

Educational Objectives:

?? Learn the interrelationships of microorganisms with foods and their role in food manufacture and food spoilage.

?? Predict the impact of food processing and food handling on the microbiology of food. Topics include all aspects of food microbiology as listed below in the lecture outline.

?? To develop success skills including critical thinking, professionalism, and life-long learning.

?? Discuss the detection and Enumeration of Microbes in Foods

?? Identify the indicator Microorganism and Microbiological Criteria

Course Outcomes:

At the end of the course the student should,

- Describe the microbes interaction adaptation mechanism involve in environmental changes.
- Propose appropriate protocol for controlling food spoilage and pathogenic microorganisms
- Describe the significant effects of microorganisms to food safety and quality.
- Familiarization with a selection of current topics in food microbiology.
- Ability to understand and critically read research papers in food microbiology. Ability to integrate the findings within the larger issues in food microbiology.

Course Contents:

- Food microbiology: introduction and scope.
- Morphological, cultural and physiological characteristics:
 - molds, yeasts and yeast like fungi, bacteria.
- Important microbial genera in foods: bacteria, moulds, yeasts, viruses - general, morphological, cultural and physiological characteristics.
- Factors affecting the growth and survival of microorganisms in food
 - Intrinsic, extrinsic and implicit.
- Contamination and spoilage of perishable, semi perishable and stable foods: sources, transmission, microorganisms.

- Food microbiology and public health: food-borne infections: intoxications. Microbiological risk assessment.
- Microbiology in food sanitation: food sanitizers and pathogen reduction - a case study.
- Isolation, identification and characterization of micro organisms: morphology, biochemical.
- Enumeration of microorganisms in food and water samples (total count, viable count, MPN).
- Examination of foods for pathogenic organisms (*Escherichia coli*, Coliform, *Salmonella* and *Listeria monocytogenes*).

Recommended Books:

1. Frazier, W.C. and Westhoff, D.C. 2008. Food microbiology. McGraw Hill Book Co., New York, USA.
2. Adams, M.R. and Moss, M.O. 2006. Food microbiology. The Royal Society of Chemistry, Cambridge, UK.
3. Yousef, A. E. and Carlstrom, C. 2003. Food microbiology: a laboratory manual. John Wiley and Sons, New Jersey, USA.
4. Brown, M. and Stringer, M. 2002. Microbiological risk assessment in food processing. Woodhead Publishing Ltd. Cambridge, UK.
5. Spencer, J.F.T. and Ragout de Spencer, A.L. 2001. Food microbiology protocols. Humana Press, New Jersey, USA.