**BDS 2nd YEAR**

**DEPARTMENT OF PATHOLOGY**

**STUDY GUIDE session 2022**

***GENERAL PATHOLOGY & MICROBIOLOGY***

**Prepared By:**

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**Prof. of Microbiology**

**STUDY GUIDE**

**CLASS: BDS 2nd YEAR**

**Session 2022 (February 2022– October 2022)**

**DEPARTMENT OF PATHOLOGY:**

**SUBJECT: General pathology and Microbiology**

**DURATION OF THE COURSE WORK:**

* 9 months (36weeks)
* February - October 2022
* Send-up ….. 2nd week of October 2022
* Total lectures of BDs 2ndyr( minus 4 weeks of summer break)

4 lecture / week (each of 45 minutes) = 96 hrs

1 practical & 1 tutorial / week (each of 120 minutes)= 128 hrs.

**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 two 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 2022: ( ON CAMPUS)**

**Duration : 9 MONTHS. ( February to OCTOBER 2022)**

**Venue: LECTURE THEATRE 5**

**DAYS: Monday, Tuesday, Thursday, Friday**

|  |  |
| --- | --- |
| **TOPICS** | **TEACHERS INCHARGE** |
| **GENERAL PATHOLOGY** | |
| CELL INJURY | Prof. Fauzia Sadiq |
| INFLAMMATION | Prof. Shazia.N. Ibn e Rasa |
| Healing & Repair | Prof. Fauzia Sadiq |
| Genetics | Prof. Fauzia Sadiq |
| Immunity | Prof. Shazia.N. Ibn e Rasa |
| Hemodynamics | Dr.Nazia |
| 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 Sonia Tahir , Dr Nazia |

\*ONLINE TEACHING: in case if we will have to shift to online teaching at any stage of teaching session, we will continue our classes using Google meet with four lectures and two tutorial classes per week as we successfully did in 2020 and 2021.

**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

1. **Microbiology Practicals:**

* Gram staining
* ZN staining
* **Culture media**
* **Biochemical tests ( catalase, coagulase, oxidase)**
* **Anaerobic jar**
* **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.

**2nd year BDS**

**LECTURE ALLOCATION GRID 2022**

**Department of Pathology**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Feb** | **Mar** | **Apr** | **May** | **jun** | **Jul** | **aug** | **sep** | **oct** | **TOTAL** |
| **Cell Injury,** | **7** |  |  |  |  |  |  |  |  | **7** |
| **Inflammation** | **7** |  |  |  |  |  |  |  |  | **7** |
| **Healing** |  | **4** |  |  |  |  |  |  |  | **4** |
| **Gen. bacterio** | **2** | **8** |  |  |  |  |  |  |  | **10** |
| **Neoplasia** |  |  |  |  | **8** |  |  |  |  | **8** |
| **Sp. bacterio** |  | **4** | **11** | **10** |  |  |  | **7** |  | **32** |
| **Hemodynamics** |  |  |  | **6** |  |  |  |  |  | **6** |
| **Virology** |  |  |  |  |  | **1** | **6** | **4** |  | **11** |
| **Immunity** |  |  |  |  |  | **7** |  |  |  | **7** |
| **Parasitology** |  |  |  |  |  |  | **10** | **5** |  | **15** |
| **Genetics** |  |  | **5** |  |  |  |  |  |  | **5** |
| **Mycology** |  |  |  |  |  |  |  |  | **4** | **4** |
| **TOTAL** | **16** | **16** | **16** | **16** | **8** | **8** | **16** | **16** | **4** | **116** |

Summer vacations= 15th june to 15th july.

Send up ( tentative) = 2nd week of October.

**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) |