BDS 2nd YEAR

DEPARTMENT OF PATHOLOGY

STUDY GUIDE session 2025

GENERAL PATHOLOGY & MICROBIOLOGY

STUDY GUIDE

CLASS: BDS 2nd YEAR 2025

Session 2024 (17th march 2025– 17th november 2025)

DEPARTMENT OF PATHOLOGY:

SUBJECT: General pathology and Microbiology

DURATION OF THE COURSE WORK:

- 9 months (36weeks)
- 17th March – 17th November 2025
- Summer vacations= 4th july 2025 to 4th aug 2025
- Mid term = august 2025
- Send-up ….. December 2025

LEARNING OBJECTIVES:

The main objective of teaching General Pathology and Microbiology to undergraduate Dental students is to give them a comprehensive knowledge of the underlying mechanisms and causes of diseases and also to introduce them to the basics of infectious diseases and objective of the principles of sterilization which are a core component of clinical practise of every dental surgeon.

Teaching methodologies:

- Lectures
- Tutorials
- Practicals
- Large group teaching is in the form of lectures.
- Small group teaching is in the form of tutorials and practical.
- BDS class is divided into two batches A and B for small group classes.

SYLLABUS: (according to UHS guidelines)

GENERAL PATHOLOGY:

- Cell injury
- Inflammation
- Repair
- Hemodynamics
- Genetics
- immunity
- Neoplasia

MICROBIOLOGY:

- General and special bacteriology.
- Parasitology
- Virology
- Mycology

ASSESSMENTS:

- **There will be a monthly test on Monday of week one of every month.**
- All the class tests will be according to the UHS examination pattern.
- Assessments will contain SEQ and MCQ.
- Regular feedback will be taken from students.
- Internal assessments i.e 20 marks will be calculated from the results of class tests during the whole session and also mid- term and send up results.

Recommended Books:

- **Robbins Basic Pathology. 10th edition.**
- **Review of Medical Microbiology and Immunology. 16th edition.**

Reference books:

- Laboratory diagnosis of Tropical diseases. Part 2. . 2nd Edition.
- Concise Pathology by Geetika Bhattacharya . 3rd Edition.

Reference websites:

- Webpath.com
- Pathology.com

TEACHING SCHEDULE 2024:

Duration : 9 MONTHS. (March 2024 to November 2024)

Venue: LECTURE THEATRE 9

LECTYRE DAYS: Monday, Tuesday, Thursday, Friday

PRACTICAL DAYS: Monday, Tuesday, Wednesday,Thursday

TOPICS	**TEACHERS INCHARGE**
GENERAL PATHOLOGY	
CELL INJURY	Prof. Shazia.N. Ibn e Rasa/Dr Maimoona/Dr Rizwan
INFLAMMATION	Prof. Shazia.N. Ibn e Rasa
Healing & Repair	Dr Rizwan Ahmed
Genetics	Prof. Fauzia Sadiq
Immunity	Prof. Shazia.N. Ibn e Rasa
Hemodynamics	Dr.Nazia Ahmed
Neoplasia	Prof. Shahbaz Amin
MICROBIOLOGY	
Bacteriology	Prof. Saadia Ch. Dr. Sonia Tahir
Virology	Prof. Saadia Ch. Dr. Sonia Tahir
Mycology	Prof. Saadia Ch.
Parasitology	Prof. Saadia Ch. Dr Nazia Ahmed , Dr Sonia Tahir

PRACTICALS:

1. **General Pathology Practicals:**

- Types of Necrosis
- Calcification
- Fatty change
- Intracellular accumulations
- Cellular adaptations
- Acute inflammation (appendicitis, pneumonia)
- Chronic inflammation (non granulomatous)
- Granuloma
- Types of giant cells
- Primary and secondary healing
- Keloid formation, scar formation
- Thrombosis
- Congestion
- Infarction
- Benign and malignant tumors
- Lipoma, leiomyoma
- BCC, SCC

2. **Microbiology Practicals:**

- Gram staining
- ZN staining
- Culture media
- Biochemical tests (catalase, coagulase, oxidase)
- Anaerobic jar
- Motility of bacteria
- Biochemical media
- Urine examination
- Stool examination

Tutorials: General Pathology & Microbiology tutorials will be aligned with the topics covered in lectures.

STUDENT FEEDBACK: Regular student feedback will be taken after the completion of each unit by the Dental Education Department.

Student Counselling: Student councillor is available in LMDC to help students for their counselling.

DETAILS OF TEACHING SYLLABUS : (UHS)

GENERAL PATHOLOGY

CELL INJURY:

- Clinical Causes of Irreversible and Reversible injury & Role of free radical.
- Apoptosis versus necrosis and types of necrosis with examples.
- Clinical aspects of Intracellular accumulations
- Fatty change
- Dystrophic and metastatic calcification along with clinical significance and examples.
- Clinical aspects of cellular Adaptations with examples e.g. atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia.

INFLAMMATION & **REPAIR:**

- Vascular and cellular events and Chemical mediators of acute inflammation.
- Morphological patterns &Clinical outcomes of acute inflammation.
- Transudate vs exudate with clinical examples.
- Types of chronic inflammation (simple and granulomatous) with clinical examples.
- Define repair, regeneration, growth factors and scar formation
- Factors affecting wound healing & Pathological aspects of complications of wound healing.
- healing by primary and secondary intention.

NEOPLASIA

- Nomenclature with clinical examples of benign and malignant tumors.
- Define protooncogenes and oncogenes with clinical examples.
- Clinical aspects of carcinogenesis ,carcinogenic agents, tumor metastasis and tumor markers
- Clinical aspects of grading and staging of tumors and laboratory diagnostic methods of tumors.
- Paraneoplastic syndrome & precancerous conditions

DISORDERS OF CIRCULATION

- Clinical aspects with types and examples of hemorrhage, infarction, thrombosis, emboli, oedema and shock.

IMMUNOLOGY:

- Clinical aspects of innate and acquired immunity. Active and passive immunity.
- Types of immune cells (T cells, B cells) , types of MHC & their role in clinical diseases.
- Types and clinical aspects of antibodies.
- Clinical aspects of hypersensitivity reactions.
- Types of transplant rejections & GVHD.
- Clinical aspects of autoimmunity and autoimmune diseases.
- HIV

GENETICS:

- Types of mutation.
- Clinical aspects of X linked diseases, Autosomal dominant & autosomal recessive diseases with clinical examples.
- Clinical aspects of down syndrome, turner syndrome, klinefelter syndrome, Ehlers danlos syndrome & Marfan syndrome.

MICROBIOLOGY:

GENERAL BACTERIOLOGY

- Important components of bacterial cell (cell wall, cell membrane, nucleoid, ribosomes, pilli, flagella, plasmids, trasposons, spores).
- Exotoxins vs Endotoxin.
- Mechanisms of actions of exotoxins and their clinical outcomes.
- Classification of important groups of bacteria .
- Bacterial growth curve
- Classification of culture media.
- Colonisation resistance and clinically important bacteria of Normal Flora.
- Clinical aspects of sterilization process and its various methods and uses of disinfectants in various clinical settings.
- Clinical aspects of conjugation, transduction and transformation.
- Clinical uses of bacterial vaccines.
- Clinical aspects of antimicrobial resistance.
- Clinical aspects of antimicrobial mechanisms of actions.

SPECIAL BACTERIOLOGY:

- **GRAM POSITIVE COCCI:**
- ***Staphylococci***
- ***Streptococci***
- ***Gram negative cocci***
- ***Gonococci***
- ***Meningococci***
- **GRAM POSITIVE RODS:**
- ***Bacillus***
- ***Clostridia***
- ***Diphtheria***
- ***Listeria***

- **SPIROCHETES:**
- ***Treponema pallidum***
- ***BORRELIA***
- ***LEPTOSPIRA***

- ***MYCOBACTERIA:***
- ***MTB, M. Leprae, Atypical Mycobacteria***

- **GRAM NEGATIVE RODS**

- ***E. coli***
- ***Salmonella***
- ***Shigella***
- ***Proteus***
- ***Pseudomonas***
- ***Klebsiella***
- ***Bacteroides***
- ***Bordetella***
- ***H. influenza***
- ***Legionella***

CHLAMYDIA, RICKETTSIA

MYCOPLASMA
ACTINOMYCETES

- ***PARASITOLOGY***

- **Plasmodium**
- **Leishmania**
- **Trypanosomes,**
- **Toxoplasma,**
- **Entamoeba**
- **Giardia**
- **Trichomonas**
- **Entrobius**
- **Ascaris**
- **Trichuris**
- **Hook worm**
- **Wuchereria**
- **Dracunculus**
- **Tenia saginata**
- **Tenia solium**
- **Echinococcus**
- **D. Latum**
- **Schistosomes**

VIRUSES:

- **Viral structure and replication**
- **Classification of viruses with clinical conditions caused by each.**

Clinical aspects of

- **Herpes viruses**
- **Pox virus**
- **Measles, mumps, rubella**
- **Rhinoviruses**
- **adenoviruses**
- **Influenza virus**
- **Polio virus**
- **Dengue**

- **Rabies**
- **coronaviruses**
- **HEPATITIS**
- **HIV**

MYCOLOGY:

- **Fungal structure and classification of clinically important fungi.**
- **Clinical aspects of**
- **Dermatophytes, tinea versicolor, sporothrix, histoplasma, coccidioiodes, blastomyces, candida, aspergillus, mucor, rhizopus, Cryptococcus.**

TOS FOR UHS THEORY EXAMINATION (G.Pathology)

TOPICS	SEQ 1 SEQ=3mark	MCQ 1 MCQ= 1 mark
Cell injury and Adaptation	1	6
Inflammation,	2	6
healing and repair	1	3
Hemodynamic disorders	1	2
Immunology	1	2
Genetic Disorders	1	2
Neoplasia	2	6
Total	9 SEQ	27 MCQ

TOS FOR UHS PRACTICAL EXAMINATION (OSPE): (G. Pathology)

CONTENTS	STATIC STATIONS (3marks of each station)	TOTAL
Cell Injury	1	1
Inflammation,	1	1
Hemodynamics	1	1
Neoplasia	1	1
Healing & Repair	1	1
TOTAL	5 stations (5x3= 15 marks)	5 stations (15 marks)

TOS FOR UHS WRITTEN EXAMINATION: (Microbiology)

CONTENTS	SEQ 1 SEQ= 3 marks	MCQ 1 MCQ = 1 mark
General Bacteriology	2	4
Special Bacteriology	2	7
Virology	1	1
Parasitology	1	6
Total	6	18

TOS FOR UHS PRACTICAL EXAMINATION (OSPE): (Microbiology)

CONTENTS	STATIC STATIONS (3 marks of each station)	PERFORMANCE STATIONS (5 marks of each station)	TOTAL
STAINING PROCEDURES	1	1	2
BIO-CHEMICAL REACTIONS/BENCH TESTS	1	1	2
CULTURE MEDIA	2		2
STERILIZATION & DISINFECTION		1	1
PARASITOLOGY	1		1
TOTAL	5 stations (5 x 5= 15 marks)	3 stations (5 x 3= 15marks)	8 stations (52 marks)