II semester
MICROBIOLOGY

SYLLABUS FOR BSc  AHS

Objectives: The syllabus in Microbiology is designed as to give the students a thorough knowledge in basics of Medical Microbiology.

Theory:

1) A brief introduction to Microbiology, eminent personalities in Microbiology and importance of this subject in Medical field.
2) Microscopes, staining techniques and morphology of bacteria
3) Sterilization
4) Disinfection.
5) Different culture media used in Microbiology with different culture methods-Aerobic and Anaerobic
6) Immunity
7) Antigen antibody reactions
8) Hypersensitivity reactions.
9) Common bacteria causing human infections-wound infectionand Respiratory tract infections
10) Urinary tract infections and Diarrheal diseases.
11) Blood stream infections and Meningitis.
12) Tuberculosis.
13) Hospital acquired infections
14) Basic concept of biomedical waste disposal, segregation and treatment
15) Concept of Universal Precaution.
16) Introduction to virology- Polio, Rabies and Dengue
17) Hepatitis Virus.
18) HIV virus.
19) Important parasitic infections- Amoebiasis, Malaria, Round worm, Hook worm, Filariasis
20) Important fungal infections.
**PATHOLOGY- Syllabus**

**Aims:**

- Should have a general understanding of the organisation routine functioning and operational standards of laboratories.
- Should be aware of the role of the laboratory in patient care, and realize the importance of team building, together with technology evolution.
- Should be familiar with specimen collection procedures and aware of pre analytical, analytical, analytical, and post analytical stages of processing of specimens and errors which can occur at each of these stages.
- Should be familiar with principles of equipment maintenance, principles of laboratory safety and medico legal concerns.
- Should be introduced to the concept of quality assurance.

**Pathology -Theory:**

1. Knowledge of lab organization, reporting and recording procedures.
2. Ethics of laboratory practice, confidentiality of reports. Medico legal aspects of record keeping
3. Method of collection transport, packing and storing of specimens, the concept of pre analytical, analytical and post analytical stages
4. Importance of labeling and identification.
5. Concept of universal precautions, biohazard.
6. Handling of waste, waste segregation and management including disposal
7. Laboratory accidents, prevention, first aid.
8. Stores supplies, indenting shelf life, grades of chemicals.
9. Composition of blood normal values, and normal morphology.
10. Different types of blood samples.
11. Anticoagulants, mechanism of action and uses.
14. Collection, transport, preservation and processing of various clinical specimens
15. Urine examination - collection and preservation, Physical, chemical and microscopic examination for abnormal constituents
16. Examination of Body fluids
17. Examination of Cerebrospinal fluid (CSF)
18. Sputum examination
19. Examination of feces
20. Principles and methods of ensuring of quality assurance in the laboratory.

**Demonstration:**

1. Venipuncture and collection of blood samples
2. Preparation of blood films
3. Staining of blood smears
4. Urine analysis - Physical, Chemical, Microscopic
5. Blood grouping and Rh typing

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**Biochemistry**

**AIM & OBJECTIVE:**

- To study about the basis of biochemistry, biophysical aspects of biochemistry, instruments, hazards and safety measures in biochemistry laboratory.

**THEORY:**

1. Introduction - Scope of biochemistry and clinical biochemistry objectives and scheme of clinical biochemistry teaching
2. Ethics and discipline: laboratory ethics and discipline, importance of patients and patients management
3. Hazards and safety: physical, chemical and biological hazards in clinical biochemistry laboratory. Awareness, responsibility, measures and equipment of laboratory safety.
   Prevention, communication and control of laboratory hazards.
   Different ways of disposal of laboratory waste (hazardous material)
   Different first aid measures to be taken immediately after accidents.
4. BASIC BIOCHEMISTRY: Biochemical organization of the cell, tissues, organs and human organism
5. BIOPHYSICAL ASPECTS OF BIOCHEMISTRY - theory of acids and bases, ionization of acid, dissociation of water, hydrogen ion concentration, pH dissociation of weak acid, buffer solution, determination of pH titration using indicators.

6. CARBOHYDRATES: Chemistry, classification, physical and chemical properties biological importance of carbohydrates

7. PROTEINS: classification of aminoacid, classification of proteins, properties of aminoacids and proteins, biological importance of proteins, and hydrolytic products of proteins

8. LIPIDS: classification of fatty acid, classification of lipid, properties, biological functions, biological importance of phospholipids and steroids

9. NUCLEOPROTEINS: Purine and pyrimidine, nucleoside, nucleotide, nucleic acids, structure of nucleic acid, biological importance of nucleotides

10. General overview of Vitamins: RDA, Sources & deficiency manifestations

11. General overview of Minerals: RDA, Sources & deficiency manifestations

12. Valency, Molecular weight & Equivalent weight of elements and compounds. Normality, Molarity, Molality.

PRACTICAL DEMONSTRATION
- Analytical balance - Weighing of chemicals to prepare standard and different types of solutions. Care while weighing acids, deliquescent and hygroscopic compounds.
- Colorimeter- Absorbance readings of a colored solution and graphing
- pH meter- Checking pH of urine and buffer

PHARMACOLOGY SYLLABUS

General pharmacology

CLASS 1: Definition of drug & sources of drug & drug information.

CLASS 2: Drug dosage forms- Oral forms & Labelling of drugs.

CLASS 3: Parenteral & Topical Dosage forms.

CLASS 4: Routes of Drug administration.

CLASS 5: Absorption of drug.
CLASS 6: Distribution,
CLASS 7: Metabolism of drugs
CLASS 8: Excretion
CLASS 9: Factors modifying drug action.
CLASS 10: Mechanism of Action, Adverse Drug Reaction & Pharmacovigilance.
CLASS 11: Pharmacodynamics
CLASS 12: Drug development & Drug interaction.
CLASS 13: Autonomic Nervous System
CLASS 14: Gastrointestinal Tract
CLASS 15: Respiratory System
CLASS 16: Local & General Anaesthetics
CLASS 17: Histamine & Antihistamine, Prostaglandins
CLASS 18: NSAID
CLASS 19: Anti hypertensive drugs.
CLASS 20: Antibiotics I & Antibiotics resistance.
CLASS 21: Antibiotics II
CLASS 22: Blood
CLASS 23: Insulin & Oral Hypoglycemic Drugs
CLASS 24: Vitamins, Iron, Calcium, Toxicology
CLASS 25: Diuretics
CLASS 26: Sedative hypnotics
CLASS 27: Miscellaneous
ENGLISH & COMMUNICATION SKILLS

ENGLISH

Unit I : Basic English

Review of Grammar ◦ Sentence formation ◦ Building Vocabulary ◦ Phonetics

Unit 2: Writing Skills:


Unit 3: Listening Skills:

Types of Listening (theory /definition) Tips for Effective Listening Academic Listening- (lecturing) Listening to talks and presentation

Unit 4: Spoken English

- Oral Report
- Discussion
- Debate
- Telephone conversation

Reading purposefully Understanding what is read Drawing conclusion Finding and analysis

How to explain clearly Defining and giving reasons Explaining differences Explaining procedures Giving directions

Unit V: Listening Comprehension

- Media, audio, video, speeches etc.

COMMUNICATION:

Role of communication
Defining Communication
Classification of communication
Purpose of communication
Major difficulties in communication
Barriers to communication
Characteristics of successful communication – The seven Cs Communication at the work place
Human needs and communication “Mind mapping” Information communication
INTRODUCTION TO COMPUTERS

SYLLABUS:

INTRODUCTION TO COMPUTERS

UNIT I: INTRODUCTION


UNIT II: WORD PROCESSING


Unit III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION


Unit IV: DATABASE MANAGEMENT SYSTEM

Theory: 30 hours Practical: 30 hours

UNIT V: APPLICATIONS IN HEALTH CARE AND MEDICINE