

JSS COLLEGE OF ARTS, COMMERCE AND SCIENCE
(Autonomous college of University of Mysore)
POSTGRADUATE DEPARTMENT OF BIO-TECHNOLOGY
III Semester M.Sc., Bio-Technology
Value Added Course (2019-20)

Course Title : **Food Safety and Adulteration**

Course Duration : 30 hours

- CO1** : **Proficiency in Identifying and Mitigating Food Safety Risks:** Course objective is to make students adeptly identify food safety hazards, spanning microbiological, chemical, and physical contaminants.
- CO 2** : **Competence in Detecting and Preventing Food Adulteration:** Upon completion of the course, students will be able to identify common types of food adulterants and adulteration techniques, and employ appropriate methods for detecting adulterated food products.
- CO 3** : **Mastery of Food Safety Regulations and Compliance Standards:** By the end of the course, students will have a comprehensive understanding of food safety regulations and compliance standards at the local, national, and international levels.

Unit 1: Fundamentals of Food Safety

(10 hours)

Week 1-2: Introduction to Food Safety: Definition and significance of food safety, Historical perspective and evolution of food safety regulations, Key principles of food safety management, Overview of common foodborne illnesses and their causes, Introduction to regulatory frameworks and standards governing food safety

Week 3-4: Microbiological Hazards and Control Measures: Understanding foodborne pathogens and their sources, Factors influencing microbial growth and survival in food, Principles of food microbiology and food spoilage, Techniques for controlling microbial hazards

in food processing and handling, Case studies on foodborne illness outbreaks and their impact on public health.

Week 5-6: Chemical and Physical Hazards in Food: Identification of common chemical contaminants and physical hazards in food, Health risks associated with chemical and physical hazards, Strategies for preventing and mitigating chemical and physical hazards in the food supply chain, Regulatory requirements for chemical and physical hazard control, Hands-on exercises on chemical testing and hazard identification.

Unit 2: Food Adulteration and Fraud

(10 hours)

Week 7-8: Understanding Food Adulteration: Definition and classification of food adulteration, Common types of food adulterants and their sources, Methods for detecting food adulteration and authenticity testing, Regulatory frameworks for preventing and addressing food adulteration, Case studies on high-profile food adulteration scandals.

Week 9-10: Food Fraud and Economic Adulteration: Overview of food fraud and economic adulteration, Factors contributing to food fraud (e.g., market demand, price fluctuations), Techniques for detecting and preventing food fraud, Legal and ethical implications of food fraud, Group discussions and presentations on real-world examples of food fraud.

Unit 3: Regulations, Compliance, and Risk Management

(10 hours)

Week 11-12: Regulatory Frameworks and Compliance Requirements: Overview of food safety regulations and agencies (FDA, USDA, CODEX), National and international food safety standards (e.g., HACCP, ISO 22000), Compliance requirements for food manufacturers, processors, and distributors, Role of auditing and certification in ensuring compliance with food safety standards.

Week 13-14: Risk Assessment and Management: Principles of risk assessment in food safety, Techniques for identifying, evaluating, and prioritizing food safety risks, Development and implementation of risk management strategies, Case studies on risk assessment and management in the food industry, Final project or presentation on a food safety risk management topic.

Week 15: Review and Assessment: Review of key concepts and topics covered throughout the course, Practice exam or quiz to assess understanding and retention, Feedback session for

students to provide input on the course content and delivery, Course evaluation and reflection on learning outcomes.

References

- ❖ **Food Safety Management:** A Practical Guide for the Food Industry by Yasmine Motarjemi and Huub Lelieveld
- ❖ **Principles of Food Safety and Hygiene** by Ronald Schmidt and Gary Rodrick
- ❖ **Food Fraud and Adulteration:** Insights from the Forensic Analyst by John Spink and Jeffrey Moore
- ❖ **Food Bio-technology.** Knorr, D. Marcel Dekker Inc.