DISCIPLINE SPECIFIC CORE COURSE

DSC FT18: Food Safety

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITE OF THE COURSE

Course title & code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Theory	Tutorial	Practical/ Practice		
FOOD SAFETY	4	3	0	1	XII Pass with PCM/PCB	Nil

Learning Objectives

- To understand the concept of safe food and types of hazards associated with food.
- To control the potential threats to the safety of food.
- To familiarize with Good Hygienic Practices, Food Safety Management Systems and the Indian regulatory regime

Learning Outcomes

After completing this course, students will be able to:

- Understand the concept of food safety, types of hazards, and their control measures
- Identify and prevent potential sources of food contamination
- Comprehend the need for hygiene and sanitation for ensuring food safety
- Knowledge of Food Safety Management tools and introduction to the Indian regulatory regime
- Practical knowledge to detect and quantify microorganisms from various routes of contamination of food

SYLLABUS OF DSC FT18

THEORY
Credit: 3; Hours: 45

UNIT I Introduction to Food Safety 6 Hours

Unit Description: This unit introduces the concept of safe food. It focuses on the significance of food safety, common types of hazards associated with food, and factors that affect the safety of food, especially in a developing country like India.

Subtopics:

- Definition of safe food
- Types of hazards
- Factors affecting Food Safety
- Importance of Safe Foods

UNIT II Hazards associated with food 14 Hours

Unit Description: This unit begins with how various hazards gain entry into the food chain, then gradually delves into each hazard type, its example, and its impact. The unit also covers the chemical and biological hazards in depth keeping in view their public health significance. Topics like mycotoxins, indicator organisms, and allergens are also included for a better understanding of their relationship to food safety.

Subtopics:

- Mode of entry of hazards into food
- Physical hazards –common examples and control measures
- Chemical hazards (naturally occurring, environmental including radioactive components and intentionally added), packaging material as a threat
- Biological hazards (Foodborne pathogens: bacteria, viruses, and eukaryotes) , Seafood and Shellfish poisoning, Mycotoxins, Indicator Organisms
- Food Allergens

UNIT III Management of Hazards 16 Hours

Unit Description: This unit covers all the key factors which influence food safety in depth and provides hands-on information on managing hazards in the food industry. This unit helps the students not only to understand the significance of hygiene and sanitation but also the critical role of water and food handlers in maintaining food safety. The recent food safety management tools have also been included to emphasize the applied aspects of food safety.

Subtopics:

- Factors influencing food safety -Design of food plant, Temperature Danger Zone and Storage of Food, Food handler and personal hygiene, Quality of Water

- General Principles of Hygiene, Sanitation and methods of control using physical and

chemical agents, Waste Disposal, Pest and Rodent Control

- Food Safety Management Tools -Basic Concept, HACCP, ISO series, TQM - components of TQM, Risk Analysis

UNIT IV Trends in Food Safety **9 Hours**

Unit Description: Food safety is a dynamic area of food science where new challenges recurrently appear and finding solutions to them is the key to safe food. This unit covers the current status of Food Safety Regulations in the country and all the emerging hazards in food. The new advances in food safety pertaining to the detection of hazards, food-borne pathogens, and preservation methods are also discussed.

Subtopics:

- Food Safety Regulations and their current status in India
- New and emerging pathogens and chemical hazards
- Genetically Modified Foods \ Transgenics, Organic foods
- Newer approaches to hazard and pathogen detection
- Recent technologies in food preservation and pathogen detection

PRACTICAL
Credit: 1, Hours: 30

1. Preparation of different types of media (complex, differential and selective)
2. Enumeration of aerial microflora using PDA
3. Identification of Molds by lactophenol blue staining
4. Bacteriological Analysis of Water by MPN method
5. Assessment of surface sanitation by swab / rinse method
6. Assessment of Personal Hygiene
7. Preparation of a HACCP plan
8. Testing of foods for microbiological hazards

Essential Readings

- Forsythe,S.J. (2020).The Microbiology of Safe Food , 3rd edition. UK: Willey.
- Lawley, R., Curtis L. and Davis,J.(2015) The Food Safety Hazard Guidebook. London: RSC.
- Marriott, N G. and Gravani RB (2006).Principles of Food Sanitation. 5th edition New York: AVI
- Mathur, P. (2018). Food Safety and Quality Control. Hyderabad: Orient BlackSwan Pvt. Ltd.

Suggested Readings

- de Blackburn, C and Mc Clure P.(2009).Food borne pathogens. Hazards,risk analysis & control. 2nd edition. Washington,US: CRC Press.
- De Vries. (2014). Food Safety and Toxicity.New York: CRC.
- Mortimore S.and Wallace C. (2013).HACCP-A Practical Approach 3rd edition. London: Springer.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.