MFT305 Fermentation and Microbial Technology	
Teaching Scheme Lectures:2hrs./week Credits:2	**ExaminationScheme** InternalAssessment Marks[IAM]:30 [Class Test: 12, Teachers assessment:6,Attendance: 12] EndSemesterMarks[ESM]:70

CourseObjective:

1. To familiarize about the various microbial processes/systems/activities which have been used for the development of industrially important products/processes.

DetailedSyllabus

Module1
Fermentation: History, definition and types. Study of a Bio fermentor – its design and operation, Down Stream Processing and Product recovery. Its measurement and control in fermentation, Aeration and agitation in fermentation: Oxygen requirement, sterilization of air and media; scale up in fermentation.
Module2
Recovery of particulate matter, product isolation, distillation, centrifugation, whole brothprocessing, filtration, aqueous two-phase separation, solvent extraction, chromatography and electrophoresis.
Module3
Production of alcoholic beverages, organic acids, enzymes and immobilization of enzymes. Biological waste treatment.
Module4
Dairy Fermentations-starter cultures and their types, concept of probiotics.
Module5

Microbial enzymes, role in various industrial processes, Bio-transformations, Immobilized enzymes based bioreactors; production of antibiotics, vaccines, and biocides; Bioconversion of substrates, anti-nutritional factors present in feeds; Microbial detoxification of aflatoxins; Bioinsecticides; Biofertilizers.

Suggested Readings

1. Vogel,H.C.andC.L.Todaro,2005FermentationandBiochemicalEngineeringHandbook:Principles,ProcessDesignandEquipment, 2ndEdition,StandardPublishers.
2. El-Mansi,E.M.T,2007,FermentationMicrobiologyandBiotechnology2ndEdition,CRC /Taylor&Francis.
3. Joshi,V.K.andAshokPandey,1999,Biotechnology:FoodFermentation,Microbiology,Biochemistryand Technology, Vol.I&vol.IIEducational Publisher.
4. Peppler,H.J.andD.Perlman,2004,MicrobialTechnology:FermentationTechnology,2nd Edition, Vol. IIAcademicPress / Elsevier.
5. Stanbury,P.F.,A.WhitakerandS.J.Hall,2005PrinciplesofFermentationTechnology,2nd Edition AdityaBooks(P)Ltd.

CourseOutcomes

1.Understanding the fermentation,biofrementer,downstream processing and various factor affecting fermentation process.

2.Understandthe Recovery of particulate matter and its methods.

3.Understand principles of alcoholic beverage production and immobilization of enzymes.

4.Understanddairy fermentation and starter culture methods.

5.Knowledge about microbial enzymes, role in various industrial processes, Bio-ansformations