

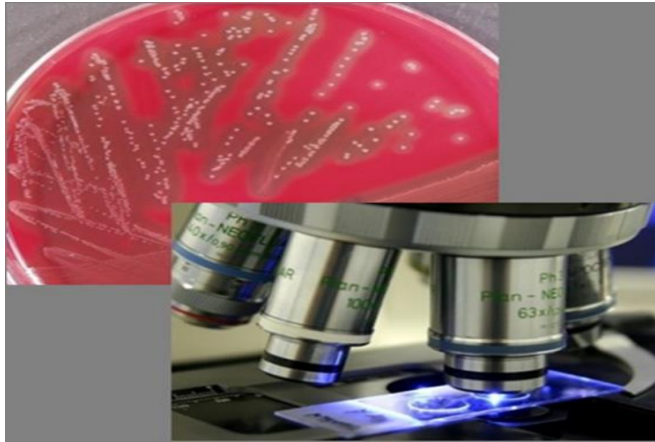


LAHORE
MEDICAL & DENTAL
COLLEGE

STUDY GUIDE

DEPARTMENT OF PATHOLOGY

3rd yr MBBS



LAHORE MEDICAL AND DENTAL COLLEGE, LAHORE

LMDC MISSION

LMDC is committed in pursuit of excellence to providing the best academic facilities to its students. Mission of LMDC is:













**To train future leaders of medicine who set
new standards in knowledge, care and compassion.**










The well qualified and committed faculty of LMDC provides combination of nurturing support and challenge to the students to reach their maximum potential.

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FACULTY INTRODUCTION

		Name	Designation	Qualification
1		Dr. Shazia N. Ibnerasa	Prof. of Histopathology Head of Path Deptt.	MBBS, M.Phil, MHPE
2		Dr. Saadia Chaudhry	Prof. of Microbiology	MBBS MPhil
3		Dr. Fauzia Sadiq	Prof. of Chemical Pathology	MBBS, M.Phil, MHPE (Thesis Remains)
4		Dr. M. Shahbaz Amin	Prof. of Histopathology	MBBS,DCP, MCPS(Path) FCPS(Histopath),
5		Dr. Nazia Ahmad	Associate Prof. Hematology	MBBS, M.Phil, (CMT, CHPE in Process)
6		Dr. Sonia Tahir	Assistant Prof. Microbiology	MBBS, M.Phil, (CHPE in Process)
7		Dr. M. Rizwan	Assistant Prof. Histopathology	MBBS, M.Phil
8		Dr. Zahid Asgher	Assistant Professor Histopathology	MBBS, Diplomate American Board (Histo & Cytopathology)
9		Dr. Maimoona Aslam	Assistant Prof. Histopathology	MBBS, FCPS (Histo) FRC-Path (Part-I)
10		Dr. Hafiza Fajar Shabbir	Demonstrator	MBBS
11		Dr. Khadija Aftab	Demonstrator	MBBS
12		Dr. Huma Anwar	Demonstrator	MBBS

13		Dr. Sadaf Qayyum	Demonstrator	MBBS
14		Dr. UMBER SATTAR	Demonstrator	MBBS
15		Dr. Faiza Javaid Tariq	Demonstrator	MBBS
16		Dr. Fahum Akhtar	Demonstrator	MBBS
17		Dr. Khuzaima Ahmad	Demonstrator	MBBS
18		Dr. Sobia Wazeer Ali	Demonstrator	MBBS
19		Dr. Hiba Tehrim	Demonstrator	MBBS
20		Dr. Rabia Chaudhry	Demonstrator	MBBS
21		Dr. Samreen	Demonstrator	MBBS

INTRODUCTION

The primary goal of the pathology course is to initiate the medical student in the study of disease. Without a clear understanding of the etiology (cause), pathogenesis (development), pathological anatomy, and pathophysiology of disease, clinical medicine would mean little more to the student than memorization of clinical syndromes and the empirical treatments applied to them. These concepts are developed in close association with the other basic sciences and with the clinical science that is also being introduced at this time. This study guide will give an insight to the students about all these competencies for a 7 star doctor and how to plan their educational activities in the subject of Pathology.

COURSE REQUIREMENT

Students need to have basic knowledge of Anatomy, Physiology, Biochemistry to understand the pathogenesis and laboratory diagnosis of different infectious diseases and pathological phenomenon of underlying diseases.

TARGET AUDIENCE:

3rd year M.B.B.S (SESSION 2023)

DURATION OF COURSE:

- 9 months (36weeks)
- Teaching hours according to PMDC/PMC
- 13TH FEB 2023 --November 2023
- Send-up OCTOBER 2023
- Professional exam Acc to UHS
- Total lectures 1 @ 4 /week (minus 6wks)
 = 120 lectures approx.
- General Pathology + Microbiology (42 + 78) lectures (minimum basic lectures)
- Practicals 1/week= 4-5 /month=30 approx (minus 6wks)
- Tutorial 1/week= 4-5/ month= 30 approx (minus 6wks)

LEARNING OBJECTIVES

GENERAL PATHOLOGY

Goal:

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge of the causes and mechanisms of diseases, in order to enable him/her to achieve complete understanding of the natural history and clinical manifestations of disease.

OBJECTIVES

Knowledge

At the end of the course, the student should be able to:

1. describe the structure and ultrastructure of a sick cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.
2. explain the pathophysiological processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and clinical manifestations associated with it.
3. describe the mechanisms and patterns to tissue response to injury such that she/he can appreciate the pathophysiology of disease processes and their clinical manifestations.
4. correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

Skills

At the end of the course, the student should be able to:

1. describe the rationale and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results.
2. draw a rational scheme of investigations aimed at diagnosing and managing the cases of common disorders.

MICROBIOLOGY

Goal: The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the natural history of infectious disease in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

OBJECTIVES

Knowledge

At the end of the course, the student should be able to:

1. state the infective micro-organisms of the human body and describe the host parasite relationship.
2. list pathogenic micro-organisms (bacteria, viruses, parasites, fungi) and describe the pathogenesis of the diseases produced by them.
3. state or indicate the modes of transmission of pathogenic and opportunistic organisms and their sources, including insect vectors responsible for transmission of infection.

4. describe the mechanisms of immunity to infections.
5. acquire knowledge on suitable antimicrobial agents for treatment of infections and scope of immunotherapy and different vaccines available for prevention of communicable diseases.
6. apply methods of disinfection and sterilization to control and prevent hospital and community acquired infections.
7. recommend laboratory investigations regarding bacteriological examination of food and water.

Skills

At the end of the course, the student should be able to:

1. plan and interpret laboratory investigations for the diagnosis of infectious diseases and to correlate the clinical manifestations with the etiological agent.
2. identify the common infectious agents with the help of laboratory procedures and use antimicrobial sensitivity tests to select suitable antimicrobial agents.
3. perform commonly employed bed-side tests/bench tests for detection of infectious agents such as blood film for malaria, filaria, gram staining and AFB staining and stool sample for ova cyst.

COURSE OUTLINE (SYLLABUS UHS/PMDC)

Gen. Pathology:

1. Cell Injury
2. Inflammation
3. Repair & healing
4. Hemodynamics
5. Immunity
6. Neoplasia
7. Genetics

Microbiology

1. General Bacteriology
2. Special bacteriology
 - Gm + cocci
 - Gm - cocci
 - Gm + rods
 - Gm - rods
3. Minor
 - bacteria/Spirochetes/Mycobacteria
4. Parasitology
5. Virology
6. Mycology

(A) GENERAL PATHOLOGY (DETAILS OF CHAPTERS)

CELL INJURY

1. Necrosis, Ischemia, Hypoxia, Infarction and Gangrene Oncosis and Autolysis.
2. Sequence of the ultrastructural and biochemical change which occur in the cell in response to the following: Ischemia, Immunological injury, e.g., Asthma / SLE / Anaphylactic reaction, Physical agents, e.g., Radiation, Genetic defects e.g., Thalassemia / Hemophilia, Nutritional deficiency, e.g., Kwashiorkor, Infectious agents :Viruses, e.g., Hepatitis, Bacteria, e.g., Staphylococcus aureus, Fungi, e.g., Candida Parasites, e.g., Malaria, Nutritional deficiency
3. Irreversible and reversible injury
4. Apoptosis and its significance.
5. Necrosis and its types
6. Exogenous and endogenous pigmentation.
7. Dystrophic and metastatic calcification along with clinical significance.
8. Metabolic disorders
9. Lipid disorders, Steatosis of liver, Hyperlipidemia
10. Protein disorders
11. Carbohydrate disorders

INFLAMMATION, MEDIATORS OF INFLAMMATION

1. Role of inflammation in the defense mechanisms of the body.
2. Vascular changes of acute inflammation and their relation to morphological and tissue effects.
3. Process of Chemotaxis, Opsonization and Phagocytosis.
4. Role of cellular components in inflammatory exudate.
5. Exudates and transudate.
6. Important chemical mediators of inflammation.
7. Pathway of Arachidonic Acid metabolism.
8. Role of products of Arachidonic acid metabolism in inflammation.

9. Mechanism for development of fever, with reference to exogenous and endogenous pyrogens.
10. Chronic inflammation including Granulomas.
11. Granuloma and its types along with causes.
12. Systemic effects of acute and chronic inflammation and their possible outcomes.
13. Significance of ESR.
14. Induced hypothermia in medicine.
15. Healing in specialized tissue.

WOUND HEALING

1. Repair and regeneration.
2. Wound healing by first and second intention.
3. Factors that influence the inflammatory reparative response.
4. Wound contraction and cicatrization.
5. Formation of granulation tissue.
6. Complications of wound healing.

DISORDERS OF CIRCULATION

a. Thrombo-embolic disorders and their modalities

1. Etiology and pathogenesis of thrombosis.
2. Possible consequences of thrombosis
3. Difference between thrombi and clots
4. Classification of emboli according to their composition.
5. Difference between arterial and venous emboli.

b. Hemorrhage, Hyperemia and Congestion

1. Definitions of common types of Hemorrhage
2. Types of hyperemia
3. Difference between hyperemia and congestion

c. Infarction

1. Types of infarction
2. Difference between anemic and hemorrhagic infarct
3. Morphological picture of infarction in different organ systems

d. Disorders of the circulation and shock

1. Edema, ascites, hydrothorax and anasarca.
2. Pathophysiology of edema with special emphasis on CHF.
3. Pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal & septic) and their causes.
4. Compensatory mechanisms involved in shock.

MICROBIOLOGY

1. Defense mechanisms of the body.

2. Microbial mechanisms of invasion and virulence.

3. Difference between sterilization and disinfection.

4. Methods of disinfection and sterilization of the following:

- a. Facility where the doctor practices,
- b. Examination table,
- c. Any spillage e.g. sputum, vomitus, stool, urine, blood,

d. Examination tools, e.g., thermometer, nasal and ear specula and spatula,

5. Principles of aseptic techniques such as Venepuncture, urinary catheterization, bandaging, suturing and lumbar puncture.

6. Universal precautions for infection control.

7. General principles of the following serological tests:

a. ELISA – Hepatitis (A, B, C, D, E, G) Rubella, CMV and HIV

b. PCR

c. Haemagglutination – TPHA

d. Western Blot –HIV

Malaria.

8. Interpretation of :

a. Culture reports

b. Serological reports and

c. Microscopic reports of gram stain and ZN stain.

9. Principles of proper collection and submission of specimens for laboratory investigations

10. General characteristics and taxonomy of Bacteria, Rickettsia, Chlamydia, Viruses and Fungi.

11. Communicable, Endemic, Epidemic, and Pandemic Diseases, Carriers Pathogens,

Opportunists, Commensals and Colonizers.

12. Microorganisms responsible for infection of the following organ systems:

- Central Nervous System
- Respiratory System
- Gastrointestinal System
- Genital System
- Urinary System
- Infections of Bones and Joints
- Zoonosis
- Infection of the Skin
- Hepatic Infections

13 Pathogenesis, Treatment, Epidemiology, Prevention and Control of the following organisms:

(i) Bacteria

Staphylococcus aureus

Streptococcus pneumoniae

Beta hemolytic streptococcus group a & b

Diphtheria sp.

Bordetella sp.

Bacillus anthracis

Clostridium perfringens

Clostridium botulinum,

Clostridium difficile

Clostridium tetani

Actinomyces israelii

Nocardia asteroides

Neisseria meningitidis

Neisseria gonorrhoeae

Gardnerella vaginalis

Haemophilus influenzae

Mycobacterium tuberculosis

Mycobacterium leprae

E.coli

Klebsiella

Proteus

Salmonella

Shigella

Yersinia pestis

Pseudomonas

Vibrio cholera

Vibrio parahemolyticus
Campylobacter jejuni
Helicobacter pylori
Legionella
Mycoplasma pneumoniae

(ii) Viruses

Mumps
Herpes
Measles
Influenza,
Para influenza
RSV
Hepatitis A, B, C, D, E
Rota virus
CMV

(iv) Protozoa

Plasmodium species
Giardia lamblia
Entamoeba histolytica
Cryptosporidium

(v) Helminths

Ascaris lumbricoides
Ancylostoma duodenale
Trichuris trichuria
Enterobius vermicularis
Filaria species
Strongyloides stercoralis

Chlamydia
Treponema pallidum
Leptospira
Rickettsia sp.

EBV
Rubella
Chicken Pox
HIV
Rabies
(iii) Fungus
Cryptococcus neoformans
Candida albicans
Tinea species
Leishmania species
Trichomonas vaginalis
Toxoplasma gondii
Pneumocystis carinii

Schistosoma species
Echinococcus species
Taenia solium
Taenia saginata
Hymenolepis nana

PRINCIPLES OF ANTI MICROBIAL ACTION.

1. Antibiotics, selective toxicity, bacteriostatic and bactericidal.
2. Host determinants in relation to selection of an antimicrobial drug for therapy.
3. Minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC)
4. Bacterial resistance and the mechanisms involved in acquiring bacterial resistance.
5. Mechanisms involved in transfer of drug resistance to bacterial resistance.
6. Mode of action of various antimicrobial drug groups.
7. Superinfection and cross sensitivity.

LIST OF COMMON ORGANISMS CAUSING ORGAN SYSTEM EFFECTS

a. Common organisms causing CNS Infections

(i) Bacteria

Streptococcus pneumoniae
Beta hemolytic streptococcus group b
Neisseria meningitidis

Haemophilus influenzae
Mycobacterium tuberculosis.
E.coli
Listeria monocytogenes

(ii) *Viruses*

Enterovirus
Mumps
Herpes
Adenovirus

B. Common organisms causing respiratory tract infection

(i) Bacteria:

Streptococcus pneumoniae
Beta hemolytic streptococcus group b
Diphtheria sp.
Bordetella sp.
Haemophilus influenzae
Mycobacterium tuberculosis
Klebsiella
Legionella
Mycoplasma pneumoniae

(ii) Viruses

Herpes
Adeno virus
Measles
Influenza
Para influenza
Rhinovirus
RSV

(iii) Protozoa

Pneumocystis carinii

C. Organisms causing gastrointestinal tract infection / infestation

(i) Bacteria

Clostridium difficile
Mycobacterium tuberculosis
Salmonella
Shigella
Vibrio cholera
Vibrio parahemolyticus
Campylobacter jejuni
Helicobacter pylori

(ii) Viruses

Hepatitis A
Rota

(iii) Fungus

Cryptococcus neoformis

(vi) Protozoa

(iii) *fungus*

Cryptococcus neoformis

(iv) *protozoa*

Malaria
Toxoplasma

Giardia lamblia

Entamoeba histolytica

Cryptosporidium

D. Common organisms causing hepatic infections

(i) Bacteria

Streptococcus species
Coliforms
Anaerobes

(ii) Viruses

Herpes
Hepatitis A, B, C, D, E
CMV
EBV

(iii) Protozoa

Entamoeba histolytica
Tapeworms
Echinococcus granulosus

E. Common organisms causing skin infection

(i) Bacteria

Staphylococcus aureus
Streptococcus pyogenes
Actinomyces israelii
Nocardia asteroides
Mycobacterium tuberculosis
Mycobacterium leprae
Corynebacterium diphtheriae

(ii) viruses

Herpes
Measles
Rubella,
Chicken pox
Moluscum contagiosum

(iii) fungus

Candida albicans

Tinea species

(iv) arthropods

Sarcoptes scabiei
Pediculus species
Cinex lectularius
Schistosoma sp.

(v) helminths
Filaria species
Strongyloides stercoralis

(vi) protozoa:

Leishmania species.

f. Common organisms causing bone and joint infection

Bacteria: Staph aureus, Streptococcus pyogenes, Haemophilus influenzae, Neisseria gonorrhoeae, Brucella melitensis, Salmonella typhi, Strep. pneumoniae, Pseudomonas sp. and Mycobacterium tuberculosis.

g. Common organisms causing genital infection

(i) Bacteria: Mycoplasma urealyticum

(ii) Viruses: Pox, Herpes, Hepatitis B, HIV

(iii) Fungus: Candida albicans

(iv) Arthropodes: Sarcoptes scabiei

(v) Protozoa: Trichomonas vaginalis

h. Common organisms causing zoonosis

(i) Viruses: Rabies,

(ii) Protozoa: Toxoplasma gondii, Leishmania sp.

(iii) Helmenthics: Echinococcus sp.

GENETICS

1. Common sex linked, autosomal recessive and autosomal dominant disorders.
2. Common genetic mutations.
3. Diseases associated with consanguineous marriages.
4. Molecular biology techniques.

GROWTH DISORERS/NEOPLASIA

1. Atrophy and Hypertrophy, Agenesis, Dysgenesis, Aplasia, Hypoplasia, Hyperplasia, Metaplasia, Dysplasia, Neoplasia, Anaplasia,.
2. Cell cycle and cell types (stable, labile, permanent)
3. Mechanisms controlling cell growth
4. Classification systems of tumors.
5. Characteristics of benign and malignant tumors
6. Difference between Carcinoma and Sarcoma.
7. Grading and staging system of tumors.
8. Biology of tumor growth
9. Process of carcinogenesis
10. Host defense against tumors.
11. Mechanism of local and distant spread.
12. Local and systemic effects of tumors.
13. Tumor markers used in the diagnosis and management of cancers.
14. Common chemical, physical agents and viruses related to human cancer.
15. Epidemiology of common cancers in Pakistan.
16. Radiation and its effects on tissues.

17. Cancer screening.

IMMUNOLOGY

1. Antigen, antibody, epitope, hapten and adhesion molecules.
2. Difference between innate and acquired immunity.
3. Structure and function of major histocompatibility complex (MHC).
4. Cytokines.
5. Mechanism of humoral and cell mediated immunity.
6. Hypersensitivity reactions, Type I, Type II, Type III and Type IV.
7. Autograft, homograft, allograft and xenograft.
8. Immunotolerance and immunoparalysis.
9. Mechanism involved in allograft rejection and steps that can be taken to combat rejection.
10. Classification of Immunodeficiency disorders
11. Basis of autoimmunity.
12. Tissue transplantation.
13. Pathology and pathogenesis of AIDS.
14. Lab diagnosis of immunological diseases.

INSTRUCTIONAL STRATEGIES

TEACHING METHODOLOGY:

1. Lectures (interactive, Flipped, student centered)
2. Practicals
3. Small group discussions (tutorials)
4. OSPE
5. MCQ assignments
6. SEQ Assignments
7. Viva
8. Online (if required)

Lectures alone are generally not adequate as a method of training, therefore, every effort shall be made to encourage the use of active learning methods. Students will be encouraged to learn in small groups through peer interactions and shall be taught in a setting of clinical relevance and hands on experience so that they assimilate and make the knowledge a part of their own working skill.

PRACTICAL & TUTORIAL SESSION:

Class is divided into 5 batches

Two batches will be coming to Pathology Department every week (Pathology and Clinical pathology) The batch coming for Clinical pathology practical will be learning about the clinical aspects of disease and MCQ practice assignments. This batch is involved in small group discussions by allocation of subject topics.

Friday Tutorial time would be reserved for class tests discussion, OSPE or viva.

FORMAT OF TUTORIAL CLASSES (small group discussion)

1. Tutorial classes will be interactive sessions.
2. Any ambiguity of the students on the topics being taught in the class will be removed.
3. There will be an MCQ test in tutorials and these MCQs will be discussed afterwards.
4. Students will be given written assignments/or presentation topics to be done or prepared in first 30 minutes. Presentations will be given verbally.
5. The assignments will be discussed and answers checked by tutor at that time
6. Every student will submit a copy of his/her Assignments to the class incharge.
7. Topics of presentations and test will be displayed on the notice board or conveyed to class through class representatives.
8. Presentations/Assignments and tests will be given weightage in internal evaluation.
9. Attendance in pathology tutorial is mandatory for all students.

TEACHING SCHEDULE

THEORY

Face to Face teaching

Starting date of the session	13 TH FEB, 2023
Venue	Lecture Hall 3
Course coverage	9 Months
No. of total lectures	More than 120 @ 4/week
Days of pathology lectures	Tues, Wed, Thurs, Fri

PRACTICALS

Starting date of the session	13 TH Feb, 2023
Venue	Histopathology Laboratory & microbiology laboratory
Days of pathology practical's (face to face)	Monday-Friday

TUTORIALS/Small Group Discussions

Starting date of the session	13 TH Feb, 2023
Venue	Histopathology Laboratory & microbiology laboratory
Days of pathology tutorials(face to face)	Monday – Friday
Long tutorial	Monday (lecture hall # 3)

LECTURE BREAKUP OF GENERAL PATHOLOGY & MICROBIOLOGY

	Topics	Teachers/Facilitators	Lectures count
	GENERAL PATHOLOGY		
1.	Cell Injury	Prof.Shazia Ibnerasa, Dr.Maimoona	4+4
2.	Inflammation	Prof.Shazia Ibnerasa	06
3.	Repair	Prof.Dr.Fauzia Sadiq	03
4.	Hemodynamics	Dr.Nazia Ahmad	07
5.	Genetics	Prof.Dr.Fauzia Sadiq	04
6.	Neoplasia	Dr.M.Shahbaz Amin	08
7.	Immunity	Prof.Shazia Ibnerasa	06
	MICROBIOLOGY		
1.	Bacteriology	Prof.Saadia Ch. & Dr.Sonia Tahir	52
2.	Parasitology	Dr.Nazia Ahmad & Dr.Sonia Tahir	12
3.	Mycology	Prof.Saadia Ch.	04
4.	Virology	Prof.Saadia Ch. & Dr.Sonia Tahir	10

TIME LINE FOR COURSE COVERAGE

Chapter No.	Name	Lectures	Practicals	Tutorials
	Orientation class	1	1	1
01	Cell injury	08	3	2
02	General microbiology	17	2	4
03	Inflammation , Healing and repair	7+3	3	2
04	Special bacteriology- 1	15	4	3
05	Virology	10	-	2
06	Special bacteriology- 2	19	5	3
07	Neoplasia	08	4	2
08	Haemodynamics	07	4	2
09	Immunity	8	-	2
10	Parasitology	10	3	2
11	Human genetics	04	-	2
12	Mycology	04	1	3

TIMELIINE PATHOLOGY TOPICS 2023

MONTHS		TOPICS COVERED
1	FEB	General Micro
2	March	General Micro
3	April	Special Micro-1
4	May	Cell injury, Healing and repair, Inflammation
5	June	Hemodynamics, PROTOZOA
6	16 July Onwards	Special Micro.2.
7	August	Special Micro.2. , MYCOLOGY, Neoplasia
8	September	GENETICS, Immunity , Virology
9	October	Prasitology
10	November	Send up
11	December - January	Prep leave/ Professional

LIST OF PRACTICALS (OSPE) TO BE PERFORMED

MICROBIOLOGY:

1. Sterilization of wire loop by flaming. Smear making and Gram staining and identification of Gram +ve and Gram –ve bacteria.
2. ZN staining and identification of acid fast bacilli.
3. Bench tests: Catalase test, Coagulase test, Oxidase test.
4. Identify and describe the characteristics of the following culture media:
5. Blood agar, Chocolate agar, MacConkey media & LJ media.
6. Biochemical tests for identification of bacteria.
7. Identify the autoclave, hot air oven and demonstrate their working?
8. Antibiotic sensitivity testing & anaerobic jar.
9. Blood culture- sample collection & processing.
10. Urine examination.
11. Stool examination.
12. Malarial parasite examination.

GENERAL PATHOLOGY:

1. Intracellular adaptations, Necrosis and intracellular accumulations
2. Pigmentation, fatty change
3. Acute and chronic inflammation,
4. Chronic venous congestion
5. Thrombus, infarction,
6. Benign and malignant Mesenchymal tumors,
7. Benign and malignant epithelial tumors
8. Granulation tissue
9. Types of giant cells
10. Exudate and transudate

ASSESSMENT METHODS/PLAN

The formative assessments will be planned according to table of specification TOS provided by UHS.

UNITS	MCQS	SEQS
CELL INJURY	04	01
INFLAMMATION, HEALING & REPAIR	06+02	01+01
NEOPLASIA	09	01
GENETICS	02	01
HEMODYNAMICS	04	01
BACTERIOLOGY	14+GEN 04	03
MYCOBACTERIA	-	01
IMMUNITY	05	01
VIROLOGY	06	01
MYCOLOGY	04	01
PARASITOLOGY	05	01
<u>TOTAL</u>	65	14

Formative:

CLASS TESTS (DURING ACADEMIC SESSION)

On 3rd Monday of every month (8.00-9.30 a.m)

On all topics covered during the month.

College ID card is a must, to appear in all tests.

Grading will be as follows (Mostly, depending on tests content)

$$\begin{aligned}
 \text{Total marks} &= \text{MCQs} + \text{SEQs/ VIVA+COPY} \\
 50 + 40 &= 30 + 20 / 30 + 10
 \end{aligned}$$

INTERNAL ASSESSMENT CRITERIA

- 10 % of total marks
- Total marks = 300
- Internal Assessment = 30 (15 marks in theory + 15 marks in Practical)
- Approximate weightage
 - Attendance 20% of total (6/30)
 - Assessment 60% each of total (18/30)
 - Behavior/Professionalism 20% of total (6/60)
- Break-up of 30 marks

Lecture/Practical attended	Test average	Midterm	Sendup	Behavior	Total
6	6	6	6	6	30

Lectures/Practicals attendance scale	
>90%	6
80 - 89%	5
70 - 79%	4
60 - 69%	3
50 - 59%	2
<50%	1

Tests, Midterm and Sendup scale	
>75%	6
65 - 75%	5
55 - 64%	4
45 - 54%	3
35 - 44%	2
<35%	1

- Marks for Practical Copy will be added with
 1. Sendup total
 2. Internal Examiner viva marks (30 marks viva + 5 marks Copy)

Summative: at the end of the year in college as sendups and later by U.H.S as professional examination. In form of SEQs, MCQs, VIVA, OSPE.

FORMATIVE & SUMMATIVE ASSESMENTS RULES & REGULATIONS **(PATHOLOGY DEPARTMENT, LMDC)**

1. Student must report to examination hall/venue, 30 minutes before the exam.
2. Exam will begin sharp at the given time.
3. No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
4. Students must sit according to their roll numbers mentioned on the seats.
5. **Cell phones are strictly not allowed in examination hall.**
6. 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.
7. No students will be allowed to sit in exam without University Admit Card, LMDC College ID Card and Lab Coat
8. Student must bring the following stationary items for the exam: Pen, Pencil, Eraser, and
9. Sharpener.
10. Indiscipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

FEEDBACK OF ACADEMIC YEAR:

Feedback regarding teachers/facilitators and teaching methodology will be taken after end of every chapter and a collective overall feedback will be taken at the end of the year.

CODE OF CONDUCT

TIMINGS

The students should strictly follow the timings of lectures, practical & tutorial classes. Entry of students in class rooms and laboratories will not be permitted after 10 minutes of scheduled time.

ATTENDANCE & SEND UP EXAMINATION

75% attendance and 50% of internal assessment are required for appearing in professional examination of the University Of Health Sciences, Lahore. If any student is caught marking a proxy in lectures, tutorial and practical classes, he/she along with the absentee will be marked absent for two consecutive classes. Any unfair means in internal examination will disqualify a student for appearing in professional examination.

INTERNAL EVALUATION

Internal evaluation carries 10% of the total marks of 2nd professional examination. This is based on the performance of internal examination system, assignments, presentations and student teacher communication in practical & tutorial classes. The students must bring college identity cards while appearing in module evaluations and examination.

PRACTICAL NOTE BOOKS AND LAB COATS

Practical note books carry 05 marks. The students should strictly follow the protocol mentioned. The students will not be allowed to attend practical and tutorial classes without lab coats.

LEARNING RESOURCES SUGGESTED READINGS:

TEXT BOOKS

1. Pathological Basis of Disease by Kumar, Cortan and Robbins, 9th Ed., W.B. Saunders. (Basic Pathology by Cotran & Kumar (Medium Robbins))
2. Robbins Pathology 8th edition (Big Robbins)
3. Medical Microbiology and Immunology by Levinson and Jawetz, 9th Ed., Mc Graw-Hill.
4. Medical Genetics by Jorde, 3rd Ed., Mosby.
5. Review of Medical Microbiology and Immunology by Lewinson
<http://www.pdfbooks11.com/2015/04/download-free-ebook-review-of-medical-Microbiology-and-Immunology.html>

REFERENCE BOOKS

1. Illustrated Pathology
2. Pathology Practical Book by Harsh Mohan
3. Concise Pathology for Exam Preparation by Bhattacharya
4. District Laboratory Practice in Tropical Countries, Part 2 by Monica
<http://www.medbox.org/district-laboratory-practice-in...part-2/download.pdf>

WEBSITES

Webpath, Pathguy

ADDITIONAL LEARNING RESOURCES

Museum Models available in the museum are a rich learning resource for quick review of pathological diseased specimen related educational activities.

Skill Lab: Skills acquisition in a simulated environment in the skills lab involving experiential learning will ensure patient safety and will also help to build confidence in approaching the patients

Videos/Podcasts.

Internet Resources Students will use easily accessible internet resources with added time flexibility to enrich and update their knowledge and its application.

TEST PREPARATION/MCQS

Review of pathology – Robbins and Pre-test in Pathology, BRS PATHOLOGY.

COUNSELLING

CAREER COUNSELLING

- Senior Faculty members provide necessary career counselling to students as per their need.
- Help and guidance is provided to students who wish to apply for their elective rotations both in the country and abroad.
- Students are facilitated on the development of their student curriculum vitae.

PSYCHOLOGICAL COUNSELLING

- Psychological support and guidance is provided in a systematic way.
- Struggling students, Students under stress and students in need of psychological support are pointed out by class tutors.
- These students are called for an initial assessment by respective senior faculty member.
- Depending on student's need, either the student is counselled and is actively monitored by a tutor or if needed, the student is referred to Colleges' nominated student councilor.