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