LIAQUAT NATIONAL HOSPITAL & MEDICAL COLLEGE
2016
# STUDY GUIDE FOR RESPIRATORY SYSTEM MODULE

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Module name: Respiratory System

Semester: Two  Year: One  Duration: 3 weeks (July 2016 – Aug 2016)

Timetable hours: Lectures, Case-Based Learning (CBL), Self-Study, Practicals, Skills, Demonstrations, Visit to Wards & Laboratory

Credit hours: 3 credit hours in theory and 1.5 credit hours in practical

**MODULE INTEGRATED COMMITTEE**

| MODULE COORDINATORS:                        | • Prof. Syed Hafeez-ul-Hassan
|                                            | • Dr. Ashan Ashfaq
| CO-COORDINATOR:                            | • Professor Nighat Huda

**DEPARTMENTS’ & RESOURCE PERSONS’ FACILITATING LEARNING**

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<td>PHYSIOLOGY</td>
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<tr>
<td>• Professor Syed Hafeezul Hassan</td>
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**DEPARTMENT of HEALTHCARE EDUCATION**

| • Professor Nighat Huda |
| • Dr. Mirza Aroosa Beg |

**LNH&MC MANAGEMENT**

| • Professor Amir Ali Shoro, Dean & Principal, Director FHS LNH&MC |
| • Dr. Shaheena Akbani, Controller A.A & R.T LNH&MC |

**STUDY GUIDE COMPILED BY:** Department of Health Care Education

| • Dr. Muhammad Suleman Sadiq |
INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program of the semester-wise 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 1st & 2nd semesters.

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 MODULE

LEARNING METHODOLOGIES

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

- Interactive Lectures
- Hospital / Clinic visits
- Small Group Session
- Case- Based Learning
- Practicals
- Skills session
- Self Study

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.

HOSPITAL VISITS: In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.
SMALL GROUP SESSION (SGS): 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.

ASSESSMENT METHODS:

Theory (knowledge): Best Choice Questions (BCQs) also known as MCQs (Multiple Choice Questions) and EMQs (Extending Matching Questions) are used to assess objectives covered in each module.

BCQs:
- A BCQ has a statement or clinical scenario followed by four options (likely answers).
- After reading the statement/scenario student select ONE, the most appropriate answer/response from the given list of options.
- 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.

EMQs:
- An EMQ has:
  - An option list of 5-15 neurovascular supply, functions, diagnosis, investigations etc
  - A Lead In—Statement/Question
  - Two to four Stems or Clinical Scenarios
For each stem or clinical scenario, the student should choose the most appropriate option from the option list.

- A single option can be used once, more than once or not at all.
- Correct answer carries one mark and incorrect ‘zero mark’. There is NO negative marking.
- Student mark their responses on a specified computer-based sheet for EMQs.

**OSPE: Objective Structured Practical Examination**

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which students will have to answer the questions related to the given pictures, models or specimens the provided response sheet.
- Rest station is a station where there is no task given, and in this time student can organize his/her thoughts.

**Internal Evaluation**

- During the module, students will be assessed to determine achievement of module objectives.
- **Module Examination:** will be scheduled on completion of each module. The method of examination comprises theory exam which includes BCQs, and practical (Objective Structured Practical Examination).

- 20% marks of internal evaluation will be added in theory of semester exam. That 20% may include class tests, assignment, journals and the modular exam which all have specific marks allocation.
Example: Number of Marks allocated for Semester Theory and Internal Evaluation

<table>
<thead>
<tr>
<th>Semester</th>
<th>Semester Examination Theory Marks</th>
<th>Internal Evaluation (Class tests + Journals + Assignments + Modular Exam)</th>
<th>Total (Theory)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>80%</td>
<td>20%</td>
<td>100%</td>
</tr>
</tbody>
</table>

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.

More than 75% attendance is needed to sit for the modular and semester examinations.
SEASON EXAMINATION RULES & REGULATIONS OF JINNAH SINDH MEDICAL UNIVERSITY (JSMU)

- In one academic year there will be two semesters. The semester duration is approximately sixteen weeks.
- Each semester may have two to three modules from two to eight weeks duration.

JSMU EXAMINATIONS:

- JSMU will schedule and hold Semester Examinations on completion of each semester.
- In one academic year, there will be two semester examinations and one Retake Examination.

MBBS First year:

- **Semester I examination** is scheduled on completion of Foundation & Blood Modules.
- **Semester II Examination** is scheduled on completion of Locomotor, Respiratory and CVS Modules.

Examination Protocols:

- In each semester, module will be assessed by theory paper comprising only MCQs. For example, semester 2 will have separate paper for Locomotor, Respiratory & CVS Modules.
- There will be one OSPE (Objective Structured Practical Examination) which will cover all the modules of semester 2.

1. **Theory (Knowledge)**

   - Theory paper will comprise of 80 one best type MCQs and 20 EMQs.
   - Time duration for theory paper will be 120 minutes.
   - Students will mark their responses on JSMU specified response sheets assessed by computer software.
   - It will carry out 80% contribution in theory results of the Semester.
   - There is no negative marking.

2. **OSPE:**

   - It is held at the respective college unless specified by JSMU.
   - It may comprise between 12- 25 stations. Each station will carry 10 marks.
   - All students begin and end at the same time.
   - The content assessed is the same for all students
   - The time allocated for each station is the same.
3. JSMU Grading System

- It will be based on GPA – 4 system

<table>
<thead>
<tr>
<th>Marks obtained in Percentage range</th>
<th>Numerical Grade</th>
<th>Alphabetical Grade</th>
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</thead>
<tbody>
<tr>
<td>80-100</td>
<td>4.0</td>
<td>A+</td>
</tr>
<tr>
<td>75-79</td>
<td>4.0</td>
<td>A</td>
</tr>
<tr>
<td>70-74</td>
<td>3.7</td>
<td>A-</td>
</tr>
<tr>
<td>67-69</td>
<td>3.3</td>
<td>B+</td>
</tr>
<tr>
<td>63-66</td>
<td>3.0</td>
<td>B</td>
</tr>
<tr>
<td>60-62</td>
<td>2.7</td>
<td>B-</td>
</tr>
<tr>
<td>56-59</td>
<td>2.3</td>
<td>C+</td>
</tr>
<tr>
<td>50-55</td>
<td>2.0</td>
<td>C</td>
</tr>
<tr>
<td>&lt;50 Un-grade-able</td>
<td>0</td>
<td>U</td>
</tr>
</tbody>
</table>

- A candidate obtaining GPA less than 2.00 (50%) is declared un-graded (fail).
- Cumulative transcript is issued at the end of clearance of all modules.

4. Retake Examination

- The failures are to re-appear in subsequent examinations.
- It is held once a year that is after the even number semesters. For example at the end of second, fourth, sixth, eighth or tenth semester.
- Retake examinations are for those students who fail in semester examinations, and who wish to improve grades (GPA) secured in semester examinations.
- The candidate who has passed the semester examinations with GPA less than 3.0 GPA may re-appear in respective retake examination to improve grades.
- MBBS first year Candidates failing in retake examinations may re-appear in semesters’ examinations of the following year. The format is exactly the same as in semester examinations.

**EXAMPLE OF PROMOTION RULES:**

A student who fails in Semester One Examination and passes Semester Two, s/he will take Retake for Semester One Examination. S/he passes Semester one retake and is promoted to 2nd year. If that student FAILS in Retake, s/he will be promoted to 2nd year BUT will have to Pass Semester One examination in Second year along with Semester Three and Four examinations for promotion to third year.
5. Promotion to next class

- Students who pass both semester examinations are promoted from first year to second year.

- Students who fail the MBBS first year semester retake examination will be promoted to second year.

- Students will be promoted from second year to third year and onward only if they have passed the semester examinations of that year.

- Clearance of all modules and their components of semester one to four are mandatory for promotion from second year to third year (as per PMDC rules).

- As per PMDC rules any candidate failing to clear a module or its component in four (1+3) attempts is NOT allowed to carry out further medical education.

- To pass all modules and their components of semester/s are mandatory for promotion from third year onward.
SEMINTR 2 MODULE 2: RESPIRATORY SYSTEM

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. Video and hands – on sessions on coping with medical emergencies will be a useful introduction to clinical skill development.

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 basic skills used in testing the function of this system in a clinical scenario

- Knowledge of drugs used to treat respiratory diseases
COURSE OBJECTIVES AND STRATEGIES

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

ANATOMY

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>STRATEGY</th>
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<tbody>
<tr>
<td><strong>STRUCTURE AND FUNCTION OF THORAX, RIBS, THORACIC VERTEBRA &amp; STERNUM, THORACIC CAGE (MUSCLES, JOINTS)</strong></td>
<td>Lecture/Demonstration/Case-Based Learning</td>
</tr>
<tr>
<td>• Discuss the arrangement of cartilage that supports the laryngeal soft tissue components</td>
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<td>• Describe various bones and joints in the thoracic wall</td>
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<td>• Discuss muscles in the thoracic wall and diaphragm</td>
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<tr>
<td>• Define neurovascular plane</td>
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<tr>
<td>• Describe thoracic movements</td>
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<tr>
<td><strong>STRUCTURE AND FUNCTION OF MEDIASTINUM, LUNGS AND PLEURA and RESPIRATORY MUSCLES</strong></td>
<td>Lecture/Small Group Learning/Case-Based Learning</td>
</tr>
<tr>
<td>• Describe the microscopic features of conducting and respiratory parts of respiratory system</td>
<td></td>
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<tr>
<td>• Describe the layers of pleura and its types</td>
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<tr>
<td>• Describe the gross features of the lung and the connections to the other organ systems</td>
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<tr>
<td>• Discuss the relative positions of the lobes of the lungs as divided by fissures</td>
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<tr>
<td>• Describe the physical relation of the lobules to the bronchioles, vessels and alveolar components</td>
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<tr>
<td>• Explain how the respiratory muscles cause volume changes that lead to airflow into and out of the lungs (breathing)</td>
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<tr>
<td>• Define the mediastinum and its contents</td>
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<tr>
<td>• Demonstrate the pleural membranes and cavity</td>
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<tr>
<td>• Demonstrate the surface anatomy of Pleura and Lungs</td>
<td></td>
</tr>
<tr>
<td><strong>MICROSCOPIC STRUCTURE AND FUNCTION OF PHYARYNX, LARYNX TRACHEA AND NOSE</strong></td>
<td>Lecture/Practical</td>
</tr>
<tr>
<td>• Describe the structure of the internal and external nose</td>
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<tr>
<td>• Recognize the olfactory epithelium (modified respiratory epithelium)</td>
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<tr>
<td>• Identify some clinical problems related respiratory epithelium</td>
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<tr>
<td>• Enumerate the components of blood –air barrier</td>
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<tr>
<td>• Enumerate the types of cells present in alveolar wall</td>
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<tr>
<td>• Identify the histological features of upper respiratory tract</td>
<td></td>
</tr>
<tr>
<td>• Identify the histological features of lower respiratory tract</td>
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## DEVELOPMENT OF RESPIRATORY SYSTEM (EMBRYO)

- **Describe** how respiratory system develops
- **Discuss** how lung buds start initially
- **Describe** how the larynx, trachea, bronchi and lungs are formed
- **Demonstrate** how maturation of the lungs takes place
- **Discuss** the anomalies of the respiratory system

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## BIOCHEMISTRY

### RESPIRATORY VOLUMES AND CAPACITIES

- **Describe** the formation and functions of phospholipids (surfactant)
- **Discuss** the role of phospholipids in developing lung and in ARD

### GASEOUS TRANSPORT

- **Discuss** the role of respiratory system in pH regulation (HCO3 buffer)
- **Differentiate** between respiratory and metabolic acidosis and alkalosis with their compensatory mechanisms in relation to respiratory and metabolic diseases

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## BIOCHEMISTRY DIAGNOSTIC LABORATORY

### GASEOUS TRANSPORT

- **Differentiate** between acidosis and alkalosis on the basis of ABGs (pH irregularities)

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## COMMUNITY MEDICINE

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<tr>
<td><strong>COMMUNICABLE AND NON-COMMUNICABLE DISEASES</strong></td>
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<tr>
<td>• List the respiratory infections caused by droplet transmission with emphasis on Chicken pox and its relation with Herpes zoster</td>
<td>Lecture</td>
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<tr>
<td>• Explain vaccines for its prevention</td>
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<tr>
<td>• Discuss the importance of eradication of small pox and its concerns to its re-emergence.</td>
<td>Small Group Learning</td>
</tr>
<tr>
<td>• Describe measles, its complications and the vaccines involved with its prevention</td>
<td>Lecture</td>
</tr>
<tr>
<td>• Describe the pandemic, epidemic and endemic influenza and its concern to cyclic re-emergence and challenges with Vaccination</td>
<td>Lecture</td>
</tr>
</tbody>
</table>
| • Describe tuberculosis as a public health problem at national and global level  
• Discuss the role of DOTS  
• Discuss tuberculosis control program and screening of tuberculosis | Lecture/Small Group Learning |
| **OCCUPATIONAL HEALTH HAZARDS** |  |
| • Discuss and list the occupational health hazards and general principles of prevention | Lecture |
| • Describe Pneumoconiotic diseases and describe briefly Asbestosis, Byssinosis, Silicosis etc and their preventive measures | Lecture |
| • Identify the risk factors of asthma and its prevention  
• Discuss the Occupational Asthma and Carcinoma lung along with prevention | Lecture |
### MICROBIOLOGY

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<thead>
<tr>
<th>TOPIC</th>
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<tbody>
<tr>
<td><strong>COMMUNICABLE AND NON-COMMUNICABLE DISEASES</strong></td>
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<tr>
<td>- Identify the microscopic stages of pneumonia</td>
<td>Lecture</td>
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<tr>
<td>- Enumerate the common pathogens causing CAP (typical and atypical)</td>
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<tr>
<td>- Identify the microscopic and pathogenic features of Mycobacterium TB</td>
<td>Lecture</td>
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### PATHOLOGY

<table>
<thead>
<tr>
<th>TOPIC</th>
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<tbody>
<tr>
<td><strong>STRUCTURE AND FUNCTION OF MEDIASTINUM, LUNGS AND PLEURA and RESPIRATORY MUSCLES</strong></td>
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<tr>
<td>- List conditions associated with acute lung injuries and discuss its pathogenesis</td>
<td>Lecture</td>
</tr>
<tr>
<td>- Define atelectasis and and its types</td>
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</tr>
<tr>
<td><strong>PULMONARY PRESSURES &amp; CIRCULATION</strong></td>
<td></td>
</tr>
<tr>
<td>- Discuss the pulmonary vascular disorder and pulmonary embolism</td>
<td>Lecture</td>
</tr>
<tr>
<td>- Describe the predisposing conditions of pulmonary embolism and its pathogenesis</td>
<td></td>
</tr>
<tr>
<td>- List the preventive measures of pulmonary embolism</td>
<td></td>
</tr>
<tr>
<td><strong>COMMUNICABLE AND NON-COMMUNICABLE DISEASES</strong></td>
<td></td>
</tr>
<tr>
<td>- Discuss COPD and list its types</td>
<td>Lecture/Small Group Learning</td>
</tr>
<tr>
<td>- Discuss briefly pathogenesis of COPDs</td>
<td></td>
</tr>
<tr>
<td>- Define asthma, emphysema, bronchitis and bronchiectasis</td>
<td></td>
</tr>
<tr>
<td>- List types of emphysema and asthma</td>
<td></td>
</tr>
<tr>
<td>- Explain causes of bronchiectasis</td>
<td></td>
</tr>
<tr>
<td>- Enumerate the common pathogens causing CAP (typical and atypical)</td>
<td></td>
</tr>
<tr>
<td>- Classify Pneumonia</td>
<td></td>
</tr>
<tr>
<td>- Identify the microscopic stages of pneumonia</td>
<td></td>
</tr>
<tr>
<td>- Enumerate various diffuse, restrictive, interstitial lung diseases with their pathogenesis, clinical features and laboratory diagnosis</td>
<td></td>
</tr>
<tr>
<td>- Differentiate between COPD and interstitial lung diseases</td>
<td></td>
</tr>
</tbody>
</table>
- Identify the lab diagnosis and microscopic features of COPDs
- Discuss pathogenesis and morphological features of lung tuberculosis

### PHARMACOLOGY

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>STRATEGY</th>
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</thead>
<tbody>
<tr>
<td><strong>ANTI-ASTHMATIC DRUGS</strong></td>
<td></td>
</tr>
<tr>
<td>• Explain the different types of Asthma</td>
<td>Lecture</td>
</tr>
<tr>
<td>• Discuss the drugs used in preventive therapy</td>
<td></td>
</tr>
<tr>
<td>• Describe drugs used in acute attack of asthma</td>
<td></td>
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<tr>
<td>• Discuss the treatment of status asthmatics</td>
<td></td>
</tr>
<tr>
<td>• Discuss drugs used in COPD</td>
<td></td>
</tr>
<tr>
<td>• Explain the adverse effect of different drugs</td>
<td></td>
</tr>
<tr>
<td><strong>ANTI-TUSSIVE DRUGS</strong></td>
<td>Case-Based Learning</td>
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<tr>
<td>• Define cough</td>
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<tr>
<td>• Explain the different types of cough</td>
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<tr>
<td>• Explain the treatment strategy</td>
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<tr>
<td>• Discuss the adverse effect of anti-tussive drugs</td>
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<tr>
<td>• Define allergic rhinitis</td>
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<tr>
<td>• Describe the triggering factor</td>
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<tr>
<td>• Explain the drugs used in the treatment of allergic rhinitis and its treatment strategy</td>
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<tr>
<td><strong>DRUGS USED IN TUBERCULOSIS</strong></td>
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<tr>
<td>• Discuss the 1st line drugs used in treatment of tuberculosis, mechanism of action and adverse effects</td>
<td>Case-Based Learning</td>
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<tr>
<td>• Discuss the 2nd line drugs used in treatment of tuberculosis, indications for use and adverse effects</td>
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<tr>
<td>• Describe WHO guidelines for treatment of tuberculosis – The DOTS Regimen</td>
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<tr>
<td>• Explain monitoring of Anti-Tuberculosis (AT) therapy</td>
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<tr>
<td>• Explain Multiple Resistance Drugs (MRD) TB, causes of resistance and prevention of resistance</td>
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<tr>
<td>• Discuss drugs for prevention of TB in exposed patients</td>
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<tr>
<td>TOPIC</td>
<td>STRATEGY</td>
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<tr>
<td>• <strong>Describe</strong> composition of air, difference between inhaled and exhaled air, partial pressures of gases at different levels and oxygen cascade.</td>
<td>Lecture</td>
</tr>
<tr>
<td>• <strong>Discuss</strong> functional organization of respiratory system and innervations of respiratory tract with functions of nose, paranasal sinuses and larynx</td>
<td>Lecture</td>
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<tr>
<td>• <strong>Explain</strong> the structure and functions of respiratory membrane</td>
<td>Lecture</td>
</tr>
<tr>
<td>• <strong>Describe</strong> mechanics of respiration and respiratory muscles</td>
<td>Lecture</td>
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<tr>
<td>• <strong>Explain</strong> lung compliance(compliance diagram) and role of surfactant</td>
<td>Lecture</td>
</tr>
<tr>
<td>• <strong>Record</strong> normal respiratory movements and effect of breath holding and hyperventilation</td>
<td>Practical</td>
</tr>
<tr>
<td>• <strong>Discuss</strong> lung volumes and capacities-Spirogram and methods to measure lung volumes</td>
<td>Lecture/Small Group Learning/Practical</td>
</tr>
<tr>
<td>• <strong>Discuss in detail</strong> chemical and neural regulation of respiration</td>
<td>Lecture/Small Group Learning</td>
</tr>
<tr>
<td>• <strong>Enlist and describe</strong> Respiratory centers</td>
<td>Lecture</td>
</tr>
<tr>
<td>• <strong>Explain</strong> pulmonary circulation and ventilation perfusion ratio with regard to lung zones</td>
<td>Lecture</td>
</tr>
<tr>
<td>• <strong>Describe</strong> diffusion of gases across the respiratory membrane</td>
<td>Lecture/Small Group Learning</td>
</tr>
<tr>
<td>• <strong>Explain</strong> transport of oxygen with Bohr’s effect</td>
<td>Lecture/ Small Group Learning</td>
</tr>
<tr>
<td>• <strong>Explain</strong> transport of carbon dioxide with Haldane effect</td>
<td>Lecture/ Small Group Learning</td>
</tr>
<tr>
<td>• <strong>Discuss</strong> CO poisoning</td>
<td>Lecture/ Small Group Learning</td>
</tr>
<tr>
<td>• <strong>Explain</strong> the Hb-O2 dissociation curve and factors shifting it</td>
<td>Lecture/ Small Group Learning</td>
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<tr>
<td>• <strong>Define</strong> hypoxia and its types</td>
<td>Lecture</td>
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<tr>
<td>• <strong>Describe</strong> respiratory adjustments during exercise in relation with VO2 max</td>
<td>Lecture</td>
</tr>
<tr>
<td>• <strong>Explain</strong> physiology of high altitude and acclimatization</td>
<td>Lecture</td>
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<tr>
<td><strong>PULMONOLOGY (CHEST MEDICINE)</strong></td>
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<td><strong>TOPIC</strong></td>
<td><strong>STRATEGY</strong></td>
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<tr>
<td>GASEOUS TRANSPORT</td>
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<tr>
<td>• Discuss deep sea diving hyperbarism, Caisson’s disease, decompression sickness and near drowning</td>
<td>Lecture</td>
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<tr>
<td>• Perform the experiments on power lab with respect to respiration</td>
<td>Practical</td>
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<tr>
<td>• Interpret the respiratory status with the given sets of ABGs and electrolytes in the diagnosis of respiratory diseases</td>
<td>Small Group Learning</td>
</tr>
<tr>
<td>• Demonstrate the clinical examination of respiratory system</td>
<td>Small Group Learning</td>
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<table>
<thead>
<tr>
<th><strong>RADIOLOGY</strong></th>
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<tr>
<td><strong>TOPIC</strong></td>
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<tr>
<td>• Describe the normal radiology of chest on X-ray.</td>
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<tr>
<td>• Enlist the causes of mediastinal deviation and discuss the therapeutic procedures to resolve them.</td>
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<thead>
<tr>
<th><strong>RESEARCH AND SKILLS LAB</strong></th>
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<tbody>
<tr>
<td><strong>TOPIC</strong></td>
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<tr>
<td>NORMAL AND ABNORMAL LUNG SOUNDS</td>
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<tr>
<td>• Define the areas for auscultating lung sounds</td>
</tr>
<tr>
<td>• Differentiates normal and abnormal lung sounds</td>
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<tr>
<td>RESPIRATORY DISTRESS</td>
</tr>
<tr>
<td>• Identify sign and symptoms of respiratory distress (slow and fast breathing, abnormal chest movements and noisy breathing etc.)</td>
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<tr>
<td>• Demonstrate stepwise process of using inhaler effectively</td>
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<tr>
<td>RESPIRATORY ARREST</td>
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<tr>
<td>• <strong>Identify</strong> sign and symptoms of respiratory arrest</td>
</tr>
<tr>
<td>• <strong>Perform</strong> appropriate First Aid interventions</td>
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<tr>
<th>CHOKING</th>
<th>Small Group Learning</th>
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<tbody>
<tr>
<td>• <strong>Identify</strong> signs and symptoms of choking (in adult, child or infant)</td>
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<tr>
<td>• <strong>Performs</strong> appropriate First Aid interventions for a responsive choking victim</td>
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<tr>
<td>• <strong>Demonstrate</strong> appropriate First Aid intervention for unresponsive choking victim</td>
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## LEARNING RESOURCES

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>RESOURCES</th>
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</thead>
</table>
| **ANATOMY**                 | **A.** GROSS ANATOMY  
1. K.L. Moore, Clinically Oriented Anatomy
2. Neuro Anatomy by Richard Snell  
**B.** HISTOLOGY  
1. B. Young J. W. Health Wheather’s Functional Histology  
**C.** EMBRYOLOGY  
1. Keith L. Moore. The Developing Human  
2. Langman’s Medical Embryology |
| **BIOCHEMISTRY**            | **A.** TEXTBOOKS  
1. Harper’s Illustrated Biochemistry  
2. Lehninger Principle of Biochemistry  
3. Biochemistry by Devlin |
| **COMMUNITY MEDICINE**      | **A.** TEXT BOOKS  
1. Community Medicine by Parikh  
2. Community Medicine by M Illyas  
3. Basic Statistics for the Health Sciences by Jan W Kuzma |
| **PATHOLOGY/MICROBIOLOGY**  | **A.** TEXT BOOKS  
2. Rapid Review Pathology, 4th edition by Edward F. Goljan MD  
1. http://library.med.utah.edu/WebPath/webpath.html  
| **PHARMACOLOGY**           | **A.** TEXT BOOKS  
1. Lippincot Illustrated Pharmacology  
2. Basic and Clinical Pharmacology by Katzung |
| **PHYSIOLOGY**             | **A.** TEXTBOOKS  
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  
**B.** REFERENCE BOOKS  
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 |
### ADDITIONAL LEARNING RESOURCES

<table>
<thead>
<tr>
<th>Hands-on Activities/ Practical</th>
<th>Students will be involved in Practical sessions and hands-on activities that link with the respiratory module to enhance learning with understanding.</th>
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</thead>
<tbody>
<tr>
<td><strong>Labs</strong></td>
<td>• Utilize the lab to relate the knowledge to the specimens and models available.</td>
</tr>
<tr>
<td><strong>Skill Lab</strong></td>
<td>• A skills lab provides the simulators to learn the basic skills and procedures. This helps build the confidence to approach the patients.</td>
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<tr>
<td><strong>Videos</strong></td>
<td>Video familiarize the student with the procedures and protocols to assist patients.</td>
</tr>
<tr>
<td><strong>Computer Lab/CDs/DVDs/Internet</strong></td>
<td>To increase the knowledge students should utilize the available internet resources and CDs/DVDs. This will be an additional advantage to increase learning.</td>
</tr>
<tr>
<td><strong>Self Learning</strong></td>
<td>Self Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.</td>
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</tbody>
</table>
MODULAR EXAMINATION RULES & REGULATIONS (LNH&MC)

- 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:

<table>
<thead>
<tr>
<th>WEEKS</th>
<th>1ST YEAR SEMESTER 2</th>
<th>MONTH</th>
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<tbody>
<tr>
<td>WEEK 1</td>
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<td>WEEK 8</td>
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<td>23rd May’2016</td>
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<td>MODULAR EXAM</td>
<td>15th July’2016</td>
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<tr>
<td>WEEK 1</td>
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<td>18th &amp; 19th July’2016</td>
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<td>WEEK 2</td>
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<td>WEEK 3</td>
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<td>MODULAR EXAM</td>
<td>13th Aug 2016</td>
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<tr>
<td>WEEK 1</td>
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<td>16th &amp; 17th Aug’2016</td>
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<td>WEEK 2</td>
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<td>CVS MODULE</td>
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<td>WEEK 4</td>
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<td>PREPARATORY LEAVE</td>
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<td>SEMESTER EXAM</td>
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<td>RETAKE</td>
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*Final dates will be announced later.*