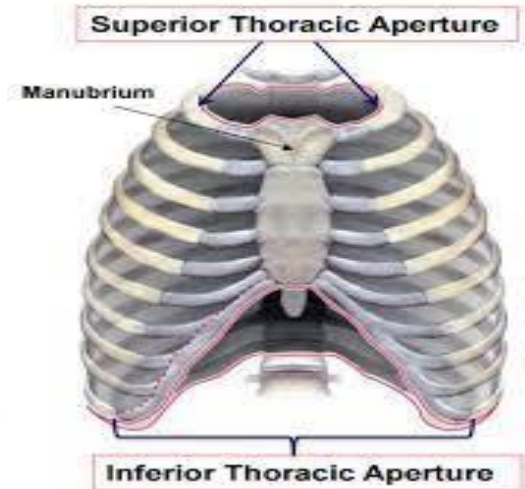
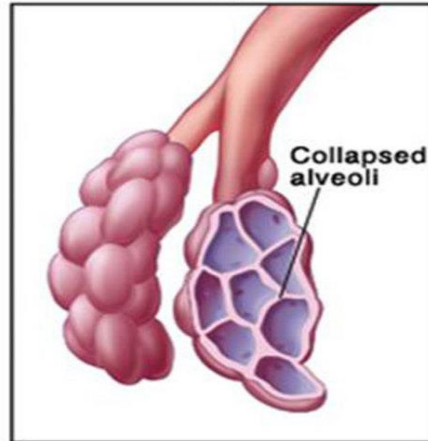
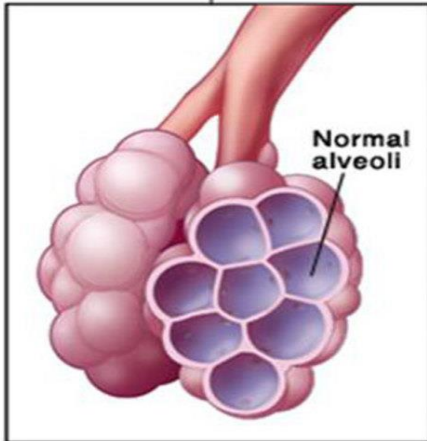
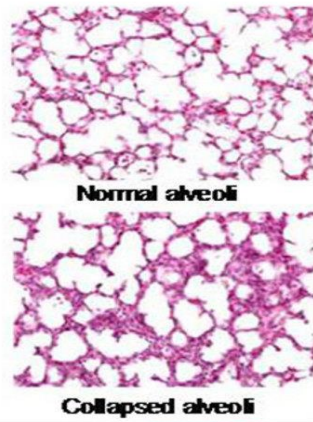
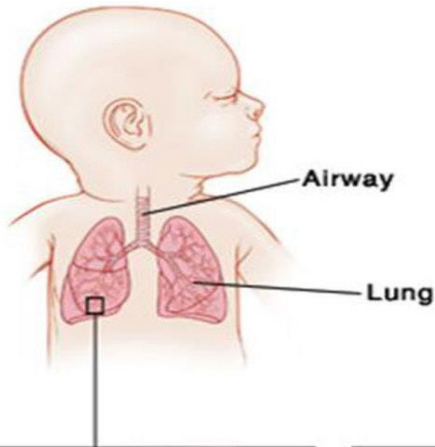


STUDY GUIDE

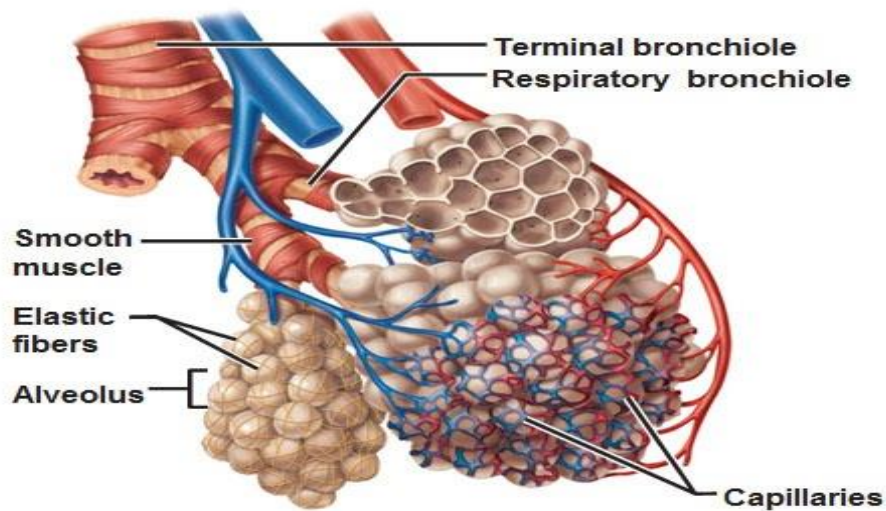
FIRST YEAR MBBS

16TH AUG- 17TH SEP 2021

DURATION: 5 WEEKS



Diagrammatic view of capillary-alveoli relationships



RESPIRATORY MODULE I



LIAQUAT NATIONAL HOSPITAL AND MEDICAL COLLEGE

Institute for Postgraduate Medical Studies & Health Science



STUDY GUIDE FOR RESPIRATORY SYSTEM-I MODULE

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Module name: Respiratory System I

Year: one

Duration: 5 weeks (Aug-Sep 2021)

Timetable hours: Lectures, Team based Learning (TBL), Laboratory, Practical, Demonstrations, Skills, Self-Study

MODULE INTEGRATED COMMITTEE

MODULE COORDINATOR:	Prof. Ahsan Ashfaq (Physiology)
CO-COORDINATOR:	Dr. Fatima Rehman (Anatomy)

DEPARTMENTS & RESOURCE PERSONS

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
ANATOMY Professor Zia-ul-Islam	PHYSIOTHERAPY Mr. Muhammad Ali
BIOCHEMISTRY Professor Kashif Nisar	MEDICINE Professor Karimullah Makki
COMMUNITY MEDICINE Dr. Saima Zainab	
FORENSIC MEDICINE Professor Murad Zafar	
MICROBIOLOGY Professor Shaheen Sharafat	
PHYSIOLOGY Professor Syed Hafeezul Hassan	
DEPARTMENT of HEALTH PROFESSIONS EDUCATION	
<ul style="list-style-type: none"> • Professor Nighat Huda • Professor Sobia Ali • Dr. Afifa Tabassum • Dr. Sana Shah 	
LNH&MC MANAGEMENT	
<ul style="list-style-type: none"> • Professor Karimullah Makki, Principal LNH&MC • Dr. Shaheena Akbani, Director A.A & R.T LNH&MC 	
STUDY GUIDE COMPILED BY: Department of Health Professions Education	

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program of the module has been organized
- Help students organize and manage their studies throughout the module
- Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

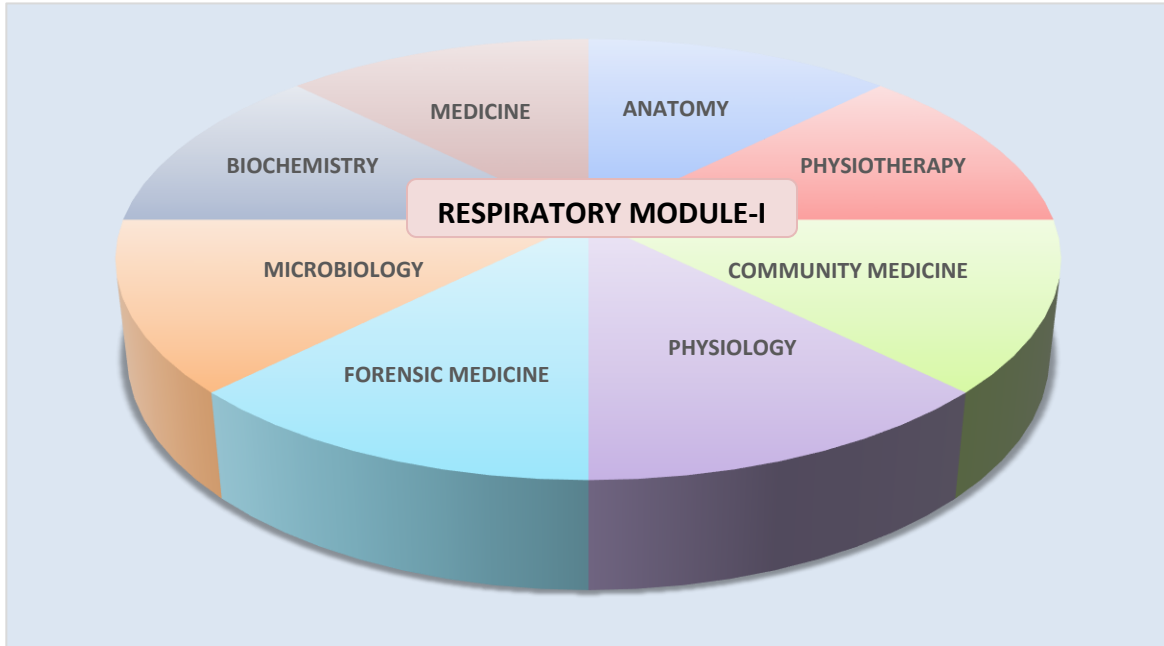
- Communicates information on organization and management of the module. This will help the student to contact the right person in case of any difficulty
- Defines the objectives which are expected to be achieved at the end of the module
- Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives
- Provides a list of learning resources such as books, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning
- Highlights information on the contribution of continuous and semester examinations on the student's overall performance
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives
- Focuses on information pertaining to examination policy, rules and regulations

CURRICULUM FRAMEWORK

Students will experience integrated curriculum of previous modules.

INTEGRATED CURRICULUM comprises of system-based modules such as Locomotor system, Respiratory System and Cardiovascular system which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case-based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab and physiotherapy department are characteristics of integrated teaching program.

INTEGRATING DISCIPLINES OF RESPIRATORY SYSTEM-I MODULE



LEARNING METHODOLOGIES

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- Small Group Discussion
- Case- Based Learning (CBL)
- Practicals
- Skills session
- E-Learning
- Self-Directed Learning

INTERACTIVE LECTURES

In large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients' interviews, exercises, etc. Students are actively involved in the learning process.

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

CASE- BASED LEARNING: A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained in clinical and basic health sciences during the module.

PRACTICAL: Basic science practicals related to anatomy, biochemistry, pathology, pharmacology and physiology are scheduled for student learning.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Department of Physiotherapy.

SELF STUDY: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

E-LEARNING: E-Learning is a strategy by which learning occurs through the utilization of electronic media, typically the Internet. The basic aspects of medical professionalism and ethics will be addressed through an e-learning course.

MODULE: RESPIRATORY SYSTEM-I

IMPORTANCE OF RESPIRATORY SYSTEM

The module focuses on integrating basic health sciences to clinical medicine. It will be taught in a combination of lectures, tutorials, small group learning sessions, practical and skills classes and possibly visits to clinics / wards. The module will explore the normal as well as the abnormal physiology of the respiratory system. Students will be introduced to a variety of pathologies to facilitate a better understanding of how the respiratory system is impacted by disease. It will give the broad overview of the system. The module will also address respiratory adaptations to exercise as well as examining its responses to different environments like high altitudes and deep sea diving. This will extend students' integrative abilities.

AIMS OF THIS MODULE:

The module aims to provide:

- Knowledge and understanding of the structures and functions of the respiratory system and how it responds to changing metabolic needs of the body, organs and tissues, revealing the relevance of such knowledge to clinical practice
- Knowledge and understanding of the origin and associated risk factors of common diseases of the respiratory system
- Knowledge and prevention of common infectious diseases associated with the respiratory diseases
- Practice of basic skills used in testing the function of this system in a simulated clinical setting



COURSE OBJECTIVES AND TEACHING STRATEGIES

At the end of the module the students will be able to:

ANATOMY

OBJECTIVES	LEARNING STRATEGY
1. Introduction to thoracic cage, thoracic inlet, and gross anatomy of diaphragm	Interactive Lectures /Case- Based Learning/Small Group Discussion
• Describe the thoracic cage and its boundaries	
• Describe thoracic Inlet and thoracic outlet	
• Discuss intercostal muscles and their neuro-vasculature	
• Describe supra-pleural membrane and endo-thoracic fascia	
• Describe the position & component of muscular & tendinous part of diaphragm	
• Describe the attachments of diaphragm	
• Describe the blood supply and nerve supply of diaphragm	
• Describe the opening present in the diaphragm and their respective levels	
• Enumerate the structures passing through the openings and piercing the diaphragm	
• List the functions of diaphragm	Small Group Discussion/Tutorial
2. Thoracic vertebrae & joints of thoracic wall	
• Describe general features of vertebral column	
• Describe spinal curvature in children and adults	
• Discuss general characteristics of a vertebra and general features of thoracic vertebrae	
• Differentiate typical and atypical vertebrae	
• Discuss joints formed by thoracic vertebrae, general features of intervertebral joints, and costovertebral joints	
• Enumerate the diseases related to vertebral column (scoliosis, lordosis, disc prolapse)	
• Describe the features of diseases related to thoracic vertebrae	Small Group Discussion
3. Thoracic wall muscles & fascia of thoracic wall & movements	
• Describe the layers of thoracic wall	
• Describe the attachment of muscles of thoracic wall, their actions & nerve supply	Interactive Lectures
• Describe the arrangement & modifications of fascia	
4. Neurovascular supply of thoracic wall	
• Describe the nerve supply of skin, fascia and muscles of thoracic wall	Interactive Lectures /Tutorial
• Describe the origin and course of arteries, and nerves supplying the thoracic wall	
• Explain the venous drainage of thoracic wall, and its communications	
5. Mediastinum, its divisions and contents of superior and anterior mediastinum	Interactive Lectures /Tutorial
• Define mediastinum	
• Describe the divisions of mediastinum	
• Define the extent and boundaries of mediastinum	

<ul style="list-style-type: none"> • Describe the boundaries of superior mediastinum 	
<ul style="list-style-type: none"> • List the contents of superior mediastinum 	
<ul style="list-style-type: none"> • Describe origin, extent and termination of aorta 	
<ul style="list-style-type: none"> • Describe the extent, branches and relations of Aorta within the superior mediastinum 	
<ul style="list-style-type: none"> • Explain the tributaries of superior vena cava within the superior mediastinum 	
<ul style="list-style-type: none"> • Discuss the nerves present in the superior mediastinum 	
<ul style="list-style-type: none"> • Describe the major viscera present in superior mediastinum 	
<ul style="list-style-type: none"> • Describe the boundaries and contents of anterior mediastinum 	
6. Posterior mediastinum-I (Thoracic Aorta, Esophagus & Azygous System of vein)	Interactive Lectures /Tutorial
<ul style="list-style-type: none"> • Describe the boundaries of posterior mediastinum 	
<ul style="list-style-type: none"> • List the contents of posterior mediastinum 	
<ul style="list-style-type: none"> • Describe the extent and position of thoracic aorta in posterior mediastinum 	
<ul style="list-style-type: none"> • Enumerate the branches of thoracic aorta 	
<ul style="list-style-type: none"> • Describe the length, extent and relations of esophagus 	
<ul style="list-style-type: none"> • Describe the blood supply, nerve supply, venous drainage, & lymphatics of esophagus 	
<ul style="list-style-type: none"> • Discuss the clinical significance of anatomical constrictions of esophagus 	
<ul style="list-style-type: none"> • Define Azygos system of veins 	
<ul style="list-style-type: none"> • Describe the formation, course, relations and tributaries of azygos, Hemi-azygos & Accessory hemi-azygos veins 	
<ul style="list-style-type: none"> • Discuss variations in the origin of azygos vein 	
<ul style="list-style-type: none"> • Discuss the clinical importance of Azygos system of veins 	
7. Posterior mediastinum-II (Thoracic sympathetic trunk, thoracic duct, phrenic and vagus nerve)	
<ul style="list-style-type: none"> • Discuss the thoracic part of sympathetic chain, ganglia, and branches 	
<ul style="list-style-type: none"> • Describe the origin, intrathoracic course and branches of vagus & phrenic nerves 	
<ul style="list-style-type: none"> • Describe origin, extent, tributaries, territory of drainage & termination of thoracic duct 	Interactive Lectures /Practical
8. Introduction to respiratory tract (Gross anatomy of pleura and lung)	
<ul style="list-style-type: none"> • Enumerate the parts of respiratory tract 	
<ul style="list-style-type: none"> • Describe the clinical (upper and lower respiratory tract) and anatomical (Conducting and respiratory) divisions of respiratory tracts 	
<ul style="list-style-type: none"> • Describe parietal and visceral pleura and its innervation 	
<ul style="list-style-type: none"> • Describe arrangement of pleura according to lines of orientation (mid sternal, mid clavicular and axillary etc) 	
<ul style="list-style-type: none"> • Discuss clinical anatomy of pleura (related to effusion and pleural tap etc) 	
<ul style="list-style-type: none"> • Name the diseases related to pleura 	
<ul style="list-style-type: none"> • Summarize the features of diseases related to pleura 	
<ul style="list-style-type: none"> • Describe apex, base, surfaces and borders of lungs 	
<ul style="list-style-type: none"> • Describe Hilum /root of the lungs 	
<ul style="list-style-type: none"> • Discuss Fissures and lobes of the lungs 	
<ul style="list-style-type: none"> • Describe the divisions of bronchial tree 	
<ul style="list-style-type: none"> • Describe the bronchopulmonary segmentation and their importance 	

<p>9. Vasculature of lungs, bronchial & pulmonary vessels, & lymphatics of thorax</p> <ul style="list-style-type: none"> • Describe the origin, course and termination of bronchial vessels and their territory of supply/ drainage • Discuss the origin, course and termination of pulmonary vessels and their functions • Describe the nerve supply of lung • Describe the different groups of lymph nodes in thorax • Discuss the deep as well as the superficial lymphatics of thorax • Discuss the significance of lymphatics drainage of thorax 	
<p>10. Histology of respiratory epithelium and its variations</p> <ul style="list-style-type: none"> • Name the types of epithelia lining the various parts of respiratory system • Explain the histological features of various parts of respiratory system • Identify the various epithelial tissue and its variations in different parts of conducting system, as shown in the slides of respiratory tract <p>11. Histology of trachea and lung</p> <ul style="list-style-type: none"> • Describe the histological features of different layers of trachea • Describe the divisions of bronchial tree • Discuss the structural variations in different parts of bronchial tree • Describe the structure of alveoli and interalveolar septum • Relate the functions of different type of cells, forming the alveolar wall • Describe the structure and function of blood -air barrier • Describe the histological characteristics of different layers of trachea based on light microscope findings • Identify different components of bronchial tree • Identify alveolar duct, alveolar sac and alveoli 	Interactive Lectures /Practical
<p>12. Development of body cavities and diaphragm, and their anomalies</p> <ul style="list-style-type: none"> • Define the intra-embryonic mesoderm and its parts • Discuss the divisions of lateral plate mesoderm into visceral and parietal layers enclosing intraembryonic coelom • Describe the Cephalo-caudal and transverse folding of embryonic disc • Describe the folding of intraembryonic coelom and its divisions into three serous cavities • Discuss the formation of Pleuro-pericardial and Pleuro-peritoneal membranes • Define embryonic components of diaphragm (Septum Trans-versum etc) • Discuss the steps of development of diaphragm from its composite embryonic derivatives • Discuss anomalies related to its development <p>13. Development of respiratory system and its anomalies</p> <ul style="list-style-type: none"> • Discuss the formation of Laryngo- tracheal groove & respiratory diverticulum or Lung Bud • Describe the branching of primitive bronchi • Discuss the stages of development / maturation of Lungs • Name the congenital anomalies of respiratory system (tracheoesophageal fistula etc) • Describe the main features of the common congenital anomalies 	Interactive Lectures /Case- Based Learning

14. Cross sectional anatomy of thorax	Small Group Discussion/Tutorial
<ul style="list-style-type: none"> • Explain Thorax cross sectional anatomy 	
<ul style="list-style-type: none"> • Identify mediastinal great vessels, organs and lymph nodes on cross sectional images at different levels • Identify the structures at T4 vertebral level or angle of Louis 	
15. Sternum & Ribs [muscle attachment, typical and atypical ribs]	Small Group Discussion/ Practical
<ul style="list-style-type: none"> • Describe the borders and surfaces of sternum 	
<ul style="list-style-type: none"> • Summarize the locations of the muscles attached on sternum 	
<ul style="list-style-type: none"> • Enumerate the type of joints formed at sternum 	
<ul style="list-style-type: none"> • Relate the type of joint with its functions 	
<ul style="list-style-type: none"> • Classify ribs 	
<ul style="list-style-type: none"> • Discuss the features of ribs 	
<ul style="list-style-type: none"> • Differentiate typical from atypical ribs 	
<ul style="list-style-type: none"> • Describe the attachments (muscles and ligaments) on ribs 	
<ul style="list-style-type: none"> • Discuss joints formed by the ribs 	
<ul style="list-style-type: none"> • Describe the clinical features of cervical rib and rib fracture • Describe the functional significance of sternum 	
16. Surface anatomy of thoracic wall, lungs & pleura	Demonstration
<ul style="list-style-type: none"> • Describe surface marking of ribs and intercostal spaces 	
<ul style="list-style-type: none"> • Mark the anatomical landmarks of important thoracic arteries and veins 	
<ul style="list-style-type: none"> • Identify the surface anatomy of trachea and main bronchi 	
<ul style="list-style-type: none"> • Identify the important anatomical landmarks of lungs • Mark the surface anatomy of pleura 	

BIOCHEMISTRY

OBJECTIVES	LEARNING STRATEGY
1. Phospholipids	Interactive Lecture/Small Group Discussion
<ul style="list-style-type: none"> • Classify the Phospholipids in the human body with examples 	
<ul style="list-style-type: none"> • Discuss the synthesis and degradation of phospholipids 	
<ul style="list-style-type: none"> • Discuss the functions of phospholipids in the human body 	
<ul style="list-style-type: none"> • Describe the synthesis and biochemical role of surfactant 	
<ul style="list-style-type: none"> • Discuss the clinical significance of Acute Respiratory Distress Syndrome 	
2. Regulation of acid base balance	
<ul style="list-style-type: none"> • Explain the mechanism of acid production 	
<ul style="list-style-type: none"> • List the volatile & non-volatile acids 	
<ul style="list-style-type: none"> • Describe the Henderson's Hassellbach equation 	
<ul style="list-style-type: none"> • Explain the mechanisms of buffer in human body 	
<ul style="list-style-type: none"> • Discuss the normal regulation of pH by buffers, respiratory and renal systems 	
<ul style="list-style-type: none"> • Explain the anion gap and its biochemical significance 	
<ul style="list-style-type: none"> • Interpret the values of Arterial Blood Gases (ABGs) 	

3. Respiratory pH disturbances	Interactive Lecture/Small Group Discussion/Case- Based Learning
• Explain the role of respiration in pH regulation	
• Explain the mechanism of pH regulations in respiratory disturbances	
• Explain how to analyze ABGs in respiratory disorders	
• Discuss the clinical disorder of respiratory pH disturbances and their ABGs	
4. Respiratory compensation mechanism	Interactive Lecture/ Tutorial
• Describe the compensation of pH disturbances by the respiratory system	
• Describe compensation of pH disturbances due to respiratory diseases	
• Describe respiratory acidosis and respiratory alkalosis	
5. Arterial Blood Gases (ABGs)	Interactive Lecture/ Tutorial
• Interpret the normal values of Arterial Blood Gases (ABGs)	
• Interpret the ABGs in various clinical disorders	
6. pH meter	Practical
• Identify the chemical tests and bio-techniques to detect pH of solutions	
• Outline the methods for detection of pH of solutions in a sample	
• Determine the pH of different solutions using pH meter and litmus paper	
• Interpret clinical conditions correlated with their laboratory investigations	

COMMUNITY MEDICINE

OBJECTIVES	LEARNING STRATEGY
1. Pandemic-Introduction	Interactive Lecture
• To understand the concept of pandemic	
• To know the history of pandemics	
2. Immunization for Covid-19	
• To know the basic immunization of covid -19	

FORENSIC MEDICINE

OBJECTIVES	LEARNING STRATEGY
Medico-legal aspects of thoracic cage injuries	Interactive Lecture
• Define Trauma, Injuries	
• Describe Chest injuries including injuries to ribs, lungs, heart	
• Describe the Medico legal aspects of fractures related to chest wall	

MEDICINE

OBJECTIVES	LEARNING STRATEGY
• Describe the clinical presentation and management of covid-19	Interactive Lecture

MICROBIOLOGY

OBJECTIVES	LEARNING STRATEGY
Pathophysiology of Covid-19	Interactive Lecture
<ul style="list-style-type: none"> • Explain the mode of transmission and Pathophysiological mechanism of COVID 19 Infection 	
<ul style="list-style-type: none"> • List the important Pathological events that involve various Physiological systems during COVID 19 	
<ul style="list-style-type: none"> • Explain concept of Isolation and Quarantine 	

PHYSIOTHERAPY

OBJECTIVES	LEARNING STRATEGY
<ul style="list-style-type: none"> • Outline the purpose of Chest Physiotherapy 	Practical
<ul style="list-style-type: none"> • Compare different techniques of Chest Physiotherapy 	
<ul style="list-style-type: none"> • Distinguish between different types of breathing exercises 	
<ul style="list-style-type: none"> • Determine indications of chest Physiotherapy in respiratory conditions 	
<ul style="list-style-type: none"> • Identify Role of chest Physiotherapy in COVID Pneumonia 	

PHYSIOLOGY

OBJECTIVES	LEARNING STRATEGY
1. Introduction to respiratory physiology	Interactive Lecture/Small Group Discussion
<ul style="list-style-type: none"> • List parts of upper and lower respiratory tract 	
<ul style="list-style-type: none"> • Describe the functions of respiratory passages 	
2. Mechanics of respiration	
<ul style="list-style-type: none"> • Explain mechanism of pulmonary ventilation with reference to thoracic cage & muscles of respiration 	
<ul style="list-style-type: none"> • Define alveolar pressure, pleural pressure, and alveolar ventilation 	
<ul style="list-style-type: none"> • Discuss trans-pulmonary pressure and its changes during respiration 	Interactive Lecture/Small Group Discussion/Case- Based Learning
<ul style="list-style-type: none"> • Define dead space 	
3. Lung compliance	
<ul style="list-style-type: none"> • Define lung compliance 	
<ul style="list-style-type: none"> • List factors affecting lung compliance 	Interactive Lecture/Small Group Discussion/Case- Based Learning/Practical
<ul style="list-style-type: none"> • Describe the role of surfactant in maintaining lung compliance 	
<ul style="list-style-type: none"> • Differentiate among compliance work, tissue resistance work & airway resistance work 	Interactive Lecture/Small Group Discussion/Case- Based Learning/Practical
4. Pulmonary volumes and capacities	
<ul style="list-style-type: none"> • List the pulmonary volumes & capacity with their normal values & significance in pulmonary function test 	
<ul style="list-style-type: none"> • Determine functional residual capacity, residual vol. & total lung capacity (helium dilution method) 	

5. Pulmonary circulation V/Q relationship	Interactive Lecture/Small Group Discussion/Case- Based Learning
• Describe pressure in pulmonary circulation & blood flow zones of lung (1,2,3)	
• Explain pulmonary capillary dynamics	
• Explain mechanism of development of pulmonary oedema	
• State the importance of ventilation/perfusion ratio	
6. Diffusion of gases	
• Define respiration unit & respiration membrane	
• Describe mechanics of diffusion across respiration membrane & factors effecting diffusion	
• List partial pressure of respiratory gases in atmosphere, humidified, alveolar & expired air	
• Describe briefly the diffusing capacity of O ₂ and CO ₂	
7. Transport of Carbondioxide (CO₂)	Interactive Lecture/Small Group Discussion/Case- Based Learning
• Describe the chloride shift	
• Relate effect of CO ₂ and O ₂ transport (Haldane effect)	
• Define respiratory exchange ratio	
8. Oxygen (O₂) transport and O₂Hb curve	
• Explain transport of O ₂ from lungs to body tissues	
• Describe briefly the role of Hb in O ₂ transport	
• Define Bohr effect	
9. Respiratory adjustments to exercise	
• Describe the effects of exercise on respiratory system	
10. Respiratory adjustments to high altitude & deep sea	Interactive Lecture/Small Group Discussion
• Explain physiology of acclimatization and deep sea diving	
11. Hypoxia and its types	
• Define hypoxia and its types	
• Describe coughing & sneezing reflexes	Interactive Lecture/Small Group Discussion/Case- Based Learning
12. Regulation of respiration	
• List the respiratory centers & their effect on the regulation of respiration	
• Describe the neural and chemical control of respiration	
13. Pulmonary causes of Dyspnea	Interactive Lecture/Small Group Discussion/Case- Based Learning
• Describe the Pulmonary causes of Dyspnea: Emphysema, Pneumonia, Atelectasis and Tuberculosis	
14. Introduction to Power Lab (with respect to Respiration)	Practicals
• Identify different parts of power lab with respect to respiration and recording of normal respiratory rate	
15. Lung volume and capacities	
• Determine lung volumes and capacities (Spirogram)	
16. Pulmonary Function Tests (spirometry)	
• Perform respiratory function tests	
• Interpret results of respiratory function tests	

LEARNING RESOURCES

SUBJECT	RESOURCES
ANATOMY	<p>A. <u>GROSS ANATOMY</u></p> <ol style="list-style-type: none"> 1. K.L. Moore, Clinically Oriented Anatomy 2. Neuro Anatomy by Richard Snell <p>B. <u>HISTOLOGY</u></p> <ol style="list-style-type: none"> 1. B. Young J. W. Health Wheather’s Functional Histology <p>C. <u>EMBRYOLOGY</u></p> <ol style="list-style-type: none"> 1. Keith L. Moore. The Developing Human 2. Langman’s Medical Embryology
BIOCHEMISTRY	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Harper’s Illustrated Biochemistry 2. Lehninger Principle of Biochemistry 3. Biochemistry by Devlin
PHYSIOLOGY	<p>A. <u>TEXTBOOKS</u></p> <ol style="list-style-type: none"> 1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong ‘ S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice <p>B. <u>REFERENCE BOOKS</u></p> <ol style="list-style-type: none"> 1. Guyton & Hall Physiological Review 2. Essentials Of Medical Physiology by Jaypee 3. Textbook Of Medical Physiology by InduKhurana 4. Short Textbook Of Physiology by Mrthur 5. NMS Physiology

ASSESSMENT METHODS:

- **Best Choice Questions(BCQs)** also known as MCQs (Multiple Choice Questions)
- **Objective Structured Practical/Clinical Examination (OSPE or OSCE)**

BCQs:

- A BCQ has a statement or clinical scenario of four options (likely answers).
- **Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.**
- Students mark their responses on specified computer-based sheet designed for LNHMC.

OSCE:

- All students rotate through the same series of stations in the same allocated time.
- At each station, a brief written statement includes the task. Student completes the given task at one given station in a specified time.
- Stations are observed, unobserved, interactive or rest stations.
- In unobserved stations, flowcharts, models, slide identification, lab reports, case scenarios may be used to cover knowledge component of the content.
- Observed station: Performance of skills /procedures is observed by assessor
- Interactive: Examiner/s ask questions related to the task within the time allocated.
- In Rest station, students in the given time not given any specific task but wait to move to the following station.

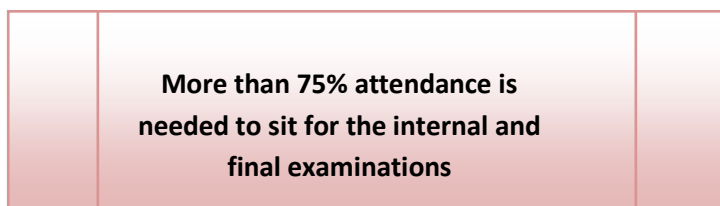
Internal Evaluation

- Students will be assessed comprehensively through multiple methods.
- 20% marks of internal evaluation will be added to JSMU final exam. That 20% may include class tests, assignment, practicals and the internal exam which will all have specific marks allocation.

Formative Assessment

Individual department may hold quiz or short answer questions to help students assess their own learning. The marks obtained are not included in the internal evaluation

For JSMU Examination Policy, please consult JSMU website!



LNH&MC EXAMINATION RULES & REGULATIONS

- Student must report to examination hall/venue, 30 minutes before the exam.
- **Exam will begin sharp at the given time.**
- No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
- Students must sit according to their roll numbers mentioned on the seats.
- **Cell phones are strictly not allowed in examination hall.**
- If any student is found with cell phone in any mode (silent, switched off or on) he/she will be not be allowed to continue their exam.
- No students will be allowed to sit in exam without University Admit Card, LNMC College ID Card and Lab Coat
- Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and Sharpener.
- Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students

SCHEDULE:

WEEKS	1 ST YEAR	MONTH
WEEK 1	LOCOMOTOR MODULE	14 th June 2021
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		
WEEK 8		
WEEK 9		
WEEK 1	RESPIRATORY MODULE	16 th Aug 2021
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		17 th Sep 2021
WEEK 1	CVS MODULE	20 th Sep 2021
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		30 th Oct 2021
PRE PROF EXAM*		

*Final dates will be announced later