

PRACTICALS (HARD CORE COURSES)

BTP 406 BIOCHEMISTRY AND BIOPHYSICS

Course outcome

The student will

- CO 1. Get hands-on training and develop practical skills
- CO 2. Learn to work independently
- CO 3. Be trained in assays and techniques used in Biochemistry and Biophysics
- CO 4. Have application-based learning

GLP, Safety practices

Titration of amino acid Glycine

Qualitative analysis of amino acids, proteins, sugars, lipids

Extraction of casein from milk by isoelectric precipitation

Estimations of proteins by Biuret method

Estimation of sugars by DNS method

Animal Handling techniques for biochemical assays

BTP 407 MOLECULAR GENETICS

Course outcome

The student will

- CO 1. Get hands-on training and practical skills in Molecular genetics
- CO 2. Learn the use of model organisms
- CO 3. Learn to solve genetics-based problems
- CO 4. Learn banding techniques and karyotyping

Morphological features of *Drosophila*

Mounting genital plate and sex comb in *Drosophila*

Isolation and staining of salivary gland chromosomes in *Drosophila*

Mutants of *Drosophila*

Micronucleus test in mice

Banding techniques and karyotyping

Demonstration of Barr bodies in buccal cells

Study of human blood groups

Chromatographic separation of eye pigments in *Drosophila*

Problems on quantitative inheritance

Problems on gene frequencies in population

BTP 408 MICROBIOLOGY

Course outcome

The student will:

- CO 1. Get hands-on training and practical skills
- CO 2. Learn use of safety equipment used in microbiology
- CO 3. Develop skills in isolation and culture of microorganisms from different sources
- CO 4. Carry out staining and identification of microorganisms

Microscopic observations of microorganisms

Microbial staining techniques (simple and differential staining, cell wall, endospores, intracellular lipids, acid-fast, flagella, viability)

Microbial motility tests

Sterilization techniques

Microbial culture media and their preparation

Isolation techniques

Maintenance of microorganisms (stock culture and subculture)

Microbial characterization based on biochemical tests

Quantitative and quantitative assessment of microflora in soil, water, air and food

Milk microbiology

Studies on bacteria, fungi and actinomycetes

Studies on symbiotic association of microorganisms

PRACTICALS (SOFT CORE COURSES)

BTP 409 ENZYMOLOGY

Course outcome

The student will

CO 1. get hands-on training in enzymology practicals

CO 2. learn kinetics using suitable examples

CO 3. learn about applications of enzymes in industry

CO 4. learn advantages of immobilization of enzymes

Extraction, isolation and purification of soluble and membrane bound enzymes

Enzyme assays

Study of enzyme kinetics (effect of substrate concentration, pH, temperature and metal ions)

Determination of K_m and V_{max}

Mechanism of enzyme inhibition

Mechanism of action of lysozyme, chymotrypsin polymerases

Immobilization of enzymes and their applications

OR

BTP 410 CELL BIOLOGY

Course outcome

The student will

CO 1. acquire practical skills in cell biology

CO 2. learn preparation of slides

CO 3. acquire skills in quantitative assays of biomolecules

CO 4. learn separation of subcellular organelles using centrifugation

Microscopy, micrometry, microtomy

Study of mitosis and meiosis in plants and animals

Preparation of mitotic chromosomes and karyotyping

Staining techniques: Staining blood cells, total count and differential count

Histology and differential staining (cellular organelles and components)

Brushborder membrane

Studies on nerve impulses

Isolation of RNA and DNA

Estimation of RNA and DNA