

BTY011 -INTRODUCTION TO FOOD TECHNOLOGY (SEC) – 45 hours

Food is an obvious fundamental need that provides the body with nutrients and helps in maintaining good health. It is a basic need to support life of not only man but also the other animals and micro organisms. The consumable food often deteriorates due to the effect of several factors. The most important factor is the fact that it serves as a good substrate for the growth of micro organisms that cause the food spoilage. This course aims to help the students to understand the various properties of food and the factors that make it vulnerable for spoilage. Also it gives details on the techniques involved in prevention of spoilage and preservation of food and the methods of detection of food spoilage micro organisms. The practical work of the course comprises of experiments in production of certain food, beverages a few food ingredients using micro organisms and the qualitative tests to determine food quality.

Unit 1: **5 hrs**

Food as substrate: Introduction to microbes in fermented food (Idly, dosa, wine, yogurt) Important Food microorganisms (Molds, Yeast, Lactic acid bacteria, Acetic acid bacteria) Microbial growth characteristics, Sources of microbes in food (water, soil, air, animal, birds, fish, shellfish, plants)

Unit 2: **5 hrs**

Food Spoilage: Factors influencing spoilage, Intrinsic factors-Nutrients in food, Growth factors and inhibitors in food, Water Activity, pH, Redox potential. Extrinsic Factors- Temperature and Humidity, Food spoilage in dairy products, canned foods. (5)

Unit 3: **6 hrs**

Food Preservation: Definition, Methods of preservation- Canning, Drying, Smoking, Curing, Freeze drying, Cold storage, pasteurization and irradiation, advantages and disadvantages.

Unit 4: **5 hrs**

Food intoxication: Food borne diseases: Types of food associated with food borne illness, infection and intoxication, symptoms, causes and control, Bacteria: *Campylobacter sp.*, *Salmonella sp.*, *E. coli* O157:H7, *Clostridium sp.*, *Vibrio sp.*, *Listeria monocytogenes*, *Bacillus cereus*, *Enterobacter sp.*, Moulds: *Aspergillus sp.*

Unit 5: **4 hrs**

Detection of food pathogens: Immunotechniques - ELISA, Agglutination, Western Blotting, Molecular technique- PCR, and line probe assays.

Unit 6:

5 hrs

Food sanitation: control and inspection.

DEMONSTRATION EXPERIMENTS – 15 hrs

1. Production of wine from fruit juices.
2. Estimation of Alcohol in wine by specific gravity method.
3. Production and estimation of lactic acid by Lactobacillus Sp.
4. Production of vinegar from fruit juices.
5. Production of apple cider.
6. Production of yogurt
7. Mushroom cultivation
8. Production of citric acid and estimation
9. Isolation and Study of fungi from contaminated food.
10. Qualitative analysis of milk by dye reduction test.

References

- 1 J. M. Jay, D. A. Loessner, J. Martin, Essentials of Food Microbiology, London: Arnold, 2005
- 2 Frazier, W.C, Food Microbiology, Mc Graw Hill Inc. 4th Edition, 2007