

MFT-103 Food Analysis and Instrumentation	
Teaching Scheme Lectures: 3hrs./week Tutorials: 1hr/week Credits: 4	Internal Assessment Marks [IAM]: 30 [Class Test: 12, Teachers assessment: 6, Attendance: 12] End Semester Marks [ESM]: 70

Course Objectives:

1. To give knowledge about preparation of chemical solutions and food sample preparations.
2. To give knowledge about proximate composition of food.
3. To impart knowledge of colorimetry, spectroscopy, electrophoresis and atomic absorption spectrophotometry.
4. To impart knowledge on instrumentation in food analysis.
5. To impart knowledge on refractometry, ultrasonics, texture analysis and immunoassays methods in food.

Detailed Syllabus

MODULE I
Preparation of chemical solutions: Concept of molar, molal, and normal solutions. pH and Buffers: Importance and measurement of pH. Introduction to food analysis, types of samples and sampling techniques, storage and preservation of samples, expression of results.
MODULE II
Proximate analysis of foods: Principles of moisture, fat, protein, carbohydrates, crude fiber and vitamins in foods.
MODULE III
Instrumentation in food analysis: principles, types and applications of colorimetry and raman spectroscopy, photometry, electrophoresis; High Pressure Liquid chromatography, Gas chromatography and atomic absorption spectrophotometry.
Module IV

Instrumentation in food analysis: color measurement in foods; X-ray analysis of foods and its applications; mass spectroscopy; nuclear magnetic resonance (NMR); differential scanning calorimetry (DSC).

Module V
Refractometry and ultrasonics in food analysis; texture analysis in foods, sensory versus instrumental analysis of texture, rapid methods of microbial analysis; immunoassays methods.

Suggested Readings
1. Chatwal, G.R., "Instrumental methods of chemical analysis", Mumbai, Himalaya Pub. Pvt. Ltd, 2011.
2. RG.Moreira,T.PCoultate"AutomaticControlforFoodProcessingSystem".2001.
3. D.Patranabis, "IndustrialInstrumentation", McGrawHill, 1990.
4. B.G.Liptak, InstrumentEngineersHandbook:ProcessMeasurementandAnalysis", 1995
5. KeithWilsonandJohnWalker,PrinciplesandTechniquesofPracticalBiochemistry,CambridgeUniversity.

Course Outcomes:

After completing the course, students will be able to:

1. Understand the method of preparation of chemical solutions and food samples.
2. Understand the principles of proximate analysis in food.
3. Understand about the different instrumentation involved in food analysis.
4. Understand about advanced instrumentation in food analysis.
5. Understand the refractometry, ultrasonics, texture analysis and immunoassays methods in food.