Department of Medical Education (DME)

Respiration Module

Study Guide
First Year MBBS 2022 - 2023

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Additional Director Medical Education, Asst. Director Medical Education,	Curriculum Committee	Vice Chancellor

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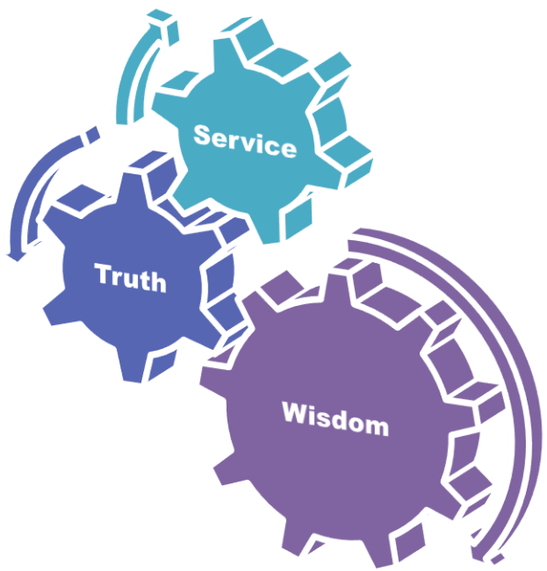
University Moto, Vision, Values & Goals

RMU Motto



Mission Statement

To impart evidence-based research-oriented health professional education in order to provide best possible patient care and inculcate the values of mutual respect, ethical practice of healthcare and social accountability.

Vision and Values

Highly recognized and accredited centre of excellence in Medical Education, using evidence-based training techniques for development of highly competent health professionals, who are lifelong experiential learner and are socially accountable.

Goals of the Undergraduate Integrated Modular Curriculum

The Undergraduate Integrated Learning Program is geared to provide you with quality medical education in an environment designed to:

- Provide thorough grounding in the basic theoretical concepts underpinning the practice of medicine.
- Develop and polish the skills required for providing medical services at all levels of the Health care delivery system.
- Help you attain and maintain the highest possible levels of ethical and professional conduct in your future life.
- Kindle a spirit of inquiry and acquisition of knowledge to help you attain personal and professional growth & excellence.

Second Year MBBS 2023

Study Guide

Respiratory Module

Discipline Wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
II1	• Anatomy	•	• Embryology of Respiratory System	Histology of Upper & Lower • Respiratory System	• Gross Anatomy of Upper & Lower Respiratory System
	• Biochemistry	• pH, Electron transport chain, Oxidative phosphorylation, Water soluble vitamins riboflavin, biotin, pyridoxine, pantothenic acid, Normal acid base regulation			
	• Physiology	• Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation, Functions of the Respiratory Passageways • Pulmonary Circulation, Pulmonary Edema, Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids • Regulation of Respiration • Useful Methods for Studying Respiratory Abnormalities, Respiratory Insufficiency, Hypoxia & Oxygen Therapy, Hypercapnia & Artificial Respiration Respiratory changes during Exercise, Aviation, Space & Deep-Sea Diving Physiology			
	• Research Club Activity (IUGRC)	• Poster Presentation			
	• Artificial Intelligence	• Artificial Intelligence basic concepts			
	• Family Medicine	• Approach to a patient with cough hemoptysis & shortness of breath			
	• Climate Change & Health	• Effects of Climate Changes on Body Systems (IHD, Skin Diseases & Heat Stroke) • Effects of Climate Changes on Respiratory System (Asthma, COPD, Allergies & Cancers) • Greenhouse effect • Global warming and climate change			
	• Bioethics Professionalism & Behavioral Sciences	• Crises intervention and disaster Conflict resolution and empathy			
	• Vertical components	• The Holy Quran Translation Component			
	• Vertical Integration	Clinically Content Relevant to Respiratory Module • Tuberculosis (Medicine) • Clinical disorders of Respiration (Pathology) • Foreign body nose & ear &Tonsillitis (ENT)			

Table of Contents

Respiration Module Team

Module Name	:	Respiration Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Kamil
Co- Coordinator	:	Dr. Fareed Ullah
Review by	:	Module Committee

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Additional Director DME	Prof. Dr. Ifra Saeed
Chairperson Physiology	Prof. Dr. Samia Sarwar
Chairperson Biochemistry	Dr. Aneela Jamil
Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf
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Focal Person Pharmacology	Dr. Zunera Hakim
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Focal Person Behavioral Sciences	Dr. Saadia Yasir
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Focal Person Quran Translation Lectures	Dr. Fahd Anwar

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Co-coordinator	Dr. Fareed Ullah (Senior Demonstrator Physiology) & Clinical Co- Coordinator

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Deputy Director DME	Dr. Shazia Zeb
Module planner & Implementation coordinator	Dr. Sidra Hamid
Editor	Muhammad Arslan Aslam

Module IV – Respiratory Module

Rationale: A respiratory system's function is to allow gas exchange. The space between the alveoli and the capillaries, the anatomy or structure of the exchange system, and the precise physiological uses of the exchanged gases vary depending on the organism. In humans respiratory system include airways, lungs, and the respiratory muscles. Molecules of oxygen and carbon dioxide that are passively exchanged, by diffusion, between the gaseous external environment and the blood. This exchange process occurs in the alveolar region of the lungs.

In this present module has been designed to unfold structural organization function congenital anomalies and diseases of respiration. It explains the anatomy, control, gases exchange, reflexes of respiratory system. It also helps to include the radiological examination of the respiratory system.

Module Outcomes

At the end of this module the student should be able to:

Knowledge:

1. Integrate the basic science knowledge with clinical sciences in order to describe the pathogenesis, clinical presentations of common respiratory disorders, e.g. COPD
2. Use technology based medical education including
   Artificial Intelligence.
3. Appreciate concepts & importance of **Family Medicine**
   Biomedical Ethics
   Research.

Skill:

1. Describe the gross anatomy of mediastinum along with clear understanding of structures present in it.
2. Correlate between histological structure of respiratory membrane and its role in diffusion of gases.

Attitude:

1. Demonstrate a professional attitude, team building spirit and good communication skills.

SECTION - I

Terms & Abbreviations

Contents

Tables & Figures

Table1. Domains of Learning According to Blooms Taxonomy

Sr. #	Abbreviation	Domains of learning
1.	C	**Cognitive Domain:** knowledge and mental skills.
	• C1	Remembering
	• C2	Understanding
	• C3	Applying
	• C4	Analyzing
	• C5	Evaluating
	• C6	Creating
2.	P	**Psychomotor Domain:** motor skills.
	• P1	Imitation
	• P2	Manipulation
	• P3	Precision
	• P4	Articulation
	• P5	Naturalization
3.	A	**Affective Domain:** feelings, values, dispositions, attitudes, etc
	• A1	Receive
	• A2	Respond
	• A3	Value
	• A4	Organize
	• A5	Internalize

Teaching and Learning Methodologies / Strategies

Large Group Interactive Session (LGIS)

The large group interactive session is structured format of Prof Umar Model of Integrated lecture. It will the followed for delivery of all LGIS. The lecturer will introduce a topic or common clinical condition and explains the underlying phenomena through questions, pictures, videos of patients, interviews and exercises, etc. Students are actively involved in the learning process.

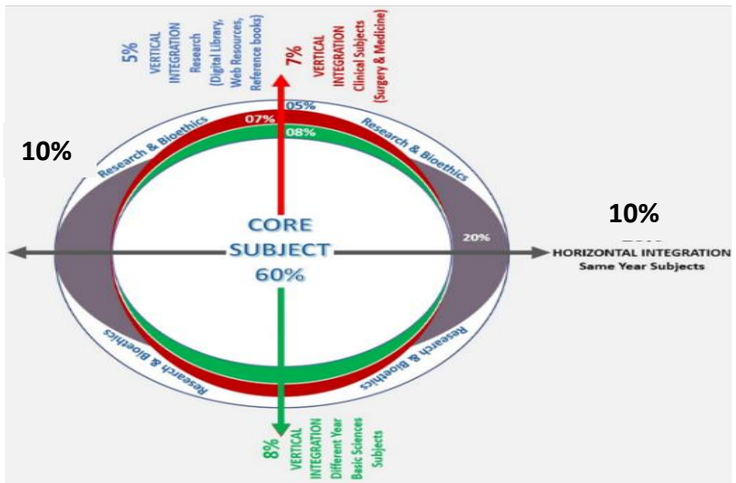


Figure 1. Prof Umar's Model of Integrated Lecture

Small Group Discussion (SGD)

This format helps students to clarify concepts acquire skills and attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics or power point presentations. Students exchange opinions and apply knowledge gained from lectures, SGDs and self-study. The facilitator role is to ask probing questions, summarize and help to clarify the concepts.

Table 2. Standardization of teaching content in Small Group Discussions

S. No	Topics	Approximate %
1	Title Of SGD	
2	Learning Objectives from Study Guides	
3	Horizontal Integration	5%+5%=10%
4	Core Concepts of the topic	60%
5	Vertical Integration	20%
6	Related Advance Research points	3%
7	Related Ethical points	2%

Table 3. Steps of Implementation of Small Group Discussions

Step 1	Sharing of Learning objectives by using students Study guides	First 5 minutes
Step 2	Asking students pre-planned questions from previous teaching session to develop co-relation (these questions will be standardized)	5minutes
Step 3	Students divided into groups of three and allocation of learning objectives	5minutes
Step 4	ACTIVITY: Students will discuss the learning objectives among themselves	15 minutes
Step 5	Each group of students will present its learning objectives	20 min
Step 6	Discussion of learning content in the main group	30min
Step 7	Clarification of concept by the facilitator by asking structured questions from learning content	15 min
Step 8	Questions on core concepts	
Step 9	Questions on horizontal integration	
Step 10	Questions on vertical integration	
Step 11	Questions on related research article	
Step 12	Questions on related ethics content	
Step 13	Students Assessment on online MS teams (5 MCQs)	5 min
Step 14	Summarization of main points by the facilitator	5 min
Step 15	Students feedback on the SGD and entry into log book	5 min
Step 16	Ending remarks	

Self-Directed Learning (SDL)

- Self- directed learning is a process where students take primary charge of planning, continuing, and evaluating their learning experiences.
- Time Home assignment
- Learning objectives will be defined
- Learning resources will be given to students = Textbook (page no), web site
- Assessment:

  i Will be online on LMS (Mid module/ end of Module)

  ii.OSPE station

Case Based Learning (CBL)

- It's a learner centered model which engages students in discussion of specific scenarios that typically resemble real world examples.
- Case scenario will be given to the students
- Will engage students in discussion of specific scenarios that resemble or typically are real-world examples.
- Learning objectives will be given to the students and will be based on
  i. To provide students with a relevant opportunity to see theory in practice
  ii. Require students to analyze data in order to reach a conclusion.
  iii. Develop analytic, communicative, and collaborative skills along with content knowledge.

Problem Based Learning (PBL)

- Problem-based learning (PBL) is a student-centered approach in which students learn about a subject by working in groups to solve an open-ended problem.
- This problem is what drives the motivation and the learning.

The 7- Jump-Format of PBL (Masstricht Medical School)	
Step 7	Synthesize & Report
Step 6	Collect Information from outside
Step 5	Generate learning Issues
Step 4	Discuss and Organize Ideas
Step 3	Brainstorming to Identify Explanations
Step 2	Define the Problem
Step 1	Clarify the Terms and Concepts of the Problem Scenario
Problem- Scenario	

Figure 2. PBL 7 Jumps Model

Practical Sessions/Skill Lab (SKL)

Practical Session/ Skill Lab (SKL)	
Demonstration/ power point presentation 4-5 slide	10-15 minutes
Practical work	25-30 minutes
Write/ draw and get it checked by teacher	20-25 minutes
05 mcqs at the end of the practical	10 minutes
At the end of module practical copy will be signed by head of department	
At the end of block the practical copy will be signed by Head of Department Dean Medical education department QEC	

SECTION – II

Learning Objectives, Teaching Strategies & Assessments

Contents

- Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)
- Large Group Interactive Session:
  - Anatomy (LGIS)
  - Physiology (LGIS)
  - Biochemistry (LGIS)
- Small Group Discussions
  - Anatomy (SGD)
  - Physiology (SGD)
  - Biochemistry (SGD)
- Self-Directed Topic, Learning Objectives & References
  - Anatomy (SDL)
  - Physiology (SDL)
  - Biochemistry (SDL)
- Skill Laboratory
  - Anatomy
  - Physiology
  - Biochemistry

Horizontally Integrated Basic Sciences (Anatomy, Physiology & Biochemistry)

Anatomy Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Respiratory system 1(Histology)	• Explain division of the respiratory system	C2	LGIS	MCQ SAQ VIVA
	• Describe different functions of respiratory system.	C2		
	• Describe details of respiratory epithelium	C2		
	• Discuss microscopic structure of vestibule	C2		
	• Describe structural specialization in mucosa of nasal cavity proper	C2		
	• Appreciate differences between respiratory mucosa and olfactory mucosa	C1		
	• Describe the features of olfactory mucosa	C2		
	• Describe related Clinical	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Respiratory system II (Histology)	• Describe microscopic structure of paranasal sinuses	C2	LGIS	MCQ SAQ VIVA
	• Describe general histological organization of respiratory system	C2		
	• Appreciate different histological layers of nasopharynx	C1		
	• Describe histological structure of laryngeal cartilages	C2		
	• Discuss components of tracheal wall	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Histology of Respiratory System III	• Describe division of bronchial tree	C2	LGIS	MCQ SAQ VIVA
	• Discuss microscopic structure of extra and intra pulmonary bronchi	C2		
	• Describe histological structure of bronchioles	C2		
	• Appreciate differences between bronchi and bronchioles Discuss microscopic structure of terminal bronchioles	C1		
	• Appreciate the significance of Clara cells with their functions	C2		
	• Discuss other cells present in terminal bronchioles	C2		
	• Describe the microscopic structure of respiratory bronchioles	C2		
	• Describe differences between respiratory and terminal bronchioles Describe characteristics of alveolar ducts	C2		

	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Histology of Respiratory System IV	• Describe histological structure of alveolar ducts and their functions	C2	LGIS	MCQ SAQ VIVA
	• Identify type 1 and type II alveolar cells	C1		
	• Describe histological structure of interalveolar septum	C2		
	• Discuss role of alveolar macrophages	C2		
	• Describe Blood – Air barrier in detail	C2		
	• Discuss histology of pleura in detail	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Development of Respiratory System (Nose and Paranasal sinuses)	• Describe role of pharyngeal arches in development of nose	C2	LGIS	MCQ SAQ VIVA
	• Describe development of nose and paranasal sinuses	C2		
	Describe the Congenital anomalies of nose and paranasal sinuses	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Development of Respiratory System (Larynx & Trachea)	• Describe formation of respiratory primordium	C2	LGIS	MCQ SAQ VIVA
	• Describe the role of pharyngeal arches in development of larynx	C2		
	• Discuss formation of laryngotracheal diverticulum	C2		
	• Describe formation of trachea esophageal septum and its importance	C2		
	• Describe Congenital defects associated with development of Trachea	C3		
	• Describe formation and division of respiratory buds	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Development of Respiratory System (Lungs)	• Discuss development of bronchi and bronchopulmonary segments	C2	LGIS	MCQ SAQ VIVA
	• Describe development of pleural cavities	C2		
	• Discuss process of maturation of lungs	C2		
	• Enlist different stages of lung maturation	C1		
	• Explain the production and significance of Surfactant	C2		
	• Describe role of fetal breathing movements in maturation of lungs	C2		
	• Discuss postnatal development of lungs	C2		
	• Describe congenital anomalies associated with lungs	C3		
	• Read relevant research articles	C3		

	• Use HEC digital library	C3		
Development of Respiratory System (Diaphragm)	• Describe the development of diaphragm	C2	LGIS	MCQ SAQ VIVA
	• Elaborate formation of septum transversum and its role in development of diaphragm	C2		
	• Discuss congenital defects associated with diaphragm	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		

Physiology Large Group Interactive Session (LGIS)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Mechanics of pulmonary ventilation, Lung compliance	• Enumerate muscles of inspiration and expiration and • Describe mechanics of pulmonary ventilation • Describe surfactant, surface tension and collapse of alveoli • Define compliance. • Draw compliance diagram of lungs. • Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 621,629) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 569) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 189,197) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 36,Page 581) ,(Chapter 40,Page 629) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 491,493)	**1.** https://www.ncbi.nlm.nih.gov/books/NBK538324/ **2.** https://youtu.be/BTwgmMfqOW4	C1 C1 C1 C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Pulmonary circulation & Pulmonary capillary dynamics. Physical principles of gas exchange & diffusion through respiratory membrane	• Discuss the role of alveoli and pleural space in respiration and pressure changes during respiration • Enlist non-respiratory and respiratory functions of respiration • Define and explain the concept of respiratory membrane. • Define and draw respiratory unit • Draw a diagram showing the exchange of gases through the	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 626,633,635) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 574) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 209)	1. https://youtu.be/aJPwUnZtycQ 2. https://youtu.be/zv1fDFn8BaM 3. https://pressbooks-dev.oer.hawaii.edu/biology/chapter/gas-exchange-	C2 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

	respiratory membrane • Enlist four factors affecting the rate of gas diffusion through the respiratory membrane • Define diffusing capacity of respiratory membrane. • Describe the diffusing capacity for oxygen. • Describe the diffusing capacity for carbon dioxide. • Describe the changes in diffusing capacity of oxygen and carbon dioxide during exercise • Compare the diffusing capacities of oxygen and carbon dioxide	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 37,Page 592) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 39, Page 503) (Chapter 40, Page 511,515)	across-respiratory-surfaces/ 4. https://www.sciencedirect.com/science/article/pii/S2666496822000194.			
Pulmonary volumes, capacities & functions of respiratory tract	• Define lung volumes and capacities. • Define the four pulmonary volumes and capacities. • Enlist normal values of all the lung volumes and capacities • Draw a graph representing all the lung volumes and capacities. • Describe how lung volumes and capacities can be measured with spirometer. • Enlist the lung volumes and capacities which can't be measured by spirometer	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 628) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 578) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 191) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 495)	**1.** https://youtu.be/9VdHhD1vcDU **2.** https://teachmephysiology.com/respiratory-system/ventilation/lung-volumes/	C1 C1 C1 C1 C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Transport of oxygen	Describe in detail the transport of oxygen from lungs to tissues	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 639)	1. https://teachmephysiology.com/respiratory-system/gas-exchange/oxygen-transport/ 2. https://youtu.be/HU6	C1	LGIS	MCQ SEQ VIVA VOCE

		• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Gas Exchange and Transport (Chapter 18, Page 599) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 210,213,216) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 38,Page 603) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 41, Page 521)	LQldvog			MCQ (LMS based Assessment, MST based Assessment) OSPE
Ventilation perfusion ratio	• Define And Explain importance. • Draw ventilation perfusion diagram Explain the concept of physiologic shunt and dead space	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 34, Page 636) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Mechanics of Breathing (Chapter 17, Page 587) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 194,225,229) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 39,Page 612) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 497)	1. https://youtu.be/UKsOLb5XWa0 2. https://teachmephysiology.com/respiratory-system/gas-exchange/ventilation-perfusion/	C1/C2 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Oxygen hemoglobin dissociation curve	Describe the role of hemoglobin in oxygen transport. Draw oxy-hemoglobin dissociation curve.	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,	1. https://www.sciencedirect.com/topics/nursing-and-health-	C1 C1 C1	LGIS	MCQ SEQ

	Enlist and explain factors which shift the curve towards right and left. Briefly explain the transport of oxygen in plasma	Respiratory Physiology (Chapter 35, Page 639-641) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Gas Exchange and Transport (Chapter 18, Page 608) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 218) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 41, Page 524)	professions/oxygen-dissociation-curve 2. https://youtu.be/MUKkv1rbOIM	C2		VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Lung function test	• Describe all the non-invasive & invasive tests to assess the pulmonary functions	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Mechanics of Breathing (Chapter 17, Page 592) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553)	1. https://www.webmd.com/lung/types-of-lung-function-tests 2. https://youtu.be/6dHVhEjzj64	C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Transport of CO_2	Enumerate and explain the various transport forms of carbondioxide in blood.Also state percentages of all these forms Explain the carbondioxide dissociation curve Define respiratory exchange ratio. Describe haldanes effect ,bohr effect and chloride shift	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 641) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 223)	1. https://courses.lumenlearning.com/wm-biology2/chapter/transport-of-carbon-dioxide-in-the-blood/ 2. https://youtu.be/VgpNSdWvrno	C1 C2 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment)

		• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. Section 05,(Chapter 38,Page 606) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 41, Page 528)				OSPE
Respiratory abnormalities (COPD, Tuberculosis, Pneumonia, Atelectasis)	• Explain the physiologic peculiarities of chronic pulmonary emphysema, pneumonia, ateiectasis, asthma and tuberculosis	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 664) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 43, Page 541)	1. https://www.physio-pedia.com/Respiratory_Disorders 2. https://youtu.be/SrKfsCdeqWc 3. https://youtu.be/h0p7bs5xdgQ	4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Nervous regulation of respiration	• Describe term respiratory center. • Enumerate the various respiratory centers. • Give the anatomical location of respiratory centers	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 655) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Gas Exchange and Transport (Chapter 18, Page 614) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 231) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05(Chapter 41,Page 646) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 531)	1. https://youtu.be/_KNAKKNbq20 2. https://teachmephysiology.com/respiratory-system/regulation/neural-control-ventilation/	3. C1 4. C1 5. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Hypoxia, hypercapnia, cyanosis	• Define hypoxia and hypercapnia. Enumerate and explain its various types. • Enumerate the roles of oxygen therapy in different types of hypoxia	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 646,650) • Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 239) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,,(Chapter 41,Page 653) (Chapter 42,Page 662) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 43, Page 546)	1. https://youtu.be/wtn--qgs3Fg 2. https://www.verywellhealth.com/hypoxia-types-symptoms-and-causes-2248929	3. C1 4. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Chemical regulation of respiration & exercise changes	• Describe in detail the role of respiratory centers in the regulation of respiration. • Explain chemical control of respiration in detail • Describe changes in respiration during exercise. Enumerate and briefly explain factors which affect respiration. • Describe briefly the mechanism of periodic breathing and sleep apnea	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 657,664) • Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 233,235) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 41,Page 649) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 533,536)	1. https://youtu.be/gR_RLgo9Vn0 2. https://journals.physiology.org/doi/abs/10.1152/physrev.1925.5.4.551?journalCode=physrev	C1 C2 C1 C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Space physiology	• Define and explain the process of acclimatization to low oxygen tension • Describe acute and chronic mountain sickness	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 42,Page 659,663)	1. https://youtu.be/NFfHh_rQZJE 2. https://www.physoc.org/careers/res	C1 C1 C1	LGIS	MCQ SEQ VIVA VOCE

	• Describe the effects of acceleratory forces on body in aviation and space physiology	• Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553)	earch/space-physiology/			MCQ (LMS based Assessment, MST based Assessment) OSPE
Miscellaneous factors affecting respiration (concept of voluntary control of respiration, lung J receptor, brain edema, anesthesia, chyne stokes breathing, sleep apnea)	• Describe in detail the role of respiratory centers in the regulation of respiration. • Explain chemical control of respiration in detail • Describe changes in respiration during exercise. Enumerate and briefly explain factors which affect respiration. • Describe briefly the mechanism of periodic breathing and sleep apnea	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 662) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 41,Page 656) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 538)	1. https://www.physoc.org/careers/research/space-physiology/ 2. https://www.brainkart.com/article/Factors-Affecting-Respiration_16533/		LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
High altitude physiology	• Describe the effects of low oxygen pressure on body • Enumerate the acute effects of hypoxia on body • Define and explain the process of acclimatization to low oxygen tension • Describe acute and chronic mountain sickness Describe the effects of acceleratory forces on body in aviation and space physiology	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 648) • Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 237) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 42,Page 659) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553,556,559)	1. https://youtu.be/6KHQGS4jJyI 2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2151873/	3. C1 4. C1 5. C1 6. C1	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Deep sea physiology	• Discuss Effect of high partial pressure of individual gasses on the body • Discuss Oxygen toxicity at high pressure Carbon dioxide toxicity at high pressure Explain in detail the process of decompression in deep sea divers	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition. (Chapter 42, page 665) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553)	1. https://medicoapps.org/m-physiology-of-deep-sea-diving/ 2. https://youtu.be/eeNMkPam9aU	3. C2 4. C2	LGIS	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Biochemistry Large Group Interactive Session (LGIS)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
PH And PKA	• Define of pH and pKa	C1	LGIS	MCQs SAQs Viva
	• Elaborate Henderson Hasselbalch equation.	C2		
	• Describe Measurement of pH by equation.	C2		
Body buffers	• Define buffers.	C1	LGIS	MCQs SAQs Viva
	• Discuss Mechanism of various buffers in maintenance of blood pH.	C2		
Electron transport chain	• Describe Components/ complexes of electron transport chain.	C2	LGIS	MCQs SAQs Viva
	• Enlist Enzymes and Co-enzymes of each component.	C1		
	• Enlist Inhibitors of these complexes.	C1		
Mechanisms of energy generation in the body.	• Discuss various mechanisms of energy generation in the body.	C2	LGIS	MCQs SAQs Viva
	• Discuss Oxidative phosphorylation.	C2		
	• Describe uncouplers.	C2		
Energy change.	• Define the terms: ○ Free energy change. ○ Standard free energy.	C1	LGIS	MCQs SAQs Viva
	• Describe various sources of electrons.	C2		
	• Define Vitamins	C1		MCQs

Vitamins	• Discuss the distribution, daily requirement and deficiency of vitamins • Clinical indication of vitamins	C2 C2	LGIS	SAQs Viva
Xenobiotics	• Define xenobiotics • Discuss its metabolism and its role in environment	C1 C2	LGIS	MCQs SAQs Viva

Anatomy Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Nose & Paranasal Sinuses	• Describe anatomy of nasal cavity	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Describe the blood supply and the site of anastomosis in the nose.	C2		
	• Discuss the nerve supply of nose	C2		
	• Discuss the applied and the related clinical.	C3		
	• Define and enumerate para nasal sinuses.	C1		
	• Discuss the shape, location and their point of openings.	C2		
	• Clinical significance with surgical interventions.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Larynx & Trachea	• Enumerate the components of larynx	C1	Skill Lab	MCQ SAQ Viva OSPE
	• Describe paired and unpaired cartilages of larynx Describe Intrinsic and extrinsic muscles of larynx (origin, insertion nerve supply and action).	C2		
	• Describe Intrinsic and extrinsic membrane (attachments and structure piercing the membranes).	C2		
	• Discuss the movements of vocal cords and their effects on the voice and respiration.	C2		
	• Discuss the blood supply and nerve supply of larynx.	C2		
	• Discuss the applied and the related clinical.	C3		
	• Describe the level of commencement of trachea, its termination and the tracheal cartilages.	C2		
	• State the level of division of trachea	C1		
	• Describe in detail the nerve supply and blood supply of trachea.	C2		
	• Discuss the applied and the related clinicals.	C3		

	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Overview of Thoracic wall	• Enumerate the bones of the thorax.	C1	Skill Lab	MCQ SAQ Viva OSPE
	• Describe and classify the typical ribs (side determination, features, attachments, relations, types and ossification.	C2		
	• Discuss the applied and the related clinical.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Skeleton of thoracic wall (Ribs)	• Describe and classify the atypical ribs (side determination, features, attachments, relations, types and ossification.	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Differentiate between typical and atypical ribs.	C2		
	• Discuss costal cartilages and their attachments.	C2		
	• Discuss the applied and the related clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Skeleton of thoracic wall (Sternum)	• Identify different parts of sternum.	C1	Skill Lab	MCQ SAQ Viva OSPE
	• Describe the bony features, attachments ossification of sternum	C2		
	• Discuss the related applied and clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Joints of thoracic wall	• Classify the joints of the thorax.	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss the type, ligaments and relations of the joints of the thorax (Manubriosternal, xiphisternal, costoverterbal, costotransverse, costochondral, chondrosternal, interchondral and intervertebral joints).	C2		
	• Discuss the components functions of the intervertebral disc.	C2		
	• Discuss the related applied and clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Thoracic apertures	• Discuss the boundaries, shape and structure passing through superior thoracic aperture (viscera, blood vessels, nerve and muscles)	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Describe the thoracic inlet syndrome.	C3		
	• Discuss the boundaries, shape and structures passing through the inferior thoracic aperture.	C2		
	• Read relevant research articles	C3		

	• Use HEC digital library	C3		
Intercostal spaces / Movements of thoracic wall	• Discuss the thoracic wall.	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Describe the intercostals muscles (origin, insertion, direction of fibers, nerve supply and actions.	C2		
	• Discuss in detail the formation, branches, distribution and the related clinical of the intercostals nerves.	C3		
	• Explain the formation, course, relations, distribution and branches of the thoracic sympathetic trunk.	C2		
	• Differentiate between the typical and atypical intercostals space.	C1		
	• Compare the typical and atypical intercostals space.	C2		
	• Describe the types and axis of movements of vertebral column (flexion, extension, lateral flexion and rotation).	C2		
	• Define the respiratory movements on the basis of principles, factors and the different types (pump handle, bucket handle and piston).	C1		
	• Discuss the related physiological and pathological changes occurring (related to age movement etc).	C2		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Diaphragm	• Describe the small and large openings in the diaphragm (vertebral level, location, formation, structures passing through and effects on the openings and structures by the diaphragmatic contraction).	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss related clinical aspects	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Vessels and lymphatics of thoracic wall	• Explain the arterial supply of intercostals space (anterior / posterior, parent vessels, branches, course, relations and termination).	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Differentiate between the arterial supply of typical and atypical intercostal space with the related clinicals.	C3		
	• Explain the venous drainage of the inercostal spaces (anterior / posterior, parent vessels, tributaries, course, relations and termination).	C2		
	• Differentiate between the venous drainage of typical and atypical intercostal space with the related clinicals	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		

Innervation of Thoracic Wall	• Discuss the origin of intercostal nerves.	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss course of nerves.	C2		
	• Discuss branches and related area suplied by these	C2		
	• Discuss related clinical	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Pleura	• Discuss visceral and parietal pleura	C2	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss the pleural recesses and pleural cavity.	C2		
	• Describe the nerve and blood supply of pleura.	C2		
	• Discuss the applied and the related clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Lungs	• Identify the features of right and left lung.	C1	Skill Lab	MCQ SAQ Viva OSPE
	• Discuss the bronchopulmonary segments and their clinical significance	C3		
	• Discuss and differentiate between the root of lung and the hilum of lung.	C2		
	• Describe the nerve plexuses related to the lungs.	C2		
	• Explain the blood supply of lungs	C2		
	• Discuss the applied and the related clinicals.	C3		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		
Surface Marking	• Identify heart borders	P1	Skill Lab	MCQ SAQ Viva OSPE
	• aortic knuckle,	P1		
	• costophrenic angles,	P1		
	• cardio phrenic angles,	P1		
	• domes of diaphragm,	P1		
	• counting of ribs	P1		
	• Read relevant research articles	C3		
	• Use HEC digital library	C3		

Physiology Small Group Discussion (SGDs)

Topics	Learning Objectives	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Physiology of unusual environment	• Define and explain the process of acclimatization to low oxygen tension • Describe acute and chronic mountain sickness • Describe the effects of acceleratory forces on body in aviation and space physiology	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.(Chapter 42,Page 659,663) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 44, Page 553)	1. https://youtu.be/NFfHh_rQZJE 2. https://www.physoc.org/careers/research/space-physiology/	C1 C1 C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE
Mechanics of pulmonary ventilation & compliance (Second week)	• Enumerate muscles of inspiration and expiration and • Describe mechanics of pulmonary ventilation • Describe surfactant, surface tension and collapse of alveoli • Define compliance. • Draw compliance diagram of lungs. Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 621,629) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 569) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 189,197) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 36,Page 581) ,(Chapter 40,Page 629) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 491,493)	• https://www.ncbi.nlm.nih.gov/books/NBK538324/ • https://youtu.be/BTwgmMfqOW4	C1 C1 C1 C1 C1 C2	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Ventilation perfusion ratio & regulation of respiration (Second week)	• Define And Explain importance. • Draw ventilation perfusion diagram Explain the concept of physiologic shunt and dead space	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 34, Page 636) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition. Mechanics of Breathing (Chapter 17, Page 587) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 194,225,229) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 39,Page 612) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 497)	• https://youtu.be/UKsOLb5XWa0 • https://teachmephysiology.com/respiratory-system/gas-exchange/ventilation-perfusion/	1. C1/C2 2. C1	SGD	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE

Biochemistry Small Group Discussion (SGDs)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
Body buffers	• Define buffers.	C1	SGD	MCQs SAQs Viva
	• Discuss Mechanism of various buffers in maintenance of blood PH.	C2		
Electron transport chain	• Enlist Components/ complexes of electron transport chain.	C1	SGD	MCQs SAQs Viva
	• Describe Enzymes and Co-enzymes of each component.	C2		
	• Discuss Inhibitors of these complexes.	C2		
Mechanisms of energy generation in the body.	• Describe various mechanisms of energy generation in the body.	C2	SGD	MCQs SAQs Viva
	• Discuss Oxidative Phosphorylation.	C2		
	• Describe uncouplers of ETC.	C2		
Vitamin	• Define Vitamins • Discuss the distribution, daily requirement and deficiency of vitamins • Clinical indication of vitamins	C1 C2 C2	SGD	MCQs SAQs Viva

Anatomy Self-Directed Learning (SDL)

Topics Of SDL	Learning Objective	References
Nose, paranasal sinuses, larynx, and trachea	• Describe anatomy of nasal cavity • Describe the blood supply and the site of anastomosis in the nose. • Discuss the nerve supply of nose • Discuss the applied and the related clinical. • Define and enumerate para nasal sinuses. • Discuss the shape, location and their point of openings. • Clinical significance with surgical interventions. • Enumerate the components of larynx • Describe paired and unpaired cartilages of larynx Describe Intrinsic and extrinsic muscles of larynx (origin, insertion nerve supply and action). • Describe Intrinsic and extrinsic membrane (attachments and structure piercing the membranes). • Discuss the movements of vocal cords and their effects on the voice and respiration. • Discuss the blood supply and nerve supply of larynx. • Discuss the applied and the related clinical. • Describe the level of commencement of trachea, its termination and the tracheal cartilages. • State the level of division of trachea • Describe in detail the nerve supply and blood supply of trachea. • Discuss the applied and the related clinicals.	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 395, 396, 973, 974, 978, 979) https://youtu.be/UPrY8JqXYCc https://youtu.be/IDBYF2i9vqU https://www.ncbi.nlm.nih.gov/books/NBK513272/
Skeleton of thoracic wall	• Describe and classify the atypical ribs (side determination, features, attachments, relations, types and ossification. • Differentiate between typical and atypical ribs.	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 299). https://youtu.be/PoA-Uq9w-7s https://www.ncbi.nlm.nih.gov/books/NBK557710/

	• Discuss costal cartilages and their attachments. • Discuss the applied and the related clinicals. • Identify different parts of sternum. • Describe the bony features, attachments ossification of sternum • Discuss the related applied and clinicals.	
Movements of thoracic wall and Intercostal spaces	• Discuss the thoracic wall. • Describe the intercostals muscles (origin, insertion, direction of fibers, nerve supply and actions. • Discuss in detail the formation, branches, distribution and the related clinical of the intercostals nerves. • Explain the formation, course, relations, distribution and branches of the thoracic sympathetic trunk. • Differentiate between the typical and atypical intercostals space. • Compare the typical and atypical intercostals space. • Describe the types and axis of movements of vertebral column (flexion, extension, lateral flexion and rotation). • Define the respiratory movements on the basis of principles, factors and the different types (pump handle, bucket handle and piston). • Discuss the related physiological and pathological changes occurring (related to age movement etc).	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 306, 307, 308). https://youtu.be/NwDxbNqEVaA https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4534848/
Anatomy of diaphragm	• Describe the small and large openings in the diaphragm (vertebral level, location, formation, structures passing through and effects on the openings and structures by the diaphragmatic contraction). • Discuss related clinical aspects	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 297, 313, 314, 391, 396, 397, 412, 455, 457, 521, 523). https://youtu.be/6IK-YHK1ToM https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5184786/

Pleura	• Discuss visceral and parietal pleura • Discuss the pleural recesses and pleural cavity. • Describe the nerve and blood supply of pleura. • Discuss the applied and the related clinicals.	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 333, 334, 335, 336). https://youtu.be/66PR3IYWb0A https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4332049/
Lungs	• Identify the features of right and left lung. • Discuss the bronchopulmonary segments and their clinical significance • Discuss and differentiate between the root of lung and the hilum of lung. • Describe the nerve plexuses related to the lungs. • Explain the blood supply of lungs	Clinical Oriented Anatomy by Keith L. Moore.5TH Edition. (Page 337-347). https://youtu.be/66PR3IYWb0A https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4332049/

Physiology Self-Directed Learning (SDL)

Topics Of SDL	Learning Objective	References	Learning Resources	Learning Domains	Learning Strategy	Assessment Tools
Mechanics of pulmonary ventilation, Lung compliance	• Enumerate muscles of inspiration and expiration and • Describe mechanics of pulmonary ventilation • Describe surfactant, surface tension and collapse of alveoli • Define compliance. • Draw compliance diagram of lungs. 1. Explain relationship of surface tension, radius of alveoli, elastic forces of lungs with compliance	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 621,629) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 569) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 189,197) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 36,Page 581) ,(Chapter 40,Page 629)	1. https://www.ncbi.nlm.nih.gov/books/NBK538324/ 2. https://youtu.be/BTwgmMfqOW4	C1 C1 C1 C1 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation

		• Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 491,493) ❖				
Pulmonary circulation & Pulmonary capillary dynamics. Physical principles of gas exchange & diffusion through respiratory membrane	• Discuss the role of alveoli and pleural space in respiration and pressure changes during respiration • Enlist non-respiratory and respiratory functions of respiration • Define and explain the concept of respiratory membrane. • Define and draw respiratory unit • Draw a diagram showing the exchange of gases through the respiratory membrane • Enlist four factors affecting the rate of gas diffusion through the respiratory membrane • Define diffusing capacity of respiratory membrane. • Describe the diffusing capacity for oxygen. • Describe the diffusing capacity for carbon dioxide. • Describe the changes in diffusing capacity of oxygen and carbon dioxide during exercise 1. Compare the diffusing capacities of oxygen and carbon dioxide	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 626,633,635) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 574) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 209) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 37,Page 592) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 39, Page 503) (Chapter 40, Page 511,515)	1. https://youtu.be/aJPwUnZtycQ 2. https://youtu.be/zv1fDFn8BaM 3. https://pressbooks-dev.oer.hawaii.edu/biology/chapter/gas-exchange-across-respiratory-surfaces/ 4. https://www.sciencedirect.com/science/article/pii/S2666496822000194.	C2 C1 C1 C1 C1 C1 C1 C1 C1 C1 C2	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Pulmonary volumes, capacities &	• Define lung volumes and capacities. • Define the four pulmonary volumes and capacities.	• Ganong's Review of Medical Physiology.25TH Edition.Section 06,Respiratory Physiology (Chapter 34, Page 628)	1. https://youtu.be/9VdHhD1vcDU 2. https://teachmephysio	C1 C1 C1 C1 C1	SDL	MCQ SEQ VIVA VOCE

functions of respiratory tract	• Enlist normal values of all the lung volumes and capacities • Draw a graph representing all the lung volumes and capacities. • Describe how lung volumes and capacities can be measured with spirometer. • Enlist the lung volumes and capacities which can't be measured by spirometer	• Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Mechanics of Breathing (Chapter 17,Page 578) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 191) • Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 38, Page 495)	logy.com/respiratory-system/ventilation/lung-volumes/	C1		MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Transport of oxygen	• Describe in detail the transport of oxygen from lungs to tissues	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 639) • Human Physiology by Dee Unglaub Silver thorn. 8TH Edition.Gas Exchange and Transport (Chapter 18, Page 599) • Physiology by Linda S. Costanzo 6th Edition. Respiratory Physiology (Chapter 5,Page 210,213,216) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 38,Page 603) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 41, Page 521)	1. https://teachmephysiology.com/respiratory-system/gas-exchange/oxygen-transport/ 2. https://youtu.be/HU6_LQldvog	C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation
Chemical regulation of respiration & exercise changes	• Describe in detail the role of respiratory centers in the regulation of respiration. • Explain chemical control of respiration in detail • Describe changes in respiration during exercise. Enumerate and	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 36, Page 657,664) • Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 233,235)	1. https://youtu.be/gR_RLgo9Vn0 2. https://journals.physiology.org/doi/abs/10.1152/physrev.1925.5.4.551?jo	C1 C2 C1 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment,

	briefly explain factors which affect respiration. • Describe briefly the mechanism of periodic breathing and sleep apnea	• Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,(Chapter 41,Page 649) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 42, Page 533,536)	urnalCode=physrev			MST based Assessment) OSPE SDL Evaluation
Hypoxia, hypercapnia, cyanosis	• Define hypoxia and hypercapnia. Enumerate and explain its various types. • Enumerate the roles of oxygen therapy in different types of hypoxia	• Ganong's Review of Medical Physiology.25TH Edition.Section 06, Respiratory Physiology (Chapter 35, Page 646,650) • Physiology by Linda S. Costanzo 6th Edition.Respiratory Physiology (Chapter 5,Page 239) • Physiological Basis of Medical Practice by Best & Taylor's.13th Edition.Section 05,,(Chapter 41,Page 653) (Chapter 42,Page 662) Textbook of Medical Physiology by Guyton & Hall.14th Edition. (Chapter 43, Page 546)	1. https://youtu.be/wtn--qgs3Fg 2. https://www.verywellhealth.com/hypoxia-types-symptoms-and-causes-2248929	C1 C1	SDL	MCQ SEQ VIVA VOCE MCQ (LMS based Assessment, MST based Assessment) OSPE SDL Evaluation

Biochemistry Self-Directed Learning (SDL)

Topic	Learning Objectives At the end of lecture students should be able to	Learning Domain	Teaching Strategy	Assessment Tool
HH equation	• Define of pH and pKa	C1	SDL	MCQs SAQs Viva
	• Elaborate Henderson Hasselbalch equation.	C2		
	• Describe Measurement of pH by equation.	C2		
Role of Chemical Buffers in pH regulation	• Define buffers.	C1	SDL	MCQs SAQs Viva
	• Discuss Mechanism of various buffers in maintenance of blood pH. • Elaborate the carbonic acid-bicarbonate buffer system	C2		
pH meter and physiological buffers in pH regulation	• Measure the pH of solution in Pharmaceutical, Chemical, and Biotechnology Industry	C2	SDL	MCQs SAQs Viva
	• Elaborate the Bicarbonate and Phosphate system of Buffers and intracellular and extracellular proteins	C1		
		C1		
Vitamin Pyridoxine	• Discuss Vitamin B_6, used as a dietary supplement	C2	SDL	MCQs SAQs Viva
	• Describe its deficiency and related clinical disorders	C2		
		C2		
Xenobiotics	• Define xenobiotics • Discuss its metabolism and its role in environment	C1 C2	SDL	MCQs SAQs Viva

Histology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Olfactory /Nasal mucosa	• Identify microscopic structure of respiratory and nasal mucosa under microscope.	P1	Skills Lab	OSPE
	• Illustrate histological structures of olfactory / nasal mucosa	C1		
	• Write two points of identification	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		
Epiglottis	• Identify types of cells and epithelium of epiglottis under microscope	P1	Skills Lab	OSPE
	• Illustrate histological structures of epiglottis.	C1		
	• Write two points of identification	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		
Trachea	• Identify microscopic structures of trachea.	P1	Skills Lab	OSPE
	• Illustrate microscopic structure of trachea.	C1		
	• Write two points of identification	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		
Lungs	• Identify microscopic structure of, bronchi, terminal bronchiole, respiratory bronchiole, alveoli, alveolar duct of the respiratory tract on the basis of ○ Types of epithelial cells present ○ Relative amount of gland, cartilage, smooth muscles and connective tissue fibers present in wall of the tubes.	P1	Skill Lab	OSPE
	• Illustrate microscopic structure of different layers of respiratory passages.	C1		
	• Write points of identification of each part	C1		
	• Relevant research articles	C3		
	• Use HEC digital library	C3		

Physiology Practicals Skill Laboratory (SKL)

Topic	Learning Objectives	Reference	Learning Domains	Learning Strategy	Assessment Tools
Measurement of different lung volume & capacities with the help of spirometer	• Description of its various parts • Importance of spirometer for measurements of various volumes • Define various lung volumes & capacity • How to measure them	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	C1/C3 A3 P3	Practicals /skill lab	Viva Voce Ospe Video Assissted Assessment
Recording of normal and modified movement of respiration (Stethography)	• Introduction to stethography • How to use it and its clinical importance	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	C1/C3 A3 P3	Practicals /skill lab	Viva Voce Ospe Video Assissted Assessment
Clinical examination of chest for respiration	• Detail introduction and explanation about inspection • Palpation • Percussion • Auscultation	Practical Notebook of Physiology First year MBBS by Dr Saqib Sohail	C1/C3 A3 P3	Practicals /skill lab	Viva Voce Ospe Video Assissted Assessment

Biochemistry Practicals Skill Laboratory (SKL)

Topic	Learning Objectives At The End Of Practical Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Henderson Hassel batch equation	Illustrate Henderson Hassel batch equation. Measure pH by equation.	P	Skill lab	OSPE
Buffers	Illustrate buffer actions and buffer zone.	P	Skill lab	OSPE
pH meter	Measure the acidity or basicity of water-based solutions	P	Skill lab	OSPE

SECTION - III

Basic and Clinical Sciences (Vertical Integration)

Content

- **CBLs**
- **Vertical Integration LGIS**
- **Longitudinal Themes**
    - **Biomedical Ethics & Professionalism**
    - **Family Medicine**
    - **Artificial Intelligence (Innovation)**
    - **Integrated Undergraduate Research Curriculum (IUGRC)**

Basic and Clinical Sciences (Vertical Integration)

Case Based Learning (CBL)

Subject	Topic	Learning Objectives At the end of the lecture the student should be able to	Learning Domain
Anatomy	• Lung's cancer	Apply basic knowledge of subject to study clinical case.	C3
	• Chest trauma	Apply basic knowledge of subject to study clinical case.	C3
Physiology	• Wheeze/Stridor	Apply basic knowledge of subject to study clinical case.	C3
	• Crib Death	Apply basic knowledge of subject to study clinical case.	C3
Biochemistry	• CBL-ABGs	Apply basic knowledge of subject to study clinical case.	C3
	• CBL – uncouplers	Apply basic knowledge of subject to study clinical case.	C3

Large Group Interactive Sessions (LGIS)

Pathology

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Clinical disorders of Respiration:	• Discuss Pneumonia in detail.	C1	LGIS	MCQs
	• Discuss Tuberculosis in detail.	C1		
	• Discuss Cystic fibrosis in detail.	C1		
	• Discuss Respiratory Failure Incidence in detail.	C1		
	• Discuss Sign and symptoms in detail.	C1		
	• Discuss Pathophysiology in detail.	C1		

Surgery

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Chest Deformities (Congenital)	• **Describe:** • Various chest deformities & congenital malformations	C2	LGIS	MCQs
	• Significance of deformities	C2		
	• General and operative management outline	C2		
Pneumothorax	• **Describe:** • Various types of Pnuemothorax	C2	LGIS	MCQs
	• Causes	C2		
	• Signs and symptoms Significance of tension pneumothorax	C2		
	• Emergency and definitive management	C2		
Hemothorax	• Describe: • Various types of Hemothorax	C2	LGIS	MCQ
	• Causes of Hemothorax	C2		
	• Signs and symptoms of Hemothorax	C2		
	• Emergency and definitive management			
Pleural effusion	• Describe: • Definition	C1	LGIS	MCQ
	• Causes	C2		
	• Signs &symptoms • General and operative management outlines	C2		

ENT

Topic	At The End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Tonsillitis	• Define tonsillitis	C1	LGIS CBL	MCQs
	• Enlist the causes of tonsillitis	C1		
	• List the clinical features of tonsillitis	C2		
	• Enumerate the management of tonsillitis	C1		
Foreign body nose & ear	• Classify foreign bodies	C1	LGIS CBL	MCQs
	• Enumerate emergency situations for removal.	C2		

Bioethics Professionalism & Behavioral Sciences

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Crises intervention and disaster	• To be able identify crises situations and learn the means to cope with them during disasters either natural or man made	C1 C2	LGIS CBL	MCQS
Conflict resolution and empathy	• To be able to identify crises situations and using empathy how to deal with these situations arising in clinical practice	C2	LGIS CBL	MCQS

Medicine

Topic	At the End Of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Tuberculosis	• Discuss TB.	C2	LGIS	MCQs
	• Discuss its diagnostic Criteria.	C2		
	• Describe How to treat a patient with TB.	C2		
Drowning & Strangulation	• Discuss How to manage a patient with drowning and strangulation.	C2	LGIS	MCQs

Climate Change & Health & Community Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Air and Ventilation Air composition & indices of thermal comfort	• At the end of the session the students will be able to: • Enlist indices of thermal comfort	C1	LGIS	MCQ
	• Describe the factors responsible for vitiation of air	C2		
Air pollution and its factors	• Define air pollution	C1	LGIS	MCQ
	• Identify sources of air pollution and air pollutants	C1		
Preventive measures to control air pollution	• Demonstrate selection of air sample for analysis	C2	LGIS	MCQ
	• Enumerate the methods to prevent & control of air pollution	C1		
Air purification methods	• Enlist natural and artificial methods of air purification.	C1	LGIS	MCQ
Greenhouse effect	• Describe the greenhouse effect	C2	LGIS	MCQ
	• Enlist greenhouse gases.	C1		
	• Identify sources of greenhouse gases	C1		
Global warming and climate change	• Demonstrate global warming.	C2	LGIS	MCQ
	• Define ozone hole. • Describe link between global warming and climate change	C1 C2		

Artificial Intelligence (AI)

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Artificial Intelligence basic concepts	• To learn the concept of deep and superficial neural networks in AI	C2	LGIS	MCQs

Family Medicine

Topic	At the End of Lecture Students Should Be Able To	Learning Domain	Teaching Strategy	Assessment Tool
Approach to a Patient with cough & hemoptysis	• Define cough & hemoptysis.	C1	LGIS	MCQs
	• Discuss differential diagnoses cough & hemoptysis.	C2		
	• When to refer a patient of cough & hemoptysis to pulmonologist	C2		

Integrated Undergraduate Research Curriculum (IUGRC)

Topics	At the end of the session the student should be able to:	Learning Domains	Teaching Strategy	Assessment Tool
Practice session 6	• Finalization of poster presentation • Submission at SJRMC/any other medical journal	C3	Activity	MCQs

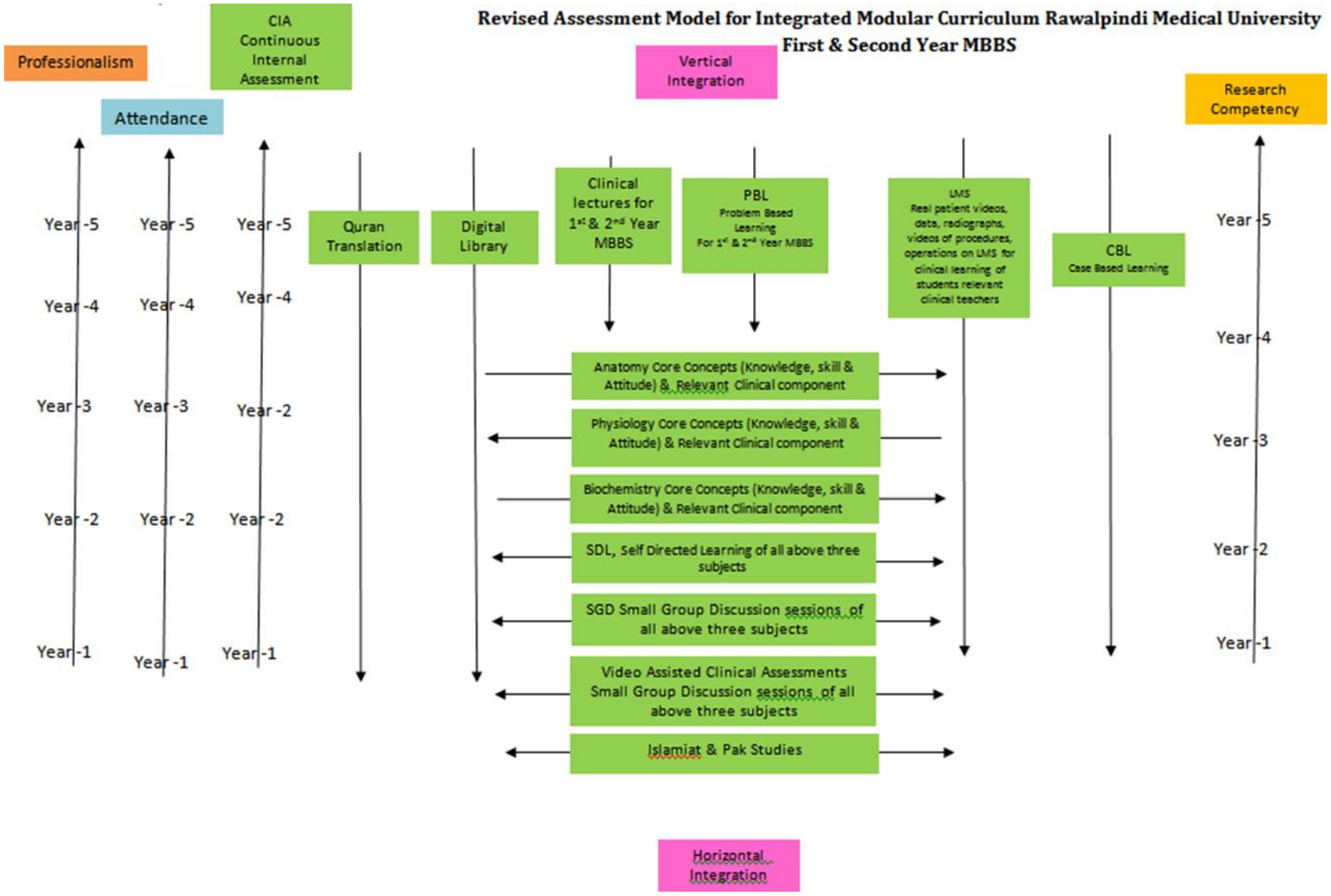
SECTION - IV

Assessment Policies

Contents

- **Assessment plan**
- **Types of Assessment:**
- **Modular Examinations**
- **Block Examination**
- **Table 4: Assessment Frequency & Time in Respiration**

Revised Assessment Model for Integrated Modular Curriculum Rawalpindi Medical University
First & Second Year MBBS



Gauge for Continuous Internal Assessment (CIA)

Red Zone	High Alert	Yellow Zone	Green Zone	Excellent	Extra Ordinary
0 - 25%	26 - *50%	51 - 60%	61 – 70%	71 – 80%	81 - 100%

*50% and above is Passing Marks.

Gauge for attendance percentage

Red Zone	High Alert	Yellow Zone-1	Yellow Zone-2	Green Zone	Excellent
0 - 25%	26 - 50%	51 - 60%	61 – 74%	*75 – 80%	81 - 100%

90% is eligibility criteria for appearing in professional examination.

Assessment plan

University has followed the guidelines of Pakistan Medical and Dental Council for assessment. Assessment is conducted at the mid modular,modular and block levels.

Types of Assessment:

The assessment is formative and summative.

Formative Assessment	Summative Assessment
Formative assessment is taken at modular (2/3rd of the module is complete) level through MS Teams. Tool for this assessment is best choice questions and all subjects are given theshare according to their hour percentage.	Summative assessment is taken at the mid modular (LMS Based),modular and block levels.

Modular Assessment

Theory Paper	Viva Voce
There is a module examination at the end of first module of each block. The content of the whole teaching of the module are tested in this examination. It consists of paper with objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module. (Annexure I attached)	Structured table viva voce is conducted including the practical content of the module.

Block Assessment

On completion of a block which consists of two modules, there is a block examination which consists of one theory paper and a structured viva with OSPE.

Theory Paper	Block OSPE
There is one written paper for each subject. The paper consists of objective type questions and structured essay questions. The distribution of the questions is based on the Table of Specifications of the module.	This covers the practical content of the whole block.

Table 4-Assessment Frequency & Time in Respiratory Module

Block	Sr #	Module – 1 Respiratory Module Components	Type of Assessments	Total Assessments Time			No. of Assessments	
				Assessment Time	Summative Assessment Time	Formative Assessment Time		
Block-I	1	Mid Module Examinations LMS based (Anatomy, Physiology & Biochemistry)	Summative	30 Minutes	3 Hour 15 Minutes	45 Minutes	2 Formative	6 Summative
	2	Topics of SDL Examination on MS Team	Formative	30 Minutes				
	3	End Module Examinations (SEQ & MCQs Based)	Summative	2 Hours				
	4	Anatomy Structured and Clinically Oriented Viva	Summative	10 Minutes				
	5	Physiology Structured & Clinically oriented Viva voce	Summative	10 Minutes				
	6	Assessment of Clinical Lectures	Formative	15 Minutes				
	7	Assessment of Bioethics Lectures	Summative	2 Minutes				
	8	Assessment of IUGRC Lectures	Summative	10 Minutes				

Learning Resources

Subject	Resources
Anatomy	**A. Gross Anatomy** 1. Gray's Anatomy by Prof. Susan Standring 42th edition, Elsevier. 2. Clinical Anatomy for Medical Students by Richard S. Snell 10th edition. 3. Clinically Oriented Anatomy by Keith Moore 9th edition. 4. Cunningham's Manual of Practical Anatomy by G.J. Romanes, 16th edition, Vol-I, II and III **B. Histology** 1. B. Young J. W. Health Wheather's Functional Histology 6th edition. 2. Medical Histology by Prof. Laiq Hussain 7th edition. **C. Embryology** 1. Keith L. Moore. The Developing Human 11th edition. 2. Langman's Medical Embryology 14th edition.
Physiology	**A. Textbooks** 1. Textbook Of Medical Physiology by Guyton And Hall 14th edition. 2. Ganong ' S Review of Medical Physiology 26th edition. **B. Reference Books** 1. Human Physiology by Lauralee Sherwood 10th edition. 2. Berne & Levy Physiology 7th edition. 3. Best & Taylor Physiological Basis of Medical Practice 13th edition. 4. Guyton & Hall Physiological Review 3rd edition.
Biochemistry	**Textbooks** 1. Harper's Illustrated Biochemistry 32th edition. 2. Lehninger Principle of Biochemistry 8th edition. 3. Biochemistry by Devlin 7th edition.
Community Medicine	**Textbooks** 1. Community Medicine by Parikh 25th edition. 2. Community Medicine by M Illyas 8th edition. 3. Basic Statistics for the Health Sciences by Jan W Kuzma 5th edition.
Pathology/Microbiology	**Textbooks** 1. Robbins & Cotran, Pathologic Basis of Disease, 10th edition. 2. Rapid Review Pathology, 5th edition by Edward F. Goljan MD. 3. http://library.med.utah.edu/WebPath/webpath.html
	Textbooks

Pharmacology	1. Lippincot Illustrated Pharmacology 9th edition. 2. Basic and Clinical Pharmacology by Katzung 5th edition.

SECTION - V

Time Table

Integrated Clinically Oriented Modular Curriculum for first Year MBBS

Respiration Module Time Table

First Year MBBS

Session 2023-2024

Batch- 50

Respiration Module Team

Module Name	:	Respiration Module
Duration of module	:	04 Weeks
Coordinator	:	Dr. Kamil
Co- Coordinator	:	Dr. Fareed Ullah
Review by	:	Module Committee

Module Committee	
Vice Chancellor RMU	Prof. Dr. Muhammad Umar
Director DME	Prof. Dr. Rai Muhammad Asghar
Convener Curriculum	Prof. Dr. Naeem Akhter
Chairperson Anatomy & Dean Basic Sciences	Prof Dr. Ayesha Yousaf
Additional Director DME	Prof. Dr. Ifra Saeed
Chairperson Physiology	Prof. Dr. Samia Sarwar
Chairperson Biochemistry	Dr. Aneela Jamil
Focal Person Anatomy First Year MBBS	Prof Dr. Ayesha Yousaf
Focal Person Physiology	Dr. Sidra Hamid
Focal Person Biochemistry	Dr. Aneela Jamil
Focal Person Pharmacology	Dr. Zunera Hakim
Focal Person Pathology	Dr. Asiya Niazi
Focal Person Behavioral Sciences	Dr. Saadia Yasir
Focal Person Community Medicine	Dr. Afifa Kulsoom
Focal Person Quran Translation Lectures	Dr. Fahd Anwar

Module Task Force	
Coordinator	Dr. Kamil
DME Focal Person	Dr. Sidra Hamid
Co-coordinator	Dr. Quratulain Sharif (Senior Demonstrator of Anatomy)
Co-Coordinator	Dr. Uzma Zafar (Senior Demonstrator Biochemistry)
Co-coordinator	Dr. Fareed Ullah (Senior Demonstrator Physiology) & Clinical Co- Coordinator

DME Implementation Team	
Director DME	Prof. Dr. Rai Muhammad Asghar
Implementation In charge 1st & 2nd Year MBBS & Add. Director DME	Prof. Dr. Ifra Saeed
Deputy Director DME	Dr. Shazia Zeb
Module planner & Implementation coordinator	Dr. Sidra Hamid
Editor	Muhammad Arslan Aslam

Discipline wise Details of Modular Content

Block	Module	General Anatomy	Embryology	Histology	Gross Anatomy
II1	• Anatomy	•	• Embryology of Respiratory System	Histology of Upper & Lower • Respiratory System	• Gross Anatomy of Upper & Lower Respiratory System
	• Biochemistry	• pH, Electron transport chain, Oxidative phosphorylation, Water soluble vitamins riboflavin, biotin, pyridoxine, pantothenic acid, Normal acid base regulation			
	• Physiology	• Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation, Functions of the Respiratory Passageways • Pulmonary Circulation, Pulmonary Edema, Physical Principles of Gas Exchange; Diffusion of Oxygen and Carbon Dioxide Through the Respiratory Membrane Transport of Oxygen and Carbon Dioxide in Blood and Tissue Fluids • Regulation of Respiration • Useful Methods for Studying Respiratory Abnormalities, Respiratory Insufficiency, Hypoxia & Oxygen Therapy, Hypercapnia & Artificial Respiration Respiratory changes during Exercise, Aviation, Space & Deep-Sea Diving Physiology			
	• Research Club Activity (IUGRC)	• Poster Presentation			
	• Artificial Intelligence	• Artificial Intelligence basic concepts			
	• Family Medicine	• Approach to a patient with cough hemoptysis & shortness of breath			
	• Climate Change & Health	• Effects of Climate Changes on Body Systems (IHD, Skin Diseases & Heat Stroke) • Effects of Climate Changes on Respiratory System (Asthma, COPD, Allergies & Cancers) • Greenhouse effect • Global warming and climate change			
	• Bioethics Professionalism & Behavioral Sciences	• Crises intervention and disaster Conflict resolution and empathy			
	• Vertical components	• The Holy Quran Translation Component			
	• Vertical Integration	Clinically Content Relevant to Respiratory Module • Tuberculosis (Medicine) • Clinical disorders of Respiration (Pathology) • Foreign body nose & ear &Tonsillitis (ENT)			

Categorization of Modular Contents

Anatomy

Category A*	Category B**	Category C***			
Special Embryology	**Special Histology**	**Demonstrations / SGD**	**CBL**	**Practical's**	**Self-Directed Learning (SDL)**
		• Nose and Paranasal sinuses • Larynx and trachea • Overview of thoracic wall • Skeleton of thoracic wall (Ribs) • Skeleton of thoracic wall (Sternum) • Joints of Thoracic Wall • Thoracic Apertures • Movements Of Thoracic Wall & Intercostal Spaces • Diaphragm • Vasculature of thoracic wall • Innervation of Thoracic Wall • Pleura • Lungs • Radiology & Surface Marking	• Lungs and its lymphatics • Thorax & Pleura	• Nose/paranasal sinuses /epiglottis • Trachea • Lungs	• Nose paranasal sinus larynx and trachea • Skeleton of thoracic wall • Movement of Thoracic Wall & Intercostal Spaces • AnatomyOf diaphragm • Anatomy Pleura • Lungs

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Anatomy

Sr. #	Designation Of Teaching Staff / Human Resource	Total number of teaching staff
1.	Professor of Anatomy department	01
2.	Associate Professor of Anatomy department (AP)	01
3.	Demonstrators of Anatomy department	04

Contact Hours (Faculty)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	2* 08 = 16 hours
2.	Small Group Discussions (SGD)	1*4, 2*11 =26 hours
3.	Practical / Skill Lab	7.5 * 3 = 22.5 hours

Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LGIS)	1 * 8 = 8 hours
2.	Small Group Discussions (SGD)	1*4, 2*11 =26 hours
3.	Practical / Skill Lab	1.5 * 3 = 4.5 hours
4.	Self-Directed Learning (SDL)	2 * 6 = 12 hours

Physiology

Category A*	Category B**	Category C***					
• Transport of oxygen (**Prof. Dr. Samia Sarwar/Dr Sheena)** • Oxygen hemoglobin dissociation curve (Prof. Dr. Samia Sarwar/Dr Sheena) • Transport of CO2 (Prof. Dr. Samia Sarwar/Dr Iqra) • Nervous regulation of respiration (Prof. Dr. Samia Sarwar/Dr Kamil) • Chemical regulation of respiration & exercise changes (Prof. Dr. Samia Sarwar/Dr Kamil) • Space physiology (Prof. Dr. Samia Sarwar/Dr Fareed) • High altitude physiology (Prof. Dr. Samia Sarwar/Dr Fareed) • Deep sea physiology (Prof. Dr. Samia Sarwar/Dr Nayab) • Mechanics of pulmonary ventilation, Lung compliance (By Dr. Shmyla) • Pulmonary volumes, capacities & functions of respiratory tract (By Dr. Shmyla) • Ventilation perfusion ratio (By Dr. Shmyla) • Lung function teRespiratory abnormalities (COPD, Tuberculosis, Pneumonia, Atelectasis) • (By Dr. Shmyla)st (By Dr. Shmyla) • Hypoxia, hypercapnia, cyanosis (By Dr. Shmyla)		Transport of CO2 (Prof. Dr. Samia Sarwar/Dr Iqra) Deep sea physiology (Prof. Dr. Samia Sarwar/Dr Nayab)	**PBL** One PBL In two sessions	**Demonstrations / SGD** • Physiology of unusual environment. • Mechanics of pulmonary ventilation & compliance (Second week) • Ventilation perfusion ratio & regulation of respiration (Second week)	**CBL** • Wheeze/Stridor • Crib Death	**SKL/Practical's** • Measurement of different lung volume & capacities with the help of spirometer • Recording of normal and modified movement of respiration (Stethography) • Clinical examination of chest for respiration.	**Self-Directed Learning (SDL)** **(OFF CAMPUS)** • Mechanics of pulmonary ventilation, Lung compliance • Pulmonary circulation • Pulmonary volumes, capacities • Transport of oxygen • Chemical regulation of respiration & exercise changes • Hypoxia, hypercapnia, cyanosis

Category A*: By Professor

Category B:** By Associate & Assistant Professors

Category C*:** By Senior Demonstrators & Demonstrators

Teaching Staff / Human Resource of Department of Physiology

Sr. #	Designation Of Teaching Staff / HumanResource	Total number ofteaching staff
1.	Professor of physiology department	01
2.	Associate professor of physiology department	01
3.	Assistant professor of physiology department (AP)	01
4.	Demonstrators of physiology department	07
5.	Residents of physiology department (PGTs)	06

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours
1.	Large Group Interactive Session (LECTURES)	16X1 =16 Hours
2.	Small Group Discussions (SGD)/CBL	1.5X3 =4.5 Hours + 2 Hours (2nd week) = 6.5 Hours
3.	Problem Based Learning (PBL)	---
4.	Practical / Skill Lab	1.5X3 =4.5 Hours
5.	Self-Directed Learning (SDL)	6x1 = 6 Hours (Off Campus)

Biochemistry

Category A*	Category B**				
LGIS	**LGIS**	**PBL**	**CBL**	**Practical's**	**SGD**
• Simple Lipids • Compound Lipids (phospholipids, glycolipids, lipoproteins) • Prostaglandins	• Definition and Biological importance of Lipids • Fatty acids • Derived lipids • Cholesterol • Introduction and classification of carbohydrates • Isomerism, optical activity and mutarotation • Monosaccharide • Disaccharides • Homopolysaccharides • Heteropolysaccharides		• Atherosclerosis • Heteropoly saccharides	• Lipid solubility • Benedict's test and Molisch's test • Barfoed's Test and Selivanoff's test • Iodine Test	• Classification of carbohydrates and lipids • Classification and properties of fatty acids

Category A*: By HOD and Assistant Professor

Category B:** By All (HOD, Assistant Professors, Senior Demonstrators)

Category C*:** (By All Demonstrators)

Teaching Staff / Human Resource of Department of Biochemistry

Sr. #	Designation of Teaching Staff / Human Resource	Total number of teaching staff
1	Assistant professor of biochemistry department (AP)	01
2	Demonstrators of biochemistry department	07

Contact Hours (Faculty) & Contact Hours (Students)

Sr. #	Hours Calculation for Various Type of Teaching Strategies	Total Hours (Faculty)	Total Hours (student)
1.	Large Group Interactive Session (LECTURES)	2 * 8 = 16 hours	08
2.	Small Group Discussions (SGD)	1.5 * 5 = 7.5hours	06
3.	Problem Based Learning (PBL)	Zero	zero
4.	Practical / Skill Lab	1.5 * 5= 7.5hours	6
5.	Self-Directed Learning (SDL)	----------	08

Timetable For Respiratory Module
02-10-2023 TO 07-10-2023 (First Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM		11:00AM-12:00 PM		12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)
02-10-2023 MONDAY	**DISSECTION SGD**		**ANATOMY (LGIS)**		**DME SESSION**		**Break**	Practical & CBL Topics & venue mentioned at the end	SDL Physiology Mechanics of pulmonary ventilation, Lung Compliance
	Nose and Paranasal sinuses		Development of Respiratory System (Nose & Paranasal sinuses)	Histology of Respiratory System I	Feedback & Paper Discussion				
			Prof. Dr. Ayesha Yousaf (Even)	Assoct. Prof . Dr Mohtasham (Odd)	Dr. Sidra Hamid/ Dr. Saira Aijaz	Dr. Maria, Dr. Aneela & Dr Anila yasmeen			
03-10-2023 TUESDAY	**DISSECTION SGD**		**BIOCHEMISTRY (LGIS)**		**PHYSIOLOGY(LGIS)**			Practical & CBL Topics & venue mentioned at the end	SDL Physiology Pulmonary circulation
	Larynx and trachea		PH, PKa, Henderson Hasselbalch equation	Electron transportchain	Mechanics of pulmonary ventilation, Lung compliance	Pulmonary circulation & Pulmonary capillary dynamics. Physical principles of gas exchange & diffusion through respiratory membrane			
			Dr. Isma (Even)	Dr. Aneela jamil (Odd)	Dr. Faizania (Even)	Dr. Kamil (Odd)			
04-10-2023 WEDNESDAY	**DISSECTION SGD**		**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**			Practical & CBL Topics & venue mentioned at the end	SDL Biochemistry Biochemistry role of buffers in pH regulation HH equation
	Overview of thoracic wall		Histology of Respiratory system1	Development of Respiratory System (Nose & Paranasal sinuses)	Pulmonary circulation & Pulmonary capillary dynamics Physical principles of gas exchange& diffusion through respiratory membrane	Mechanics of pulmonary ventilation Lung compliance			
			Assoct. Prof. Dr Mohtasham (Even)	Prof. Dr. Ayesha(Odd)	Dr. Kamil (Even)	Dr. Faizania (Odd)			
05-10-2023 THURSDAY	**DISSECTION/SGD**	**PBL SESSION -I**	**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**			Practical & CBL Topics & venue mentioned at the end	SDL AI Artificial Intelligence basic concepts
	Skeleton of thoracic wall (Ribs)	Asbestosis First Year Batch of Physiology Teachers Supervised by Dr. Sidra Hamid	Histology of Respiratory system II	Development of Respiratory system (Trachea and Larynx)	Transport of oxygen	Pulmonary volumes, capacities & functions of respiratory tract			
			Assoct. Prof. Dr. Mohtashim (odd)	Prof. Dr. Ayesha (Even)	Prof. Dr. Samia / Dr. Sheena (Odd)	Dr. Faizania (even)			
06-10-2023 FRIDAY	**DISSECTION/SGD**	**QURAN TRANSLATION – I**	**PHYSIOLOGY LGIS**		**BIOCHEMISTRY (LGIS)**			SDL Anatomy Nose paranasal sinus larynx and trachea	
	Skeleton of thoracic wall (Sternum)	Immaniat- V &VI / Ibaadat-V	Pulmonary volumes, capacities & functions of respiratory tract	Transport of oxygen	Electron transport chain	PH, pKa, Henderson Hasselbalch equation			
		Mufti Naeem (Even) / Molana AbdulWahid (Odd)	Dr. Faizania (Odd)	Prof. Dr. Samia / Dr. Sheena (even)	Dr. Aneela Jamil (Even)	Dr. Isma (Odd)			
07-10-2023 SATURDAY	**BIOCHEMISTRY (LGIS)**	**PHYSIOLOGY (LGIS)**	**ANATOMY (LGIS)**		**PHYSIOLOGY LGIS**		**Break**	Practical & CBL Topics & venue mentioned at the end	SDL Anatomy Skeleton of thoracic wall
	Oxidative phosphorylation / Normal pH regulation by buffers	Oxygen hemoglobin dissociation curve / Ventilation perfusionratio	Development of Respiratory system (Trachea and Larynx)	Histology of Respiratory system II	Ventilation perfusionratio	Oxygen hemoglobin dissociation curve			
	Dr. Aneela Jamil (even) / Dr. Isma (Odd)	Prof. Dr. Samia / Dr. Sheena (even) / Dr. Nayab (Odd)	Prof. Dr. Ayesha (Even)	Assoct. Prof. Dr. Mohtashim(Odd)	Dr. Nayab (even)	Prof. Dr. Samia / Dr. Sheena (Odd)			

Topics For Practical with Venue
• Olfactory nasal mucosa/Epiglottis/ (Anatomy/ Histology-practical) venue Histology Laboratory • HH equation (Biochemistry practical) venue- Biochemistry Laboratory • Measurement of different lung volume & capacities with the help of spirometer (Physiology – practical) Physiology Laboratory

Topics For Small Group Discussion& CBLs With Venue
• Biochemistry tutorial- Electron transport chain (Lecture Hall 03) • Physiology CBL Wheeze/Stridor. (Lecture Hall 05)

Schedule For Practical / Small Group Discussion

Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	Biochemistry SGD
Monday	**C**	**B**	**E**	**A**	**D**
Tuesday	**D**	**C**	**A**	**B**	**E**
Wednesday	**E**	**D**	**B**	**C**	**A**
Thursday	**B**	**A**	**D**	**E**	**C**
Saturday	**A**	**E**	**C**	**D**	**B**

1st week Practical by Dr. Ali Raza

Venue For First Year Batches For Anatomy Dissection / Small Group Discussion

Batches	Roll No	Anatomy Teacher	Venue
A	01-90	Dr. Quratulain Sharif	Lecture Hall No.03 Anatomy Lecture Hall
B	91-180	Dr. Ali Raza	New Lecture Hall Complex Lecture Theater # 04
C	181- 270	Dr. Urooj	New Lecture Hall Complex Lecture Theater # 02
D	271 - onwards	Dr. Zanera Saqib	New Lecture Hall Complex Lecture Theater # 01

Venue For First Year Batches For PBL & SGD Team-I

Batches	Roll No	Venue	
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room(Basement)	Dr. Fareedullah
Batch-C1	(141-175)	Lecture Hall no.04(Basement)	Dr. Maryam Abbas(PGT Physiology)
Batch-C2	(176-210)	Lecture Hall no.05(Basement)	Dr. Nayab (PGT Physiology)
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)	Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)	Dr. Izzah (PGT Physiology)
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology	Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)

Sr.No	Batch	Roll no	Names of Teachers	
			Biochemistry	Physiology
1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
2.	Batch –B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
3.	Batch –C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
4.	Batch –D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
5.	Batch -E	281-onwards	Dr. Faiza Zafar	Dr. Fareed

Venues for Large Group Interactive Session (LGIS) and SDL

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Timetable For Respiratory Module
09-10-2023 TO 14-10-2023 (Second Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM		11:00AM-12:00 PM		12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)
09-10-2023 MONDAY	**DISSECTION/SGD**		**MEDICINE (LGIS)**		**PHYSIOLOGY (LGIS)**		Break	Practical & CBL Topics & venue mentioned at the end	SDL Physiology Lung volumes and capacities
	Joints of Thoracic Wall		Tuberculosis		Transport of CO_2	Lung function test			
			Dr. Sana (Odd)	Dr. Sara (Even)	Prof.. Dr. Samia / Dr. Iqra ((even)	Dr. Faizania (Odd)			
10-10-2023 TUESDAY	**DISSECTION/SGD**	**PBL SESSION -II**	**ANATOMY (LGIS)**		**CLIMATE CHANGE & HEALTH**			Practical & CBL Topics & venue mentioned at the end	SDL Physiology Transport of Oxygen
	Thoracic Apertures	Asbestosis First Year Batch Of Physiology Teachers	Histology of Respiratory system III	Development of Respiratory System (Lungs)	Effects of Climate Changes on Body Systems (IHD, Skin Diseases & Heat Stroke)				
		PBL Team – I Supervised by Dr. Sidra Hamid	Assoct. Prof. Dr. Mohtashim (even)	Prof. Dr. Ayesha (Odd)	Dr. Sidra Hamid	Dr. Maria Tasleem			
11-10-2023 WEDNESDAY	**DISSECTION/SGD**		**ANATOMY (LGIS)**		**PHYSIOLOGY (LGIS)**			Practical & CBL Topics & venue mentioned at the end	SDL Biochemistry Role of buffers (chemical and physiological)
	Movements of Thoracic Wall & Intercostal Spaces		Development of Respiratory system (Lungs)	Histology of Respiratory system III	Lung function test	Transport of CO_2			
			Prof. Dr. Ayesha (even)	Assoct. Prof. Dr. Mohtashim(Odd)	Dr. Faizania (even)	Prof.Dr. Samia / Dr. Iqra (Odd)			
12-10-2023 THURSDAY	**DISSECTION/SGD**	**PRACTICAL COPIES**	**ANATOMY (LGIS)**		**FAMILY MEDICINE (LGIS)**			Practical & CBL Topics & venue mentioned at the end	SDL Biochemistry pH meter and body buffers
	Diaphragm	Marking by QEC, Dean & DME	Development of Respiratory system (Diaphragm)	Histology of Respiratory system IV	Approach to a patient with cough hemoptysis & shortness of breath				
		Dr. Fareed (Odd) Dr. Quratulain (Even)	Prof. Dr. Ayesha (Even)	Assoct. Prof. Dr. Mohtashim(Odd)	Dr. Sidra Hamid (Even)	Dr. Sadia Khan (Odd)			
13-10-2023 FRIDAY	**DISSECTION/SGD**	**BIOCHEMISTRY (LGIS)**	**ANATOMY (LGIS)**		**BEHAVIOUR SCIENCES & BIOETHICS**			SDL Anatomy Movement of Thoracic Wall & Intercostal Spaces	
	Diaphragm	NormalpH regulation by buffers Oxidative phosphorylation	Thoracic Radiology		Crises intervention and disasterConflict resolution and empathy				
		Dr. Isma (even) Dr. Aneela Jamil(Odd)	Dr. Minahil		Dr Muhammad Azeem Rao				
14-10-2023 SATURDAY	**DISSECTION/SGD**	**PHYSIOLOGY (LGIS)**	**RESEARCH CLUB ACTIVITY**		**PHYSIOLOGY (LGIS)**		Break	Practical & CBL Topics & venue mentioned at the end	SDL AnatomyOf diaphragm
	Vasculature of thoracic wall	Respiratory abnormalities Nervous regulationof respiration	Poster Presentation		Nervous regulation of respiration	Respiratory abnormalities			
		Dr. Faizania (Even) Prof.Dr. Samia / Dr. Kamil (Odd)	Dr. Sidra Hamid (Even)	Dr Khaula (Odd)	Prof.Dr. Samia / Dr. Kamil (Even)	Dr. Faizania (Odd)			

Topics For Practical With Venue	Topics For Small Group Discussion& CBLs With Venue
• Trachea (Anatomy/ Histology-practical) venue Histology Laboratory • Buffers (Biochemistry practical) venue- Biochemistry Laboratory • Recording of normal and modified movement of respiration (Stethography) (Physiology –practical) Physiology Laboratory	• Biochemistry CBL-Acid based (Lecture Hall 03) • Physiology CBL Crib Death. (Lecture Hall 05)

Schedule For Practical / Small Group Discussion

Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	BiochemistrySGD
Monday	C	B	E	A	D
Tuesday	D	C	A	B	E
Wednesday	E	D	B	C	A
Thursday	B	A	D	E	C
Saturday	A	E	C	D	B

2nd week Practical by Dr. Quratulain Sharif

Venue For First Year Batches For Anatomy Dissection / Small Group Discussion

Batches	Roll No	AnatomyTeacher	Venue
A	01-90	Dr. Quratulain Sharif	Lecture Hall No.03 Anatomy Lecture Hall
B	91-180	Dr. Ali Raza	New Lecture Hall Complex Lecture Theater # 04
C	181- 270	Dr. Urooj	New Lecture Hall Complex Lecture Theater # 02
D	271 - onwards	Dr. Zanera Saqib	New Lecture Hall Complex Lecture Theater # 01

Venue For First Year Batches For PBL & SGD Team-I

Batches	Roll No	Venue	
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room(Basement)	Dr. Fareedullah
Batch-C1	(141-175)	Lecture Hall no.04(Basement)	Dr. Maryam Abbas(PGT Physiology)
Batch-C2	(176-210)	Lecture Hall no.05(Basement)	Dr. Nayab (PGT Physiology)
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)
Batch-D2	(246-280)	Anatomy Museum (First Floor Anatomy)	Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)	Dr. Izzah (PGT Physiology)
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology	Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)

Sr. No	Batch	Roll no	Names of Teachers	
			Biochemistry	Physiology
1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
2.	Batch – B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
3.	Batch – C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
4.	Batch – D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
5.	Batch - E	281- onwards	Dr. Faiza Zafar	Dr. Fareed

Venues for Large Group Interactive Session (LGIS) and SDL

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Timetable For Respiratory Module
16-10-2023 TO 21-10-2023 (Third Week)

DAY/ TIME	8:00AM-9:00AM	09:00AM-10:00AM	10:00AM-11:00AM	11:00AM-12:00 PM	12:00PM-12:20PM	12:20PM-02:00PM	Home Assignment (2 Hours)
16-10-2023 MONDAY	**DISSECTION/SGD**	**PATHOLOGY**	**ANATOMY (LGIS)**	**PHYSIOLOGY (LGIS)**	Break	Practical & CBLTopics & venue mentioned at theend	SDL Physiology Chemical regulation of respiration & exercise changes Online SDLEvaluation
	Innervation of Thoracic Wall	Clinical disorders of Respiration	Histology of Respiratorysystem IV / Development of Respiratorysystem (Diaphragm)	Hypoxia, hypercapnia, cyanosis / Chemical regulation of respiration & exercise changes			
		Dr. Sara(Even) / Dr. Aasia(Odd)	Assoct. Prof. Dr. Mohtashim(Even) / Prof. Dr. Ayesha (Odd)	Dr. Nayab (Even) / Prof.Dr. Samia / Dr. Kamil(Odd)			
17-10-2023 TUESDAY	**DISSECTION/CBL**		**PHYSIOLOGY (LGIS)**	**PHYSIOLOGY (LGIS)**		Practical & CBLTopics & venue mentioned at theend	SDL Phys Hypoxia, hypercapnia, cyanosis iology
	Pleura		Hypoxia, hypercapnia,cyanosis / Chemical regulation of respiration & exercise changes	Chemical regulation of respiration & exercise changes / Hypoxia, hypercapnia, cyanosis			
			Dr. Shmyla Hamid (Even) / Prof.Dr. Samia /Dr. Kamil(Odd)	Prof.Dr. Samia / Dr. Kamil(Even) / Dr. Nayab (Odd)			
18-10-2023 WEDNESDAY	**DISSECTION/CBL**		**COMMUNITY MEDICINE**	**PHYSIOLOGY (LGIS)**		Practical & CBLTopics & venue mentioned at theend	SDL Biochemistry Pyridoxine
	Lungs		Greenhouse effect	Miscellaneous factors affecting respiration (concept of voluntary control of respiration, lung J receptor, brain edema, anesthesia, chyne stokes breathing, sleep apnea / Space physiology			
			Dr. Rizwana (Odd) / Dr. Asif (Even)	Dr. Kamil (Even) / Prof. Dr Samia / Dr. Fareed(Odd)			
19-10-2023 THURSDAY	**DISSECTION/SGD**	**DEEN CLUB ACTIVITY**		**PHYSIOLOGY (LGIS)**		Practical & CBLTopics & venue mentioned at theend	SDL Biochemistry Xenobiotic Online Clinical Evaluation
	Lungs	Lecture on Character Building Activity of Counselling Cell		Space physiology / Miscellaneous factors affecting respiration (concept of voluntary control of respiration, lung J receptor, brain edema, anesthesia, chyne stokes breathing, sleep apnea			
				Prof. Dr Samia / Dr. Fareed(Even) / Dr. Kamil(Odd)			
20-10-2023 FRIDAY	**BIOCHEMISTRY (LGIS)**	**ENT (LGIS**	**COMMUNITY MEDICINE**	**PHYSIOLOGY (LGIS)**		SDL Anatomy Pleura	
	Pyridoxin Pant ethnic acid biotin &Ribo flavin / Xenobiotics	Foreign body nose & ear &Tonsillitis	Global warming and climate change	Deep sea physiology / High Altitude Physiology			
	Dr. Almas (Even) / Dr. Uzma Zafar (Odd)	Dr. Sundus (Even) / Dr. Arshad (Odd)	Dr. Rizwana (Odd) / Dr. Asif (Even)	Prof. Dr. Samia /Dr. Nayyab (even) / Prof. Dr. Samia / Dr. Fareed (Odd)			
21-10-2023 SATURDAY	**DISSECTION/SGD**		**BIOCHEMISTRY (LGIS)**	**PHYSIOLOGY (LGIS)**	Break	Practical & CBLTopics & venue mentioned at theend	SDL Anatomy Lungs
	Radiology & Surface Marking		Xenobiotics / Pyridoxin&Pantothenic acidbiotin&Riboflavin	High AltitudePhysiology / Deep sea physiology			
			Dr. Uzma Zafar(even) / Dr. Almas (Odd)	Prof. Dr. Samia /Dr. Fareed (even) / Prof. Dr. Samia /Dr. Nayyab (Odd)			

Topics For Practical With Venue	Topics For Small Group Discussion& CBLs With Venue
• Lungs(Anatomy/ Histology-practical) venue Histology Laboratory • pH meter (Biochemistry practical) venue- Biochemistry Laboratory • Clinical examination of chest for respiration (Physiology –practical) Physiology Laboratory	• Biochemistry CBL – Vitamin biotin and pantothenic acid uncouplers(Lecture Hall 03) • Physiology tutorial- physiology of unusual environmental (Lecture Hall 05)

Schedule For Practical / Small Group Discussion

Day	Histology Practical	Biochemistry Practical	Physiology Practical	Physiology SGD	BiochemistrySGD
Monday	C	B	E	A	D
Tuesday	D	C	A	B	E
Wednesday	E	D	B	C	A
Thursday	B	A	D	E	C
Saturday	A	E	C	D	B
3rd week Practical by Dr. Kashif					

Venue For First Year Batches For Anatomy Dissection / Small Group Discussion

Batches	Roll No	AnatomyTeacher	Venue
A	01-90	Dr. Quratulain Sharif	Lecture Hall No.03 Anatomy Lecture Hall
B	91-180	Dr. Ali Raza	New Lecture Hall Complex Lecture Theater # 04
C	181- 270	Dr. Urooj	New Lecture Hall Complex Lecture Theater # 02
D	271 - onwards	Dr. Zanera Saqib	New Lecture Hall Complex Lecture Theater # 01

Venue For First Year Batches For PBL & SGD Team-I

Batches	Roll No	Venue	
Batch-A1	(01-35)	New Lecture Hall Complex Lecture no.02	Dr. Sheena Tariq
Batch-A2	(36-70)	New Lecture Hall Complex Lecture no.03	Dr. Uzma Kiani
Batch-B1	(71-105)	Lecture Hall no.02(Basement)	Dr. Fahd Anwar
Batch-B2	(106-140)	Conference room(Basement)	Dr. Fareedullah
Batch-C1	(141-175)	Lecture Hall no.04(Basement)	Dr. Maryam Abbas(PGT Physiology)
Batch-C2	(176-210)	Lecture Hall no.05(Basement)	Dr. Nayab (PGT Physiology)
Batch-D1	(210-245)	Lecture Hall no.03 (First Floor)	Dr. Iqra Ayub (PGT Physiology)
Batch-D2	(246-280)	Anatomy Museum (First FloorAnatomy)	Dr. Shahrukh (PBL) Dr. Shazia Noreen (SGD)
Batch-E1	(281-315)	Lecture Hall no.04 (First Floor Anatomy)	Dr. Izzah (PGT Physiology)
Batch-E2	(315 onwards)	Lecture Hall no.05Physiology	Dr. Uzma Zafar (PBL) Dr. Kamil Tahir (SGD)

Sr. No	Batch	Roll no	Names of Teachers	
			Biochemistry	Physiology
1.	Batch – A	01-70	Dr. Almas Ijaz	Dr. Sheena Tariq
2.	Batch – B	71-140	Dr. Rahat Afzal	Dr. Uzma Kiani
3.	Batch – C	141-210	Dr. Shahrukh Khan	Dr. Fahd Anwar
4.	Batch – D	211-280	Dr. Uzma Zafar	Dr. Maryam Abbas & Dr. Nayab Zonish
5.	Batch - E	281- onwards	Dr. Faiza Zafar	Dr. Fareed

Venues for Large Group Interactive Session (LGIS) and SDL

Odd Roll Numbers	New Lecture Hall Complex Lecture Theater # 03
Even Roll Number	New Lecture Hall Complex Lecture Theater # 02

Timetable For Respiratory Module
23-10-2023 TO 28-10-2023 (Fourth Week)

DAY/ TIME	8:00AM-9:00AM
23-10-2023 MONDAY	Assessment Week
24-10-2023 TUESDAY	
25-10-2023 WEDNESDAY	
26-10-2023 THURSDAY	
27-10-2023 FRIDAY	
28-10-2023 SATURDAY	

SECTION VI

Table of Specification (TOS) For Respiratory Module Examination for First Year MBBS

Sr. #	Discipline	No. of MCQs (%)	No. of MCQs according to cognitive domain			No. of SEQs (%)		No. of SEQs according to cognitive domain			Viva voce/OSPE	Total Marks
			C1	C2	C3	No. of items	Marks	C1	C2	C3		
1.	Anatomy	25	15	5	5	5	25	1	2	2	50	100
2.	Physiology	30	18	9	3	4	20	1	2	1	50	100
3.	Biochemistry	5	3	2	-	3	15	-	1	-	20	20
4.	Bioethics Professionalism	5										5
5.	Research, Artificial Intelligence & Innovation	10										6
6.	Behavioral Sciences	2										2
7.	Family Medicine	1										1
										Grand Total	234	

Annexure-I

(Sample MCQ, SEQ & OSPE papers)

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS MCQs RESPIRATORY MODULE EXAM

1. Radiographic examination of a patient with insufficient breathing movements reveals permanent elevation and paradoxical movement of one half of the diaphragm, most likely reason is
    a. Irritation of diaphragm bilaterally
    b. Unilateral damage of phrenic nerve
    c. Injury to intercostal nerves on one side
    d. Vagal stimulation
    e. Damage to respiratory center

2. Lymphatics from the back of thoracic wall drains into
    a. posterior intercostal nodes
    b. internal mammary nodes
    c. anterior intercostal nodes
    d. pectoral nodes
    e. subdiaphragmatic node

3. Type I Pneumocytes covering approximately 95% of the alveolar surface are
    a. Source of surfactant
    b. Squamous & Thin
    c. Having microvilli at apical surface
    d. Joined with neighboring cells by adhering junctions
    e. Also called dust cells

4. A 60 years old man presented to OPD with edema of lower limbs, on investigations there is obstruction of the inferior vena cava, alternative pathway to return of blood to right atrium is provided by
    a. Azygos vein
    b. Inferior hemiazygos vein
    c. Superior hemiazygos vein
    d. Right subcostal vein
    e. Internal thoracic vein

5. Non-ciliated dome shaped cells with apical ends bulging due to secretory granules; also involved in producing protein content of surfactants in the lining of bronchioles are
    a. Type I pneumocytes
    b. Type II pneumocytes
    c. Clara cells
    d. Brush cells
    e. Goblet cells

RAWALPINDI MEDICAL UNIVERSITY
ANATOMY DEPARTMENT
1ST YEAR MBBS SEQs RESPIRATORY MODULE EXAM

1. A person sustained multiple rib fractures in a road traffic accident. After this he developed flail chest.

a. What is the movement of chest wall in this condition? (1)

b. Explain pump handle movement of chest wall. (2)

c. Give contents of intercostal space. (2)

2. a. Give characteristic features of interior of right ventricle. (3)

b. What is a moderator band? (1)

c. Define sudden death syndrome. (1)

. a. Discuss formation and partitioning of heart tube. (3)

b. Enlist different types of inter atrial septal defects. (2)

4. a. Discuss characteristic features of sinusoidal capillaries. (1)

b. Draw and label elastic artery. (2)

c. Give location and function of type II pneumocytes. (2

RAWALPINDI MEDICAL UNIVERSITY

PHYSIOLOGY DEPARTMENT

1ST YEAR MBBS MCQs RESPIRATORY MODULE EXAM

1. When the radius of resistance vessels is increased there will be increase in:
   a. Capillary blood flow
   b. Diastolic blood pressure
   c. Hematocrit
   d. Systolic blood pressure
   e. Viscosity of blood

2. Turbulence in a blood vessel is inversely proportional to the :
   a. Viscosity of blood
   b. Velocity of blood flow
   c. Diameter of the vessel
   d. Density of fluid inside the vessel
   e. Reynolds' number

3. A physiologist while teaching the concept of Starling forces directs his students with the subsequent data to calculate the net force. Pressure in the capillary in muscle= 35 mm Hg at the arteriolar end, 14 mm Hg at the venular end. The interstitial pressure= 0 mm Hg.The colloid osmotic pressure is 25 mm Hg in capillary and 1 mm Hg in interstitium. The net force producing fluid movement across the capillary wall at its arteriolar end is:
   a. 10mmHg filtration
   b. 11mmHg filtration
   c. 11mmHg reabsorption
   d. 3mmHg filtration
   e. 3mmHg reabsorption

4. In local control of blood flow the most significant regulatory mechanism is the :
   a. Release of adrenal medullary catecholamines
   b. Local concentration of metabolites
   c. Local concentration of cellular nutrients
   d. Sympathetic activation of blood vessels
   e. Sympathetic inhibition of blood vessels

5. Neural control of circulation predominates over local control in the :
   a. Brain
   b. Heart
   c. Kidney
   d. Skeletal muscle
   e. Skin

RAWALPINDI MEDICAL UNIVERSITY

PHYSIOLOGY DEPARTMENT

1ST YEAR MBBS SEQs RESPIRATORY MODULE EXAM

Q.1 Draw and label a normal electrocardiogram. Give the normal duration of PR interval, in which condition it is prolonged. (3,2)

Q.2 Define cardiac output. Give its normal values in males and females. Enlist factors causing hypoeffective heart (2.3)

Q3 A 50-year-old smoker progressively developed dyspnea and cough over a few months. After clinical examination and lung function tests he was diagnosed to be suffering from pulmonary emphysema.

a. How ventilation perfusion ratio will be altered in this patient? (3)
b. Enumerate the muscles that elevate the chest cage during inspiration (2)

Q.4 a. Define and give normal values:

1. Functional residual capacity (1.5)
2. Vital capacity (1.5)

b. What is the physiological significance of Functional residual capacity? (2)

RAWALPINDI MEDICAL UNIVERSITY

BIOCHEMISTRY DEPARTMENT

1ST YEAR MBBS MCQs RESPIRATORY MODULE EXAM

1. Buffer has maximum buffering capacity when

a. pH is acidic
b. pH <pKa
a. pH = pKa
c. pH >pKa
d. pH is alkaline

2. NAD is the coenzyme in the following type of chemical reactions

a. Carboxylation
b. Phosphorylation
c. Decarboxylation
b. Oxidation – reduction
d. Transamination

3. The following complex of electron transport chain is inhibited by Antimycin A

a. Complex I
b. Complex II
c. Complex III
c. Complex IV
d. Complex V

4. Following complex of electron transport chain contains copper:

a. Complex I
b. Complex II
c. Complex III
d. Complex IV
d. Complex V

SEQ

Q. Explain Chemiosmotic hypothesis of ATP synthesis. 05

RAWALPINDI MEDICAL UNIVERSITY

1ST YEAR MBBS BIOETHICS MCQs EXAM

1. ----Includes rules of conduct that may be used to regulate our activities concerning the biological world.
   a. Bio-piracy
   b. Biosafety
   c. Bioethics
   d. Bio-patents
   e. Bio-logistic

2. The right of patients having self-decision is called.
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

3. Following is not code of ethics.
   a. Integrity
   b. Objectivity
   c. Confidentiality
   d. Behaviour
   e. Autonomy

4. -------in the context of medical ethics, if it's fair and balanced
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

5. ------Principle requiring that physicians provide, positive benefits
   a. Justice
   b. Autonomy
   c. Beneficence
   d. Veracity
   e. Fidelity

Rawalpindi Medical University
Department of Anatomy
Block-I OSPE 1st Year MBBS

For Candidate: **Station No. 1** Time Allowed: 1 Min 30secs

Histology sketch copy will be assessed for

a. Complete index (1)

b. Complete and signed diagrams (1)

c. 2 ID points mentioned with each diagram (1)

Station No. 2

For Candidate: Time Allowed: 1 Min 30secs

a. Identify slide A (1)

b. Identify slide B (1)

c. What are common locations of slide A in human body (1

Rawalpindi Medical University
Department of Physiology
Block-I OSPE 1st Year MBBS

For Candidate: Time Allowed: 2 Minutes

1 A resident of internal medicine was examining a visibly dyspnoeic old man, he noted pulsations in the neck, he was confused about their nature. Enlist some maneuvers which will ascertain the nature of the pulsation. **(2.5)**

2 Give 03 sites for recording arterial pulse. **(0.5)**

Rawalpindi Medical University
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Block-I OSPE 1st Year MBBS

For Candidate: **Station No. 1** Time Allowed: 2 Mins

Observed Station

Perform Iodine test. 03

For Organizer: **Station No. 2**

Observed Station

Observe the slide under the microscope. Give one identifying feature. 03