

ALAGAPPA UNIVERSITY
DEPARTMENT OF NUTRITION AND DIETETICS

VALUE ADDED COURSE -II
Offers value added courses on
FOOD ANALYSIS AND INSTRUMENTATION

Course Code :558VAC02

Session: December to April 2023

Duration: 20 Hrs



Summary of the content:

- Food and Food service system
- Introduction to food analysis
- Sensory analysis of foods
- Instrumentation in food analysis
- Rapid methods of microbial analysis

Objectives:

- To gain the knowledge of sampling technique and analysis of foods
- To Know the principles and methods of sensory evaluation
- To understanding the types and principles of various instruments
- To gain the knowledge of analytical procedures used to analyze food components.
- To acquire knowledge on professional practice in texture analysis



COURSE CO-ORDINATOR:

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Outcome:

After successfully completing the course, students will be able to:

- Practice a prototype using the knowledge of sampling technique and proximate analysis of foods
- Apply the methods of sensory evaluation to create a new product.
- Understand the application of different instruments in the measurements of food components.
- Utilize the knowledge of food analysis to develop new product

VALUE ADDED COURSE – II

SUMMARY OF THE COURSE:

This course will allow the student to gain an understanding of the product development procedure as it relates to the food industry. Emphasis will be on application of basic knowledge of foods and food processing in designing a new product.

Food Analysis focuses on the application of quantitative techniques used in the chemical and instrumental analyses of foods. The basic principles behind various instruments that are commonly used to characterize the structural, physical, and chemical properties of food components in food industries and academic research labs shall be discussed.

This is a required course for all students in the Food Science, Nutrition and dietetics as well as students in the Food Option or Food Industry Option in Nutritional Sciences. Nutrition and dietetics students in other options who have a desire to learn about developing new products and Students from other programs with the necessary background are also welcome to take this course.

SYLLABUS:

SEMESTER - II				
Course code : 558VAC02	Title of the Course	Food Analysis and Instrumentation	T	Hours : 20
Unit - I				
Objective 1	To gain the knowledge of sampling technique and proximate analysis of foods			
Introduction to food analysis: a) Types of samples and sampling techniques b) Storage and preservation of samples, expression of results. c) Proximate analysis of foods: Principles of moisture, fat, protein, carbohydrates, crude fiber and vitamins in foods.				
Outcome 1	Practice a prototype using the knowledge of sampling technique and proximate analysis of foods Question:			K3
Unit - II				
Objective 2	To Know the principles and methods of sensory evaluation			
Sensory analysis of foods: a) Overview of the sensory principles and practices b) Selection and screening of the sensory panel, types of panel (trained, semi trained), c) Methodology of sensory evaluation: discriminative tests: difference tests, paired comparison, duo trio, triangle; descriptive tests				
Outcome 2	Apply the methods of sensory evaluation to create a new product.			K3
Unit - III				
Objective 3	To gain a clear understanding of the types and principles of various instruments			
Instrumentation in food analysis: principles, types and applications – a) Colorimetry and spectroscopy b) Photometry, electrophoresis c) Chromatography d) Atomic absorption spectrophotometry				
Outcome	Understand the application of instruments in food			K2

3	analysis	
Unit - IV		
Objective 4	To gain the knowledge of analytical procedures used to analyze food components.	
Color measurement in foods: a) X-ray analysis of foods and its applications b) Mass spectroscopy; c) Nuclear magnetic resonance (NMR) d) Differential scanning calorimetry (DSC).		
Outcome 4	Understand the application of different instruments in color measurements of food	K2
Unit - V		
Objective 5	To acquire knowledge on professional practice in texture analysis and rapid methods of immunoassays.	
Refractometry and ultrasonics in food analysis : a) Texture analysis in foods b) Sensory versus instrumental analysis of texture c) Rapid methods of microbial analysis; immunoassays methods.		
Outcome 5	Apply the knowledge of food analysis to develop new product	K3
<p>Suggested Readings:</p> <p>Official Methods of Analysis (2023), Association of Official Analytical Chemists - Officially recognized methods of analysis for many food components.</p> <p>C.S. James (2013). Analytical Chemistry of Foods. Blackie Academic and Professional - General overview of food analysis techniques.</p> <p>S.S. Nielsen, (1998). Introduction to Food Analysis. Aspen Publishers - The best general overview of food analysis techniques currently available.</p> <p>Y. Pomeranz and C.E. Meloan (1994). Food Analysis: Theory and Practice. Chapman and Hall - General overview of food analysis techniques.</p> <p>D.W. Gruenwedel and J.R. Whitaker (1984). Food Analysis: Principles and Techniques. Marcel Dekker - General overview of food analysis techniques.</p>		
<p>Web Resources:</p> <p>https://fcen.uncuyo.edu.ar/upload/food-analysis.pdf</p> <p>http://xn--https-ix3b/www.aoac.org/official-methods-of-analysis/</p> <p>https://www.researchgate.net/publication/328448605 PRINCIPLES OF SENSORY EVALUATION</p> <p>https://people.umass.edu/~mcclemen/581Introduction.html</p> <p>https://egyankosh.ac.in/bitstream/123456789/12395/1/Unit-13.pdf</p> <p>https://www.hunterlab.com/blog/importance-of-food-color-measurement/</p> <p>https://aurigaresearch.com/food-testing/texture-analysis-for-the-food-industry/</p>		