

## **Advanced Food Biotechnology 3(2-1)**

### **Theory**

Food Biotechnology: Introduction, importance, recent advances and trends, techniques and applications. Fermentation: Types, equipment, factors affecting the fermentation, and control of fermentation conditions. Fermentation kinetics, stoichiometry, bioreactors, solid state bioprocessing and transformation. Yeast based products: Alcoholic beverages, industrial alcohols, baker yeast, bread and related products. Bacteria based fermented products, dairy, meat and fish, vegetable, vinegar and organic acids, bacterial biomass. Mold based products. Other microbial based products: Enzymes, sweeteners, flavors, amino acids and vitamins. Food Safety: Safety evaluation of novel food products, genetically modified foods.

### **Practical**

Isolation, purification and maintenance of yeast and bacterial cultures, aerobic and anaerobic fermentation and production of various fermented food products. Production of metabolites and enzymes, their purification.

### **Books Recommended**

1. Capuccino, J.G. and N. Sherman. 1996. Microbiology and Laboratory Manual. The Benjamin Cummings Pub. Co., New York.
2. Lee. B.H. 1996. Fundamentals of food biotechnology. VCH Publishers, Inc, New York.
3. Mittal, G.S. 1992. Food Biotechnology: Techniques and applications. Technomic Pub Inc. Lancaster.
4. Shetty, K. (ed). 2005. Food Biotechnology, 2<sup>nd</sup> Ed. Marcel Dekker, Inc., New York, NY, USA.
5. Thomas and R.L Fuchs. 2002. Biotechnology and Safety Assessment. Taylor & Francis, Philadelphia, PA.

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