MANGALORE UNIVERSITY

Department of Biosciences

M.Sc. Food Science and Nutrition

FNS 454 ANALYTICAL TECHNIQUES IN FOOD SCIENCE

39 Hr (13× 3 units)

Course outcome:

- Describe the various analytical techniques used in food industry.
- Classify the different techniques used in chromatography to differentiate nutrients and other chemical compounds in foods.
- Write down the chemical properties and role of enzymes in food industries.
- Describe the proximate analysis of foods and feeds including ant nutritional factors and antibiotics.

Unit I: Techniques – paper, TLC, Gel filtration, ion exchange, affinity, HPLC and GLC. Spectroscopy - UV-visible, fluorescent spectroscopy, CD spectroscopy, NMR. Radiotechniques – nature of radiation sources, radioactive decay, units of radiation, detection and measurements of radioactivity, autoradiography, GM counter, Scintillation counter.

Unit II: Optimisation of PCR reactions and application in food technology, immunological techniques. Extraction, isolation and purification of soluble and membrane bound enzymes. Enzyme. Isolation of enzymes, extraction of soluble and membrane bound enzymes purification of enzyme- criteria for purification.

Unit III: Quantification of organic acids (citric acid). Proximate analysis of foods and feeds (moisture, nitrogen, crude fiber, crude lipids and ash). Mineral analysis of foods and feeds. Vitamin assay (water soluble and fat soluble). Analysis of antinutritional factors (phenolics). Estimation of secondary metabolites (antibiotics).

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- Upadhaya A. Biophysical Chemistry – Principles and techniques –Himalaya pub.
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- Friedlander G., Kennedy JW., Macias ES., et al. 1981Nuclear and Radio Chemistry – 3rd ed. John Wiley andsons
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