

# BIOPROCESS TECHNOLOGY

**Course Code:** BTBBT 40702

## **Course Objective:**

The present course aims to aware about the requirements for large-scale cultivation of microbes for production of industrially important products with the concept of scale up processes.

## **Course Contents:**

### **Module I**

Bioprocessing vs. chemical processing

### **Module II**

Substrates for bioconversion processes and design of media; Cell culture techniques; Inoculum development and aseptic transfers.

### **Module III**

Process technology for the production of primary metabolites, eg. Baker's yeast, ethanol, acetone-butanol, citric acid, amino acids, polysaccharides and plastics

### **Module IV**

Microbial production of industrial enzymes – glucose isomerase, penicillin acylase, cellulase, amylase, lipase, protease etc.

### **Module V**

Production of secondary metabolites – penicillin, cephalosporins, streptomycin, etc. Metabolites from plant and animal cell culture;

### **Module VI**

Biomass (mushrooms) production from agro-residues; Biofertilizers and biopesticides.

## **Examination Scheme:**

<b>Component Codes</b>	<b>H/Q</b>	<b>S</b>	<b>CT2</b>	<b>EE</b>
<b>Weight age (%)</b>	10	10	20	60

## **Books and References:**

- Biochemical Engineering – Kinetics, Mass Transport, Reactors and Gene Expression, W.F. Veith, John Wiley and Sons Inc.
- Biochemical Engineering, S. Aiba, A.E. Humphrey and N.F. Millis, University of Tokyo Press
- Bioprocess Engineering Basic Concepts, M.L. Shuler and F. Kargi, Prentice Hall
- Bioprocess Engineering, B.K. Lydersen, K.L. Nelson, B.K. Lyderson and N. D'Elia, John Wiley and Sons Inc.
- Bioprocess Engineering Principles, P. Doran, Academic Press
- Biotechnology. A Textbook of Industrial Microbiology, W. Crueger and a. Crueger, Sinauer Associates.
- Principles of Fermentation Technology, P.F. Stanbury and A. Whitaker, Pergamon Press
- Process Engineering in Biotechnology, A.T. Jackson, Prentice Hall