



GENERAL PATHOLOGY & MICROBIOLOGY STUDY GUIDE FOR 3RD YEAR MBBS

This Study guide of the course outlines the key components and areas for the facilitation of the students

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Introduction to Study Guide

This study guide is designed by a consolidated effort of all the faculty members throughout the year to provide MBBS students of CMH Lahore Medical College a resource material that would highlight important aspects of the curriculum. The study guide aims to promote self-regulated lifelong learning among students.

The curriculum aspects of undergraduate competencies, assessment policies and curriculum coordinators are mapped in this guidebook.

The study guide gives an overview of intended course outcomes and objectives in relation to the course content. The assessment methodology tailored to institutional strategy is provided.

This study guide has been carefully designed, keeping in view the PM&DC and NUMS curriculum and guidelines. Dedicated effort by faculty has been made to make this guide tailored to student's needs. This humble effort of all faculty acts as a beacon of light for our dear students.

Mission Statement (College)

To provide an excellent learning and teaching environment, inculcating ethical values and social responsibilities in undergraduate and postgraduate medical and dental students and nursing and allied health sciences students to enhance the level of comprehension of healthcare in the Army/Country.

Vision Statement (NUMS)

To ensure the development and sustenance of internationally acclaimed quality standards and practices for NUMS Higher Education that benefit and live up to the stakeholder's needs and expectations.

Introduction To General Pathology And Microbiology

The subject of General Pathology and Microbiology at an undergraduate level enables students to recognize the structural and functional causes of human disease. The four aspects of a disease process that form the core of pathology are the cause of a disease (etiology), the mechanisms of disease development (pathogenesis), the structural and biochemical alterations induced in cells and tissues by the disease (morphologic and biochemical changes) and the functional consequences of the morphologic and molecular changes (clinical significance).

Teaching & Learning Distribution Year-III	35 weeks
First Module	12 weeks
Second Module	12 weeks
Third Module	11 weeks
Contact hours for Pathology	260 hours

COURSE OUTLINE

COURSE CONTENT- BLOCK I

BLOCK I

1. FOUNDATION MODULE: 06 weeks

General Pathology:

- I. Cell injury**
- II. Inflammation and tissue repair**

Microbiology

I. General Microbiology

- Introduction
- Bacterial structure
- Bacterial classification
- Bacterial growth
- Bacterial genetics
- Bacterial pathogenesis
- Normal flora
- Sterilization & disinfection
- Infection prevention & control
- Specimen collection for microbiological processing
- Laboratory diagnosis of Infectious diseases
- Bacterial & Viral vaccines

II. Virology

- Introduction
- Classification
- Pathogenesis of viral diseases
- Viral laboratory diagnosis

III. Parasitology

- Introduction
- Classification

IV. Mycology

- Introduction
- Classification

2. CVS MODULE: 04 weeks

General Pathology:

I. Hemodynamics & Thromboembolism

Microbiology:

1. Gram positive cocci
2. Bacterial pathogens causing infections of the Cardiovascular system and clinical correlation.

GENITOURINARY MODULE: 01 WEEK

General Pathology:

I. Shock

- II. Infections of the genitourinary system (UTI & STDs)
 - GPC causing UTI
 - Enterobacteriaceae
 - Escherichia coli
 - Syphilis
 - Neisseria gonorrhoeae
 - Trichomonas vaginalis
 - Chlamydia trachomatis

COURSE CONTENT – BLOCK II

GENERAL PATHOLOGY

- 1. Diseases of the Immune System**
- 2. Genetic & Pediatric Diseases**
- 3. Environmental & Nutritional Diseases**

MICROBIOLOGY

Hematology module:

Overview of pathogens causing infection of the blood and Immune system:

- Plasmodium
- Leishmania
- Toxoplasma
- Trypanosoma
- Dengue
- CCHF
- HIV

Neuroscience module:

1. Overview of pathogens causing CNS infections (meningitis/encephalitis/brain abscesses)
 - Neisseria meningitides
 - Hemophilus influenzae
 - Cryptococcus neoformans
 - Naegleria fowleri
 - Polio
 - Rabies

Respiratory system module:

1. Overview of pathogens causing infections of the respiratory system
 - Corynebacterium diphtheriae
 - Bordetella pertussis
 - Streptococcus pneumoniae
 - Bacillus anthracis
 - Legionella pneumophila
 - Mycoplasma

- Mycobacterium tuberculosis/ other Mycobacteria
- Influenza virus
- Coronavirus
- Adenovirus
- Measles, Mumps, Rubella
- Respiratory syncytial virus
- Systemic mycoses causing pneumonia
- Aspergillus
- Mucor

Gastrointestinal system module:

1. Overview
 2. Diarrhea Vs Dysentery
 - Salmonella
 - Shigella
 - Vibrio
 - Helicobacter/ Campylobacter
 - Entamoeba
 - Giardia
 - Cryptosporidium
 - Intestinal Nematodes (Ascaris, Ankylostoma, Trichuris, Enterobius)
 - Intestinal Trematodes (Schistosoma mansoni/japonicum)
 - Cestodes (Tenia, Echinococcus, Diphyllbothrium)
 - Viral Hepatitis
 - Rotavirus
-
- Herpes simplex virus
 - Human papilloma virus

COURSE CONTENT- BLOCK-III

MICROBIOLOGY

Gastrointestinal System Module

- Diarrhoea Vs Dysentery
- Salmonella
- Shigella
- Vibrio
- Helicobacter/ Campylobacter
- Entamoeba
- Giardia
- Cryptosporidium
- Intestinal Nematodes (Ascaris, Ankylostoma, Trichuris, Enterobius)
- Intestinal Trematodes (Schistosoma mansoni/japonicum)
- Tissue Nematodes
- Cestodes (Tenia, Echinococcus, Diphyllbothrium)
- Viral Hepatitis
- Rotavirus

Multisystem Module-I

- Infections in the immunocompromised patients
- Opportunistic bacterial and fungal pathogens
- Epstein-Barr virus
- Cytomegalovirus

Multisystem Module-II/ Infectious Diseases

- Pyrexia of unknown origin (PUO)
- Sepsis
- Hospital Acquired infections (MRSA, VRE, etc)
- Antimicrobial resistance
- Pneumonia
- Meningitis
- Gas gangrene/ Clostridia
- Zoonotic pathogens (Brucella, Pasteurella, Yersinia, Rickettsiae, Actinomyces, Nocardia)
- Subcutaneous mycoses
- Candida
- Dermatophytes

GENERAL PATHOLOGY

- 1. Nutritional Diseases**
- 2. Neoplasia**

Teaching Faculty of CMH Lahore Medical College

Ser No	Name	Designation
1	Prof. Dr. Abdus Sattar, Brig (Retd)	HOD/ Professor
2	Prof. Dr. Muhammad Saeed Anwar	Professor
3	Prof. Dr. Sidra Shafiq Cheema	Professor
4	Dr. Afia Sarwar	Associate Professor
5	Dr. Muhammad Abdul Naeem, Brig (Retd)	Associate Professor
6	Dr. Kanwal Cheema	Assistant Professor
7	Dr. Atiya Begum	Assistant Professor
8	Dr. Sabah Khan	Demonstrator
9	Dr. Sidra Naveed	Demonstrator
10	Dr. Ammarah Mehmood	Demonstrator
11	Dr. Muhammad Taimur Ahmad	Demonstrator

Teaching faculty of Combined Military Hospital, Lahore

Ser No	Name	Designation
1	Lt. Col. Muhammad Asif	Professor
2	Col. Helen Marry Robert	Associate Professor
3	Col. Saif Ullah Khan Niazi	Associate Professor
4	Lt. Col. Hamid Nawaz Tipu	Associate Professor
5	Lt. Col. Muhammad Zeeshan Rana	Assistant Professor
6	Lt. Col. Najeeb Ullah Khan	Assistant Professor
7	Lt. Col. Muhammad Yasir Rafiq	Assistant Professor
8	Lt. Col. Muhammad Abid Farooq	Senior Lecturer
9	Lt. Col. Sana Yousaf	Senior Lecturer
10	Lt. Col. Sanam Haneef	Senior Lecturer
11	Maj Muhammad Rizwan	Senior Lecturer

TEACHING FACILITIES AVAILABLE ON CAMPUS

1. LECTURE HALL:

The college has designated lecture halls with a seating capacity of 150, equipped with multimedia, a microphone, a computer system and UPS to provide an uninterrupted environment conducive to active learning.

2. PATHOLOGY LABORATORY:

The pathology laboratory is fully equipped catering to the needs of our students. The following facilities are available for the students in order to have a good hands-on experience.

- a. A multi-head **microscope** with a camera and screen facility.
- b. **Microscopes** for individual use.
- c. **Multiple stations** for practice of staining techniques.
- d. A **vast collection of slides** related to microbiology, haematology and histopathology.
- e. A 36-inch **LED screen** is used to project slides when required by the facilitator.
- f. Two **Refrigerators** for storage of culture media.
- g. A **designated -20 °C freezer** for storage of bacterial strains.
- h. **Autoclave** (for sterilization purposes)
- i. **Hot air oven** (for sterilization purposes)
- j. Incubator**
- k. A **distillation apparatus** for a continued supply of distilled water in the laboratory.
- l. **Tissue processor** used for histopathology specimens.
- m. Miscellaneous instruments required for the smooth running of the laboratory.

For students' safety and hygiene:

- n. An **Eyewash area**.
- o. Multiple areas designated for **hand washing** and alcohol-based **hand sanitizers** are provided in the laboratory.
- p. A **first aid box** as well as a **spillage kit** also available in the laboratory in case of an accident (cuts, burns or spills in the lab)

3. PATHOLOGY MUSEUM:

The pathology department is also equipped with a state-of-the-art museum, containing hundreds of gross pathology specimens along with their corresponding microscopic slides, that are used by the students when they are studying the gross morphology of various diseases and tumors.

TEACHING AND LEARNING STRATEGIES

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

- Lectures
- Small group discussions
- Practical Classes in the Laboratory
- Case-based learning
- Tutorials
- E-Learning

Lectures :

A lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture-based class of any size. The instructor can apply a blend of various interactive techniques in the class.

Small group discussion (SGD):

Small group discussions help the shy and less articulate to contribute more. Students learn from each other. Everyone gets more practice at expressing their ideas. A two-way discussion is almost always more creative than individual thoughts and clears out misconceptions. This teaching format helps students to clarify concepts, acquire skills or attitudes. Students are able to apply the knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

Practical session:

Skills relevant to the respective module are observed and practised where applicable in the pathology laboratory. For example how to use a microscope for various slides, staining techniques, biochemical and serological tests etc.

Self-Directed learning (SDL):

Self-directed learning involves studying without direct supervision in a classroom/Library and is a valuable way to learn growing in popularity among students. Students assume responsibility for their own learning through individual study, sharing and discussing with peers, and seeking information from various learning resources. Students can utilize the time within the college's scheduled hours of self-study.

Case-based learning and Tutorials:

Tutorial or case-based learning is another method of transferring knowledge that is more interactive and specific than a book or a lecture, as it seeks to teach by example.

E-Learning:

Since the COVID-19 pandemic, education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms.

Students are engaged by giving them assignments, quizzes and presentations.

WEEKLY TRAINING PROGRAM 3rd Year MBBS

1) LECTURES: 50 minutes each

Microbiology: 3 Lectures

General Pathology: 3 Lectures

2) CBL: 50 minutes

1 per week

3) PRACTICAL: 90 minutes

3 batches x 04 days practical

4) ASSESSMENT:

A) Number of class test: 2 per module

1 class test monthly

B) Exam: End of module

Time Tables:

The course content and timetables of each module are shared on the department notice board as well as the college LMS portal in advance.

ASSESSMENT TOOLS

Theoretical knowledge is tested by a written examination system consisting of multiple-choice questions (MCQs) and short answer questions (SAQS).

The assessment of practical knowledge involves objective structured practical examinations (OSPE).

ASSESSMENT PROTOCOL

- a. There will be end-of-module exams taken at the end of modules I, II and III. The syllabus for the end module examination will be announced by the department at least 02 weeks prior to the examination. The end block exam will be conducted by the Pathology Department. Assessment tools are to be decided by the respective faculty. The schedule and date will be announced by the examination branch of the respective institute.
- b. Pre-annual exam will be taken for both theory and practical after completion of the curriculum. Pre-annual examination will cover the entire syllabus. The table of specifications for Pre annual exam is similar to the annual exam. The schedule for the Pre-annual exam (Theory and Practical) will be announced by the examination branch of the respective institute.
- c. Marks of End block and Pre annual exams will contribute to internal assessment
- d. Schedule for the annual examination (Theory and Practical) will be announced by NUMS. The practical examination will be conducted by the Pathology department while the theory part will be conducted by the examination Department, NUMS.

Attendance Requirement:

More than 75% attendance is mandatory to sit for the examinations.

LEARNING RESOURCES FOR STUDENTS

1. Robbins & Cotran Pathologic Basis of Disease.
2. Review of Medical Microbiology and Immunology by Warren Levinson.
3. Jawetz, Melnick & Adelberg's Medical Microbiology.
4. District Laboratory Practice in Tropical Countries by Monica Cheesbrough.