2023 - 2024

MICROBIOLOGY

Assignments

SEMESTER-I

Course-1: Introduction to Classical Biology.

UNIT-I

Nomenclature - ICBN and ICZN, Binomial and trinomial nomenclature.

Textbook

UNIT-II

Mushroom cultivation, Floriculture and landscaping.

Practical

UNIT-III

Economic Zoology - Sericulture, Apiculture, Aquaculture.

Internet

UNIT-IV

Cell theory, Ultrastructure of prokaryotic and eukaryotic cell, cell cycle

Home work.

UNIT - V

Chemical bonds - ionic, covalent, non-covalent - vander Waals, hydrophobic hydrogen bonds.

Chart

Course-2: Introduction to Applied Biology.

Unit-I: Essentials of Microbiology.
Applications of microorganisms in-Food, Agriculture, Environment, and industry.

Internet

Unit-II: Essentials of Biochemistry
Basics of Metabolism - Anabolism and catabolism.

Textbook

Unit-III: Essentials of Biotechnology
Environmental Biotechnology - Bioremediation and Biofuels, Biofertilizers and Biopesticides.

Practical

Unit-IV: Analytical tools and Techniques in Biology - Applications.
Applications in forensics-PCR and DNA fingerprinting.

Unit - V

Data collection and Sampling. Measures of central tendency - Mean, Median, Mode.

Home work

Course-3: Molecular Biology and Microbial Genetics.

Unit-I: DNA Replication:
DNA Extrachromosomal genetic elements

chart

Unit-II: Transcription:
RNA Classes - properties, structure and functions.

Model

Unit-III: Mutations and DNA Repair:
DNA damage. DNA repair mechanisms

Internet

Unit-IV: Bacterial Genetics.
Conjugation, Transformation and Transduction - generalized and specialized transduction.

Textbook

Unit - V : Gene Regulation:

Gene regulation in eukaryotes.

Home work.

Course 16A: Agricultural and Environmental Microbiology

Unit-I: Soil Microbiology.
Microflora of Rhizosphere and Phyllo-Sphere, microbes in composting.

Practical

Unit-II: Beneficial Microorganisms in Agriculture.
Plant-Microbe interactions.- mutualism commensalism, antagonism, competition, parasitism, predation.

Textbook.

Unit-III: Diseases in Plants.
principles of Plant disease control.

Internet.

Unit-IV: Terrestrial Environment
Soil Profile and Soil microflora.

Home Work.

Unit - I : Outlines of Solid waste management.

Liquid waste management: Composition and strength of sewage (BOD and COD).

Practical

SEMESTER-V

Course-7A: CLINICAL MICROBIOLOGY

Unit-I: Types of Diseases.
Disease - incidence, Prevalence; communicable, non-communicable.

Internet

Unit-II: Types of Infections.
Food and Water borne infections - Cholera, Polio.

Text book

Unit-III: Identification of Organisms:
Biochemical reaction - Sugar fermentation test.

Practical

Unit-IV: Clinical Lab Technology.
Collection of clinical samples (Oral cavity, Skin, blood, urine) and Precautions required.

Home work

Unit - I : Serology.

Western blot analysis for HIV.

Practical

SEMESTER II

Course-3:

Introduction to Microbiology

Unit-I:

Modern developments in microbiology.

Internet

Unit-II:

Classification of microorganisms - study of Phylogenetic Relationships, Three domain & Five kingdom classification.

Text book.

Unit-III:

Classification and multiplication of bacteriophage and an animal virus (HIV)

Home work.

Unit-IV:

Instrumentation and applications of Electron microscopy (SEM and TEM).

Chart.

Unit - II;

Chemical methods of microbial control- Priniciples of effective disinfection, Types of disinfectants-

Model.

SEMESTER II

Course 4:

Bacteriology and Virology

Unit - I:

Ultrastructure of a Prokaryotic cell.

Chart

Unit - II

The requirements for growth - Physical requirements and chemical requirements.

Text book

Unit - III

Phases of growth - The death Phase.

Chart.

Unit - IV

Isolation, cultivation and identification of viruses.

practical

Unit - V

Multiplication of bacteriophages.

Home work.

Course -4:

Immunology and Medical microbiology.

Unit - I

Lymphoid organs of immune system.

Chart.

Unit - II

Types of antigen - antibody reactions.

Model.

Unit - III

General priniciples of diaghostic microbiol -ogy.

Practical

Unit - IV

Viral Diseases - Hepatitis - A; AIDS.

Internet

Unit - V

Mode of action of antimicrobial drugs.

Homework

SEMESTER - IV

Course - 5 :

Food and industrial Microbiology.

Unit - I

Intrinsic and extrinsic Parameters that affect microbial growth in Food.

Text book.

Unit - II

Fermented Dairy foods - cheese and Yogurt

Internet.

Unit - III

Primary and Secondary microbial metabolites.

Chart.

Unit - IV

Basic concepts of Design of fermenter

Model.

Unit - V

Microorganisms involved in Pharma & therapeutic enzyme

Home work.