DEARTMENT OF NUTRITION AND DIETETICS

VALUE ADDED COURSE

Semester	Course Code	Course Title	Hours
III	21UNDVAC1	BASIC FOOD ANALYSIS TECHNIQUES	30

Course Outcomes:

At the end of the course, students will be able to:

CO1. To learn the basic applied principles in the analysis of foods

CO2. To understand the methods used to assess the accuracy and precision of the analytical techniques performed in lab

CO3. To acquire laboratory skills required for performing a range of chemical and physicochemical analyses of food

CO4. To develop the practical knowledge on analysis of food products.

CO5. To enable the students to learn about the Adulterants of foods.

UNIT-I **6 hrs**

Food Analysis: Introduction and sample preparation:

1.1. Introduction – food analysis, sampling and sampling preparation.

1.2. Preparation of laboratory samples of dry foods, flesh foods, fluid foods, oils and fats, fruits and Vegetables-Storage and preservation of sample.

1.3. Definition and Calculation –Moisture, Importance of moisture assay, Moisture content of foods. Total solid content.

UNIT-II **6 hrs**

Basic Calculation for foodanalysis:

2.1. Definition and Calculation-pH, Titrable acidity, total acidity, molarity, equivalent weight-definition and calculation. Percentage solution, normality, parts per million, parts perbillion.

2.2. pH meter- Activity Vs. Concentration, Activity Coefficient-Definition. Acidity. Overview & Principle- Titrable acidity

2.3 Buffer-Definition, Preparation of acidic buffer & basic buffer. Buffer action. Specific Gravity-Definition.

UNIT-III **6 hrs**

Oils & Fats:

3.1 Refractive Index-Definition &Application. Meltingpoint, Smoke point, Flash point, Fire point, Cold test, Cloud point- Definition, Principle &Application

3.2 Iodine value, Saponificationvalue, Free fatty acids & Acid value of Oils-Principle & Application.

UNIT IV: **6 hrs**

Experiments for Thermally Processed Fruit and Vegetable Products

4.1Estimation of Ash&Crude Fibre. Determination of Total soluble solids using Refractrometer.

4.2 Estimations - Reducing Sugar &Total sugar (by Nelson Somogyi method), Sodium Chloride (Salt Content) Brine Solution, Volatile acids (by steam distillation), mineral impurities in Jam, Puree, Marmalade, fruit content in Jam, Jelly, Marmalade and Juice.

UNIT V: **6 hrs**

Analysis of Dehydrated Vegetables &Fruits andAdulterants

5.1 Rehydration ratio in dried/dehydrated vegetables and fruits. Test for presence of Peroxide in dehydrated vegetables and fruits.

5.2 Introduction, Definition, types of adulterants, detection of adulterants in Cereals grains, milk, spices (whole & powder), and FSSAI standards for different food groups.

Book Reference:

1. Dr.GeethaSwaminathan& Ms Mary George, laboratory chemical methods in food analysis, margham publications, 2002.
2. S.Susanne Nielsen, food analysis laboratory manual, Springer, 2th edition, 2010.
3. Sadasivam S &Manickam A, Biochemical Methods, New Age International (P) Limited, Publishers 2008.
4. Ranganna S, Handbook of Analysis & Quality Control for Fruits & vegetables products, Tata McGraw-Hill Publishing Company Limited, 2004.

Semester	Course Code	Course Title	Hours
V	21UNDVAC2	ARTIFICIAL INTELLIGENCE IN NUTRITION AND DIETETICS	30

Course Outcomes:

At the end of the course, students will be able to:

CO1. To know the concept of artificial intelligence in health care

CO2. To acquire knowledge on differentiating artificial intelligence and Human intelligence

CO3. To apply the role of artificial intelligence to gain knowledge in Dietetics research

CO4. To apply the role of artificial intelligence in food service industry

CO5. To apply the role of artificial intelligence to gain knowledge in Nutrition research

UNIT-I **6 hrs**

Artificial Intelligence – Definition, meaning, concept, scope. Artificial Neural Network (ANN) - Definition, Meaning, Algorithm – Meanings Machine learning – Meanings and Types- supervised, unsupervised and reinforcement. Approaches – cybernetics and brain stimulation, symbolic and sub-symbolics.

UNIT –II **6 hrs**

Artificial Intelligence Vs Human Intelligence

Artificial intelligence and Human intelligence – Concept, Artificial Intelligence Vs Human Intelligence: A comparison - nature, functioning, learning power. Benefits of Artificial Intelligence.

UNIT III **6 hrs**

Application of Artificial Intelligence in Dietetics research- evaluate diseases risk in relation to food and nutrient pattern, study on supplementation, nutritional epidemiology, Dietary Assessment -Physical Monitoring System.

UNIT IV **6 hrs**

Application of Artificial Intelligence in Nutrition research- Role of Artificial Intelligence in Clinical Nutrient Research and nutrient intake.

UNIT – V **6 hrs**

Artificial Intelligence and Food service industries – Application of Artificial Intelligence in the Food and Beverage Industry and food safety. Challenges and Solutions in food industry.