

## **PRACTICALS (HARD CORE COURSES)**

### **BTP 506      MICROBIAL BIOTECHNOLOGY**

#### **Course outcome**

The student will

- CO 1. get hand-on practical skills in fermentation
- CO 2. learn about microbial assays,
- CO 3. develop pilot scale production of beverages
- CO 4. experiment on microbial uses in agriculture

Submerged and solid state fermentation

Estimation of microbial biomass

Estimation of microbial enzymes, mycotoxins, organic acids and antibiotics

Microbiological assays (antibiotics, amino acids and vitamins)

Properties of microbial exopolysaccharides (e.g. cell immobilization)

Uses of Chitin and its derivatives

Pilot scale production of alcoholic beverages

Microbial interactions with plants (rhizobia, mycorrhizas) and plant production

Assessment of nitrogen fixation (acetylene reduction test)

Phosphate solubilization in bacteria, fungi and actinomycetes

Qualities of biofuels (e.g. biodiesel, biogas)

### **BTP 507      PLANT BIOTECHNOLOGY**

#### **Course outcome**

The student will

- CO 1. learn the set-up of a plant tissue culture lab
- CO 2. develop hand-on practical skills in plant tissue culture methods
- CO 3. learn the use of media, hormones etc,
- CO 4. study early development of plants, protoplast culture etc.

Estimation of plant hormones (e.g. auxins, gibberellins)

Plant tissue culture methods

Callus culture (compact and friable)

Ovule and anther culture

Cell suspension cultures

Embryogenesis

Synthetic seeds

Protoplast preparation

Protoplast fusion techniques

Plant cell immobilization

Methods of inducing resistance through tissue culture

## **PRACTICALS (SOFT CORE COURSES)**

### **BTP 508      IMMUNOTECHNOLOGY**

#### **Course outcome**

The student will:

- CO 1. learn the immune system structure and function
- CO 2. carry out experiments to quantify immune cells
- CO 3. get hands-on training in various immunological assays of medical and diagnostic importance
- CO 4. develop skills in immunotechnology