COURSE NAME:	Food Analysis, Processing and Preservation Techniques
TOTAL DURATION:	45 Hrs
MODE OF DELIVERY	PHYSICAL CLASSROOM TRAINING AT RESPECTIVE COLLEGES
TRAINER TO STUDENT RATIO:	1:50
TOTAL MARKS:	75

Table 1	
OVERALL COURSE OBJECTIVE:	1. Examine advanced analytical techniques to evaluate and interpret their applications in food testing. 2. Design precise methodologies for conducting proximate and nutritional analysis using advanced tools and techniques. 3. Appraise methods for ensuring food safety and quality, emphasizing microbiological and sensory evaluation. 4. Enhance laboratory practices by innovating procedures and adhering to rigorous quality control standards. 5. Devise comprehensive quality control strategies to address challenges in the food production sector effectively.

| LEARNING OUTCOME: | 1. Critique various food analysis methodologies, assessing their applicability to specific food types and justifying their selection based on theoretical principles.
 2. Synthesize advanced techniques for proximate and nutritional analysis, ensuring precision and adherence to standard operating procedures.
 3. Validate food safety and quality through critical evaluation of microbiological safety results and sensory analysis techniques.
 4. Optimize laboratory operations by refining skills in equipment maintenance and ensuring accuracy in quality control practices.
 5. Formulate and propose innovative quality assurance programs tailored to the evolving needs of the food production industry. |

TABLE 2: MODULE WISE COURSE CONTENT AND OUTCOME				
SL. NO	MODULE NAME	MODULE CONTENT	MODULE LEARNING OUTCOME	DURA TION (HRS)
1	Introduction to Food Analysis	Basics of food composition and importance of analysis Overview of analytical techniques used in food analysis	Categorize and recommend suitable food analysis methods while justifying their importance in ensuring food quality.	9
2	Food Composition Analysis	Techniques for proximate analysis Methods for nutritional content evaluation	Evaluate food composition using proximate and nutritional analysis techniques, ensuring comprehensive results.	9
3	Food Safety and Quality Assessment	Microbiological safety evaluation Chemical and sensory quality assessment	Judge the safety and quality of food samples using advanced microbiological and sensory evaluation techniques.	10
4	Interpretation and Reporting Results	Statistical tools for analysis Techniques for effective report writing and presentation	Defend analysis outcomes through detailed statistical interpretations and clear, concise report presentations.	8
5	Laboratory Skills for Food Analysis	Equipment handling and maintenance Implementing quality control procedures	Demonstrate advanced laboratory skills, ensuring precision in equipment usage and adherence to quality control standards.	9

TABLE 3: OVERALL COURSE LEARNING OUTCOME ASSESSMENT CRITERIA AND USE CASES

LEARNING OUTCOME	ASSESSMENT CRITERIA	Performance Criteria	USE CASES
Evaluate methodologies for food analysis	Written assessments, quizzes	1. Compare different analytical techniques based on their applicability to specific food types. 2. Outline the principles underlying chosen methodologies.	Case study on selecting appropriate food analysis methodologies for specific food categories.
Apply techniques for food composition analysis	Laboratory practical assessments	1. Implement proximate and nutritional analysis with precision. 2. Demonstrate consistency in the use of standard operating procedures during tests.	Nutritional analysis of selected food items in a controlled laboratory setting.
Judge food safety and quality through advanced analysis	Evaluation of mock samples	1. Validate the accuracy of microbiological safety results. 2. Argue the effectiveness of sensory analysis techniques applied to food samples.	Quality assessment of mock food samples through microbiological and sensory analysis techniques.

Demonstrate precision in laboratory skills	Laboratory skill assessments, practical tests	1. Operate and maintain laboratory equipment effectively. 2. Conduct tests with minimal errors, adhering to quality control standards.	Quality control procedures for ensuring accuracy in food analysis results.
Propose solutions to enhance quality control in food analysis	Project presentations, problem-solving exercises	1. Design a comprehensive quality control program tailored to food production needs. 2. Recommend improvements for existing quality assurance processes.	Designing a robust quality control program tailored to the needs of a food production scenario.

TABLE 4: LIST OF FINAL PROJECTS (PROJECTS THAT COMPREHENSIVELY COVER ALL THE LEARNING OUTCOME)	
SL.NO	**FINAL PROJECT**
1	Development of a comprehensive food analysis handbook for various food categories
2	Case study analysis on the application of different analytical techniques in food analysis
3	Implementation of quality control measures in a mock food production scenario
4	Research project on emerging analytical methods in food analysis and their efficacy
5	Creation of a nutritional guide with analyzed data for diverse food products
6	Presentation on modern trends and innovations in food analysis techniques

7	Analysis of food safety and quality parameters using real food samples
8	Statistical analysis of food composition data and interpretation of results
9	Development of a report on food analysis findings and recommendations
10	Case-based assignments demonstrating various food analysis techniques
11	Proposal for implementing quality assurance measures in a food production setting
12	Simulation of practical exercises for food composition analysis
13	Research paper on the significance of sensory analysis in food quality assessment
14	Presentation on the impact of technological advancements in food analysis
15	Business strategy development for a food analysis laboratory
16	Case studies showcasing challenges and solutions in food analysis applications
17	Design and execution of a quality control program for food analysis
18	Financial plan outlining investment strategies for enhancing food analysis techniques
19	Project evaluating the feasibility of integrating sustainable practices in food analysis
20	Creation of a comprehensive report on advancements and challenges in food analysis

TABLE 5: COURSE ASSESSMENT RUBRICS (TOTAL MARKS: 75)

ASSESSMENT CRITERIA	Learning Outcome	Fair (1–5)	Good (6–10)	Excellent (11–15)	TOTAL MARKS
Exploring Food Analysis Methodologies	Categorize and recommend suitable methodologies	Basic grasp of methods	Moderate application with examples	Advanced categorization and recommendation	15
Application of Food Composition Analysis	Evaluate food composition using advanced techniques	Limited technique application	Appropriate use of composition techniques	Highly precise application with innovative insights	15
Evaluation of Food Safety and Quality Parameters	Judge food safety and quality through assessment	Limited understanding and assessment	Satisfactory accuracy in evaluations	Comprehensive and detailed assessments with insights	15
Interpretation and Reporting of Analysis Results	Defend analysis outcomes through detailed reports	Basic interpretation with limited detail	Competent insights and clarity in reporting	Advanced interpretation with strategic recommendations	15
Laboratory Proficiency	Demonstrate precision and quality control	Limited precision in execution	Competent precision with acceptable adherence to QC	Advanced execution with strict adherence to QC	15