

**Undergraduate Programme in Home Science -  
Nutrition, Food Service Management and  
Dietetics – Shift I**

**Mapping of Programme Outcomes (PO) with  
Course Outcomes (CO)**

## **B. Sc Home Science- Nutrition, Food Service Management and Dietetics**

*(With effect from the Academic Year 2020-21)*

### **I. Preamble**

Home Science is a broad area with a focus on inter-disciplinary perspectives. Subjects which fall under the umbrella of Home Science include Foods and Nutrition, Textiles and Clothing, Community Nutrition, Food Service Management and Dietetics, Interior Decoration and Human Development. The branch of Nutrition, Food Service Management and Dietetics offers a wide array of courses which can impact the lifestyles of people ranging from healthcare to setting up entrepreneurial ventures in areas such as food and hospitality sectors, textiles or as Interior decorators. Thus, this programme offers courses which can synergistically promote the quality of lives of the community as a whole. Nutrition professionals are in high demand due to the fast-paced lifestyle, and an increasing incidence of lifestyle related disorders affecting all sects of the population. With an increasing awareness to lead healthier lifestyles, a well-trained Nutritional professional can contribute in designing community-based intervention programs for the betterment of the society. For a Home maker, this programme will give an insight into management of different resources in an everyday situation. Globalization has created a market for jobs with different skills in the areas of food industries, which will help the professional growth of college students. This programme can also facilitate action-based research in the various fields and contribute to the development of the economic growth of a community. The course curriculum for this programme has been planned in such a way so as to facilitate job opportunities after the completion of the course, as well as applying for specialization courses at the post-graduate level.

### **Programme Learning Outcome**

The Programme learning outcome is as follows:

- **PO1** - Identify different food commodities and understand its role and use in various preparations.
- **PO2** - Learn about the sciences and technologies that enhance quality of life of people.
- **PO3** - Gain hands-on experience for developing entrepreneurial ventures in the areas of foods and nutrition.
- **PO4** - Acquire skills needed to train as dietitians in clinical settings, and as nutrition counsellors in different organizations.
- **PO5** - Acquire professional and entrepreneurial skills in the various fields of Home Science.

### **Nature and Extent of the Programme**

Home Science has adopted an ecological approach in its curriculum that engages the student through teaching, research and extension. Nutrition, Food service Management and Dietetics is a programme that enhances the quality of life in a wholistic manner. Students develop professional skills in areas relating to food, nutrition, textiles, housing, product making, communication technologies and human development. The programme offers courses such as Physiology, Biochemistry, nutrition which will help students understand the human system in an effective manner to plan diets for various clinical conditions, and thus provide opportunities for serving in hospitals as dietitians. Courses related to Food service management offers an insight into different food outlets, their organization, and management of human and financial resources. Courses such as Interior decoration, Child development and Textiles opens up avenues for entrepreneurial ventures. Thus, the programme offers a wide scope for various career options, and also paves the way for specialized post graduate programmes.

## **Aim of the Programme**

This is an academic programme which is socially and technologically relevant. The programme focuses on providing a sound contemporary base for the students and prepares them for various careers in the field of Home science. It also equips students to take up entrepreneurial ventures related to food, nutrition counselling, textiles, interior decoration and human development. The programme also offers courses which can help students prepare for competitive exams.

## **Graduate Attributes**

Some of the characteristic attributes of B.Sc. Home Science-Nutrition, Food Service Management and Dietetics include

- Develop effective communication skills through presentation of seminars and group discussions.
- Develop core competencies in the field of Home Science.
- Enhance skills that build confidence, self-esteem and interpersonal relationships.
- Acquire in depth knowledge and skills by participating in various competitions, seminars and workshops.
- Develop leadership, and managerial skills needed for entrepreneurial ventures.
- Observational and cognitive skills for promoting research-based ventures.

**UNIVERSITY OF MADRAS**

**B.SC. DEGREE COURSE IN HOME SCIENCE – NUTRITION, FOOD SERVICE  
MANAGEMENT AND DIETETICS**

**W.E.F. 2020-2021 and thereafter**

**REVISED SCHEME OF EXAMINATION**

**SEMESTER – I**

COURSE COMPONENT / TITLE OF THE PAPER	CREDITS	THEORY HOURS	PRACTICAL HOURS	MAXIMUM MARKS		
				INTERNAL MARKS	EXTERNAL MARKS	TOTAL
PART I – LANGUAGE PAPER I	3	6	-	25	75	100
PART II – ENGLISH PAPER I	3	6	-	25	75	100
CORE PAPER I – HUMAN PHYSIOLOGY	4	4	2	25	75	100
CORE PAPER II – MICROBIOLOGY	4	4	2	25	75	100
ALLIED PAPER I – CHEMISTRY -I	5	4	2	25	75	100
PART IV - * BASIC TAMIL/ADVANCED TAMIL/NON – MAJOR ELECTIVE	2			25	75	100
SOFT SKILLS – I	3			50	50	100

**SEMESTER- II**

COURSE COMPONENT / TITLE OF THE PAPER	CREDITS	THEORY HOURS	PRACTICAL HOURS	MAXIMUM MARKS		
				INTERNAL MARKS	EXTERNAL MARKS	TOTAL
PART I – LANGUAGE PAPER II	3	6	-	25	75	100
PART II – ENGLISH PAPER II	3	6	-	25	75	100
CORE PAPER III – FOOD SCIENCE	4	4	2	25	75	100
CORE PAPER IV – HUMAN NUTRITION -I	4	6	-	40	60	100
ALLIED PAPER II – CHEMISTRY -II	5	4	2	25	75	100
PART IV - * BASIC TAMIL/ADVANCED TAMIL/NON – MAJOR ELECTIVE	2			25	75	100
SOFT SKILLS – II	3			50	50	100

**SEMESTER – III**

COURSE COMPONENT / TITLE OF THE PAPER	CREDITS	THEORY HOURS	PRACTICAL HOURS	MAXIMUM MARKS		
				INTERNAL MARKS	EXTERNAL MARKS	TOTAL
PART I – LANGUAGE PAPER III	3	6	-	25	75	100
PART II – ENGLISH PAPER III	3	6	-	25	75	100
CORE PAPER V – FAMILY MEAL MANAGEMENT	4	4	2	25	75	100
CORE PAPER VI – HUMAN NUTRITION - II	4	6	-	25	75	100
ALLIED PAPER III – BIO-CHEMISTRY	5	4	2	25	75	100
PART IV – SOFT SKILLS - III	3			50	50	100
ENVIRONMENTAL STUDIES	2			EXAMINATIONS WILL BE HELD IN IV SEMESTER		

**SEMESTER IV**

COURSE COMPONENT / TITLE OF THE PAPER	CREDITS	THEORY HOURS	PRACTICAL HOURS	MAXIMUM MARKS		
				INTERNAL MARKS	EXTERNAL MARKS	TOTAL
PART I – LANGUAGE PAPER IV	3	6	-	25	75	100
PART II – ENGLISH PAPER IV	3	6	-	25	75	100
CORE PAPER VII – DIET THERAPY	4	6	-	25	75	100
CORE PAPER VIII – NUTRITION AND DIETETICS PRACTICAL	4	-	6	40	60	100
ALLIED PAPER IV – PRINCIPLES OF INTERIOR DECORATION	5	6	-	25	75	100
PART IV – SOFT SKILLS -IV	3			50	50	100
ENVIRONMENTAL STUDIES	3			25	50	100

**SEMESTER – V**

COURSE COMPONENT / TITLE OF THE PAPER	CREDITS	THEORY HOURS	PRACTICAL HOURS	MAXIMUM MARKS		
				INTERNAL MARKS	EXTERNAL MARKS	TOTAL
CORE PAPER IX – HUMAN DEVELOPMENT	4	4	2	25	75	100
CORE PAPER X – FOOD SERVICE MANAGEMENT – I	4	4	2	25	75	100
CORE PAPER XI – FOOD PRESERVATION	4	4	2	25	75	100
CORE PAPER XII – SPORTS NUTRITION	4	4	2	25	75	100
ELECTIVE PAPER I – FUNDAMENTALS OF TEXTILES AND CLOTHING	5	4	2	25	75	100
PART IV – VALUE EDUCATION	2					



**SEMESTER - VI**

COURSE COMPONENT / TITLE OF THE PAPER	CREDITS	THEORY HOURS	PRACTICAL HOURS	MAXIMUM MARKS		
				INTERNAL MARKS	EXTERNAL MARKS	TOTAL
CORE PAPER XIII – PRINCIPLES OF RESOURCE MANAGEMENT	4	6	-	25	75	100
CORE PAPER XIV – FOOD SERVICE MANAGEMENT – II	4	6	-	25	75	100
CORE PAPER XV – COMMUNITY NUTRITION	4	4	2	25	75	100
ELECTIVE PAPER II – ENTREPRENEURSHIP DEVELOPMENT	5	6	-	25	75	100
ELECTIVE PAPER III – FAMILY MANAGEMENT AND COUNSELLING	5	6	-	25	75	100
PART IV – EXTENSION ACTIVITIES	1			-	-	-

**CORE PAPER I: HUMAN PHYSIOLOGY**

**Time/Hrs: Theory: 4 Hrs, Practical: 2 Hrs**

**Credits: 4**

**Subject Code: SL21A**

**Year: I**

**Semester: I**

**OBJECTIVES**

- a) To enable students to understand the structure and physiology of various organs in the body.
- b) To help students obtain a better understanding of the principles of nutrition and dietetics through the study of physiology.

## **UNIT I**

CELL----Cell structure and functions of the organelles, cell division

TISSUES----Classification, structure and functions of epithelial tissue, connective tissue, muscular tissue and nervous tissue

SENSE ORGANS-----Structure of eye and physiology of vision

## **UNIT II**

BLOOD---Functions of Blood, Classification of WBC and its functions, Structure of RBC and its functions.

HEART AND CIRCULATION---- Anatomy of the heart,conducting system of the heart, types of circulation,cardiac cycle, blood pressure - definition and physical factors affecting blood pressure,ECG.

## **UNIT III**

RESPIRATORY SYSTEM

Anatomy and physiology of respiratory organs, Gaseous exchange in the lungs

DIGESTIVE SYSTEM

Anatomy of gastro-intestinal tract.Digestion and absorption of carbohydrates, proteins and fats.

## **UNIT IV**

EXCRETORY SYSTEM

Structure of kidney, structure of nephron, physiology of urine formation.

NERVOUS SYSTEM

Nervous system ----structure of a neuron, structure and functions of brain (cerebrum, brain stem, cerebellum), functions ofspinal nerves and cranial nerves.

## **UNIT V**

ENDOCRINOLOGY-----Pituitary, thyroid, parathyroid, adrenal and pancreas functions, hypo and hypersecretions.

REPRODUCTIVE SYSTEM----Anatomy of the male Reproductive System, Anatomy of the Female Reproductive System, menstruation.

## **PHYSIOLOGY PRACTICALS**

1. Microscopic studies of different tissues epithelial tissue, connective tissue, muscular tissue and nervous tissue
2. Microscopic study of blood, WBC, RBC estimation
3. Haemoglobin estimation
4. Blood pressure
5. Respiratory rate and pulse rate

Demonstration Experiment: Identification of blood groups

## **TEXT BOOK:**

Guyton AC and Hall JE,Text book of medical physiology.

## **REFERENCE BOOKS:**

1. Chatterjee, C.C - Human Physiology – Volume I & II, 11th edition, 1992.
2. Ross and Wilson Anatomy and Physiology in Health and Illness, Anne Waugh, Allison
3. Wynn Grant, Janet S. Ross, 11th edition.
4. SaradhaSubramaniam. Text book of human physiology.
5. Lecture notes on human physiology, M. M. Muthiah Vol II, 1991.
6. Human Anatomy, B. D. Chaurasia (Vol 1, 2, 3)
7. JOHNSON, Leonard R,Essential Medical Physiology

## PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	L	S	S
CO2	S	S	L	S	S
CO3	S	S	L	S	S
CO4	S	S	L	S	S
CO5	S	S	L	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

## CORE PAPER II: MICROBIOLOGY

**Time/Hrs: Theory: 4 Hrs, Practical: 2 Hrs**

**Year: I**

**Credits: 4**

**Semester: I**

**Subject Code: SL21B**

### OBJECTIVES

To enable the students to:

1. Gain knowledge on the role of microorganisms in health and disease
2. Understand the diversity in microbiology and the scope of Microbiology
3. Acquire knowledge about the role of microorganisms in contamination and spoilage of various foods.

### LEARNING OUTCOMES

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

1. Know the different types of microorganisms and their characteristics.
2. Understand the factors affecting the growth curve of microorganisms.
3. Learn to prevent the contamination and spoilage of different types of foods.
4. Able to take measures to prevent microbial food poisoning.
5. Explore the beneficial effects of microorganisms in soil, air, water and sewage.

### UNIT I

Introduction to microbiology and its relevance to everyday life-general characteristics of microorganisms-bacteria, virus, yeasts, moulds, algae, protozoa- Morphology, classification, motility, nutrition, respiration and reproduction.

### UNIT II

DESTRUCTION OF BACTERIA a) Sterilization i) Application of dry heat- burning, flaming and hot air oven. ii) Application of moist heat- boiling, pasteurization, steam steriliser and autoclave. iii) Sterilization with the use of filters iv) Electromagnetic radiation b) Disinfection -properties and various types of disinfecting agents.

### UNIT III

#### FOOD MICROBIOLOGY

GENERAL PRINCIPLES UNDERLYING SPOILAGE Principles of food spoilage by micro-biological, physical and biological factors Chemical changes caused by Microorganisms, fit or unfit food for

consumption -causes of spoilage - classification of food by the case of spoilage - factors affecting -kinds and numbers of micro-organisms in food - growth and chemical changes - caused by microorganisms. CONTAMINATION AND SPOILAGE FOODS: a) Cereal and Cereal products and baked products. . b) Fruits and vegetables and their products c) Fleshy food 1. Meat, 2. Poultry, 3. Fish d) Eggs e) Milk and Milk Products f)fats and oils.

#### **UNIT IV**

**MICRO-ORGANISM CAUSING INFECTION, RESISTANCE AND IMMUNITY** i) Different modes of spread of infection. ii) Reaction of the body to infection cellular and chemical defences - phagocytoses -antigens - antibody- 2 examples of antigen antibody reactions. iii) Immunity - active and passive immunity. Antibiotics - use of antibiotics, spectrum of activity, mode of administration, complication arising due to constant use of antibiotics. Brief knowledge of any four common antibiotics

#### **UNIT V**

**MICRO-BIOLOGY OF FOOD POISONING, FOOD INFECTIONS AND FOOD BORNE DISEASES,** i) Microbial food poisoning by Staphylococci, Salmonella food poisoning group and clostridium botulinum (Botulism).Measures to prevent microbial food poisoning. ii) Food infections - food borne diseases - Dysenteries, Typhoid, Cholera.

#### **PRACTICALS**

1. Know the parts of microscope, type and its principle
2. Identification of prepared slides-- Algae, Yeast, moulds, Protozoa and Bacteria.
3. Examination of Unstained Organisms, wet methods and hanging drop preparations.
4. Examination of stained Organisms- Simple Staining and gram staining.
5. Common culture media and uses.
6. Direct microscopic count of Organisms in milk. Standard plate count in milk. Reductase test for milk. Methylene Blue Reduction test.

#### **DEMONSTRATIONS**

1. Study of sterilising equipment.
2. Cultivation of Organisms in the laboratory methods and equipment.

#### **RELATED EXPERIENCES**

A field trip to a dairy and food industry.

#### **REFERENCES**

1. Pelczar J. Michael : (2013) Micro-biology concepts and Application
2. Salie. A.J. : Fundamental principles of Bacteriology (2007)- McGraw Hill Book Co.,
3. R.C. Dubey & D.K. Maheshwari (2013) A Textbook of Micro-biology
4. Ananthanarayan. R. & Panicker C.K.J: (2010)Textbook of Microbiology.
5. Frazier. W.C.: (2017)Food Micro-biology - McGraw Hill Book and Co; New York.
6. Smith and Water (2017) Introductory Food Services - McGraw Hill Book and Co., Newyork 1975.
7. Maier, Pepper and Garba: (2009) Environmental Microbiology
8. Prescott and Dunn: (2004) Industrial Microbiology
9. Pelczar, Chan and Krieg: (1996) Microbiology
10. Adams MR and Moss MO. (1995). Food Microbiology, The Royal Society of Chemistry, Cambridge.

11. Banwart GJ. (1989), Basic food microbiology, Chapman & Hall, New York.
12. Hobbs BC and Roberts D. (1993) Food poisoning and food hygiene, Edward Arnold (A division of Hodder and Stoughton), London
13. S. Rajan, R.Selvi Christy (2016) CBS Publishers & Distributors Pvt Ltd
14. <https://microbiologysociety.org/why-microbiology-matters/what-is-microbiology.html>
15. [https://bio.libretexts.org/Bookshelves/Microbiology/Book%3AMicrobiology\\_\(Kaiser\)/Unit\\_1%3A\\_Introduction\\_to\\_Microbiology\\_and\\_Prokaryotic\\_Cell\\_Anatomy/1%3AFundamentals\\_of\\_Microbiology](https://bio.libretexts.org/Bookshelves/Microbiology/Book%3AMicrobiology_(Kaiser)/Unit_1%3A_Introduction_to_Microbiology_and_Prokaryotic_Cell_Anatomy/1%3AFundamentals_of_Microbiology)

### PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

## ALLIED CHEMISTRY - I (THEORY) SYLLABUS WITH EFFECT FROM 2020-2021 (Branches other than Maths and Physics)

**Time/Hrs: 60 Hrs**

**Credits: 4**

**Subject Code: SD3AA**

**Year: I**

**Semester: I**

### Learning Objective:

1. To know the fundamentals of nuclear chemistry
2. To understand the industrial application of fuels, fertilizers and polymers
3. To understand the basic concepts of Organic Chemistry
4. To study the various laws of thermodynamics
5. To learn basics of photochemistry

**Unit I: NUCLEAR CHEMISTRY (10 Hours)** Fundamental particles of Nuclear Isotopes, Isobars, Isotones and Isomers -Differences between chemical reactions and nuclear reactions: Fusion and fission - Radioactive series, group displacement law - Mass defect - Applications of radio isotopes- carbon dating, rock dating and in medicine.

**Unit II: INDUSTRIAL CHEMISTRY (15 Hours)** Fuels- Classification-gaseous fuels like water gas, producer gas, liquefied petroleum gas, gobar gas, compressed natural gas - Fertilizers- Classification - urea, ammonium sulphate, superphosphate, Triple super phosphate, potassium nitrate- manufacture and uses - Silicones - Preparation, properties and applications . Hardness of water: temporary and permanent

hardness, disadvantages of hard water - Softening of hard water - Definition and determinations of BOD and COD.

**Unit III: FUNDAMENTALS OF ORGANIC CHEMISTRY (15 Hours)** Classification of organic compounds - Hybridization in methane, ethane, ethylene, acetylene, benzene - Classification of reagents - electrophiles, nucleophiles and free radicals - Classification of reactions - addition, substitution, elimination, condensation and polymerisation.

**Unit IV: CHEMISTRY OF SOME USEFUL ORGANIC AND INORGANIC COMPOUNDS (10 Hours)** Preparation and uses of  $\text{CH}_2\text{Cl}_2$ ,  $\text{CHCl}_3$ , polyethylene, PVC, Nylon and Terylene, phenol – formaldehyde resin, Bakelite, rubber and vulcanisation.

**Unit V: PHOTOCHEMISTRY (10 Hours)** Introduction to Photochemistry - statement of Grotthus-Draper Law, Stark- Einstein's Law, Quantum yield. Hydrogen-Chlorine reaction (Elementary idea only) Photosynthesis, photosensitization, phosphorescence, Fluorescence, Chemiluminescence- Definition with examples.

### BOOKS FOR REFERENCE

1. Gopalan R. and Sundaram S., Allied Chemistry, Sultan Chand & Sons Publishers, New Delhi 2<sup>nd</sup>ed.
2. Soni P.L. and Mohan Katyal, Text Book of Inorganic Chemistry, Sultan Chand and Company Pvt. Ltd, New Delhi, 20<sup>th</sup>ed.
3. Bahl B.S. and ArunBahl, A text book of Organic Chemistry 21<sup>st</sup> ed., S. Chand and Company Pvt. Ltd.

### LEARNING OUTCOMES

1. Learner is introduced to nuclear chemistry concepts and made aware about various applications of radioisotopes such as treatment of cancer. Learnt about radiocarbon dating to determine age of natural specimens.
2. Learnt about purification of water and gained insight into reverse osmosis process. The chapter helped to understand about the various types of fuel for domestic and industrial purposes .
3. Learnt about basic concepts of organic chemistry and how electron displacement affects reactivity.
4. Student is introduced to basic principles of photochemistry and various photophysical processes like phosphorescence, fluorescence and chemiluminescence.

#### PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	S
CO2	S	S	S	M	M
CO3	M	S	S	S	M
CO4	S	M	M	S	S
CO5	S	S	M	S	S

KEY: S – Strong, M – Medium, L – Low

## **CORE PAPER III: FOOD SCIENCE**

**Time/Hrs: Theory: 4 Hrs, Practical: 2 Hrs**

**Year: I**

**Credits: 4**

**Semester: II**

**Subject Code: SL22A**

### **OBJECTIVES:**

- a) To enable students to obtain knowledge of different food groups and their contribution to nutrition.
- b) To help them study the different methods of cooking and their advantages and disadvantages.
- c) To enable them gain them to experience in the preparation of foods with attention to the preservation of their nutritive value -oriented to Indian cooking.
- d) To help them understand the scientific principles governing the acceptability of food preparations.

### **LEARNING OUTCOME:**

At the end of the course, the student will be able to

1. Identify the different food groups and examine their nutritive value.
2. Analyse the scientific principles underlying food preparation.
3. Identify the best method for cooking foods from different food groups.
4. Develop skills and techniques in food preparation with retention of nutrients and palatability.
5. Gain insight into the chemistry of cooking food.

### **UNIT I**

#### **INTRODUCTION TO FOODS**

Definition, Classification, Functions of foods- Functions of food in relation to health - classification of foods based on nutrients. Food Pyramid, Food groups – Basic Four, Basic Five, Basic Seven and Basic Nine.

### **UNIT-II**

#### **PRELIMINARY PREPARATION AND COOKING**

Preliminary preparation of foods - different methods of cooking - Dry methods - frying, broiling, parching, and baking. Moist methods - boiling, stewing, cooking under pressure. Solar cooking, Microwave cooking - advantages and disadvantages.

### **UNIT III**

#### **STUDY OF FOODS**

Cereal and Cereal products – Structure, Composition and Nutritive value of Rice, Wheat and locally available millets. Effect of cooking on the nutritive value of cereals. Gelatinisation, Dextrinization and gluten formation.

Pulses and nuts - Composition, Nutritive value of grams, dhals - some common nuts - meat substitutes - soya products. Effect of soaking, germination, cooking on pulses, toxic constituents of pulses. Textured Vegetable Protein (TVP).

Vegetables and Fruits - Classification, composition and Nutritive value - methods to minimize the loss of nutrients, types of pigments, effects of cooking, alkali & acid on color, texture and flavor. Post harvest losses and changes during ripening. Browning reaction and changes during cooking.

### **UNIT IV**

#### **ANIMAL FOODS**

Milk and milk products - Composition and Nutritive value, Principles of milk cookery, Milk protein, coagulation, problems in milk cookery. Effect of cooking and processing on milk.

Meat - Nutritive value, methods of cooking - Post mortem changes in meat, factors affecting tenderness - organ meat.

Fish - Classification, Nutritive value - selection, Methods of cooking

Poultry - Nutritive value, economic aspects. Principles and methods of cooking poultry.

Eggs - Structure, composition, Nutritive value, selection - principles of egg cookery - uses of eggs in cookery, methods of cooking eggs.

## **UNIT V**

Fats and Oils - Types - saturated, MUFA, PUFA, Hydrogenation - Invisible fats - uses of fat in cookery - factors affecting absorption of fats - smoking point - Rancidity.

Spices and Condiments - Importance, composition and classification. Uses in Indian cookery.

Sugar and Sugar Products - Jaggery - uses in Indian cookery - Stages in sugar, Indian Sweets.

Beverages - Classification, Nutritive value and uses – processing of coffee, tea, cocoa.

Food additives and food adulteration.

## **PRACTICALS**

I. Gluten formation and gelatinisation of starch

II. Germination and factors affecting cooking of pulses.

III. Effect of cooking and addition of acid & alkali on the colour, flavour and texture of vegetables. Enzymatic browning in fruits and vegetables. Pectin extraction.

IV. Preparation of white sauce and paneer. Factors affecting coagulation of milk.

V. Determination of smoking point of various fats and oils. Effect of oil temperature on frying.

VI. Ferrous sulphide formation in boiled eggs. Factors affecting egg foam formation. Factors affecting coagulation of eggs. Tests to determine quality of eggs.

VII. Stages of sugar cookery

VIII. Various methods of preparation for tea and coffee.

IX. Market of the available food additives.

X. Common tests to detect adulteration in foods.

## **REFERENCES**

1. Shakunthala Manay. N; Shadakshara Swamy.M; *Foods Facts and Principles*, 3<sup>rd</sup> edition, New Age International (P) Limited Publishers, 2014.

2. Srilakshmi. B; *Food Science*, 6th edition, New Age International (P) Limited Publishers, 2015.

4. Arindam Ramaswamy, *Elements of Food Science*, Oxford Book Company, 2010.

5. Norman. N Potter, Joseph H. Hotchkiss, *Food Science*, 5th edition, CBS Publishers and Distributors, 1996.

6. Sivasankar. B; *Food Processing and Preservation*, PHI Learning Private Limited, 2011.



### PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

### CORE PAPER IV: HUMAN NUTRITION I

**Time/Hrs: Theory: 6 Hrs**

**Year: I**

**Credits: 4**

**Semester: II**

**Subject Code: SL22B**

#### OBJECTIVES

1. To introduce the students to the principles of Human Nutrition.
2. Assess the importance of various macronutrients in relation to health.

#### Learning Outcomes

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

1. Apply knowledge of biochemistry and physiology to nutrient metabolism.
2. Explain nutrition information on food labelling.
3. Identify nutrition-related conditions and diseases by applying knowledge of metabolism and nutrient functions, food sources and physiologic systems.
4. Compute energy requirements for various age groups and study the recommended nutrient intake.
5. Discuss the concepts of nutrition for maintenance of a healthy lifestyle.

#### UNIT I

History of Nutrition – Development of Nutrition as a Science – Definition of Nutrition – Under nutrition, over nutrition and malnutrition. Introduction to nutrition-food as a source of nutrients, function of foods, definition of nutrients, adequate, optimum and good nutrition. Interrelationship between nutrition and health.

#### UNIT II

Energy -Introduction, Units, determination of energy value of food, physiological fuel value, Benedict's Oxy-calorimeter, relation between oxygen required and calorimeter value. Respiratory quotient, Specific dynamic action of food (Thermic effect of food). Definition of BMR and factors affecting BMR – determination of energy metabolism, during work-energy requirements for various types of activities, factorial methods for calculation of the daily energy requirements of an adult for varying degrees of physical activity, RDA.

#### UNIT III

##### CARBOHYDRATES

Definition, composition, classification, functions of carbohydrates in the body, food sources, digestion, absorption and utilization of carbohydrates, hormonal regulation of blood glucose levels. Glycaemic index, glycaemic load, types of resistant starch.

Dietary fibre -Definition, types, sources, RDA, physiological effects of dietary fibre

#### UNIT IV

PROTEINS-classification, functions, Food sources, Requirements and RDA. Digestion, absorption and metabolism of proteins. Amino acids-Indispensable and dispensable amino acids – Therapeutic applications of specific amino acids. Protein Energy Malnutrition – KWASHIORKOR and MARASUMS –etiology, clinical features, treatment and prevention.

Evaluation of protein quality –PER, BV, NPU and NPR, chemical score, nitrogen balance, mutual amino acid supplementation of proteins.

#### UNIT V

##### LIPIDS

Classification, functions of EFA, MUFA, PUFA, SFA, food sources, Requirements, RDA, digestion and absorption. Characteristics of animal and vegetable fats, cholesterol-function, food sources, phospholipids-functions.

Omega fatty acids functions, role in good health, food sources. Role of dietary lipids and CVD.

#### TEXT BOOKS:

1.M. Swaminathan "Principles of Nutrition and Dietetics", 1993, Bappeo 88, Mysore Road, Bangalore - 560 018

2.Srilakshmi.B “Nutrition Science”, ISBN 10: 8122432239 / ISBN 13: 9788122432237

Published by New Age International (P) Limited, 2015

#### REFERENCES

1. Gordon. M. Wardlaw et.al; Contemporary Nutrition, 2nd edition, Publishing by Mosby, 2004.

2. Srilakshmi. B; Dietetics, 7th edition, New Age International (P) Limited Publishers, 2014.

3. William's; Nix; Basic Nutrition and Diet therapy, 14th edition, Publishing by Mosby, 2013.

4. MahtabS.Bamji, Prasad Rao, N.Vinodini Reddy; Textbook of Human Nutrition, Second Edition Oxford and IBH Publishing Co. Pvt .Ltd, 2003.

5. Nutrient Requirement and Recommend Dietary Allowances for Indians by Indian council of Medical research, National Institute of nutrition, Hyderabad.

6. Judith E. Brown., Nutrition New, 2nd edition, West / Wadsworth west / Wadsworth, An International Thomson publishing company, 1998

#### PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	M	S	S	S
CO4	M	M	S	S	S
CO5	S	M	S	S	S

KEY: S – Strong, M – Medium, L – Low

## ALLIED CHEMISTRY - II (THEORY)

(Branches other than Maths and Physics)

**Time/Hrs: Theory: 60 Hrs**

**Credits: 4**

**Subject Code: SD3AC**

**Year: I**

**Semester: II**

### Learning Objective :

1. To understand the fundamentals of coordination chemistry and its applications
2. To learn the structural aspects of biologically important compounds
3. To know the applications of phase rule and freezing mixtures
4. To explain the basics of electrochemistry
5. To understand the basics of Analytical chemistry

**UNIT I: COORDINATION CHEMISTRY (12 Hours)** Definition of terms-classification of ligands-Nomenclature-chelation-EDTA and its applications-Werner's Theory-Effective Atomic Number-Pauling's Theory-Postulates Biological role of haemoglobin and chlorophyll, (Elementary idea only)

**UNIT II: CARBOHYDRATES (10 Hours)** Classification, preparation and reactions of glucose and fructose. Interconversion of glucose to fructose and vice versa. Structure of starch. Cellulose and derivatives of cellulose - Diabetes - Causes and control measures.

**UNIT III: PROTEINS (15 Hours)** Amino acids-Classification, Preparation and properties of alanine - Preparation of dipeptide using Bergman method - Proteins -Classification according to composition, biological functions and shape - Denaturation and colour reactions of Proteins - Primary and secondary structure of Proteins Nucleic acids: DNA and RNA-Their components and biological functions.

**UNIT IV: ELECTROCHEMISTRY (10 Hours)** Electrolytic conductance in metals and in electrolytic solution - specific conductance and equivalent conductance - Arrhenius theory of electrolytic dissociation and its limitations - weak and strong electrolytes according to Arrhenius theory - Ostwald's dilution law - applications and limitations - Conductometric titrations - strong acid vs strong base only.

**CATALYSIS (5 Hours)** Characteristics of catalytic reaction, auto catalysis, promoters, catalytic poisons - Types of catalysis - homogeneous and heterogeneous - Enzyme catalysis (no derivation, elementary idea only)

**UNIT V: ANALYTICAL CHEMISTRY (8 Hours)** Introduction to Qualitative and Quantitative Analysis - Principle of volumetric analysis - Separation techniques - extraction - distillation - crystallization - Chromatographic separations - Principles and application of column, paper, thin layer.

### BOOKS FOR REFERENCE

1. Gopalan R. and Sundaram S., Allied Chemistry, Sultan Chand & Sons Publishers, New Delhi 2<sup>nd</sup> ed.
2. Bahl B.S. and Arun Bahl, A text book of Organic Chemistry 21<sup>st</sup> ed., S. Chand and Company Pvt. Ltd.
3. Puri B.R., Sharma L.R. and Pathania M.S., Principles of Physical Chemistry, 47<sup>th</sup> ed., Vishal Publishing Company, 2016.

## LEARNING OUTCOMES

1. Students learn about definitions of ligands, coordination number; hybridisation and geometry of coordination complexes. Gained elementary idea about naturally occurring complexes such as haemoglobin and chlorophyll.
2. Introduced to biomolecules such as carbohydrates (glucose, starch and cellulose) and amino acids (alanine). A brief idea about structure of DNA and RNA is gained by the student.
3. Students gain primary knowledge about the structure of proteins and major classes of proteins.
4. Learnt about batteries, electrochemical cells, electrodes and EMF
5. Learnt principles of volumetric analysis, separation and purification techniques such as chromatography. Learnt about separation and identification of amino acids through thin layer chromatography.

### PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	S
CO2	M	S	S	S	S
CO3	S	M	M	M	M
CO4	S	S	S	M	S
CO5	S	M	M	S	S

KEY: S – Strong, M – Medium, L – Low

## ALLIED CHEMISTRY I & II (PRACTICALS) (COMMON FOR ALL ALLIED CHEMISTRY)

Subject Code : SD3A1

### Learning Objectives:

1. To learn the volumetric estimation of solutions
2. To identify the given organic compound systematically.

## I. VOLUMETRIC ANALYSIS

1. Estimation of Sodium hydroxide using standard Sodium Carbonate.
2. Estimation of Hydrochloric acid using standard Oxalic acid.
3. Estimation of Ferrous sulphate using standard Mohr's salt
4. Estimation oxalic acid using standard Ferrous Sulphate.
5. Estimation of Potassium permanganate using standard Sodium hydroxide.
6. Estimation of iron from iron tablets using standard potassium permanganate
7. Estimation of magnesium using EDTA.
8. Estimation of calcium from calcium tablets using EDTA
9. Estimation of Ferrous ion using diphenylamine as internal indicator.

## II. Systematic analysis of Organic compounds

The analysis must be carried out as follows

- a) Functional group tests (Carboxylic acid (Benzoic acid, phthalic acid), Phenol, Urea, Glucose, Benzaldehyde, Aniline (Aniline not to be given for exam))
- b) Detection of elements ( N, S, Halogens)
- c) Distinguish between aliphatic and aromatic
- d) Saturated and unsaturated compounds

## REFERENCES

1. Basic Principles of Practical Chemistry, Venkateswaran, Veerasamy & Kulandaivel S Chand & Co.

## Learning Outcomes

1. Students learn to estimate the amount of substance present in a given unknown solution by volumetric methods like acidimetry - alkalimetry and permagnometry.
2. Students learn the systematic method of identifying the presence of unsaturation, aromaticity and functional groups in an unknown organic compound.

## CORE PAPER V: FAMILY MEAL MANAGEMENT

**Time/Hrs: Theory: 4 Hrs, Practical: 2 Hrs**

**Credits: 4**

**Subject Code: SL23A**

**Year: II**

**Semester: III**

## OBJECTIVES

To enable the students to:

1. Acquire knowledge of the principles of planning diets for various stages of life cycle.
2. Develop ability to plan balanced diets for various activity groups and for various socio-economic levels.

## LEARNING OUTCOME

At the end of the course, the student will be able to

1. Gain knowledge of the principles of planning diet.
2. Plan balanced diets for various stages of life cycle.
3. Plan balanced diets for persons involved in various activity.
4. Plan balanced diets for people from various socioeconomic levels.
5. Create awareness about World Alliance for Breast feeding Action.

## UNIT I

Introduction to meal management, Balanced diet – food guide, food pyramid, food plate, principles of meal management – objectives – steps in meal planning and low cost balanced diet.

## UNIT II

Nutrition for Adult, reference man, reference women, activity groups, nutrient needs. Geriatric nutrition – Factors affecting food intake and nutrient use – nutrient needs – nutrition related problems.

### UNIT III

Nutrition in pregnancy – physiological stages, food selection – complications of pregnancy. Nutrition during lactation – Physiology of lactation – nutrition requirements, special foods given during lactation. WABA, EBM, breast milk pump, human breast milk bank.

### UNIT IV

Nutrition during infancy – Growth and Development – nutrition requirements- Breast feeding – Infant formula – Introduction of supplementary foods. Nutrition during early childhood (Toddler/Preschool) Growth and Nutritional needs – nutrition related problems, Feeding patterns – acceptance.

### UNIT V

Nutrition of school children – Nutritional requirement – Importance of snacks – school lunch. Nutrition during Adolescence, Growth development and nutrient needs – food choices, eating habits – factors influencing them.

### Reference Books

- 1) Guthrie H.A. & Others, "Introductory Nutrition", Times Mirror/Mosby College Pub. St. Louis (2010).
- 2) Anderson L. et al, "Nutrition in Health and Disease", J.B. Lippincott Co. Philadelphia (2006)
- 3) Whitney E.N., Hamilton E.N. & Raffles S.R., "Understanding Nutrition", West Pub. Co. New York.(1993)
- 4) Recommended Dietary Intakes for Indians, I.C.M.R. (2010).
- 5) Mudambi, S.R. & M.N. Rajagopal - "Fundamentals of Food and Nutrition", Wiley Eastern Ltd. New Delhi – 19 (2006).
- 6) Worthington Roberts, Bonnie S & others - "Nutrition in Pregnancy & Lactation", Times Mirror/ Mosby College, St. Louis.(2010)

### PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

## CORE PAPER VI: HUMAN NUTRITION II

**Time/Hrs: Theory: 6 Hrs**

**Year: II**

**Credits: 4**

**Semester: III**

**Subject Code: SL23B**

### OBJECTIVES

1. To learn the role of various micronutrients in body functions.
2. To develop skills in assessment of qualitative tests and quantitative estimation of nutrients

### LEARNING OUTCOMES

At the end of the course, the student will be able to

1. Explain the importance of water as a nutrient.
2. Describe the functions and food sources of macro and micro minerals.
3. Learn the nutritional importance of the micronutrients in human health.
4. Outline the metabolism of micronutrients
5. Evaluate the role of food and nutrients in health and disease prevention.

### UNIT I

**WATER** – functions, sources, requirements. Distribution of water in the body, composition of body fluids. Water imbalance-dehydration and water intoxication, water and electrolyte balance.

### UNIT II

**MACRO MINERALS**- Calcium, Phosphorus, Magnesium, Potassium, Sodium and Chloride- Distribution in the body; functions, effects of deficiency, **toxicity**, food sources and RDA.

**MICRO / TRACE MINERALS** in human nutrition - Iron, Zinc, Fluoride and Copper- Distribution in the body; functions, effects of deficiency, **toxicity**, food sources and requirements for different age groups.

### UNIT III

**ULTRATRACE MINERALS**- Iodine- Distribution in the body; functions, effects of deficiency, food sources and requirements; Selenium, Manganese, Chromium, Molybdenum and Cobalt- **Functions and food sources**.

Selenium and Vitamin E relationship.

Chromium and glucose tolerance factor.

### UNIT IV

#### FAT SOLUBLE VITAMINS

Metabolism, Functions, effects of deficiency, food sources, requirements, unit of measurements and hypervitaminosis of vitamins A, D, E and K.

### UNIT V

#### WATER SOLUBLE VITAMINS

Ascorbic acid and B Complex vitamins- Thiamine, Riboflavin and Niacin- Functions, effects of deficiency, food sources and requirements for different age groups.

Importance of Folic acid, Pyridoxine, Vitamin B12, Biotin and Pantothenic acid to the body.

#### Text Books:

1. Srilakshmi, B., Nutrition Science, New Age International (P) Ltd., New Delhi, 2017.
2. Mahtab, S, Bamji, Kamala Krishnasamy, G.N.V. Brahmam, Text Book of Human Nutrition, Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi, 2015
3. Swaminathan, M., Advanced Textbook on Food and Nutrition, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd., Bangalore, 2012.

### Reference Books:

1. Dietary Guidelines for Indians, ICMR, National Institute of Nutrition, Hyderabad, 2013.
2. Gordon M. Wardlaw, Paul M.Insel, **Perspectives in nutrition** third edition, Mosbyyear Book, Inc. St. Louis, Missouri, 2015
3. Krause, M.V. and Hunesher, M.A., **Food, Nutrition and Diet Therapy**, 14th Edition, W.B. Saunders Company, Philadelphia, London, 2013.
4. Maurice Edward Shils, Moshe. Shike **Modern Nutrition in Health and Diseases** 10th edition 2006.
5. Eleanor Noss Whitney/Sharon Rady Rolfes, **Understanding Nutrition**, 15<sup>th</sup> Edition, Cengage Learning, Inc.
6. Eleanor schlenker and Joyce Ann Gilbert, Williams 'Essentials of nutrition and diet therapy, 12<sup>TH</sup> edition, Elsevier publishers, 2019.
7. Longvah.T, Ananthan.R, Bhaskarachary.K and Venkaiah.K, **Indian Food Composition Tables 2017**, National Institute of Nutrition, Indian Council of Medical Research, Hyderabad – 500 007 Telangana, India.

### Web References

1. ([www.who.int](http://www.who.int))
2. [www.nin.res.in](http://www.nin.res.in)
3. [www.motherchildnutrition.org](http://www.motherchildnutrition.org)
4. [www.nnmbindia.org](http://www.nnmbindia.org)
5. [www.ijmr.org.in](http://www.ijmr.org.in)
6. [www.ncbi.nlm.nih.org](http://www.ncbi.nlm.nih.org)
7. [www.nutritionvalue.org](http://www.nutritionvalue.org)
8. [www.icmr.org](http://www.icmr.org)
9. [www.cftri.org](http://www.cftri.org)
10. [www.nsi.org](http://www.nsi.org)

### PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

### ALLIED PAPER III – BIOCHEMISTRY

Time/Hrs: Theory: 4 Hrs, Practical: 2 Hrs

Credits: 5

Year: II

Semester: III

Subject Code: SB3AA

### OBJECTIVES

To introduce the students to

1. The principles of Biochemistry
2. A basic understanding of the functions of biological systems in relation to Nutritional biochemistry.
3. The skills in qualitative tests and quantitative estimation of nutrients.



## **LEARNING OUTCOMES**

At the end of the course, the student will be able to

1. Assess the role of enzymes in various metabolic pathways.
2. Outline the metabolic pathways of Carbohydrate, Protein and Fats.
3. Discuss the role of nucleic acids.
4. Evaluate the mechanisms of energy production.
5. Integrate the mechanisms involved in anabolism and catabolism of macronutrients.

## **UNIT I**

### **INTRODUCTION TO BIOCHEMISTRY**

Definition of Biochemistry and its relation to nutrition, Applications of Biochemistry.

Enzyme, classification, Nomenclature, Factors affecting enzymatic activity, Mechanism of action, Co-enzyme and prosthetic group - role of B vitamins as co-enzymes.

Biological oxidation and Electron Transport Chain (ETC).

Nucleic acids, Purine and Pyrimidine bases, nucleosides and nucleotides – structure and functions.

## **UNIT II**

### **CARBOHYDRATES**

Structure, General reactions of mono, di, tri and oligosaccharides, Interconversion of sugars, Metabolism of carbohydrate, Glucose oxidation through glycolysis, Krebs - TCA cycle, Pentose phosphate cycle, Gluconeogenesis.

## **UNIT III**

### **PROTEINS**

Aminoacids - Classification, Chemical properties due to amino and carboxyl groups, Chromatographic separation.

Peptides - Structure and nomenclature, Determination of amino acid sequence.

Proteins - primary, secondary, tertiary structure of proteins, Hydrolysis of proteins, Denaturation, Precipitation, Coagulation, Metabolism of proteins, General pathways of metabolism of aminoacids. Deamination, Transamination, Decarboxylation, Urea cycle, Fate of carbon skeleton of amino acids, Protein biosynthesis.

## **UNIT IV**

### **LIPIDS**

Chemical composition of fats,  $\beta$  oxidation of fatty acids, Biosynthesis of fatty acids, Ketogenesis. Cholesterol - biosynthesis and metabolism.

## **UNIT V**

### **INTERMEDIARY METABOLISM**

Interrelationship between carbohydrate, fat and protein metabolism - Hormonal regulation of metabolism.

Inborn errors of metabolism with reference to: Carbohydrate - fructosuria and galactosemia; Protein - Phenyl ketonuria, Alkaptonuria, Aminoaciduria.

### **PRACTICALS**

1. Qualitative test for sugars - Glucose, Fructose, Lactose, Maltose, Sucrose
2. Quantitative estimation of reducing sugar

3. Qualitative test for proteins
4. Demonstration experiments
  - a. Estimation of total nitrogen in foods (Micro or MacroKjeldahl methods)
  - b. Lipid extraction by Soxhlet method
  - c. Determination of iodine value

## REFERENCES

1. P. Karison, 1975 - Introduction to Modern Biochemistry - Academic Press, New York.
2. Shanmugham Ambika, 1985 - Fundamentals of Biochemistry for Medical students - NVA Bharat Printers and Traders 56, Peters Road, Madras – 86.
3. Talwar G.P., Sri Vatsava L.N. and Moudgil K.D., 1989 - Textbook of Biochemistry and Human Biology - Prentice Hall of India (P) Ltd., New Delhi - 1.
4. Rama Rao A.V.S.S., 1990 - Textbook of Biochemistry, 5<sup>th</sup> edition - L.K. and Publishers, Visakhapatnam.
5. Robert K. Murray et al., 2000 – Harper’s Biochemistry, 25<sup>th</sup> edition – Mc Graw Hill, USA.
6. Chatterjea M.N. and Shinde R., 2016 -Textbook of Medical Biochemistry, 8<sup>th</sup> edition – Jaypee Brothers Medical Publishers (P) Ltd. New Delhi.
7. Sathyanarayana U and Chakrapani U, 2016 – Biochemistry, 4<sup>th</sup> Revised Edition – Elsevier (New Delhi) and Books and Allied (p) Ltd., Kolkata.
8. Harbans Lal, 2017 - Essentials of Biochemistry for BSc Nursing Students – CBS Publishers & Distributors Pvt. Ltd., New Delhi.
9. David L.N. and Cox M.M., 2017 – Lehninger Principles of Biochemistry, 7<sup>th</sup> edition - W. H. Freeman & Co Ltd.
10. Rodwell W.V. et al., 2018 – Harper’s Illustrated Biochemistry, 31<sup>st</sup> edition - Mc Graw Hill, USA.

## PO-CO Mapping

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

## CORE PAPER VII- DIET THERAPY

**Time/Hrs: Theory: 6 Hrs**

**Credits: 4**

**Subject Code: SL24A**

**Year: II**

**Semester: IV**

## OBJECTIVES

- Obtain knowledge on the role of diet in disease conditions.
- Gain experience in planning, preparing and serving therapeutic diets.

- Understand the role of dietitian in the hospital and community

## LEARNING OUTCOMES

On successful completion of the course, the students will be able to:

1. Apply biological, biochemical and physiologic scientific principles to nutrition practice.
2. Apply nutrition concepts to evaluate and improve the nutritional health of individuals and medical conditions.
3. Demonstrate an understanding of the importance of incorporating healthy eating guidelines into dietary practices.
4. Assess the risk factors of diseases and educate people to follow healthy guidelines to prevent the incidence of non-communicable diseases.

## UNIT I

Principles of diet therapy -Routine Hospital diets- Pre and Post operative diets.

Special feeding methods- Tube feeding and Total Parenteral Nutrition.

Metabolic changes in Fevers- Modification of Diet in Typhoid and Tuberculosis.

Diet in Burns and HIV.

Nutrition Care process-Definition and steps- Nutrition assessment, Nutritional diagnosis, Nutritional intervention, Nutrition monitoring and evaluation.

Roles and Responsibilities of Dietitian- Indian Dietetic Association- Registered Dietitian.

## UNIT II

Pathophysiology, nutritional implications, Etiology and modification of diet in Gastrointestinal diseases (a) Peptic ulcer (b) Diarrhoea (c) Constipation (d) Malabsorption syndrome (e) Gluten enteropathy (f) Lactose intolerance.

Pathophysiology, nutritional implications, Etiology and modification of diet in Hepatitis, Cirrhosis, Hepatic coma and Wilson's disease.

Pathophysiology, nutritional implications, Etiology and modification of diet in Cholecystitis and Cholelithiasis.

## UNIT III

Pathophysiology, Etiology, nutritional implications and modification of diet in Obesity

Etiology, nutritional implications and modification of diet in PCOS, Hypothyroidism and Underweight.

Diabetes Mellitus- Prevalence, types, symptoms, metabolic changes, Diagnosis, Treatment, Complications.

Nutrition management of pancreatitis.

## UNIT IV

Etiology and modification of diet in Hypertension.

Prevalence, Pathophysiology, nutritional implications, risk factors and modification of diet in Atherosclerosis.

Prevalence, risk factors and modification of diet in Cancer- Nutritional modification of cancer therapy.

Role of antioxidants in the prevention of degenerative diseases.

## UNIT V

Etiology, symptoms and modification of diet in Nephritis, Nephrotic syndrome, Acute renal failure and Chronic renal failure- Dialysis.

Etiology and Modification of diet in Urinary calculi and Gout.

## REFERENCES

1. Gordon M. Wardlaw, Paul M. Insel, Perspectives in nutrition third edition, Mosby Year Book, Inc. St. Louis, Missouri, 2015
2. Krause, M.V. and Hunesher, M.A., Food, Nutrition and Diet Therapy, 14th Edition, W.B. Saunders Company, Philadelphia, London, 2013.
3. Maurice Edward Shils, Moshe. Shike Modern Nutrition in Health and Diseases 10th edition 2006.
4. Eleanor Ross Whitney & Sharon Rady Rolfes, Understanding nutrition, 9th edition, Wadsworth Group, 2002
5. B. Srilakshmi, Dietetics, 8th edition, New Age International Publishers, 2019.
6. Garrow, et al, Human Nutrition and Dietetics, 10th edition, Churchill Livingstone, 2000
7. Joshi Y K, Basics of Clinical Nutrition, 2nd edition, JP Medical publishers Pvt Ltd, 2008
8. Sylvia Escott-Stump, Nutrition and Diagnosis related care, 7th edition, Jones and Barlett Publishers, 2008

## Web resources

- American Dietetic Association- [www.eatright.org](http://www.eatright.org)
- American Diabetes Association- [www.diabetes.org](http://www.diabetes.org)
- American Heart Association- [www.american.org](http://www.american.org)
- World Health Organisation- [www.who.org/nut](http://www.who.org/nut)

## CORE PAPER VIII - NUTRITION AND DIETETICS PRACTICALS

**Time/Hrs: Theory: 6 Hrs**

**Year: II**

**Credits: 4**

**Semester: IV**

**Subject Code: SL241**

## OBJECTIVES

1. To gain skill in qualitative tests and quantitative estimation of nutrients.
2. To enable the students to understand the modifications in nutrients and dietary requirements for the therapeutic condition and dietary management of different diseases.

## LEARNING OUTCOMES

At the end of the course, the student will be able to

1. Acquire scientific information and develop laboratory skills in the field of food analysis.
2. Develop an understanding of the different analytical instruments.
3. Know the difference between qualitative and quantitative analytical tests in foods.
4. Understand the application of the principles of nutrition in basic dietetics.
5. Develop the ability to plan and prepare diets for therapeutic conditions.

6. Apply knowledge of nutrition and health assessment and interpretation in comprehensive patient management.

### **NUTRITION PRACTICALS**

1. Qualitative tests for minerals
2. Quantitative estimation of calcium
3. Quantitative estimation of phosphorus
4. Quantitative estimation of vitamin C
5. **Quantitative estimation of iron**

#### **Demonstration Experiments.**

- a) Qualitative tests for vitamin A
- b) Quantitative estimation of carotene

### **DIETETICS PRACTICALS**

#### I. Planning and preparing diet for the following conditions:

1. Clear fluid, full fluid and soft diet
2. Typhoid and Tuberculosis
3. Peptic ulcer, Diarrhoea and Constipation
4. Hepatitis and Cirrhosis
5. Obesity and Underweight
6. Type 1 and Type 2 Diabetes Mellitus
7. Hypertension and Atherosclerosis
8. Nephritis and Nephrotic syndrome

#### II. Planning and preparation of five suitable recipes for:

1. Cholelithiasis
2. Urinary calculi

#### III. Dietary Internship for 1 month in a hospital.

#### **Text Books:**

1. Varley, H., Gowenlak, A.H. and Hill, M. Practical Clinical Biochemistry, William Itinmaon Medical Books, London, 2010.
2. Oser, B.L., Harke's Physiological Chemistry XIV Edition Tata McGraw Hill Publishing Company Ltd., Bombay, 2011
3. Srilakshmi, B., Dietetics, Eighth edition, New Age International (P) Ltd., New Delhi, 2019.
4. Indian food composition tables, National Institute of Nutrition, 2017.
5. Recommended dietary allowance for Indians, 2010, National Institute of Nutrition (ICMR), HYDERABAD.

#### **Reference Books:**

1. Sadasivam, S. and Manickam, A. Biochemical Method, Second Edition, New Age International P. Ltd., Publishers, New Delhi, 2013.
2. Raghuramulu, N., Madhavannair, K. and Kalyana Sundaram, National Institute of Nutrition, 2013, A Manual of Laboratory Techniques, Hyderabad, 50000

## PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
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CO5	S	S	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

## ALLIED PAPER IV – PRINCIPLES OF INTERIOR DECORATION

**Time/Hrs: Theory: 6 Hrs**

**Year: II**

**Credits: 5**

**Semester: IV**

**Subject Code: SL34A**

### COURSE OBJECTIVES

1. To enable students to understand the basic principles of Art and Design.
2. To inculcate a sense of aesthetics to help students design interiors of various establishments.

### LEARNING OUTCOME

At the end of the course, the student will be able to

1. Create understanding of the basic art principles.
2. Apply color harmony in interiors.
3. Select, use and care for Furniture, Furnishings and Accessories.
4. Understand the basic Principles of House Keeping.
5. Trained for career options in interiors and housekeeping.

### UNIT I

Art in daily living – Importance of good taste, objective of interior design. Design – elements of design – line, shape, size, space, texture, pattern, colour and light, Types and Characteristics of design, Principles of design – Harmony, Balance Rhythm, Proportion, Emphasis.

### UNIT II

Colour – Qualities of colour – Hue, value and intensity, color aspects, Prang color wheel, Colour harmony, developing colour schemes for different rooms.

### UNIT III

Furniture and Furnishings – selection and arrangement of furniture in different rooms. Different types of furnishing materials – Factors considered in their selection. Floor coverings, curtains and draperies, Window treatment.

### UNIT IV

Accessories – Selection, Use and Care of accessories, Types – traditional and modern – art objects – pictures, flower arrangement – Types, use and care - Flower arrangement for different rooms. Indoor plants – use and care. Lighting – Importance of lighting – Principles and types of Lighting – Lighting needs for various activities

## UNIT V

Organisation of the housekeeping department in an institution - House keeping staff – their duties and responsibilities – Management of House keeping department – Selection and handling of personnel, training of staff – Distribution of jobs and job chart – Safety, health and welfare of staff – Inter-departmental Co-operation, Qualification and personal qualities of a house keeper.

## PRACTICALS

Evaluation of design, Preparation of Colour Chart and various colour schemes, Arranging various areas applying all the art principles.

## Reference Books:

1. Commercial Housekeeping and Maintenance by – Stanley Thornes (1984).
2. Hotel, Hostel and Hospital House Keeping by John C. Bronson and Margaret Lennox 2003.
3. Housekeeping and Front office – by Jones (2009).
4. Steapat, D.D., Introduction to Home Furnishing, The Mac millon Co, New york. (1987)
5. Pratap R.M , Interior design principles and practice, Standard publishers
6. distribution, Delhi (2014)
7. Faulkner, S., and Faulkner. R, Inside Today’s Home, Rinehart publishing
8. company, New york. (1975).
9. Anna.H.Rutt ; Home furnishing, John Wiley Eastern Pvt Ltd, Newyork (1963)
10. John.F.P, Color in Interior Design, Mc Graw Hill company, New York. (1997)
11. Jan orchard , Lighting for a beautiful home, Dune style publishing Ltd., USA. (1993)
12. Stawart and Sally.W, The complete home decorator, Annes publishers ltd, New York (2004)

## PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	L	S
CO3	M	M	S	S	S
CO4	S	S	S	S	S
CO5	M	S	M	S	M

Key: S-Strong, M-Medium/Moderate, L-Low

**CORE PAPER IX - HUMAN DEVELOPMENT – I**  
**(OLD SYLLABUS)**  
**(DEVELOPMENT FROM INFANCY TO ADOLESCENCE)**

**III YEAR/SEMESTER V**

**SUBJECT CODE: TAL5A**

**Hours: 6**

**LEARNING OBJECTIVES :**

To enable students

1. to understand the principles of growth and development.
2. to understand the various methods of studying human development.
3. to understand human development from infancy till adolescence.

**UNIT I**

**Growth and development**

- a. Meaning and importance of growth and development, principles of governing growth and development – developmental tasks of different stages.
- b. Methods of study of human development.

**UNIT II**

**Infancy and Babyhood (0-2 years)**

- a. Characteristics, physical, social, emotional , cognitive and language development
- b. Effect of stimulation – Care of the infants - feeding, toilet training, bathing, clothing, sleeping and immunization,.
- c. Importance of mothering ; Importance of psychological needs. ·
- d. Common ailments and Safety measures.

**UNIT III**

**Early childhood period (2-6 years)**

- a. Characteristics, physical, social, emotional, intellectual and language development

**UNIT IV**

**Late childhood period (6-12 years)**

- a. Characteristics, physical, social, emotional, intellectual, language and moral development.
- b. Nursery School – Aims and objectives, building equipments, curriculum program and personnel.



## UNIT V

### Adolescence

- a. Adolescence –physical and psychological changes, emotional, moral and social, development, Problems of adolescents.
- b. Delinquency – causes, prevention and rehabilitation
- c. Educational and vocational guidance, role of family and schools and colleges in guiding adolescents

### LEARNING OUTCOMES:

On completion of this course, successful students will

1. understand the principles of development and developmental stages of the human lifespan.
2. develop an understanding of the physical and motor, emotional, social, cognitive, language and moral development of the human lifespan.
3. know the significance of preschool education.
4. gain knowledge and understanding on the transition of human beings from birth till maturity.
5. be prepared to enter the threshold of adulthood.

### REFERENCE:

- i. *Elizabeth B. Hurlock. Child development.*
- ii. *Laura E. Berk. Child development.*
- iii. *Alison Clarke Stewart. et al. Child development.*
- iv. *Rajammal P. Devdas, Jaya N. Textbook of child development.*
- v. *Dr. Sushila Srivatsav, Dr. K. Sudha Rani. Textbook of human development.*
- vi. *Suriakanti A. Child development.*
- vii. *Stephany Feeney. et al. Continuing issues in childhood education.*
- viii. <https://www.verywellmind.com/piagets-stages-of-cognitive-development-2795457>

### PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	M	S	S	S
CO3	S	S	S	M	S
CO4	S	S	L	S	S
CO5	S	S	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

## **CORE PAPER X- FOOD SERVICE MANAGEMENT – I – TAL5B**

**YEAR/ SEMESTER: III / V**

**HOURS: 4+2/ Week**

### **LEARNING OBJECTIVES:**

On completion of the course the students will be able to

1. Analyse the difference between the different types of food service establishments and their current trends.
2. Understand the concepts of management and its application in a food service.
3. Comprehend all the elements of Human Resource Management
4. Assess and apply costing techniques.
5. Identify the use of computers and software applications in hospitality management

### **UNIT 1:**

Definition and scope of Food Industries – classification of Commercial and Non commercial food service and welfare food service institutions.

### **UNIT II**

Management Definition, principles and functions of management Organization – Types and theories of organisation. Tools of management.

### **UNIT III**

Staffing Manpower Planning Labour sources, Selection, Recruitment and training wages, salaries, incentives, promotion demotion, transfer, dismissal. Managerial Problems of Food Service Unit. Directing and direction, leadership, delegation and controlling decentralization, centralization, supervision, human relation industry, authority and responsibility, motivation, communication evaluation techniques. Leadership styles and qualities.

### **UNIT IV**

Food cost and review of maintenance of accounts Accountability Daily, Weekly, Monthly accounts for food, labour equipment and furnishing, rent, water, fuel, light, licences, cleaning

supplies, maintenance, miscellaneous. Double entry book keeping, ledger accounts journal and balance sheet, budgetary control. Cost control, fixed, variable, average marginal and unit cost, break even analysis – production planning control

## **UNIT V**

Application of Computers in catering.

### **References:**

1. Dhawan, V. (2017) *Food and beverage service*. Chennai: Frank bros & co.
2. Seal, P.P. (2015) *Computers in hotels: Concepts and applications*. New Delhi: Oxford university press.
3. West & Wood (2000) *Food service in institutions*. New york : Wiley esatern limited.
4. Sethi, M & Malhan, S. (2011) *Catering mangement – An integrated approach*. New Delhi: New age international publishers.
5. Cousins, J & Lillicrap, D & Weekes, S (2014) *Food and beverage service*. Hodder education.
6. Suganthi, V. & Premakumari. C (2017) *Textbook on Food service management*. Chennai : Dipti publishers.
7. Arora, K (2008). *Theory of cooking*. Frank bros & co.
8. Palacio, J.P & Theis, M (2011). *Food service management : principles and practices. Food hygiene and sanitation*.Pearsons publishers.
9. Sudhir Andrews (2008). *Text book of Food and Beverage Management*. McGraw Hill Company Ltd.,New Delhi.
10. Singaravelan.R. (2013) *Food and Beverage service*. Oxford university Press. New delhi.
11. Ravi Aggarwal (2010) *Essential of Food and Beverage Service*. Subline publication, New delhi.
12. Roday, S (2011) *Food hygiene and sanitation*. Tata McGraw hills.

## **LEARNING OUTCOMES**

1. Competent to plan menus for food service establishments.
2. Develop managerial skills
3. Develop human resource skills required in the management of food service operations
4. Sound knowledge of the costing and book keeping techniques.
5. Well equipped to understand the applications if computer technology in the catering sector.

### **PO-CO Mapping**

<b>CO/PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1</b>	S	M	S	S	S
<b>CO2</b>	S	M	S	S	S
<b>CO3</b>	S	M	S	S	S
<b>CO4</b>	S	M	S	S	S
<b>CO5</b>	S	M	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

**SUBJECT: NUTRITION-II**

**YEAR/SEMESTER:III/V**

**HOURS: Theory 6 hours**

**SUBJECT CODE: TAL5C**

## **OBJECTIVES**

- 1.To learn the role of various micronutrients and water in body functions.
- 2.To gain skill in qualitative tests and quantitative estimation of nutrient
3. To acquaint with diagnosis and treatment of micronutrient deficiencies.

## **SYLLABUS**

### **UNIT I**

#### **FAT SOLUBLE VITAMINS**

Metabolism, Functions, effects of deficiency, food sources, requirements, unit of measurements and hypervitaminosis of vitamins A, D, E and K.

### **UNIT II**

## WATER SOLUBLE VITAMINS

Ascorbic acid and B Complex vitamins- Thiamine, Riboflavin and Niacin- Functions, effects of deficiency, food sources and requirements for different age groups.

Importance of folic acid, Pyridoxine, Vitamin B12, Biotin and Pantothenic acid to the body.

## UNIT III

MACRO MINERALS- Calcium, Phosphorous, Magnesium, Potassium, Sodium and Chloride- Distribution in the body; functions, effects of deficiency, food sources and RDA.

MICRO / TRACE MINERALS in human nutrition - Iron, Zinc, Fluoride and Copper Distribution in the body; functions, effects of deficiency, food sources and requirements for different age groups.

## UNIT IV

ULTRATRACE MINERALS- Iodine, Selenium, Manganese, Chromium, Molybdenum and Cobalt.

Distribution in the body; functions, effects of deficiency, food sources and requirements. Selenium and Vitamin E relationship.

Chromium and glucose tolerance factor.

## UNIT V

**WATER** – as a nutrient, functions, sources, requirements. Distribution of water in the body, exchange of water in the body, composition of body fluids, water exchange between plasma and interstitial fluid. Water imbalance – dehydration- water intoxication, water and electrolyte mechanism - ADH , vasopressin.

## LEARNING OUTCOMES

1. Learn the nutritional importance of the water in human health.
2. Able to conceptualize, implement and evaluate the functions, metabolism, requirements and effects of deficiency of micronutrients.
3. Understand the role of food and nutrients in health and disease prevention.

## **REFERENCES**

1. Guthrie H.A. – Introductory Nutrition C.V. Mosby Co. St. Louis.
2. Bogert, J.G.V. Briggs, D.H. Calloway Nutrition and physical fitness (1985), 11<sup>th</sup> edition  
– W.B. Saunders Co., Philadelphia, London, Toronto.
3. Wardlaw, G.M. Insel, P.H. – Perspectives in Nutrition (1990) Times Mirror / MosbyCollege Publishing Co. St. Louis, Toronto, Boston.
4. William, S.R. – Nutrition and Diet Therapy (1985) 5<sup>th</sup> edition, Mosbey Co. St. Louis.

5. M. Swaminathan “Principles of Nutrition and Dietetics”, 1993, Bappco 88, Mysore Road, Bangalore-560 018.
6. Maurice E. Shils, James A. Olson, Moshe Shike “Modern Nutrition in health and disease” (1994) eighth edition, Vol. I & II Lea & febiger Philadelphia, A waverly Company.

#### **PO-CO Mapping**

<b>CO/PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1</b>	M	S	M	M	S
<b>CO2</b>	S	S	S	S	S
<b>CO3</b>	S	S	S	S	S
<b>CO4</b>	S	S	S	S	S
<b>CO5</b>	S	S	S	S	S

KEY: S – Strong, M – Medium, L – Low

**SUBJECT: SPORTS NUTRITION YEAR/SEMESTER: III/V**

**HOURS: Theory-4 hrs Practicals-2 hrs**

#### **LEARNING OBJECTIVES**

- To find out the sources of energy for muscle and force generation.
- To learn about the importance of nutrition in sports personnel
- to know about the ergogenic aids and supplements available in the market

#### **SYLLABUS**

##### **UNIT 1**

Fuel Sources for Muscle and Exercise Metabolism Sources of energy for muscle force generation – fuel stores on skeletal muscle – energy pathways – regulation of energy metabolism – metabolic response to exercise – metabolic adaptation to exercise training – factors influencing choice of fuels – Components of energy expenditure – energy balance.

##### **UNIT 2**

Macro and Micro Nutrients in Sports Nutrition Role of carbohydrates before, during and after exercise – carbohydrates loading – protein requirements for exercise – techniques to study protein and amino acid metabolism – effect of protein intake on protein synthesis – amino acids as ergogenic aids – health risks with excessive protein intake – Fat as a fuel during exercise – fat supplementation and exercise supplements that increase aft oxidation. Micronutrients – role of antioxidants – essential function of vitamins and minerals for athletes, ergogenic effect Water – thermoregulation and exercise in the heat – effect of dehydration in exercise performance – heat illness – fluid guidelines before, during and after exercise.

### **UNIT 3**

Weight Management and Body Composition Weight management- Ideal body weight and composition – weight loss – making weight and rapid weight loss strategies Eating disorders – types, prevalence, risk factors, effect on sports performance, treatment and prevention Body composition analysis-importance of body composition, different techniques-normative values for comparison.

### **UNIT 4**

Practical Sports Nutrition Pre event and post event meal- preparing for competition, dealing with cramps, stitch GI distress electrolyte balance-sports drinks Eating for anaerobic power-aerobic power timing of meals and snacks-guidelines for the travelling athlete-recovery food Food for power sports, endurance sports, combined power Nutrition for special population: child athlete, ageing athlete, athletic diabetes, vegetarian and disabled athlete.

### **UNIT 5**

Ergogenic aids and supplements Overview of supplements and sports foods – use of performance enhancing substances among athletes – finding proof of efficacy of supplements and sports foods-anabolic steroids-sports foods (cereal bar, sports drinks, carbohydrate gels, liquid meal replacements, vitamins)-different types of protein supplements, creatine, glutamine, BCAA, HMB, caffeine, glycerol, bicarbonate, citrate – WADA-Anti doping rules and regulations.

## **PRACTICALS**

1. Body fat analysis-learn to use skin fold calipers, bio electrical impedance analysis technique. Observe DEXA analysis.
2. Measurement of Blood pressure, heart rate, calculate METs, VO<sub>2</sub> max
3. Learn to take whole body measurements from a certified fitness trainer using a measuring tape
4. Observe fitness testing methods by a sports physiotherapist or certified fitness trainer- to measure cardio vascular fitness, core strength, muscular endurance, explosive power, flexibility, agility, stability, strength, speed
5. Planning diets for strength sports, endurance sports, racquet sports, team games
6. Planning diets for competition, recovery (case studies)
7. Assignment on sports foods and supplements available in the market
8. Guest lecture by a sports nutritionist, fitness trainer, sports physician or physiotherapist on career opportunities
9. Attend a sports tournament-swimming or tennis or hockey or cricket or track and field sports etc.



## **LEARNING OUTCOMES**

On completion of the course, the students will be able to:

- Demonstrate an understanding of the basic principles associated with sports nutrition.
- Use sports supplements judiciously to enhance sports performance.
- Identify particular dietary trends or eating behaviours to suit the individual athlete.
- Develop an understanding of the importance of incorporating healthy eating guidelines to select the right foods and supplements for specific sports, activities and health conditions.
- Apply a working knowledge of nutrition and food components and the beneficial or deleterious effects of food on the human body with particular emphasis on sporting performance and lifestyle.

## **REFERENCES**

Jordan P (Ed), Fitness Theory and Practice- The comprehensive Resource for fitness Instructors, Sherman Oaks, California, 1997.

Crossley.J., Personal Training and Practice, Hodder Arnold, London, 2009.

Glendhill.A. Mulligan, C.Saffer#y, Sutton.J & Taylor.R., Sports and Exercise Sciences, McLanie Gray & Felicity Kendall, Heinemann, Oxford, 2007.

Macedinio. MA, Dunford M, The Athlete's Guide to making weight- Optimal weight for Optimal performance, Human kinetics, 2009.

Singh V & Bhadana OP, Physical Fitness and Training, Sports Publication, New Delhi, 2010.  
 Wadsworth A., Cardiovascular Training for Fitness, Anness publishing limited, 2010.  
 Lal Priti Rishi, Nutritional recommendations for sports persons- A Review, J.Indian Dietetic association,, 31, 2006.  
 Bean Anita, The Complete Guide to Sports Nutrition, A7C Black Publishers Limited, London, 2009.  
 Position of the American Dietetic association, Dietitians of Canada and the Americal College of Sports medicine: Nutrition and Athletic Performance, J Am diet Assc., 109, 2009.  
 B Srilakshmi, V Suganthi, C Kalaivani Ashok, Exercise Physiology and Sports Nutrition, New Age International publishers, 2017.

**Web Resources**

American College of Sports Medicine- [www.acsm.org](http://www.acsm.org)  
 Centre for disease control and prevention- [www.cdc.gov/ncdphp/ndpa](http://www.cdc.gov/ncdphp/ndpa)  
 Sports, cardiovascular and wellness Nutrition Dietetics Practice group- [www.scandpg.org](http://www.scandpg.org)  
 Exercise Physiology [www.ncbi.nlm.nih.gov/PubMed/](http://www.ncbi.nlm.nih.gov/PubMed/)

**MAPPING-COURSE OBJECTIVES WITH PROGRAMME OUTCOME**

<b>CO/PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1</b>	S	S	S	L	S
<b>CO2</b>	S	S	S	L	S
<b>CO3</b>	S	S	S	L	S
<b>CO4</b>	S	S	S	L	S
<b>CO5</b>	S	S	S	L	S

Key: S-Strong, M-Medium/Moderate, L-Low

**Department of Home Science**

**Class: III Year/ V Semester**

**Hours: 6/week**

**Subject: Fundamentals of Textiles (TEL5A)**

Objectives:

To help the students

1. Study the science of Textiles and use this knowledge in wise buying
2. Learn how to operate sewing machine and also to repair it.
3. Learn different Embroidery stitches and other basic stitches for garment construction.
4. Learn different types of stitches using sewing machine and also hand stitch method.

UNIT - I Fiber study

- (a) Classification of fibers – study of properties common to protein, cellulose, mineral and thermoplastic fibers.
- (b) Manufacture, uses and properties of Cotton, Jute, Viscose Rayon, Wool, Silk, Nylon, Terylene and Acrylic.

UNIT – II

Yarn processing: Steps involved in processing cotton yarns – classification of yarns based on direction of twist, count – simple and novelty yarns.

UNIT – III

Techniques of clothing construction

- a) Selection, use and care of sewing machine and sewing tools.
- b) Study of basic hand stitches-temporary and permanent.
- c) Seams and seam finishes.
- d) Methods of introducing fullness into a fabric-darts, tucks, pleats and gathers.

UNIT IV –

Principles of Pattern Making:

- a) Steps in preparing the basic bodice, sleeve and skirt pattern for children and adult women based on body measurements.
- b) Steps in fabric preparation.

- c) Pattern Layout.
- d) Methods of transferring pattern markings on to a fabric.

#### UNIT V –

Fabric Embellishment a) Embroidery b) Applique c) Sequince and Zari work

#### PRACTICALS:

1. Sewing process: a) Hand stitches – temporary and permanent.
  - b) Seam and seam finishes
  - c) Preparation and application of true bias, bias facing, shaped facing & biasbinding
  - d) Plackets and opening – continuous placket, bound & faced placket.
2. Garment construction: a) Saree petticoat b) Apron / Jabala.

#### Learning Outcome:

Student will be able to

- Identify and select fabric of their own choice for different use.
- Do Embroidery for their own use and can get orders to do the business and also teach others embroidery skills.
- Do the repair of sewing machine by themselves and construct garment using sewing machine.

#### REFERENCES:

1. Hess (1961). Textile Fiber and their use. Lippincot co., Newyork
2. Joseph, M.L., (1977). Introductory Textiles Science, Rinehart and Winston NewYork. 3rd Edition.
3. Potter and Corbman, (1985). Fiber to Fabric. Mc. Graw Hill book Co. New York.
4. Harry Mathews-Practical Clothing Construction Part-I and Part-II, Cosmic press(1966)
5. Allyne Bane, “Creative Sewing”, Mc .Graw and Hill book Company (1980)
6. Marry Mathews- Practical Clothing Construction-Part-I, Basic Sewing processes.(1974) Bhattarams Reprographics (p) Ltd. Chennai-41.
9. W.S.Murphy, (2000) preparation of Textile Fiber, Abhishek publications S.C.O.57-59,sector-17c Chandigarh-17, India.
10. Sara J.Kadolph (2009), Textiles Dorling Kindersley India Pvt Ltd, New Delhi.
11. DeepaliRastogi and Sheetal Chopra, Textile Science (2017), Orient Black swan PvtLtd, yashprintographics,Noida.

### PO-CO MAPPING

<b>CO/PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>C01</b>	S	M	S	S	S
<b>C02</b>	S	S	S	M	S
<b>C03</b>	M	M	S	S	S
<b>C04</b>	S	M	S	S	S
<b>C05</b>	M	S	M	S	M

**ANNA ADARSH COLLEGE FOR WOMEN  
DEPARTMENT OF HOMESCIENCE**

**CORE-XIII: PRINCIPLES OF RESOURCE MANAGEMENT  
(Common paper to B.Sc.Home Science – Interior Design and Décor)**

**Time/Hrs: Theory: 6 Hrs**

**Year III**

**Credits: 4**

**Semester: VI**

**Subject Code:TAL6A**

**COURSE OBJECTIVES:**

To enable the students to

1. Understand the concepts, principles and significance of resource management.
2. Apply the principles in the management of resources.
3. Acquire Knowledge in work simplification

**LEARNING OUTCOMES:**

The student will be able to

1. Identify the resources and factors influencing the use of resources.
2. Understand use of tools in time management in day to day life.
3. Apply work simplification techniques while planning work.
4. Develop skills to draw a budget within the available income and to maintain accounts.
5. Manage efficiently the available resources during residence stay.

**SYLLABUS**

**UNIT I**

Concept of resource management- Definition, Management Process- Planning, Controlling- Energising, Adjusting, Checking- Supervision- Directing and Guiding, Evaluating, Qualities of A Good Manager.

**UNIT II**

Managerial Inputs - Values, Goals, Standards and Resources - Meaning and classification, optimizing the use of family resources, Factors affecting the use of resources. Decision making - Meaning and its importance, Types of decisions, Decision making process, Methods of resolving conflicts.

**UNIT III**

Time Management- Time plans, Tools in time management- Time norms, Peak loads, Work Curves and rest periods, Time management process - Planning - Steps in making time plans - Controlling the planning action - Evaluation.

## UNIT IV

Energy Management - The efforts required in home-making activities, Energy requirements for household activities, Fatigue-concepts, Types - Physiological and Psychological fatigue and Managerial process applied to energy. Work Simplification - Definition, Importance, Techniques - Process chart, Operation chart, Multiman chart and cycle graph techniques - Mundel's Classes of change - Planning efficient work areas-kitchen.

## UNIT V

Money Management - Family Income - Types, sources and methods of augmenting family income. Family Expenditure - Budget - Meaning - Types of budget, Planning a budget for a family of a fixed income, Hotel / Restaurant, advantages of budgeting, Factors affecting family budget, Engel's law of consumption, methods of handling money - Family financial records.

## PRACTICALS

1. Identification of managerial activities performed at home.
2. Identification of personal and family values and goals.
3. Time expenditure pattern of selected groups.
4. Techniques to study work simplification.
5. Kitchen planning and storage - convenient work heights - types.
6. Formulation of budgets for family and for a department

## REFERENCES

1. Rao, P.S., and Rao, V.S.P., (1997) Personnel Human Resource Management. New Delhi, Konark Publishers Pvt., Ltd.
2. Aswathappa, K. (1997) Human Resource and Personnel Management. New Delhi, Tata McGraw Hill Publishing Company
3. VenkataRatnam, C.S. and Srivatsava, B.K., (1999) Personnel Management and Human Resources New Delhi. Tata McGraw Hill Company.
4. Salyadain, M.S., (1999) Human Resource Management. New Delhi, Tata McGraw Hill Publishing Company Limited.
5. Deacon, R., and Fire Baugh, (1981) Family Resource Management, U.S.A.
6. Varghese M.A, Ogale N.N, Srinivasan.K, Home Management
7. Gross& Crandall, Management In Modern Families(1963)
8. PremavathySeetharaman, Sonia Batra, PreetiMehra, An Introduction To Family Resource Management(April 6, 2019)
9. Nickell Dorsey, Management And Family Living(June 1, 1976)

## WEB LINKS:

- <http://www.yourarticlelibrary.com/decision-making/decision-making-in-managementdefinition-and-features-explained/25657/>
- <http://www.familyresourcemanagement.org/services/goals/>

- <http://www.familyresourcemanagement.org/services/standards/>
- [http://www.nios.ac.in/media/documents/sechmscicour/english/home%20science%20\(eng\)%20ch-15.pdf](http://www.nios.ac.in/media/documents/sechmscicour/english/home%20science%20(eng)%20ch-15.pdf)
- <https://books.google.co.in/books?id=NJkrzK3CgisC&pg=PA149&lpg=PA149&dq=time,+energy,+money+as+resource+in+management&source=bl&ots=xmSpLDkia&sig=57qLKHx2UX3sznBIJhm>

### PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	S
CO2	S	S	M	S	S
CO3	S	S	S	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low



## **CORE PAPER XIV- FOOD SERVICE MANAGEMENT – II (TAL6B)**

**YEAR/ SEMESTER: III/ VI**

**HOURS: 4 + 2 / Week**

### **LEARNING OBJECTIVES:**

1. To understand the applications of basic principles to bulk production of the food
2. To gain knowledge regarding selection and purchase of food
3. To develop skills in menu planning for quality preparation
4. To understand the different styles of food service in volume feeding
5. To gain knowledge of food service layout
6. To gain knowledge to develop skills in handling equipment and maintenance

### **UNIT I- Equipment in food service**

Classification of equipment, factors affecting selection of equipments-electrical and nonelectrical equipment for food storage, preparation, service and dishwashing Base materials and insulating materials

### **UNIT II - Planning of Food Service unit**

Layout of food plants, different work area, planning of storage, production and service areas.  
Lighting and ventilation.

### **UNIT III - Menu planning**

Definition, types, menu planning for various sectors and institutions, health safety in menu planning, standardization of recipes, portion control. Types of food and beverage services.

### **UNIT IV**

Sanitation and safety in food service institutions, garbage disposal, pest control.

### **UNIT V**

FSSAI (Food safety standard authority of India), HACCP , Entrepreneurial ship in catering.

## **LEARNING OUTCOMES**

1. To assess the use of equipment in food service and make wise purchase decision.
2. Plan and sketch layouts for different types of establishments
3. Develop skills to become a successful entrepreneur in the food industry.

## **PRACTICALS**

1. Standardization of four selected recipes from each of the following cuisines-South Indian North Indian, East Indian and West Indian.
2. Organizing, preparing and serving food for three different meals for 50 members or more (list attached)
3. Setting up the restaurant-laying of table cloth changing, setting up the silver and other table arrangements. Folding of serviettes correct use of waiter's cloth. Preparation for customers.
4. Serving and clearing practice, French and English Service.
5. Service of beverage tea, coffee, juices and alcoholic beverages.
6. Laying for breakfast.
7. Tray service.
8. Order taking, making out checks bills presentation of bills.
9. Up keep and cleaning of cutlery, crockery, other equipment.

## **REFERENCES:**

1. Dhawan, V. (2017) *Food and beverage service*. Chennai: Frank bros & co.
2. Seal, P.P. (2015) *Computers in hotels: Concepts and applications*. New Delhi: Oxford university press.
3. West & Wood (2000) *Food service in institutions*. New york : Wiley eastern limited.
4. Sethi, M & Malhan, S. (2011) *Catering mangement – An integrated approach*. New Delhi: New age international publishers.
5. Cousins, J & Lillicrap, D & Weekes, S (2014) *Food and beverage service*. Hodder education.
6. Suganthi, V. & Premakumari. C (2017) *Textbook on Food service management*. Chennai : Dipti publishers.

7. Palacio, J.P & Theis, M (2011). *Food service management : principles and practices. Food hygiene and sanitation.* Pearsons publishers.

8. Sudhir Andrews (2008). *Text book of Food and Beverage Management.* McGraw Hill Company Ltd.,New Delhi.

#### PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	M	S
CO3	S	S	S	M	S
CO4	S	S	S	M	S
CO5	S	S	S	M	S

Key: S-Strong, M-Medium/Moderate, L-Low

**ANNA ADARSH COLLEGE FOR  
WOMEN DEPARTMENT OF  
HOMESCIENCE**

**CORE PAPER XV- PRINCIPLES OF INTERIOR DECORATION**

Hours : Theory: 6 Hrs

Year :3

Subject Code: TAL6C

Semester: 6

**OBJECTIVES**

To enable students to

1. Gain understanding of the basic art principles.
2. Learn to apply colour in the interiors.
3. Understand the basic Principles of House Keeping.
4. Prepare for housekeeping jobs.

**Syllabus:**

**UNIT I**

Art in daily living - importance of good taste objectives of interior design. Design - elements of design - line, shape, size, space, texture, pattern, colour and light, Types and Characteristics of design, Principles of design - Harmony, Balance, Rhythm, Proportion, Emphasis.

**UNIT II**

Colour - Qualities of colour - Hue, value, and intensity, Colour harmony, developing colour schemes for different rooms.

**UNIT III**

Furniture and Furnishings - selection and arrangement of furniture in different rooms. Different types of furnishing materials - Factors considered in their selection. Floor coverings, Curtains and draperies, Window treatment.

**UNIT IV**

Accessories - Selection, Use and Care of accessories, Types - traditional and modern - art objects - pictures, flower arrangement-Types, use and care-Flower arrangement for different rooms. Indoor plants-use and care

**UNIT V**

Lighting - Importance of lighting - Principles and types of Lighting - Lighting needs for various activities.

**PRACTICAL**

- I. Analysis design for their qualities
- II. Arranging various areas using the different principles of design 42

- III. Special area arrangement-Hotels, Restaurant, Auditoriums, Airports etc.
- IV. Harmonious combination of colour in different areas

**LEARNING OUTCOME** – At the end of the course the students will be able to

1. Create understanding of the basic art principles.
2. Apply color harmony in the interior.
3. Selection, Use and Care of Furniture, Furnishings and Accessories.
4. Understand the basic Principles of House Keeping.
5. Prepare for housekeeping jobs.

## **REFERENCES**

1. Gilliat, M., Mix and Match Decorating Book. Dover Publishing Inc: New York, U.S.A.
2. Harry, N. The California Home Book. Pub, Abrams Inc (N.Y).
3. Form Design and More Attractive City Environment. Pub. Chamber of Commerce. U.S.A.
4. Mike Lawrence. The Complete Home Decorator by (Pub) Chat well Books New Jersey.
5. Goldstein. Art in Everyday Life. Oxford and IBH Publishing House.
6. Ray and Sarah Faulker. Inside Today's Home Harcourt Brace & Company, U.S.A.
7. Barbara Aria. Nursery Design-Pub. Bantam Book, New York.
8. Caroline Clifton . The Complete Home Decorator. Portland House, New York

## **Web references:**

<https://www.colormatters.com/color-and-design/basic-color-theory>

[https://artclever.com/books/The\\_Fundamentals\\_of\\_Interior\\_Design.pdf](https://artclever.com/books/The_Fundamentals_of_Interior_Design.pdf)

[https://extension.tennessee.edu/Rutherford/Documents/Homegrown%20Bouquets%20Principles\\_of\\_Floral\\_Arrangement%2008.05.16.pdf](https://extension.tennessee.edu/Rutherford/Documents/Homegrown%20Bouquets%20Principles_of_Floral_Arrangement%2008.05.16.pdf)

<https://bouqs.com/blog/flower-arrangement-basics/>

<https://www.resortdata.com/housekeeping-management/>

### PO-CO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	S	S	L	S
CO3	M	M	S	S	S
CO4	S	S	S	S	S
CO5	M	S	M	S	M

Key: S-Strong, M-Medium/Moderate, L-Low

Department of Home Science

**Class: III Year/ VI Semester**

**Hours: 6/week**

**Subject: Health Psychology (TEL6A)**

Objectives:

To help the students:

OBJECTIVES:

1. To understand the basic concepts of Human behavior and Health Psychology
2. Study the psychological and other psycho social sectors that affect health
3. Understand the interrelationship between Nutrition and Psycho social disorders.
4. To understand the special needs and health challenges of the human life cycle.
- 5) To familiarize with the health promoting treatment and inventions in health psychology.

Syllabus:

UNIT I

Foundation of Health Psychology Health and health psychology-health and illness-trends that shape health psychology perspectives in health psychology.

UNIT II

Stress and Health Stress-measurement-

Physiology of stress-sources-psychological factors in stress-stress response factors affecting the ability to cope stress management.

UNIT III

Health psychology through life span Childhood and adolescence-childhood nutrition, childhood obesity, adolescents and risk taking interventions, adulthood and ageing theories of ageing life style and aging.

## UNIT IV

Nutrition and Illness Nutrition-obesity-treatment-eating disorders-substance abuse- alcoholism and tobacco abuse, chronic and life threatening illness-Psychological factors in cardio vascular disease, managing stress following CVD, Health psychology and diabetes, coping with cancer, Intervention strategy for AIDS, Coping with AIDS or HIV

UNIT V Intervention Strategies Applications of principle of counseling and psychotherapy in disease management and health care. Relaxation technique, somatic oriented cognitive and behavioral skills in the management of diseases. Support group-family counseling, alternative healing systems.

Learning Outcome:

Student will be able to:

- Able to understand the psychological aspects of Health which will be able to understand and help others in holistic approach while prescribing diet to the patient.
- Know how to manage the stress using different techniques.
- Counsel the patient how to cope up with disease to lead life successfully.

## REFERENCES

- 1) Taylor.S.E. (1995), "Health Psychology", McGraw Hill Inc, New York.
- 2) Richard. O: Straub (2002) "Health Psychology", Worth Publishers, New York.
- 3) Ogden. J. (2000). "Health Psychology", 2nd Ed., open University Press, U.K
- 4) Tones. K and Tillofrd. S (2001), "Health Promotopn Effectiveness-Efficiency ardEquity", 3 Ed., Nelson theories Ltd., U.K.



**PO-CO MAPPING**

<b>CO/PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1</b>	S	M	S	S	S
<b>CO2</b>	S	S	S	L	S
<b>CO3</b>	S	S	S	S	S
<b>CO4</b>	S	S	S	S	S
<b>CO5</b>	M	S	S	S	S

Key: S-Strong, M-Medium/Moderate, L-Low

**ELECTIVE PAPER III - HUMAN DEVELOPMENT-II**  
**(Development from Adulthood through Old age)**

**III YEAR/VI SEMESTER**

**Hours: 4+2**

**LEARNING OBJECTIVES:**

To enable students

1. to understand the developmental tasks and various developments during adulthood till old age
2. to impart knowledge on family and its related issues and to create an awareness on marriage and adjustments in family life cycle
3. to create awareness about the differently abled.

**UNIT I**

**Adulthood (18 - 60 years)**

Characteristics and developmental tasks. All aspects of development and vocational adjustments.

**UNIT II**

**Marriage and family**

- a. Characteristics and developmental tasks. - Types of family-Indian, traditional and modern.
- b. Functions of family and marriage, motives of marriage, marriage and family as a basic social institution.
- c. Adjustment in marriage-adjustment towards mate, sex, finance, society and in-laws
- d. Family life cycle-Stages-beginning family, expanding family, contracting family; adjustment in different stages.
- e. Crisis in the family-critical family situations and its impact on children.
- f. Maternal and Paternal deprivation and their effect on child growth and development
- g. Paternal attitudes and their influence on their children; styles of parenting.
- h. Small family norms-concepts, advantages and limitations.

**UNIT III**

**Pregnancy and Prenatal Development**

- a. Conception-test tube baby, periods of prenatal development, factors affecting prenatal development, prenatal care. '
- b. Management of normal pregnancy - hygiene, diet and medical supervision. Common discomforts and hazards during pregnancy; birth process-signs of

labour, stages of labour, types of birth, birth injuries.

- c. Post natal care, normal puerperium; prevention of gynecological complications. Adjustments of the newborn to temperature, breathing, feeding and elimination.

#### **UNIT IV**

##### **Introduction to Children with Special Needs**

- a. Gifted children
- b. Mentally retarded
- c. Visually handicapped
- d. Orthopedically challenged
- e. Hearing impaired
- f. Learning disability

#### **UNIT V**

##### **Old age**

Characteristics of old age, Physical changes and Psychological changes.  
Place of the aged in Indian Society.

#### **PRACTICALS**

1. Preparation of case study, observing various development-physical and motor, social emotional and intellectual-of a particular child.
2. Socio-metric study of adolescents.
3. A survey on preferences of adolescents in choosing a life partner.
4. Visit to an institution for exceptional children.
5. Survey on problems of old age.

#### **LEARNING OUTCOMES:**

On completion of this course, successful students will

1. have better knowledge and understanding of the developmental stages and problems faced during adulthood.
2. attain knowledge in life-span human development and family science
3. have the ability to plan and evaluate the interpersonal skills and intervention strategies to enhance the development of an effective relationship.
4. gain competence to lead a successful marital life.
5. develop awareness about the problems and role of the elderly in the society.

**REFERENCE:**

- i. *John W. Santrock. Lifespan development.*
- ii. *Prof. Chaube S. P. Developmental psychology.*
- iii. *Carol K. Sigelmon. et al. Human development.*
- iv. *Rajammal P. Devdas, Jaya N. Textbook of child development.*
- v. *Dr. Sushila Srivatsav, Dr. K. Sudha Rani. Textbook of human development.*
- vi. *Elizabeth B. Hurlock. Developmental psychology – A lifespan approach.*
- vii. *Kapadia K. M. Marriage and family in India.*
- viii. *Chintamani Kar. Exceptional children – Their Psychology and education.*
- ix. *Dash M. Education of exceptional children.*
- x. <https://nijp.org/education-and-training-of-differently-abled-children/>

**PO-CO MAPPING**

<b>CO/PO</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1</b>	S	S	S	S	S
<b>CO2</b>	S	S	S	L	S
<b>CO3</b>	S	S	S	S	S
<b>CO4</b>	S	S	S	S	S
<b>CO5</b>	M	S	M	S	M

Key: S-Strong, M-Medium/Moderate, L-Low

## INTERNAL ASSESSMENT PROCEDURE

- For all Language, Major, Allied, Elective, Value Education, EVS and Non Major Elective the assessment procedure is **25% of Internals** (conducted by college) and **75% of Externals** (University Examination).
- The assessment procedure for Practicals is **40% of Internals** (conducted by college) and **60% of Externals** (University Examination).
- For professional English and Soft Skills the assessment procedure is **50% of Internals** (conducted by college) and **50% of Externals** (University Examination).

## RUBRICS

### CIA ASSESSMENT SPLIT UP (INTERNALS)

Assessment Procedure	Rubrics (Parameter)	Marks
Assignment	Creativity, relevance to the topic	5
Seminar	Communication skills, way of presentation	5
Internal Test	Student's performance in the written test	5
Model Exam	Student's performance in the written test	5
Attendance	Above 95%-5; 84-94%-4; 75-84%-3; 65-74%-2; Less than 65%-1	5
	<b>Total</b>	<b>25</b>

## EXTERNAL EXAM QUESTION PAPER PATTERN

Time 3 Hours

SUBJECT NAME	MARKS	TOTAL	SPECIAL INSTRUCTION IF ANY
<b>All Major and Allied Subjects</b>			
Sec A	10 out of 12 Questions (10x2)	20	Nil
Sec B	5 out of 7 Questions (5x5)	25	Nil
Sec C	3 out of 5 Questions	30	Nil
	<b>Total</b>	<b>75</b>	

*Suganthi V*

Signature of the HOD

*R. Shanthi*

Signature of the Principal