B.A. (Prog) with Food Technology (FT) as Major
Category-II

DISCIPLINESPECIFICCORECOURSE–DSC- 13
FOOD SAFETY AND QUALITY TESTING

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

CourseTitle & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Food Safety and Quality Testing	4	3	0	1	Class XII	Nil

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LEARNING OBJECTIVES:

- To sensitize students regarding the significance of quality testing in ensuring food safety
- To provide knowledge on regulatory aspects of quality testing
- To facilitate understanding of some commonly used methods of quality testing

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Appreciate the scope of regulations governing food safety and quality testing
- Describe various methods of objective and subjective evaluation of food
- Perform key food quality testing methods

SYLLABUS OF DSC-13-FT

THEORY
(Credits: 3; Hours: 45)

UNITI: Introduction to Food Safety and Quality Testing **(10 Hours)**

Unit Description: It will introduce to the students the concept of quality and the scope of quality testing for ensuring food safety. It will also help them understand the various physical, chemical and biological parameters based on which safety/quality of food can be judged.

Subtopics:

- Key terms, significance of quality testing in ensuring food safety
- Characteristics of quality
- Commonly assessed parameters for quality testing – physical, chemical, biological
- Objective and subjective evaluation of food

UNIT II: Regulations and Standards **(10 Hours)**

Unit Description: This unit will help students to understand the protocols laid down by national regulatory authority for collection and analysis of food samples, cutoff values for judging the quality, food recall and auditing. It will also briefly introduce to the

scope of certain international organizations which promote food safety through quality testing.

Subtopics:

- Food Safety and Standards (Laboratory and Sampling Analysis) regulations, 2011
- Food Safety and Standards (Food Product Standards and Food Additives) regulations, 2011
- Food Safety and Standards (contaminants, toxins and residues) regulations, 2011
- Food Safety and Standards (Food Recall Procedures) regulations, 2017
- Food Safety and Standards (Food Safety Auditing) regulations, 2018
- ISO, IUPAC, AOAC, WTO and Codex – brief introduction

UNIT III: Sensory Evaluation of Food (10 Hours)

Unit Description: This unit will help students learn and apply various sensory evaluation tests at laboratory as well as industry level.

Subtopics:

- Sensory characteristics of food
- Human senses in sensory evaluation
- Applications of sensory evaluation
- Pre-requisites for sensory testing procedure
- Methods of sensory evaluation

UNIT IV: Quality Testing – Commonly used Methods (15 Hours)

Unit Description: In this unit, the student will learn about salient methods commonly employed for assessing physical, chemical and microbiological quality of ingredients/food products.

Subtopics:

- Physical such as oflactometer, electronic nose and tongue, viscometer, penetrometer, farinograph, extensograph, amylograph, biscuit texture meter, bake-spread
- Chemical or proximate analysis such as moisture, ash, protein, fat content, presence of adulterants , pH, TSS, acidity.
- Microbiological: plate count, direct microscopic count (sauce, puree, pastes), fermentation (incubation) test, MBRT.

PRACTICAL
(Credit: 1; Hours: 30)

No. of Students per Practical Class Group: 10-15

1. Prepare a presentation on any one FSSAI regulation related to food quality testing/standards
2. Assess adulteration in commonly consumed foods (field study)
3. Learn to perform various types of sensory evaluation of food
4. Conduct consumer acceptability trial for any one canteen dish
5. Perform any two tests for assessing physical characteristics of food/ water
6. Perform any two tests for assessing chemical characteristics of food/ water
7. Perform any two tests for assessing microbial load of food/ water

ESSENTIAL/ RECOMMENDED READINGS (Theory and Practical):

- Suri, S. & Malhotra, A. (2014). Food Science Nutrition and Safety. Delhi: Pearson India Ltd.
- Mathur, P. (2018). Food Safety and Quality Control. Delhi: Orient Blackswan.
- Rao, E.S. (2013). Food Quality Evaluation. First Edition. Variety Books Publisher's Distributors.
- FSSAI (2019). Compendium of the Food Safety and Standards Act, 2006. Universal India Publishers.
- Rao, M.K (2007). Food and Dairy Microbiology.

SUGGESTED READINGS:

- Kumar, A(2024). Fundamentals of Food Hygiene, Safety and Quality. Wiley India
- Kuddus, M., Ashraf, S.A. & Rahman, P. (2024). Food Safety: Quality Control and Management. CRC Press LLC.
- Ahmad, R.S., Munawar, H., Saima, H. & Siddique, F (2023). Food Safety- New Insights. IntechOpen
- Ali, I (2004). Food Quality Assurance: Principles and Practices. CRC Press LLC.
- Food Safety and Standards (Laboratory and Sampling Analysis) regulations, 2011. Internet: https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Lab_Sample_Regulations_04_03_2021.pdf (Accessed on 15 December 2024).
- Food Safety and Standards (Food Product Standards and Food Additives) regulations, 2011. Internet: https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Additives_Regulations_20_12_2022.pdf (Accessed on 15 December 2024).
- Food Safety and Standards (contaminants, toxins and residues) regulations, 2011. Internet: https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Contaminants_Regulations_20_08_2020.pdf (Accessed on 15 December 2024).
- Food Safety and Standards (Food Recall Procedures) regulations, 2017. Internet: https://www.fssai.gov.in/upload/uploadfiles/files/Guidelines_Food_Recall_28_11_2017.pdf (Accessed on 15 December 2024).
- Food Safety and Standards (Food Safety Auditing) regulations, 2018. Internet: https://fssai.gov.in/upload/uploadfiles/files/Gazette_Notification_Food_Safety_Auditing_07_09_2018.pdf (Accessed on 15 December 2024)
- FSSAI (2024). FSSAI Manual on Methods of analysis- Microbiological examination of food and water. https://fssai.gov.in/upload/uploadfiles/files/Manual%20on%20Microbiological%20Examination%20of%20Food%20and%20Water_compressed.pdf (Accessed on 15 December 2024)
- Association of Official Chemical Analysts (AOAC). (1990). Official Methods of Analysis. 15th Edition. Internet: https://law.resource.org/pub/us/cfr/ibr/002/aoac.methods.1.1990.pdf (Accessed on 15 December 2024).
- International Union for Pure and Applied Chemistry (IUPAC). (2017). IUPAC Standards. Internet: https://iupac.org/iupac-standards-online/ (Accessed on 15 December 2024).

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