

Analytical Techniques in Food and Nutrition

Course Code	Title of Course	Credit Hours
HND-218	Analytical Techniques in Food and Nutrition	3(1-2)

Learning Outcomes:

Students will be able to:

- Understand the significance of food analysis and its role in ensuring food safety, quality, and nutritional value.
- Demonstrate proficiency in various sampling techniques and the preparation and preservation of food samples for analysis.
- Analyze physical properties of food.
- Conduct chemical analyses of food components.
- Utilize chromatography and spectroscopy techniques.
- Apply sensory evaluation methods to assess food attributes.
- Gain an overview of commonly employed statistical methods for data analysis and interpretation in food analysis.

Course Contents:

Theory:

Food analysis: significance, sampling techniques, preparation, preservation; Physical properties and analysis of foods and food products: appearance, texture, specific gravity, refractive index, rheology; Chemical analysis: significance, proximate analysis including moisture, ash, proteins, lipids, carbohydrates, fiber, NFE, acidity, pH, sugars, mineral elements, vitamins — significance; Methods for chemical analysis: chromatography (paper, thin layer), spectroscopy (atomic emission, atomic absorption); Sensory evaluation of foods: attributes, difference and preference tests, consumer acceptance, and an overview of the commonly employed statistical methods.

Practical:

Lab safety requirements; Preparation and standardization of laboratory solutions; Sampling; Determination of specific gravity, refractive index, moisture, ash, crude protein, crude fat, crude fiber, NFE, pH and acidity; Estimation of vitamin C; Determination of mineral elements through flame photometer and atomic absorption spectrophotometer; Paper and thin layer chromatography; Identification of toxins by TLC; Sensory evaluation of foods.

**Suggested
Readings Text**

Books:

1. AOAC. 2016. Official Methods of Analysis of AOAC International, 20th ed. Association of Official Analytical Chemists, Arlington, USA.
2. Awan, J.A. and S.U. Rehman. 2015. Food Analysis Manual. Unitech Communications, Faisalabad, Pakistan.

Reference Books:

1. Cruz, R.M.S., I. Khmelinskii and M. Vieira. 2014. Methods in Food Analysis. CRC Press. Taylor & Francis Group, Boca Raton, F.L, USA.
2. Pomeranz, Y. and C.E. Meloan. 2000. Food Analysis: Theory and Practice, 3rd ed. Chapman & Hall, New York, USA.
3. Winton, A. and K.B. Winton. 2006. Techniques of Food Analysis. Agrobios Publishing Co., Jodhpur, India.