

FOOD MICROBIOLOGY AND FOOD SAFETY

CNNKGF 'EQWTUG'RCRGT'/'KK

THEORY

Maximum Marks : 150

Credits : 4

Teaching Period : 4 Theory + 1 Students' Presentation/ Week

Teaching Load : 48 Theory Periods +12 Students' Presentation/ Semester

Objectives:

- To know the important genera of microorganisms associated with food and their characteristics.
- To understand the role of microbes in fermentation, spoilage and food borne diseases.
- To understand Food safety and hygiene, types of hazards associated with food.
- To understand current Food regulations and Food Safety Management Systems.

CONTENTS:

UNIT 1. Introduction to Food Microbiology (Ch-1, Garbutt) (2 Lectures)

History and Development of Food Microbiology, Definition and Scope of food microbiology

UNIT 2. Types of Microorganisms in Food (Ch-3,5,17,18,19,20 Pelczar et al) (6 Lectures)

Classification and Nomenclature, Morphology and Structure Importance in food (bacteria, fungi and viruses) Significance of spores

UNIT 3. Microbial Growth in Food (Ch-4, Banwart) (4 Lectures)

Bacterial growth curve, Factors affecting the growth of micro organisms in food

UNIT 4. Microbial Food Spoilage (Ch 4-9, Jay, Ch-12,13,14,17,18, Frazier and westhoff) (6 Lectures)

Sources of Microorganisms in foods, Some important food spoilage bacteria, Spoilage of some specific food groups

UNIT 5. Food Fermentations

(6 Lectures)

Fermentation –definition and types, Microorganisms used in food fermentations, Fermented Foods-types, methods of manufacture for vinegar, sauerkraut, yoghurt , soya sauce, wine and traditional Indian foods

UNIT6. Food borne Diseases (Ch-23,24,25,Frazier and Westhoff) (4 Lectures)

Types – food borne infections, food borne intoxications and toxin infections, Origin, symptoms and prevention of some commonly occurring food borne diseases

UNIT7. Enumeration techniques & control of microorganisms in foods

(6 lectures)

Qualitative and quantitative methods-conventional as well as rapid, Principles and methods of preservation (thermal and non thermal),Introduction to Hurdle Technology

UNIT 8 .Introduction to Food Safety (Ch-1,forsythe) (4 Lectures)

Definition, Types of hazards, biological, chemical, physical hazards, Factors affecting Food Safety

UNIT 9.Hygiene and Sanitation in Food Service Establishments (Ch-

1,Marriot)

(6Lectures)

Introduction, Sources of contamination, Control methods using physical and chemical agents, Waste Disposal, Pest and Rodent Control, Personnel Hygiene

UNIT 10. Food Safety Management Tools (Ch-7,Forsythe) (4 Lectures)

Basic concept, Prerequisites, HACCP, ISO series, TQM and Risk Analysis

Recommended Readings:

1. Frazier William C and Westhoff, Dennis C. 2004 Food Microbiology, TMH, New Delhi,
2. Jay, James M. 2000 Modern Food Microbiology, CBS Publication, New Delhi,
3. Garbutt, John.1997 Essentials of Food Microbiology, Arnold, London,
4. Pelczar MJ, Chan E.C.S and Krieg, Noel R 1993 Microbiology, 5th Ed., TMH, New Delhi
5. Lawley, R., Curtis L. and Davis,J. , 2004 The Food Safety Hazard Guidebook , RSC publishing.
6. De Vries, 1997, Food Safety and Toxicity, CRC, New York,
7. Marriott, Norman G. , 1985, Principles of Food Sanitation, AVI, New York,
8. Forsythe, S J , 1987, Microbiology of Safe Food, Blackwell Science, Oxford, 2000 & Sons; USA,