

# **PEOPLES UNIVERSITY OF MEDICAL & HEALTH SCIENCES FOR WOMEN (SBA)**



**Respiratory Module  
(RSP 1)**

**Semester II**

**First Year MBBS**

## FIVE YEAR CURRICULAR ORGANIZATION

Spiral	year	Mod ules			
First Spiral	I	<b>FND1- Foundation</b> Cell, Genetics & Cell Death (Basics of Anatomy, Physiology, Biochemistry, Gen. Pathology, Gen. Pharmacology, Community Medicine & Behavioral Sciences, <b>9 Weeks</b>		<b>HEM1- Blood Module</b> Immunity, Inflammation, Tissue repair, Antimicrobials & Neoplasia <b>9Week</b>	
		<b>LCM1- Locomotion</b> Bones, Joints, Nerves & Muscles, 9weeks	<b>RSP1- Respiratory System 4 weeks</b>	<b>CVS1- Cardiovascular System 4 weeks</b>	
	II	<b>NEU1- Nervous System 8 weeks</b>		<b>HNN1- Head &amp; Neck &amp; Special 6 weeks</b>	<b>END1- Endocrinology 5weeks</b>
		<b>GIL 1-GIT and Liver 8 weeks</b>		<b>EXC1- Renal and Excretory System 5 weeks</b>	<b>REP1- Reproductive System 5 weeks</b>
Second Spiral	III	<b>IDD 1- Infectious diseases 5 weeks</b>	<b>HEM2- Hematology 5 weeks</b>	<b>RSP2- Respiratory System 5 weeks</b>	<b>CVS2- Cardiovascular System 5 weeks</b>
		<b>GIL 2-GIT and Liver (including Nutritional Disorders) 8weeks</b>		<b>EXC2- Renal &amp; Excretory System 5 weeks</b>	<b>END2- Endocrinology 5 weeks</b>
	IV	<b>ORT2- Orthopedics, Rheumatology, Trauma 7 weeks</b>	<b>REP2- Reproductive System 8 Weeks</b>	<b>PMR-Physical Medicine &amp; Rehabilitation DPS-Dermatology Plastic Surgery / Burns GEN-Genetics 6 weeks</b>	
		<b>NEU2- Neurosciences and Psychiatry 8 weeks</b>		<b>OPH / ENT* 4 weeks</b>	<b>ENT/OPH * 4 weeks</b>
Third Spiral	V	Clinical Rotation 9:30 to 3:00 (with Ambulatory, Emergency, Intensive care) In Medicine, Pediatrics, Cardiology and Neurology units <ul style="list-style-type: none"> <li>▪ Lecture on problem based approach, twice a week</li> <li>▪ Ward tutorial twice a week</li> <li>▪ Student research presentation once a week</li> </ul>		Clinical Rotation 9:30 to 3:00 (Inpatient, Ambulatory, Emergency, Intensive care and Operation Theatres) In Surgery, Gynecology & Obstetrics, Orthopedics and Neurosurgery. <ul style="list-style-type: none"> <li>▪ Lecture on problem based approach, twice a week</li> <li>▪ Ward tutorial twice a week</li> <li>▪ Student research presentation once a week</li> </ul>	

## **Rationale:**

In our community there is a high prevalence of respiratory diseases particularly in children, where the leading cause of morbidity and mortality is ARI and pneumonia. To be able to manage these, the basis of oxygen administration and artificial ventilation should be taught in earlier years. The understanding of air flow dynamics will enable the student to understand the diseases like asthma, chronic bronchitis and their remedies. At the same time the diseases related to smoking like lung cancer and chronic bronchitis are also on the rise. A firm understanding of the respiratory system will enable the student to prevent such diseases through spreading relevant health education messages. The student training should also include mechanism and uses of inhalers.

## **Terminal Objectives:**

By the end of respiratory module, the students will be able to:

1. Describe the normal and abnormal structures and functions of respiratory system.
2. Interpret the biochemical changes in the body related to the respiratory system with reference to some common respiratory disorders.
3. Describe normal changes that occur in respiratory system functioning from infancy to old age.
4. Describe the pathophysiology and types of infective respiratory disorders
5. Explain obstructive pathologies involving respiratory system
6. Identify role of respiratory system in controlling acid-base balance
7. Take history and perform a satisfactory physical examination of the respiratory system.

## **LEARNING OBJECTIVES OF THE MODULE**

1. Describe the thoracic cavity development, divisions and relations of constituent structures.
2. Discuss the role of thoracic skeleton in respiration.
3. Explain the developmental and structural anatomy related to respiratory system and associated anomalies.
4. Explain Respiration in relation to (A: Anatomical movements, B: Physiological mechanism, C: Biochemical changes)
5. Recognize the importance of lung volumes and capacities for breathing and diagnosis of disorders.
6. Discuss the mechanism of gaseous exchange, transport and role in metabolism.
7. Compare regular breathing acclimatization in normal and abnormal body states.
8. Recognize the common signs and symptoms of respiratory disorders like cough, hemoptysis, SOB, etc.
9. Describe the Pathophysiology of disorders of respiratory system: ARDS, Pulmonary embolism, COPD / Asthma
10. Enumerate the important and common disorders of the respiratory tract. (Enlist common infections related to upper & lower respiratory tract (URI, LRI))
11. Recognize risk factors, causes, pathogenesis and preventive measures(if any) of various lung diseases.
12. To describe Sources of air pollution.
13. To describe Health hazards of indoor and outdoor air pollution
14. To explain Control measures of air pollution.
15. To describe chemical composition of Tobacco.
16. To describe habits of Tobacco Smoking.
17. To discuss the situation of tobacco in Pakistan
18. To discuss the health effects of Tobacco smoking and passive smoking of tobacco
19. To describe the tobacco control program/ control measure of tobacco.
20. To discuss tobacco free initiative.
21. Define droplet infection,
22. Tuberculosis
23. Problem statement, (Tuberculosis problem in world and in Pakistan)
24. To discuss the etiological Agent. Source of infection, mode of transmission.
25. To describe Environmental Factors as risk factor of developing the Tuberculosis
26. To describe Post Primary Tuberculosis and to discuss the diagnostic method of T.B.
27. To describe the Control measures of Tuberculosis In Pakistan and its Prevention.
28. To define global warming and climate change
29. To discuss greenhouse effect
30. To describe the effects of climate change and Global warming on human health and economy.

## **MODULE CONTENTS:**

### **ANATOMY**

#### **Gross Anatomy:**

1. **RSP 1Ang 1** General description of upper respiratory tract & lower respiratory tract
2. **RSP 1Ang 2** Intro to A.N.S (sympathetic and parasympathetic)
3. **RSP 1Ang 3** Overview of Thorax (Skeleton, wall, Outlet, inlet)
4. **RSP 1Ang 4** Gross Features of sternum
5. **RSP 1Ang 5** General Features + attachment of typical Ribs
6. **RSP 1Ang 6** General Features + attachment of Atypical Ribs
7. **RSP 1Ang 7** General Features of vertebrae+ Curvatures of vertebral column
8. **RSP 1Ang 8** Thoracic vertebrae (typical + atypical)
9. **RSP 1Ang 9** Thoracic cavity, Division & boundaries of mediastinum & Joints of thoracic cage
10. **RSP 1Ang 10** Thoracic inlet- relations & cross – sectional Anatomy
11. **RSP 1Ang 11** Thoracic muscles, wall & Inter costal spaces
12. **RSP 1Ang 12** Diaphragm (Thoracic outlet)
13. **RSP 1Ang 13** Thoracic Movements with respiration (including involvement of abdominal wall)
14. **RSP 1Ang 14** Pleura
15. **RSP 1Ang 15** Gross Lungs
16. **RSP 1Ang 16** Vasculature of Lungs- bronchial & pulmonary
17. **RSP 1Ang 17** Superior mediastinum and its contents
18. **RSP 1Ang 18** Contents of Anterior Mediastinum (Thymus) +Posterior Mediastinum (Thoracic Aorta ,Oesophagus, Azygous vein)
19. **RSP 1Ang 19** Thoracic Sympathetic Trunk,Phrenic and Vagus nerve,Thoracic duct
20. **RSP 1Ang 20** Lymphatics of Thorax

#### **Anatomy Histology:**

1. **RSP 1 Anh1** Respiratory epithelium+Larynx & Trachea
2. **RSP 1 Anh2** Histology of Lungs
3. **RSP 1 Anh 3** Histology of alveolar capillary membrane + general description of tissue arrangement in hollow viscera
4. **RSP 1 Anh 4** Respiratory epithelium + trachea (Practical)
5. **RSP 1 Anh 5** Lungs (Practical)

#### **Anatomy Embryology:**

1. **RSP 1 Ane1** Development of respiratory system & Developmental anomalies of respiratory system
2. **RSP 1 Ane2** Development of ribs & vertebrae

## PHYSIOLOGY

1. **RSP 1Phy 1** Functional organization of respiratory system
2. **RSP 1Phy 2** Mechanics of respiration
3. **RSP 1Phy 3** Surfactant and Lung Compliance
4. **RSP 1Phy 4** Diffusion of gases through respiratory membrane
5. **RSP 1Phy 5** Lung volume and capacities + PFTs
6. **RSP 1Phy 6** Pulmonary circulation V/Q RELATIONSHIP
7. **RSP 1Phy 7** Transport of O<sub>2</sub> in blood and O<sub>2</sub>-Hb dissociation curve
8. **RSP 1Phy 8** Transport of CO<sub>2</sub> in blood
9. **RSP 1Phy 9** Regulation of respiration (Chemical & Neural)
10. **RSP 1Phy 10** Hypoxia & its types
11. **RSP 1Phy 11** Respiratory adjustment to exercise, high altitude and deep sea
12. **RSP 1Phy 12** Introduction to Power Lab with respect to respiration (Practical)
13. **RSP 1Phy 13** To record the normal rate and pattern of breathing and to examine the effects of breath holding on respiration( Practical)
14. **RSP 1Phy 14** To record the effect of voluntary hyperventilation on breath holding & the recovery of normal breathing rhythm (Practical)
15. **RSP 1Phy 15** To determine the Lung Volume & Capacities by spirometry (Practical)

## BIOCHEMISTRY

1. **RSP 1Bio 1** Chemistry of inflammatory mediators in respiratory disorders
2. **RSP 1Bio 2** Role of Buffers in Hydrogen Ions Homeostasis
3. **RSP 1Bio 3** Role of respiratory system for Acidosis
4. **RSP 1Bio 4** Role of respiratory system for Alkalosis + Acid Base Balance
5. **RSP 1Bio 5** Metabolism of Phospholipids and its Role in ARDS
6. **RSP 1Bio 6** Determination of pH (Tutorial)
7. **RSP 1Bio 7** Interpretation of ABG's (Tutorial)
8. **RSP 1Bio 8** Electron transport chain TCA cycle

## PATHOLOGY

1. **RSP 1Pth 1** Congenital anomalies, Atelectasis, Pneumothorax and pleural effusion
  2. **RSP 1Pth 2** Acute respiratory distress syndrome (ARDS) Pulmonary edema
  3. **RSP 1Pth 3** Obstructive lung disease COPD-I (a chronic bronchitis (b Emphysema
  4. **RSP 1Pth 4** COPD-II (a bronchial asthma (b bronchiectasis
  5. **RSP 1Pth 5** Diseases of pulmonary vascular origin
  6. **RSP 1Pth 6** pulmonary infections, Classification of pneumonia, difference between lobar & bronchopneumonia
  7. **RSP 1Pth 7** Pulmonary Tuberculosis
  8. **RSP 1Pth 8** Restrictive lung disease
  9. **RSP 1Pth 9** tumors of Lung
  10. **RSP 1Pth 10** Common Pathogens causing community acquired pneumonia (typical & Atypical )
- COURSE OUTLINE**
11. **RSP 1Pth 11** Microscopic Features of Pneumonia
  12. **RSP 1Pth 12** Microscopic Features of Asthma, Emphysema, Chronic Bronchitis & Bronchiectasis
  13. **RSP 1Pth 13** Microscopic Features of Pulmonary Tuberculosis
  14. **RSP 1Pth 14** Ziehl-Neelsen staining (ZN Stain)

## Microbiology

1. **RSP 1 Mic1** Common pathogens causing community acquired pneumonia (typical and atypical)
2. **RSP 1 Mic2** Zeihl Nelson Staining (Practical)

## COMMUNITY MEDICINE

1. **RSP 1 Com 1** Environmental Health : Air Pollution sources & control/ prevention of air pollution
2. **RSP 1 Com 2** Tobacco and Health: Effete of Tobacco smoking on health of community.
3. **RSP 1 Com 3** Communicable Disease
4. **RSP 1 Com 4** Global warming

## RADIOLOGY

1. **RSP 1 Rad 1** Normal respiratory structure on chest radiograph
2. **RSP 1 Rad 2** CT Scan related to Respiratory system

## Medicine

1. **RSP 1 Med 1** Pulmonary function test
2. **RSP 1 Med 2** ABG's
3. **RSP 1 Med 3** Lab investigation and interpretation for respiratory status
4. **RSP 1 Med 4** Signs & symptoms & Clinical Examination of respiratory system

## Behavioral Sciences

1. **RSP 1 Beh 1** Doctor Patient Relationship
2. **RSP 1 Beh 2** Communication Skills

## Skill Lab and Digital Lab

1. **RSP 1 Skl** Introduction to respiratory system. ( Auscultation of Lungs

## CBL

1. **RSP 1 Cbl1** COPD / Asthma
2. **RSP 1 Cbl2** Pneumonia
3. **RSP 1 Cbl3** Tuberculosis
4. **RSP 1 Cbl4** Pulmonary embolism

## Pharmacology

1. **RSP 1 PH1** Asthma
2. **RSP 1 PH2** Drugs used for treatment of COPD
3. **RSP 1 Cbl3** Drugs used to Treat Allergic Rhinitis
4. **RSP 1 Cbl4** Drugs used to treat cough.

# **LEARNING OBJECTIVE OF SKILL LAB CURRICULUM**

## **I. Introduction To Respiratory System Examination:**

**INTRODUCTION/RATIONALE:** Respiratory system examination is performed as an integral part of physical examination, or when a patient presents with respiratory problems (for example: shortness of breath, cough or chest pain).

**LEARNING OBJECTIVES:** At the end of the session students should be:-

- Familiar with the correct method of inspection, palpation and percussion of chest.  
To demonstrate correct technique of auscultation of chest

## **CASE BASED LEARNING**

### **CBL 1:**

- Enlist different types of COPDs.
- Explain different lung capacities and volumes.
- Interpret the effect of bronchodilators on lung volumes in a obstructive scenario.
- Describe different treatment options for the given pathology.

### **CBL 2:**

- Define pneumonia?
- List the pathogens known to be causative agents of pneumonia?
- Explain the pathogenic mechanism of pneumonia?
- Describe the findings of lung consolidation and discuss its clinical implication?
- Enlist the complications of pneumonia?
- Describe the clinical course of pneumonia?

### **CBL 3:**

- Identify the patient having tuberculosis
- Describe the pathophysiology of the given pathology
- Interpret different types of tuberculosis
- Define the management for the given scenario.

### **CBL 4:**

- To learn types & mechanisms of hypoxia
- To learn common causes of sudden onset of Chest pain
- To learn common causes of acute shortness of breath
- To learn mechanism of hypoxia responsible for acute pulmonary embolism



## ASSESSMENT PLAN

	<b>WEIGHTAGE</b>
<b>ANNUAL EXAM</b>	<b>80%</b>
<b>MODULE EXAM (Internal Evaluation)</b>	
<b>Theory</b>	<b>10%</b>
<b>Practical</b>	<b>10%</b>

<b>CREDIT HOURS</b> <b>RESPIRATION MODULE</b>	
<b>RESPIRATION</b>	<b>4.5</b>

**CONTACT HOURS**

<b>Discipline</b>	<b>Contact Hours</b>
<b>Anatomy</b>	<b>28</b>
<b>Physiology</b>	<b>15</b>
<b>Biochemistry</b>	<b>08</b>
<b>Pathology</b>	<b>12.5</b>
<b>Community Medicine</b>	<b>03</b>
<b>Behavioral Sciences</b>	<b>02</b>
<b>Radiology</b>	<b>02</b>
<b>Microbiology</b>	<b>2.5</b>
<b>CBL</b>	<b>06</b>
<b>Skill Lab</b>	<b>1.5</b>
<b>Medicine</b>	<b>04</b>
<b>Pharmacology</b>	<b>02</b>

## **BOOKS**

### **ANATOMY**

- **CLINICALLY ORIENTED ANATOMY**  
**KEITH.L.MOORE, Arthur F. Dalley, Anne M.R. Agur**  
7<sup>th</sup> or Latest EDITION
- **GRAY'S ANATOMY FOR STUDENTS**  
**Drake & Vogl & Mitchell**  
3<sup>rd</sup> or Latest EDITION
- **CLINICAL ANATOMY BY REGIONS (REFERENCE BOOK)**  
**Richard S. SNELL**  
9<sup>th</sup> EDITION
- **LAST'S ANATOMY: REGIONAL & APPLIED (REFERENCE BOOK)**  
**Chummy S. Sinnatamby**  
12<sup>th</sup> or Latest EDITION
- **ATLAS OF HUMAN ANATOMY**  
**FRANK H.NETTER**  
6<sup>th</sup> EDITION

### **EMBRYOLOGY**

- **LANGMAN'S MEDICAL EMBRYOLOGY**  
**T.W.SADLER**  
13<sup>th</sup> EDITION
- **THE DEVELOPING HUMAN CLINICALLY ORIENTED EMBRYOLOGY (REFERENCE BOOK)**  
**MOORE & PERSAUD & TORCHIA**  
10<sup>th</sup> EDITION

### **HISTOLOGY**

- **MEDICAL HISTOLOGY**  
**LAIQ HUSSAIN SIDDIQUI**  
5<sup>TH</sup> or Latest EDITION
- **WHEATERS FUNCTIONAL HISTOLOGY**  
**BARBARA YOUNG**  
5<sup>th</sup> EDITION
- **BASIC HISTOLOGY( TEXT AND ATLAS) (REFERENCE BOOK)**  
**LUIZ JUNQUEIRA, JOSE CARNEIRO**  
11<sup>th</sup> or Latest EDITION

### **PHYSIOLOGY**

- **GUYTON AND HALL TEXTBOOK OF MEDICAL PHYSIOLOGY**  
**GUYTON AND HALL**  
13<sup>th</sup> EDITION
- **GANONGS REVIEW OF MEDICAL PHYSIOLOGY**  
25<sup>TH</sup> EDITION

## BIOCHEMISTRY

- **LIPPINCOTT'S ILLUSTRATED REVIEWS SERIES**  
**DENISE R. FERRIER**  
6<sup>th</sup> EDITION
- **HARPERS ILLUSTRATED BIOCHEMISTRY (REFERENCE BOOK)**  
**VICTOR RODWELL, DAVID BENDER, KATHLEEN M. BOTHAM, PETER J. KENNELLY,**  
**P. ANTHONY WEIL**  
28<sup>th</sup> EDITION

## PATHOLOGY

- **ROBBINS BASIC PATHOLOGY**  
**KUMAR & ABBAS**  
9<sup>TH</sup> EDITION
- **ROBBINS & COTRAN PATHOLOGIC BASIS OF DISEASE (REFERENCE BOOK)**  
**KUMAR & ABBAS & ASTER**  
9<sup>th</sup> EDITION

## COMMUNITY MEDICINE

- **PUBLIC HEALTH AND COMMUNITY MEDICINE**  
**SHAH, ILYAS, ANSARI**  
7<sup>th</sup> EDITION

## MICROBIOLOGY

- **REVIEW OF MEDICAL MICROBIOLOGY AND IMMUNOLOGY**  
**WARREN LEWINSON**  
14<sup>th</sup> EDITION
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