of a chest radiography, computed tomography, spirometry, body plethysmography, arterial blood gases, pleural puncture and biopsy, bronchoscopy and thoracoscopy, and to know the principles of administering inhaled medications.
- to provide emergency care in critical situations related to respiratory diseases: *foreign bodies* in the trachea/*bronchial* tree, hemoptysis, bronchial asthma attacks, etc.
- to elaborate scientific research projects in the field of pneumology

At the integration level:

- to be able to use pathological, pathophysiological, pharmacological knowledge in the context of respiratory diseases;
- to develop clinical thinking, based on identifying clinical syndromes that fit a certain diagnosis, to perform differential diagnosis of different respiratory diseases with similar syndromes;
- to have a creative approach to clinical medicine issues;
- to implement and integrate the obtained knowledge in pneumology in clinical context;
- to create interrelations between respiratory diseases and other medical disciplines; (allergology, oncology, intensive care, physiology)
- to be able to comprehend new trends in the respiratory diseases and to integrate them in other medical disciplines.

IV. CONDITIONS AND REQUIREMENTS

For good results in learning pneumology are required the following:

- to know and speak the teaching language;
- to possess digital competences (internet use, document processing, electronic tables and powerpoint presentations);
- to be able to communicate and work in team;
- qualities - tolerance, compassion, autonomy.
- good knowledge of the fundamental sciences: anatomy, microbiology, medical semiology, normal and pathological physiology, etc.)

V. THEMES AND ESTIMATE ALLOCATION OF HOURS

Lectures, practical hours/ laboratory hours/seminars and self-training

Nr. d/o	THEME	Number of hours		
		Lectures	Practical lessons	Individual work
1.	Approach to the patient with respiratory disease	3	3	4
2.	Pulmonary radiological syndromes	3	2	4
3.	Acute and chronic bronchitis. Bronchiectasis	2	1	3
4.	COPD	2	1,5	3
5.	Obstructive sleep apnea	2	1,5	2
6.	Bronchial asthma	4	2,5	4



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Nr. d/o	THEME	Number of hours		
		Lectures	Practical lessons	Individual work
7.	Pneumonia	4	2.5	4
8.	Lung abscess. Lung cancer	2	2	2
9.	Interstitial lung disease	2	2	4
10.	Pleurisy	2	2	4
11.	Pulmonary Hypertension. <i>Cor pulmonale</i>	2	2	4
12.	Respiratory failure	2	2	4
Total		30	22	42

VI. PRACTICAL SKILLS ACQUIRED AT THE END OF THE COURSE

The essential mandatory practical skills are:

- Identification clinical signs of pulmonary consolidation syndrome.
- Identification of clinical signs of fluid pleural syndrome.
- Identification of clinical signs of pleural arial syndrome.
- Identification of clinical signs of bronchial syndrome.
- Identification of clinical signs of hyperinflation syndrome.
- Identification of clinical signs suggestive of acute/chronic hypoxemia.
- Identification of clinical signs of obstructive syndrome.
- Prioritization of the necessary investigations with indication of the expected outcome to support the diagnosis in a patient with lung lesions (bronchial asthma, pneumonia, COPD, lung abscess, lung cancer, pulmonary tuberculosis, sarcoidosis, etc.).
- Interpretation of deviations in hematological and biochemical test results in a patient with lung injury (consolidation syndrome, pleural syndrome, pneumothorax, hyperinflation syndrome, cavitary syndrome, interstitial syndrome, etc.)
- Bacterioscopic and bacteriological examination of sputum: indications, collection technique, interpretation.
- Pleural fluid examination: indications, technique of collection, interpretation.
- Interpretation of the results of chest imaging (radiography, HRCT) in various lung pathologies, highlighting elementary radiological changes and main radiological syndromes in chest pathology.
- Pulse oximetry: the method of performing pulse oximetry, interpretation of results.
- The 6-minute walk test: the method of performing it, the pathologies in which it is applied, interpretation.
- Spirometry: technique, assessment of the type of ventilatory dysfunction according to the obtained data.
- Spirometry with bronchodilator test: technique, assessment of the type of obstruction according to the obtained results.
- Bodyplethysmography: assessment of the type of ventilatory dysfunction according to the results obtained.



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- Measurement of carbon monoxide diffusing capacity (DLCO): principles of the method, technique, interpretation of results.
- How to use the peak-flow meter. Pef-metry and pef-metry with bronchodilator: performing technique, interpretation of results.
- Arterial blood gas evaluation: principles of the method, interpretation of results.
- Thoracentesis: the performing technique, indications, particularities.
- Bronchoscopy and endoscopic techniques of sampling. Performing technique, interpretation of results.
- Bronchoalveolar lavage: technique, indications, interpretation of results.
- Ultrasonographic examination in pulmonary pathology: technique, interpretation of results.
- Polysomnography: technique of performance, interpretation of polysomnograph patterns.
- ECG: technique of performance, interpretation of results with identification of electrocardiographic signs suggestive of pulmonary heart disease.
- Echocardiography: interpretation of results with identification of echographic signs suggestive of *cor pulmonale*, pulmonary hypertension.

VII. REFERENCE OBJECTIVES OF CONTENT UNITS

Objectives	Content units
Chapter 1. Clinical assessment of the patient with respiratory disease	
- To define	- Clinical pulmonary syndromes
- To know	- List of clinical lung syndromes - Physical landmarks of clinical pulmonary syndromes (inspection, palpation, percussion, auscultation) Clinical laboratory reference values used in pneumology - Spectrum of investigations used in pneumology - Laboratory investigations used in pulmonology - Sputum investigation methods (microscopic, microbiological, molecular genetic) - Role of serological tests in pulmonology - Reference values and interpretation of common laboratory investigations used in pulmonology - Lung Function Tests and Lung Function Patterns
- To demonstrate	- Ability to identify changes in paraclinical tests and interpret them in a clinical context - Ability to draw up a differential diagnosis list with entities presenting with similar paraclinical picture
- To apply	- Knowledge and practical skills in a clinical context
- To integrate	- Knowledge in the areas of basic, preclinical and clinical disciplines
Chapter 2. Pulmonary radiological syndromes	
- To define	- Pulmonary radiological syndromes
- To know	- Elements of normal radiology - X-ray exposure regimes



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Objectives	Content units
	<ul style="list-style-type: none">- Anatomical landmarks on a normal X-ray/computed tomography scan- Syndromes and signs of radiological syndromes
- To demonstrate	<ul style="list-style-type: none">- Ability to identify radiological syndrome on a radiograph- Ability to draw up a differential diagnostic list of entities presenting with similar radiological picture
- To apply	<ul style="list-style-type: none">- Knowledge and practical skills in a clinical context
- To integrate	<ul style="list-style-type: none">- Knowledge in the areas of basic, preclinical and clinical disciplines
Chapter 3. Acute and chronic bronchitis. Bronchiectasis	
- To define	<ul style="list-style-type: none">- The entities listed emphasizing the basic landmarks of each definition according to the corresponding disease
- To know	<ul style="list-style-type: none">- Incidence, etiology, pathogenesis and classification of clinical forms (as appropriate)- Clinical features of the diseases;- Laboratory and instrumental paraclinical diagnostic steps- Groups of medicines used and principles of treatment
- To demonstrate	<ul style="list-style-type: none">- Ability to identify changes in paraclinical tests and interpret them in a clinical context- Ability to distinguish between nozological entities and to list diagnostic methods of certainty- Ability to make differential diagnosis list with entities with similar clinical and paraclinical picture- Ability to select optimal treatment according to the identified clinical syndrome
- To apply	<ul style="list-style-type: none">- The theoretical knowledge in clinical practice: making and assessing a peak flow test, a bronchodilator test, a sweat test, 6-minutes walk test.- Knowledge and practical skills gained at the clinical examination of the patient
Chapter 4. COPD	
- To define	<ul style="list-style-type: none">- Chronic obstructive pulmonary disease- Criteria for diagnosing COPD
- To know	<ul style="list-style-type: none">- Epidemiological data on the incidence and prevalence and role of COPD in the structure of mortality- Etiology, risk factors- The role of smoking in the development of COPD- Pathogenesis and classification (by GOLD and by type)- Phenotypes- Stages of laboratory and instrumental paraclinical diagnosis- Groups of medicines used- Principles of non-drug treatment: smoking cessation (patient support during nicotine withdrawal), endoscopic and surgical methods of lung reduction
- To demonstrate	<ul style="list-style-type: none">- Ability to identify changes in paraclinical tests and interpret them in a clinical context- Ability to identify diagnostic methods with certainty



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Objectives	Content units
	<ul style="list-style-type: none"> - Ability to make differential diagnosis list with entities with similar clinical and paraclinical picture - Ability to select the optimal treatment according to severity
- To apply	<ul style="list-style-type: none"> - Knowledge of PEF-metrics, spirometry, bronchodilator test, 6-minute walk test - Knowledge and practical skills gained at the clinical examination of the patient
Chapter 5. Obstructive sleep apnea	
- To define	<ul style="list-style-type: none"> - Sleep disturbances during sleep - Obstructive sleep apnea (SASO) - Criteria for diagnosing SASO
- To know	<ul style="list-style-type: none"> - Incidence, etiology, pathogenesis - The clinical picture - Stages of paraclinical, laboratory and instrumental diagnosis - Principles of treatment - Devices used for treatment
- To demonstrate	<ul style="list-style-type: none"> - Ability to identify clinical signs suggestive of SASO - Ability to interpret changes in paraclinical tests and interpret them in a clinical context - Ability to identify diagnostic methods with certainty - Ability to draw up a differential diagnosis list with entities with similar clinical and paraclinical picture - Ability to select the optimal treatment according to severity and comorbidities
- To apply	<ul style="list-style-type: none"> - Knowledge of PEF-metrics, spirometry, bronchodilator test, 6-minute walk test, interpretation of arterial blood gases, polygraph route - Knowledge and practical skills gained at the clinical examination of the patient
- To integrate	<ul style="list-style-type: none"> - Knowledge of breathing mechanics in obstructive lung diseases with compensatory pathophysiological processes - Knowledge of morpho-pathological changes occurring with their clinical expression - Clinical and paraclinical parameters identified after examination of the patient to assess the severity of the disease
Chapter 6. Bronchial asthma	
- To define	- Bronchial asthma and to emphasize key elements of this disease
- To know	<ul style="list-style-type: none"> - Epidemiological data and the importance of increased awareness for asthma - Risk factors of asthma: predisposing factors, and triggers - The pathogenesis of extrinsic and intrinsic asthma - The clinical picture of an asthma attack, and of acute severe asthma - Classification of asthma: WHO classification, by severity and level of control - Tests that are used to diagnose a patient with asthma - Medication used in treatment of asthma and the principles of treatment



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Objectives	Content units
- To demonstrate	<ul style="list-style-type: none">- Ability to identify clinical signs of obstructive syndrome in the patient- Ability to interpreting the results of laboratory and paraclinical investigations- Select the optimal treatment strategies depending on the severity of asthma
- To apply	<ul style="list-style-type: none">- Knowledge of performing PEF-metry, spirometry, bronchodilator test, asthma test- Knowledge of performing and interpreting allergological skin tests- An algorithmic approach of asthma patients in emergency situations
- To integrate	<ul style="list-style-type: none">- Knowledge of breathing mechanics in obstructive lung diseases with compensatory pathophysiological processes- Knowledge about pharmacological mechanisms of drugs used in asthma with clinical effects
Chapter 7. Pneumonia	
- To define	<ul style="list-style-type: none">- Pneumonia and highlight the key elements of the definition
- To know	<ul style="list-style-type: none">- Epidemiology, classification according to etiology, morphology, extension, site of contraction and evolutionary criteria- Clinical picture of lobar pneumonia- Clinical features of Streptococcal, Staphylococcal pneumonia and pneumonias caused by Gram-negatives and atypical germs- Clinical features of viral pneumonia, including COVID-19- Clinical features of pneumonia in immunocompromised patients- Clinical features of nosocomial pneumonia- Paraclinical methods used to diagnose pneumonia- Empirical treatment of community-acquired and nosocomial pneumonias- Criteria for severity and hospitalization of patients with pneumonia in the general ward and intensive care unit
- To demonstrate	<ul style="list-style-type: none">- Ability to identify the signs of lung consolidation and of inflammatory syndrome in a patient suspected of pneumonia- Ability to identify chest X-ray signs of pulmonary consolidation syndrome- Ability to make a correct interpretation of laboratory and paraclinical investigations results- Knowledge of severity criteria and their identification in the pneumonia patient and their affiliation to pneumonia patient groups- Knowledge of aetiological treatment of pneumonia- Select the optimal empirical treatment regimen
- To apply	<ul style="list-style-type: none">- Knowledge of performing clinical examination in pulmonary condensation syndrome- Management algorithm for patients with pneumonia in emergency situations
- To integrate	<ul style="list-style-type: none">- Knowledge of lung disease morphopathology in the clinical context- Knowledge of the microbiological characteristics of micro-organisms (enzymatic endowments, virulence, living conditions required) and the clinical evolution of pneumonia according to them



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Objectives	Content units
	<ul style="list-style-type: none"> - Knowledge of the pathophysiological mechanisms of lung tissue repair and possible complications of pneumonia - Knowledge of pharmacological mechanisms of antibacterial medication used in pneumonia and their spectrum of action depending on the etiology of pneumonia
Chapter 8. Lung abscess. Necrotizing pneumonia. Lung cancer.	
- To define	- Lung abscess. Necrotizing pneumonia. Lung cancer
- To know	<ul style="list-style-type: none"> - Epidemiological data of lung abscess - Etiology of lung abscess - Risk factors associated with lung abscess - The morphological stages of a lung abscess, as well as the morphological appearance in pulmonary gangrene - Clinical picture of lung abscess and pulmonary gangrene - Complications of lung abscess - Differential diagnosis in cavitory syndrome - Principles of pharmacological and non-pharmacological treatment in lung abscess - Epidemiological data of lung cancer - Risk factors associated with lung cancer - Classification of lung cancer - Clinical picture of lung cancer - Associated paraneoplastic syndromes - Diagnostic methods in lung cancer - Principles of treatment in lung cancer - Classification of lung cancer
- To demonstrate the ability	<ul style="list-style-type: none"> - Ability to identify the physical signs of cavitory syndrome in patients with lung abscess - Ability to identify signs of cavity syndrome on chest x-ray and be able to make a differential diagnosis based on the appearance of the cavity - Ability to interpret the results of laboratory and paraclinical investigations - To select the optimal treatment depending on the etiology and bacterial sensitivity - To select the possible treatments depending on the morphological type of lung cancer
- To apply	<ul style="list-style-type: none"> - Knowledge related to clinical examination of patients with cavitory syndrome - Knowledge related to the identification of paraneoplastic syndromes
- To integrate	<ul style="list-style-type: none"> - Knowledge of the morphopathology of lung disease in the clinical context - Knowledge of the morphological features of lung cancer and its evolution and response to treatment - Knowledge of the microbiological characteristics of microorganisms (enzymatic endowments, virulence, living conditions required) and the clinical evolution of lung abscess according to them



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Objectives	Content units
	<ul style="list-style-type: none">- Knowledge of the pharmacological mechanisms of antibacterials used in pulmonary suppurations and their spectrum of action- Knowledge of the molecular interaction of the tumor cell with the cells of the immune system in the context of the biological treatment of lung cancer
Chapter 9. Interstitial lung disease	
<ul style="list-style-type: none">- To define	<ul style="list-style-type: none">- Interstitial lung diseases (ILD). Idiopathic pulmonary fibrosis (IPF). Sarcoidosis
<ul style="list-style-type: none">- To know	<ul style="list-style-type: none">- Classification of Interstitial lung diseases.- Classification of Idiopathic interstitial pneumonias.- Clinical presentation of IPF- Clinical presentation of sarcoidosis- Paraclinical investigations in diagnosing IPF and sarcoidosis- Extrapulmonary manifestations of sarcoidosis- Principles of treatment of IPF and sarcoidosis- Indications for treatment in sarcoidosis
<ul style="list-style-type: none">- To demonstrate	<ul style="list-style-type: none">- Ability to identify signs of interstitial syndrome in the patient with IPF abscess- Ability to identify signs of interstitial syndrome on chest x-ray and be able to make a differential diagnosis depending on the appearance of opacities- Ability to interpret the results of laboratory and paraclinical investigations- To select the optimal treatment depending on the entity
<ul style="list-style-type: none">- To apply	<ul style="list-style-type: none">- Knowledge related to performing the clinical examination in the patient with interstitial syndrome- Knowledge of 6 minute walking test- Knowledge of performing and interpreting spirometry, bodyplethysmography and DLCO
<ul style="list-style-type: none">- To integrate	<ul style="list-style-type: none">- Knowledge of the morphological features of idiopathic pulmonary fibrosis and sarcoidosis and their response to treatment
Chapter 10.	Pleurisy
<ul style="list-style-type: none">- To define	<ul style="list-style-type: none">- Pleurisy
<ul style="list-style-type: none">- To know	<ul style="list-style-type: none">- Physiology of pleural fluid production and absorption.- Classification of pleural syndromes- Etiology of pleurisy- Clinical picture of pleural syndrome depending on pleural content.- The spectrum of investigations used to identify the etiology of pleurisy- Light criteria for differentiating exudate of transudate.
<ul style="list-style-type: none">- To demonstrate	<ul style="list-style-type: none">- Ability to identify clinical signs of pleural syndrome- Ability to identify the radiological signs of pleural syndrome
<ul style="list-style-type: none">- To apply	<ul style="list-style-type: none">- Knowledge about thoracentesis- Knowledge related to a correct interpretation of the laboratory examination of the pleural fluid



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Objectives	Content units
- To integrate	- Knowledge about thoracic anatomy and pathogenesis of pleurisy
Chapter 11. Pulmonary hypertension. <i>Cor pulmonale</i>	
- To define	- Pulmonary hypertension. Chronic pulmonary heart.
- To know	- Classification of pulmonary hypertension according to several criteria - The etiological spectrum of pulmonary hypertension and the pathogenetic mechanisms - Clinical picture of the chronic pulmonary heart - The spectrum of investigations used to diagnose pulmonary hypertension - Conventional and unconventional treatment of pulmonary hypertension
-To demonstrate	- Ability to identify signs of pulmonary heart disease in a patient with pulmonary hypertension - Ability to identify changes in electrocardiography in a patient with a pulmonary heart attack - Ability to identify changes in echocardiography in a patient with pulmonary hypertension
- To apply	- Knowledges related to Clinical Examination of patients with pulmonary cord - Knowledges related to six-minutes walk test
- To integrate	- Knowledge of large and small circuit anatomy and clinical signs of pulmonary heart disease - Knowledge of the pharmacological mechanisms of drugs used for the treatment of pulmonary hypertension and the pathogenetic mechanisms of induction of pulmonary hypertension
Chapter 12.	Respiratory failure
- To define	- Respiratory failure
- To know	- Pathogenetic classification, according to the speed of installation and the degree of severity of respiratory failure - Pathogenesis of respiratory failure - Clinical picture of respiratory failure - Paraclinical examinations to assess the degree of respiratory failure - Treatment of respiratory failure
- To demonstrate	- Ability to interpret blood gas and degree of compensation
- To apply	- Knowledge about measuring the oxygen saturation and performing blood gas tests
- To integrate	- Knowledge about pathophysiological mechanisms of respiratory failure and compensatory mechanisms in respiratory disorders

VIII. PROFESIONAL SKILLS (SPECIFIC, TRANSVERSAL) AND FINAL



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OUTCOMES.

Professional skills (specific):

- CP1. Responsible execution of professional tasks with the application of the values and rules of professional ethics and the provisions of the legislation in force.
- CP2. Adequate knowledge of the sciences of body structure, physiological functions and behavior of the human body in various physiological and pathological states, as well as the relationships between health, physical and social environment.
- CP3. Solving clinical cases by building diagnostic, treatment and rehabilitation plans in various pathological situations and selecting appropriate therapeutic procedures for them, including providing emergency care.
- CP4. Promoting a healthy lifestyle, applying preventive and self-care measures.
- CP5. Interdisciplinary integration of the doctor's work in the team with efficient use of all resources.
- CP6. Conducting scientific research in health and other areas of science.

Transversal competences (TC)

- CT1. Autonomy and responsibility in work.

Study outcomes

- To know the features in the evolution of respiratory diseases.
- To know differential diagnosis of respiratory tract diseases.
- To know the role of clinical, laboratory and instrumental investigations in the diagnosis of lung diseases.
- Be able to select the optimal treatment for patients with different lung diseases.
- Be able to deduce the interrelationships between pulmonology and other medical disciplines (phtysiology, oncology, cardiology) by performing multidisciplinary integration.
- To be able to take on board new developments in pulmonology on a daily basis.

IX. STUDENT'S SELF-TRAINING

No.	Expected product	Implementation strategies	Assessment criteria	Implementation terms
1.	Work with information sources	Reading the material presented in the course and in the textbook on the topic Highlight topics that need reflection Get acquainted with the list of additional information sources on the respective topic	The ability to extract the essential; Acting skills; Volume of work	Throughout the semester



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		Formulation of generalizations and conclusions regarding the importance of the approached topic.		
2.	Working with materials online	Studying online materials on sites with databases and specialized literature	Present the results at seminars	Throughout the semester
3.	Application of various learning techniques		Volume of work Degree of insight into the essence of the subject Level of scientific argument Quality of conclusions Elements of creativity Demonstration of clinical reasoning Demonstration of practical skills	Throughout the semester
4.	Examination of patients during practical work	Clinical examination of the patient, identification of the clinical syndrome directly in the patient, in laboratory and instrumental examination, learning the algorithm of diagnosis, differential diagnosis and individual treatment	Correct formulation and reasoning of the diagnosis, investigation and treatment plan of the specific patient.	Throughout the semester
5.	Preparation and presentation of research	Selection of the theme of presentations and terms of delivery	Volume of work Degree of insight into the essence of the subject Level of scientific argumentation Quality of conclusions Elements of creativity Personal attitude formation Graphic presentation Presentation mode	Throughout the semester

X. METHODOLOGICAL SUGGESTIONS FOR TEACHING-LEARNING-ASSESSMENT

- **Teaching and learning methods used**

The discipline of pneumology is taught in the classical manner: lectures, signings and practical work.

The theoretical support will be read in *theoretic lessons*.

Practical work consists of:



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Patient care - the student examines and observes patients assigned to supervision on a daily basis. He/she participates in the patient's diagnostic process by being present at paraclinical examinations and specialist consultations.

The lecturer visits the patient with each student by checking the student's skill in collecting the anamnesis, physical examination of the patient, complete the clinical observation file, make the diagnosis, indicate the treatment, etc. Particular attention will be paid to clinical thinking, differential diagnosis, rationale for selecting the medication of choice.

The student studies the particularities of disease progression in the treated patients and the effectiveness of the treatment. Participates in clinical and clinical-morphological conferences.

At the **seminars** is being discussed and analyzed the most important chapters of pneumology, such as etiology, pathophysiology, clinical picture, diagnosis and differential diagnosis, treatment and prophylaxis of lung diseases.

Seminars can be conducted in a classical manner, in the form of discussion, or applying modern pedagogical methods that emphasize individual study by the student, teamwork skills, and creative work with guidance or direction from the lecturer of the seminar course. For each chapter discussed the lecturer makes a generalization.

The seminars can also be based on the analysis of clinical cases - will be selected cases whose diagnosis is more difficult, or patients with rarer pathologies of theoretical and practical interest. During the case study, students will identify certain clinical and laboratory features, and then by delving deeper into the theoretical subject they will be able to identify the entity and establish the diagnosis of the case discussed. The particularities of the evolution of the disease and cases of atypical evolution of the disease will be studied and analyzed. Differential diagnosis will be discussed. The treatment will be indicated, with a justification of each indication

- **Applied teaching strategies / technologies (discipline-specific):**

"Group Interview"; "Case Study"; "The round table"; practical work at the patient's bedside.

- **Methods of assessment:**

Current: frontal and / or individual control by:

- discussion;
- analysis of clinical cases;
- solving the problems/clinical cases;
- evaluation tests.

At the Pneumology discipline the students' knowledge will be assessed on a daily basis and at the end of the sections they will be graded in the totalizations.

Final: examination, which consists of:

- grid tests
- theoretical assessment based on interview-type discussion of the selected topics
- practical assessment based on solving of a clinical case.

Rounding of final marks

Intermediate marks (media avarage, practical exam, american test)	National mark system	Equivalent ECTS
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	



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5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-8,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	

The annual average mark will be composed of the arithmetic average of the marks obtained in the current assessments.

The final examination consists of 3 components: computer-assisted test, theoretical oral answer, practical skills (clinical case)). The marks for the last 2 components will be expressed in numbers according to the grading scale (see table). The final mark will be obtained by applying the following formula:

$$\text{Final mark} = (\text{Annual average mark} \times 0,3) + (\text{Practical skills} \times 0,2) + (\text{Grid test} \times 0,2) + (\text{Oral theory answer} \times 0,3)$$

The final mark obtained will be expressed as a number with two decimals, which will be entered in the mark book.

The absence from the exam without any serious reason is marked as "absent" and is equivalent to 0 (zero). The student has the right to have two re-examinations.

XI. RECOMMENDED LITERATURE:

A. Compulsory:

1. Botnaru V. Pneumologie. Tipografia Balacron. Chișinău 2019
2. Botnaru V. Medicină internă. Breviar Modulul Pneumologie. Tipografia centrală. Chișinău 2009
3. Botnaru V. Evaluarea funcțională respiratorie. Tipografia centrală. Chișinău 2007
4. Botnaru V. Pneumologie în tabele și cazuri clinice. Tipografia Balacron. Chișinău 2020

B. Additional:

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