

## **FST-241, Food Enzymology 3(3-0)**

### **Educational Objectives**

The course aims to provide students with theoretical knowledge and related applications of enzymes in food processing. The aim of the course is to provide the student with the ability to use methodologies based on the use of enzymes for an assessment of the quality and safety of raw materials and food products.

### **Course Outcomes**

At the end of the course the students will be able to:

- Identify which enzymatic preparations are used for targeted interventions on food matrices.
- Understand the modifications induced by specific enzymes on food matrices.
- Apply methods based on the use of enzymes to define the quality / safety of a food.

### **Course Contents:**

Introduction-significance of enzymes in food systems, Nature of enzymes and definitions of enzyme activity, Measurement of enzyme activity, Enzyme localization, compartmentalization, and significance to food quality, Role of enzymes in the color, flavor, and texture of food, Carbohydrate-dependent enzymes, Protein-dependent enzymes Lipid-dependent enzymes, Factors that affect enzyme activity in natural food systems, Effects of processing on enzyme activity, Role of enzymes in climacteric fruits (ripening and senescence), Role of enzymes in meat quality, Enzymes used by the food industry, Use of enzymes in food analysis, Use of enzymes in food processing, Purification of soluble and membrane enzymes, Enzyme characterization, Enzyme kinetics, Regulation of enzyme synthesis and posttranslational modification, Genetic engineering to increase enzyme yield and alter enzyme properties

### **Recommended Books:**

- David Nelson and Micheal Cox, Leninger Principle of Biochemistry, Fifth edition W.H Freeman &Co., New York.
- Stryer, L, Biochemistry, Fifth edition W. H Freeman & Co., New York.
- Palmer, T and Bonner, P Enzymes: Biochemistry, Biotechnology and Clinical Chemistry Second edition.
- Alan Fersht, Structure and Mechanism in Protein Science, Second edition W.H Freeman & Co. New York.