

BDS 2nd YEAR

DEPARTMENT OF PATHOLOGY

STUDY GUIDE session 2024

GENERAL PATHOLOGY & MICROBIOLOGY



STUDY GUIDE

CLASS: BDS 2nd YEAR 2024

Session 2024 (11 march 2024– 11 november 2024)

DEPARTMENT OF PATHOLOGY:

SUBJECT: General pathology and Microbiology

DURATION OF THE COURSE WORK:

- 9 months (36weeks)
- 11March – 11November 2024
- Summer vacations= 20th june to 20th july 2024
- Mid term = July 2024
- Send-up last week of November 2024 (tentative)

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

<u>TOPICS</u>	<u>TEACHERS INCHARGE</u>
<u>GENERAL PATHOLOGY</u>	
CELL INJURY	Prof. Shazia.N. Ibn e Rasa/Dr Maimoona
INFLAMMATION	Prof. Shazia.N. Ibn e Rasa/Dr Rizwan Ahmed
Healing & Repair	Dr Rizwan Ahmed
Genetics	Prof. Fauzia Sadiq
Immunity	Prof. Shazia.N. Ibn e Rasa
Hemodynamics	Dr.Nazia Ahmed
Neoplasia	Prof. Shahbaz Amin
<u>MICROBIOLOGY</u>	
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
- Entrobium
- 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 3= 15 marks)	3 stations (5 x 3= 15marks)	8 stations (52 marks)