B.Sc. NUTRITION AND DIETETICS

SEM	COURSE CODE	PART	COURSE	COURSE TITLE	HRS/ WEEK	CREDIT	CIA MARKS	SE MARKS	TOTAL MARKS
I	14U1LT1/LA1/ LF1/LH1/LU1	I	Language I		6	3	40	60	100
	14 UCN1E1	II	English I		6	3	40	60	100
	14 UND 1A1	III	Allied I	Fundamentals of Microbiology	5	2	20	30	50
	14 UND 1A1P	III	Allied I	Fundamentals of Microbiology - Practical	3	2	20	30	50
	14 UND 1C1	III	Core I	Food Science	4	4	40	60	100
	14 UND 1M1P	III	Major Based Elective – I	Food Science - Practical	3	3	40	60	100
	14 UCN 1VE	IV	Value Education	Value Education	3	3	40	60	100
TOTAL					**30**	**20**	**240**	**360**	**600**
II	14U2LT2/LA2/ LF1/LH2/LU2	I	Language II		6	3	40	60	100
	14 UCN 2E2	II	English II		6	3	40	60	100
	14 UND 2A2	III	Allied II	Basic Chemistry	4	2	20	30	50
	14 UND 2A2P	III	Allied II	Basic Chemistry- Practical	3	2	20	30	50
	14 UND 2C2	III	Core II	Principles of Nutrition	4	4	40	60	100
	14 UND 2M2P	III	Major Based Elective – II	Principles of Nutrition - Practical	3	3	40	60	100
	14 UND 2N1	IV	Non-Major Elective – I #		2	2	40	60	100
	14 UCN 2ES	IV	Environmental Studies	Environmental Studies	2	2	40	60	100
TOTAL					**30**	**21**	**280**	**420**	**700**
III	14U3LT3/LA3/ LF3/LH3/LU3	I	Language III		6	3	40	60	100
	14 UCN 3E3	II	English III		6	3	40	60	100
	14 UND 3A3	III	Allied III	Nutritional Biochemistry	4	2	20	30	50
	14 UND 3A3P	III	Allied III	Nutritional Biochemistry - Practical	3	2	20	30	50
	14 UND 3C3	III	Core III	Nutrition through Life Cycle	4	4	40	60	100
	14 UND 3M3P	III	Major Based Elective – III	Nutrition through Life Cycle - Practical	3	3	40	60	100
	14 UND 3N2	IV	Non-Major Elective – II #		2	2	40	60	100
	14 UCN 3S1	IV	Skill Based Elective – I	Soft Skills	2	2	40	60	100
TOTAL					**30**	**21**	**280**	**420**	**700**
IV	14U4LT4/LA4/ LF4/LH4/LU4	I	Language IV		6	3	40	60	100
	14 UCN 4E4	II	English IV		6	3	40	60	100
	14 UND 4A4	III	Allied IV	Human Physiology	5	2	20	30	50
	14 UND 4A4P	III	Allied IV	Human Physiology - Practical	3	2	20	30	50
	14 UND 4C4	III	Core IV	Diet Therapy -I	4	4	40	60	100
	14 UND 4C5P	III	Core V	Diet Therapy I - Practical	4	4	40	60	100
	14 UND 4S2	IV	Skill Based Elective - II	Fundamentals of Textiles and Clothing	2	2	40	60	100
	14 UCN 4EA	V	Extension Activities	NCC, NSS, etc.	-	2	-	-	-
	14 UND 4EC1		Extra Credit – I	Hygiene and Sanitation	-	4*	-	100*	100*
	14 UND 4EC2		Extra Credit - II	Kitchen Planning and Equipment	-	4*	-	100*	100*
TOTAL					**30**	**22**	**240**	**360**	**600**
V	14 UND 5C6	III	Core VI	Diet Therapy -II	5	4	40	60	100
	14 UND 5C7P	III	Core VII	Diet Therapy II - Practical	4	4	40	60	100
	14 UND 5C8	III	Core VIII	Food Standards and Quality Control	4	4	40	60	100
	14 UND 5C9	III	Core IX	Quantity Food Production and Service	4	4	40	60	100
	14 UND 5C10	III	Core X	Community Nutrition	4	4	40	60	100
	14 UND 5C11	III	Core XI	Food Preservation	4	4	40	60	100
	14 UND 5M4P	III	Major Based Elective – IV	Food Preservation - Practical	3	3	40	60	100
	14 UND 5S3	IV	Skill Based Elective – III	Basics in Computer	2	2	40	60	100
	14 UND 5EC3		Extra Credit – III	Entrepreneurship Management	-	4*	-	100*	100*
TOTAL					**30**	**29**	**320**	**480**	**800**
VI	14 UND 6C12	III	Core XII	Food Service Management	5	4	40	60	100
	14 UND 6C13P	III	Core XIII	Food Service Management- Practical	5	4	40	60	100
	14 UND 6C14	III	Core XIV	Human Development	5	4	40	60	100
	14 UND 6C15	III	Core XV	Community Development	4	4	40	60	100
	14 UND 6C16	III	Core XVI	Basics in Bakery	4	4	40	60	100
	14 UND 6C17P	III	Core XVII	Basics in Bakery- Practical	4	4	40	60	100
	14 UND 6S4	IV	Skill Based Elective - IV	Interior Design	2	2	40	60	100
	14 UCN 6GS	V	Gender Studies	Gender Studies	1	1	40	60	100
	14 UND 6EC4		Extra Credit - IV	Food Packaging and Marketing	-	4*	-	100*	100*
TOTAL					**30**	**27**	**320**	**480**	**800**
GRAND TOTAL					**180**	**140**	**1680**	**2520**	**4200**

Non Major Elective Courses offered to the other Departments:

SEM	COURSE TITLE
II	Food and Health
III	Nutrition for the Family

* Not considered for Grand Total and CGPA

SEMESTER- I: ALLIED – I
FUNDAMENTALS OF MICROBIOLOGY

Course Code	**:14UND1A1**	**Max. Marks**	**: 50**
Hours/Week	**: 5**	**Internal Marks**	**: 20**
Credit	**: 2**	**External Marks**	**: 30**

Objectives:

To enable students to

1. Understand the nature and importance of micro-organism in the food.
2. Learn about the various methods used in the prevention and control of microorganisms in the food.
3. Impart the knowledge about the quality of water, milk and food.
4. Aware about public health hazards due to contaminated foods.

UNIT-I **15 hours**

Introduction:

1.1 Microbiology: History, microscope- types and uses, classification of micro-organism.

1.2Bacteria: Morphological characteristics- structure, size, classification based on shape, motility, nutrition, reproduction, respiration. Bacterial diseases and its prevention- cholera, typhoid.

1.3Virus: Morphological characteristics- size, classification, structure, host specificity resistance, replication, viral diseases and its prevention-hepatitis, poliomyelitis.

UNIT – II **15 hours**

Mould, Yeast, Protozoa

2.1Mould: Morphological characteristics – classification, reproduction. Economic importance of mould in industries.Mould diseases and its prevention-mycetoma.

2.2Yeast: Morphological characteristics – size, sources, shapes, classification, reproduction. Economic importance of yeast in industries. Yeast diseases and its prevention-candidosis.

2.3 Protozoa: Morphological characteristics- structure, motility, reproduction. Protozoal diseases- amoebic dysentry, malaria.

UNIT-III **15 hours**

Cultivation and control of micro-organism:

3.1 Cultivation of microorganism: Culture media, culture techniques, staining methods- simple and Gram's method, identification of bacteria.

3.2 Control of microorganism: Sterilisation - definition, methods of sterilization. Disinfection & Disinfectants - definition, uses and different types of disinfectants.

UNIT-IV **15 hours**

Food spoilage:

4.1Spoilage -definition**,** fitness or unfitness of food for consumption, causes of spoilage, classification of foods by ease of spoilage.

4.2 Spoilage in various food stuffs: Cereals and cereal products- flour, bread-

mouldiness, ropiness and red bread, fruits and vegetables products-market diseases, milk and milk products-gas production, proteolysis, colour and flavor changes, meat-spoilage under aerobic and anaerobic conditions, fish-factors influencing the spoilage,egg-changes caused by micro-organisms.

UNIT-V 15 hours

Environmental microbiology:

5.1 Soil microbiology- role of micro-organism in nitrogen fixation cycle.

5.2 Water microbiology- bacteriology of water, test for E.coli, water borne diseases and their control (list only).

5.3 Air microbiology –Droplet infection, airborne diseases and their control (list only).

TEXT BOOKS

1. A.k . Joshua, Microbiology, Fourth Edition, Popular Book Depot Chennai(2001).
2. W.C. Fazier, Food Microbiology, Fourth Edition,TataMcGraw Hill Book Company, New Delhi (2008).
3. Pelczar and Krieg, Microbiology, Fifth Edition,Tata-McGraw Hill Book Co., London (2006).

UNIT I Text book – 1 Chapter – I
Text book – 3 Chapter – I, II, III

UNIT II Text book –1 Chapter – I

UNIT III Text book –1 Chapter – I

UNIT IV Text book – 2 Chapter – IV, XI, XIII, XIV, XV, XVI, XVIII

UNIT V Text book – 1 Chapter – II
Text book – 3 Chapter – XXV, XXVI, XXVII

REFERENCE BOOKS

1. A.J.Salle,Fundamental Principles of bacteriology, Seventh Edition,Tata McGraw Hill Book Company New Delhi (2007).
2. K. Vijaya Ramesh, Food Microbiology,MJP Publishers Chennai (2007).
3. M.R.Adams and M.O.Moss ,Food microbiology, New Age International (P) Ltd., Publishers, New Delhi (2003).

SEMESTER- I: ALLIED– I
FUNDAMENTALS OF MICROBIOLOGY- PRACTICAL

Course Code	**:14UND1A1P**	**Max. Marks**	**: 50**
Hours/Week	**: 3**	**Internal Marks**	**: 20**
Credit	**: 2**	**External Marks**	**: 30**

1. Demonstration of the different parts of microscope, their use and care.
   Study of oil immersion lens.

2. Preparation of Bacterial smears: staining-simple and Gram's staining.

3. Examination of unstained organisms-Hanging drop preparation method.

4. Identification of important bacteria, moulds and yeast in food
   (by using slides/cultures)- E-coli, rhizopus, penicillium, mucor, aspergillus, yeast.

5. Bacteriological examination of milk by methylene blue reduction test.

6. Demonstration of bacterial count in the given sample by using colony counter.

7. Study of sterilization equipments – Autoclave, Hot air oven.

Related Experience: Visit to a microbiology lab.

SEMESTER-I: CORE - I
FOOD SCIENCE

Course Code	**: 14UND1C1**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

Objectives:

1. To know the basic concepts about different foods and nutrients.
2. To develop the scientific attitude of the students towards the principle of food science.
3. To obtain the knowledge of composition and nutritive value of different foods.
4. To know the impact of cooking on various foods.

UNIT-I **12 hours**

Introduction to Food science

1.1 Definition of food and food Science.

1.2 Food groups: basic five, Nutritional classification of foods - energy yielding, body building and protective foods.

1.3 Methods of cooking: moist, dry and combination heat methods of cooking, merits and demerits. #Microwave cooking- principle, merits & demerits#.

UNIT-II **12 hours**

Cereals, Pulses, Nuts and oilseeds

2.1 Cereals:

i. Structure and nutritive value of rice and wheat.
ii. Gelatinization-meaning;
iii. Process of milling (wheat), parboiling and malting; effects of each process.
iv. #Role of cereals in cookery#.

2.2 Pulses and Nuts:

(i) Pulses: composition and nutritive value, factors affecting cooking quality of pulses and germination process and its advantages; #Role of pulses in cookery#.

(ii) Nuts and oil seeds: nutritive value of specific nuts (coconut, groundnut, cashewnut, almonds, gingelly seeds, mustard, soyabean, flax seed) and their importance in cooking.

UNIT-III **12 hours**

Vegetables, Fruits and Sugar

3.1 Vegetables: classification, pigments, effect of alkali, acid medium on the pigments, decontamination of pesticides before cooking and using, changes during cooking of vegetables; #Role of vegetables in cookery#.

3.2 Fruits: classification, nutritive value, changes during ripening of fruits, browning and its prevention.

3.3 Sugar: types of sugar and stages of sugar cookery; meaning of crystallization.

UNIT-IV **12 hours**

Milk, Egg and Fleshy foods

4.1 Milk and Milk Products: composition and nutritive value, different types of milk and milk products and definition of pasteurization.

4.2 Egg: structure, composition and nutritive value, quality of egg, factors affecting foam formation and uses of egg in cookery.

4.3 Fleshy foods:

(i) Meat: composition and nutritive value of meat, cuts of meat, post mortem changes, changes during cooking and tenderness of meat.

(ii) Poultry and Fish: classification, nutritional composition, selection and cooking methods.

UNIT-V **12 hours**

Fats, Beverages and Spices

5.1 Fats and Oils: composition of common fats and oils, smoking temperature, rancidity and role of fats and oils in cookery.

5.2 Beverages: classification, nutritive value - coffee, tea, cocoa, milk based beverages, fruit juices and aerated beverages.

5.3 Spices and condiments –medicinal uses, #role of spices in cookery#.

#.....# Self-Study portion

TEXT BOOKS

1. Srilakshmi, B, "Food science",5th edition,New Age International Pvt. Ltd. Publishers, New Delhi,(2010).
2. Mudambi. S.R, Rao. S.M, & Rajagopal.M.V, "Food Science", New Age International Pvt. Ltd. Publishers, New Delhi, (2007).

UNIT I Text Book 1 Chapter I
Text Book 2 Chapter V

UNIT II Text Book 1 Chapter II, III, IV, XII
Text Book 2 Chapter IX, X

UNIT III Text Book 1 Chapter VIII, IX
Text Book 2 Chapter XII, XIII

UNIT IV Text Book 1 Chapter V, VI, VII
Text Book 2 Chapter X

UNIT V Text Book 1 Chapter X, XI, XII
Text Book 2 Chapter XI, XIV, XV

BOOKS FOR REFERENCE

1. NIIR Board, "Handbook on Fruits, vegetables & Food processing with canning & preservation", 2nd edition, Asia pacific business press inc., Delhi-7.
2. Mudambi, R.S. and Rajagopal, M.Y, "Fundamentals of Food and Nutrition", Wiley Eastern Limited New Delhi, (1991).
3. Potter. N.M.and Birch, G.G., "Food Science", 5th edition, CBS Publishers and Distributors, New Delhi,(2007).
4. Manay. N.S, "Foods – facts and principles", New age International Pvt. Ltd. Publishers,New delhi, (1996).
5. Swaminathan. M, "Food Science and Experimental Foods",Ganesh and Co., Chennai, (1988).
6. Sharma.A, "Text book of Food Science & Technology", 1st edition, International Book Distributing Co., (2006).
7. Roday.R, "Food Science & Nutrition", Oxford University Press, (1999).
8. Jan. S, "Elements of Food Science", New India Publishing Agency, New Delhi-88, (2013).

SEMESTER-I: MAJOR BASED ELECTIVE- I
FOOD SCIENCE - PRACTICAL

Course Code	**: 14UND1M1P**	**Max. Marks**	**: 100**
Hours/Week	**: 3**	**Internal Marks**	**: 40**
Credit	**: 3**	**External Marks**	**: 60**

1. INTRODUCTION TO LABORATORY:

(**a)** Laboratory rules

(b) Familiarising with laboratory equipments, procedure, and learn to weigh food ingredients.

2. CEREALS:

(a) Microscopic examination of structure of various starches.

(b) Preparation of modified starch and their application.

(c) Gluten formation.

(d) Preparation of cereal products using rice, wheat, ragi based on steaming, absorption, pressure cooking and straining methods.

3. PULSES:

(a) Factors affecting cooking quality of pulses- use of hard water, soft water, sodium bi carbonate, vinegar; soaking and pressure cooking.

(b) Preparation of few pulse recipes.

4. VEGETABLES AND FRUITS:

(**a)** Effect of heat and pH on vegetable pigments like: chlorophyll, carotenoids, anthocyanin, anthoxanthin.

(b) Effect of cooking on flavouring compounds of vegetables.

(c) Browning reaction and methods of prevention.

(d) Preparation of vegetable recipes by using the above experiment.

5. MILK COOKERY:

(a) Effect of prolonged heat, acid and enzyme.

(b) Preparation of recipes by using the above experiments.

6. EGG:

(a) Formation and prevention of ferrous sulphide in boiled egg.

(b) Factors affecting poaching of egg- in hot water (3 minutes), in cold water, adding vinegar, tomato juice, sodium chloride.

(c) Factors affecting the whipping quality of egg white- egg white beaten with beater and fork, addition of acids and oil, refrigerated egg.

(d) Preparation of scrambled egg, custard, poached egg and omelettes.

7. SUGAR:

Stages of sugar cookery

8. FATS AND OILS:

(a) Smoking temperature of different fats and oils.

(b) Preparation of few deep fat food products.

9. BEVERAGES:

Preparation and evaluation of

(a) Coffee

(b) Tea

(c) Soup and

(d) Few nourishing beverages (fruit and milk based).

SEMESTER-II: ALLIED–II
BASIC CHEMISTRY

Course Code : 14UND2A2 **Max. Marks : 50**
Hours/Week : 4 **Internal Marks : 20**
Credit : 2 **External Marks : 30**

Objectives

1. To study the importance of fuel gases, fertilizers, alloys and metals, dyes and polymers
2. To understand the geometry of hybridisation
3. To acquire basic knowledge on colloids, pH and buffers**.**

UNIT-I **12 hours**

Industrial chemistry

1.1 Fuel gases: Natural gas,semiwater gas,carburetted water gas,producer gas and oil gas(manufacturing details not needed),LPG(Liquified Petroleum Gas),Indane gas,Biogas-composition,calorific value and uses.

1.2 Fertilizers:Manufacture and uses of ammonium sulphate, ammonium nitrate,urea,super phosphate of lime,,potassium nitrateMicronutrients and their role in plants life. Liquid fertilizers spraying method (any two).

1.3 Isomerism-structural isomerism, stereoisomerism (geometrical & optical isomerism)

UNIT-II **12 hours**

2.1 Co-ordination chemistry-Double salts, Co-ordination compounds,pauling's theory,Applications to $[FeCN_6]^{4-}$,$[Ni(NH_3)_4]^{2+}$ and $[Ni(CN)_4]^{2-}$. Biological role of heamoglobin and EDTA.chelation and applications.Applications of co-ordination compounds.Haemoglobin,EDTA,chlorophyll-applications.

2.2 Drugs: Definition and uses of the following drugs, sulpha drugs, Antibiotics, Antipyretics, Analgesics, Anaesthetics, Antiseptics, and Disinfectants. (structure not necessary).

2.3 Halogenated compounds:

2.4 Solvents: Dichloromethane,chloroform,CCl_4 - one method of preparation for each and uses.

2.5 Insecticide:DDT and BHC-one method of preparation for each and uses.

.Freons- preparation and applications.

UNIT-III **12 hours**

3.1 Types of organic reactions

Addition,Substitution,Elimination,Rearrangement & Polymerisation-Definition &types.

3.2 Hybridisation

Geometry of CH4, C2H6 and C2H4.Aliphatic/Aromatic Differences-structure of Benzene, Aromaticity (Definition only) Typical Substitution reactions of. Benzene like Nitration, Halogenation, Friedal-craft reaction, Alkylation;.Naphthalene-Preparation and uses

3.3 Synthetic Dyes and Polymers

Teflon,polyester,epoxide resins-preparation and uses.Food colours- Definition and PFA,natural colouring matter.coal tar dyes.applications to foods.Dyes-chromophore,auxophore,classification according to applications(Mordant &Vat dyes).

UNIT-IV **12 hours**

4.1 Chemical kinetics

Rate of the reactions,Activation energy,catalysis-Mechanism of catalytic action,autocatalysis.Enzyme catalysis,applications of catalysts.catalytic poisons,catalytic promoters,inhibitors.corrosion and prevention.

4.2 Electrochemistry:Definition of pH-importance,determination by colorimetric method.

4.3 Buffers:Acidic and basic buffers-importance of pH and buffers in the living system.

UNIT-V **12 hours**

5.1 Surface chemistry

True solution,suspension,colloidal solution.sol-preparation.

5.2Emulsion:Definition,types,properties-Brownian movement.

5.3 Gels: Definition,classification,properties Hydration,Imbibition,syneresis,Thixotrophy-application of colloids.

5.4 Electrophoresis,chromatography-principle.Thin layer chromatography and column chromatography-procedure and applications.

5.5 Soaps and Detergents

Soaps-Manufacture by hot process.Detergents- Manufacture,advantages and disadvantages.Mechanism of cleansing agent

TEXT BOOKS:

1. R. Gopalan and S. Sundaram, Allied chemistry, Sultan Chand and Sons, Third Edition, Priya Publication (1994).
2. V.Veeraiyan and A.N.S. Vasudevan, Ancillary chemistry (Part I and II) A.B.C.Publishing Ltd, New Delhi (1995).
3. K.Vaidyanathan, A.Venkateswaran and R.Ramaswamy, Allied Chemistry (Vol I &II) , Priya Publication, Karur (2006).
4. K.Vaidyanathan, A.Venkateswaran, R.Ramaswamy and E. Krishnan, Pharmaceutical Chemistry (Vol I &II) First Edition , Priya Publication, Karur (2009).

UNIT I Text book –3 Chapter – I
Text book –3 Chapter – III

UNIT II Text book – 3 Chapter – I
Text book – 3 Chapter – II
Text book – 4 Chapter – II, III, IV

UNIT III Text book – 3 Chapter – III
Text book – 3 Chapter – III
Text book – 2 Chapter – VI, VII

UNIT IV Text book – 3 Chapter – IV
Text book – 3 Chapter – V

UNIT V Text book – 3 Chapter – IV
Text book – 3 Chapter – I

REFERENCE BOOKS

1. P.L. Soni and Mohan Katyal, Text Book of Inorganic chemistry, Sultan Chand and Sons New Delhi(2005).
2. B.S. Bhal, ArunBahl and G.D.Tuli, Essentials of Physical chemistry, S.Chand and Company Ltd, New Delhi (2008).
3. P.L. Soni and H.M. Chawla, Text Book of organic chemistry, Sultan Chand and Sons, New Delhi(2004).
4. B.R. Puri, L.R. Sharma and K.C. Kalia, Principles of Inorganic chemistry, Vallabh Publication New Delhi (2005).

SEMESTER-II: ALLIED–II
BASIC CHEMISTRY - PRACTICAL

Course Code : 14UND2A2P **Max. Marks : 50**
Hours/Week : 3 **Internal Marks : 20**
Credit : 2 **External Marks : 30**

1. Organic Reactions of the following compounds

a. Glucose d. Aldehyde
b. Urea e. Benzoic acid
c. Aniline f. Phenol

2. Permanganimetry and Acidimetry

a) Estimation of Ferrous sulphate
b) Estimation of Hydrochloric acid
c) Estimation of Oxalic acid.

SEMESTER-II: CORE –II
PRINCIPLES OF NUTRITION

Course Code : 14UND2C2 **Max. Marks : 100**
Hours/Week : 4 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

Objectives :
To enable the students
1.Understand the meaning of nutrition
2. Understand the role of nutrition in human life
3. Increase the ability to overcome deficiency

UNIT-I **16 hours**

Introduction to nutrition and carbohydrates
Definition – Nutrition, Nutrients, Nutritional Status, Health
1.1 Carbohydrates –Nutritional classification, Function, Digestion and Absorption, effects of deficiency, sources and requirements
1.2 Fibre- Definition, Types, Role of fibre in health.

UNIT-II **16 hours**
Protein
2.1 Nutritional Classification, Functions, Digestion and Absorption, Sources and Requirements, Deficiency
2.2 Methods for the determination of protein quality (DC, BV, NPU, NPR and PER)
2.3 Classification of Amino Acids – Essential and Non-essential, Functions and Deficiency

UNIT –III **16 hours**
Lipids
3.1 Lipids - Classification- Functions, Digestion and Absorption, Sources and Requirements, Deficiency
Essential fatty acids – Functions, Sources, Deficiency
3.2 Water
Water – distribution,functions, sources, requirements, dehydration and intoxication

UNIT-IV **16 hours**
Energy
4.1Energy –Units of energy - Calorie, Joule, determination of energy content of foods: Basal Metabolic rate (BMR), Direct and Indirect Method, Determination of BMR (Benedicts oxy calorimeter)
4.2 Thermic effect of food, Specific Dynamic Action of food

UNIT-V **16 hours**

Vitamins and Minerals

5.1Vitamins –

(i) # Fat Soluble Vitamins (A, D, E, K): Functions, Sources, Requirements, Deficiency and Excess #.

(ii) Water Soluble Vitamins(B_1, B_2, B_3, B_4, B_6, B_{12}& C): Functions, Sources, Requirements, Deficiency and Excess

5.2 Minerals – Functions, sources, requirements and Effects of deficiency of Calcium, Phosphorous, Sodium, Potassium, Iron, iodine, Flurorine, Zinc and Magnesium, Interrelationship between macro and micro nutrients

#.....# self - study portion.

TEXT BOOKS

1. B.Srilakshmi, Nutrition Science, Fifth Edition, New Age International (P) Ltd, New Delhi(2008).
2. Ambika Shanmugam, Fundamentals of Biochemistry for Medical Students, Seventh Edition, New Age Publishing Pvt.Ltd., New Delhi (1986).

UNIT I Text book – 1 Chapter – III
Text book – 2 Chapter – I, XVII

UNIT II Text book –1 Chapter – VII
Text book –1 Chapter – VIII
Text book –2 Chapter – III, XXI

UNIT III Text book –1 Chapter – XX, IV
Text book –2 Chapter – II, XIX

UNIT IV Text book – 1 Chapter – V
Text book – 2 Chapter – XXIII

UNIT V Text book – 1 Chapter – IX, X, XI, XII
Text book – 2 Chapter – V, XXV

REFERENCE BOOKS

1. Joshi.A.S, "Nutrition & Dietetics", Third Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, (2010).
2. R. Passmore and M.A. Eastwood, Human Nutrition and Dietetics,8thlanguage book Society/Churchill Livingstone, Hong Kong, (1986).
3. Neiman N. Catherine, Nutrition, Wm. C. Brown Publishers. USA (1990).
4. U. Sathyanarayana and U.Chakrapani, Biochemistry, Third Edition, Uppala Author – Publisher Interlinks, Vijayawada(2010).

SEMESTER-II: MAJOR BASED ELECTIVE- II
PRINCIPLES OF NUTRITION- PRACTICAL

Course Code	**: 14UND2M2P**	**Max. Marks**	**: 100**
Hours/Week	**: 3**	**Internal Marks**	**: 40**
Credit	**: 3**	**External Marks**	**: 60**

1. **Qualitative tests for Carbohydrates, Proteins and Minerals.**

   Qualitative analysis for Carbohydrates in gives food samples.

   a) Monosaccharide – Glucose (commercial Glucose), Fructose (fruit juice)

   b) Disaccharide - Lactose (milk), Sucrose (table sugar)

   c) Polysaccharide - Starch (rice)

2. **Qualitative analysis for protein in given food samples**

   a) Albumin (egg)

   b) Casein (milk)

3. **Qualitative analysis for minerals in given food samples.**

   a) Calcium (ragi)

   b) Iron (red rice flakes)

   c) Phosphorus (ragi)

   d) Magnesium (agathi)

4. Estimation of Moisture content in the given sample. (Hot air oven method)
5. Preparation of ash samples for mineral analysis.
6. Estimation of glucose in grape juice.
7. Estimation of ascorbic acid in raw or cooked cabbage.
8. Demonstration of Iron in drumstick leaves.

SEMESTER- II: NON-MAJOR ELECTIVE – I

FOOD AND HEALTH

Course Code	**: 14UND2N1**	**Max. Marks**	**: 100**
Hours/Week	**: 2**	**Internal Marks**	**: 40**
Credit	**: 2**	**External Marks**	**: 60**

Objectives

To enable non-major students

1. Understand the importance of food and health
2. Know changing health scenario
3. Learn healthy food pattern

UNIT-I **6 hours**

Health and its Promotion:

1.1 Definition of health, **Dimension of health**-physical, mental, emotional, social and spiritual.

1.2Definition-food, nutrition, optimum nutrition.

1.3 Functions of foods- physiological, psychological and social functions.

UNIT-II **6 hours**

Factors affecting Health:

2.1Factors affecting health- physical, psychological, heredity and social environment.

2.2 Stress – Types, stress related diseases and control measures.

UNIT-III **6 hours**

Health and Diet:

3.1 Basic five food groups.

3.2 Balanced diet- definition and objectives, food guide pyramid and its uses, meal planning-principles involved.

3.3Health hazards- consequence of junk food over health, carbonated beverages, healthy eating habits.

UNIT-IV **6 hours**

Role of Food and Exercise in health:

4.1 Sources and beneficial effects of dietary fiber and antioxidants in treating diseases.

4.2 Impact of physical exercise on health.

UNIT-V **6 hours**

Health Education:

5.1 Health education- definition, importance of health education.

5.2 Food Sanitation and Hygiene.

TEXT BOOKS

1. Park, Social and Preventive Medicine,Twentieth edition,Banarsidas Bhanot Publishers (2009).
2. B. Srilakshmi,Dietetics, Fifth edition, New Age International Pvt. Ltd (2010).
3. B. Srilakshmi,Nutrition Science, Fourth edition, New Age International Pvt. Ltd (2010).

UNIT I Text book – 1 Chapter – II

UNIT II Text book –1 Chapter – II

UNIT III Text book –1 Chapter – XI
Text book –2 Chapter – I

UNIT IV Text book – 3 Chapter – XXI
Text book – 2 Chapter – XXIII

UNIT V Text book – 1 Chapter – XX

REFERENCE BOOKS

1. C.Gopalan,Nutritive value of Indian Foods, NIN, Hyderabad (1989).
2. S.R Mudambi and M.V Rajagobal, Nutrition and Therapy, New Age International Pvt. Ltd (2008).
3. E.M Shills,A.J Olson, Shike, Lea and Febiger, Modern Nutrition in Health and Diseases, Lippincott Williams and Wilkins publishing (2006).
4. Mahan, L.K Arlin, M.T Krause's, Food,Nutrition and Diet Therapy, Eleventh Edition, W.B. Saunder Company, London (2000).

SEMESTER-III: ALLIED–III
NUTRITIONAL BIOCHEMISTRY

Course Code : 14UND3A3	**Max. Marks : 50**
Hours/Week : 4	**Internal Marks : 20**
Credit : 2	**External Marks : 30**

Objectives:

To enable the students to

1. Understand the mechanisms adopted by the human body for the regulation of metabolic pathways.
2. Get an insight into interrelations between various metabolic pathways.
3. Become proficient for specialization in nutrition.

UNIT-I **12 hours**

Carbohydrate metabolism

1.1 Glycolysis,Tricarboxylic acid cycle(TCA cycle),Gluconeogenesis,Hexose Monophosphate shunt.

1.2 Disorder of carbohydrate metabolism-Diabetes mellitus.Glucose tolerance test.

UNIT-II **12 hours**

Protein metabolism

2.1 Metabolism of amino acid-Oxidative deamination,transamination,decarboxylation, urea cycle,fate of deaminated amino acids,protein synthesis.

2.2 Inborn errors of aminoacid metabolism-Albuminuria,phenylketonuria,hurtnup disease,cystinuria and Maple syrup disease.

UNIT-III **12 hours**

Lipid metabolism

3.1 Oxidation of fatty acid,synthesis of triglycerides,fatty acids and cholesterol.Role of fat in lipid metabolism. Fate of acetyl CoA.

3.2 Lipoproteins:Types,composition,role and significance in diseases.

3.3 Inborn errors of fat metabolism-Wolman's disease,Gaucher's disease and Niemann- pick disease.

UNIT-IV **12 hours**

Formation of Bile acids

4.1 Formation and functions of Bile acids and bile salts - bile pigments.

4.2 Liver function test:Functions of Liver,Tests based -on metabolic functions,capacity for detoxification, role of enzymes,vitamins and minerals metabolism.

UNIT-V **12 hours**

Basic Clinical Techniques:

5.1 Collection and preservation of blood and urine.Normal and abnormal constituents of urine and blood.

Renal Function Tests:

5.2 Inulin clearance test,urea clearance test,endogenous creatinine clearance ,concentration test,addis test,mosenthal test,urea concentration Text and dye test.

TEXT BOOKS

1. Ambika Shanmugam, Fundamentals of Biochemistry for Medical Students,Seventh Edition, New Age Publishing Pvt.Ltd., New Delhi(1986).

2. A.C. Deb, Fundamentals of Bio chemistry, Fifth Edition , New Central Book Agency(P)td., (1992).

3. U. Sathyanarayana and U. Chakrapani, Textbook of Biochemistry, Third Edition, Books and Allied (P) Ltd, Kolkata(2010).

UNIT I Text book –1 Chapter – XVII

UNIT II Text book – 1 Chapter – XXI, XXII

UNIT III Text book – 1 Chapter – II, XIX, XX

UNIT IV Text book – 1 Chapter – XII, XXVIII

UNIT V Text book – 1 Chapter – XXVII

REFERENCE BOOKS

1. E.S.WestTodd, W.R. Mason and J.T. Van Bruggen, Text book of biochemistry, Fourth Edition, Amerind Publishing Co Pvt Ltd., (1974).
2. T.M. Devlin, Text Book of Biochemistry (with Clinical corrections), Second Edition, John Wiley and sons (1986).
3. S. Ramakrishnan, K.G. Prassanan and R. Rajan, Text book of Medical Bio chemistry, Second Edition, Orient Longman limited (1989).

SEMESTER-III: ALLIED–III
NUTRITIONAL BIOCHEMISTRY - PRACTICAL

Course Code	**: 14UND3A3P**	**Max. Marks**	**: 50**
Hours/Week	**: 3**	**Internal Marks**	**: 20**
Credit	**: 2**	**External Marks**	**: 30**

1. Quantitative analysis of Urine for sugar, protein, Bile pigments, Bile Salts

2. Estimation of Urine Glucose (Benedict's Method)

3. Estimation of Urine Urea (DAM Method)

4. Estimation of Blood Glucose (Folin-WU Method)

5. Estimation of Blood Urea (DAM Method)

6. Estimation of serum cholesterol (Zak's Method)

SEMESTER- III: CORE - III
NUTRITION THROUGH LIFE CYCLE

Course Code	**: 14UND3C3**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

Objectives

To enable the students

1. Understand the nutritional demand in various stages of life cycle.
2. Acquire skills in planning adequate meals in different stages of life cycle.

UNIT-I **12 hours**

Basic Principles of Meal Planning:

1.1 Definition, principles of meal planning and factors affecting meal planning.

1.2Recommended allowance-#RDA for Indians, uses and limitations#.

UNIT-II **12 hours**

Pregnancy and Lactation:

2.1 Nutrition during Pregnancy- growth and development, weight gain, physiological changes of pregnancy, nutritional requirements, complications of pregnancy and nutritional remedies.

2.2 Nutrition during lactation-physiology and psychology of lactation, hormonal control, milk output and factors affecting it, nutritional component of colostrum and mature milk. Nutritional requirement of lactating women.

UNIT-III **12 hours**

Infancy and Preschool Children:

3.1Nutrition during Infancy- growth and development, growth monitoring, factors influencing growth, importance of breast milk. Merits and demerits of artificial feeding. Weaning foods and supplementary foods. Nutritional requirements of infants.

3.2Nutritional needs of Pre-school children- growth and development, nutritional and food requirements of preschool children. Factors to be considered while planning meals for pre-school children. Nutritional problems of preschool children.

UNIT-IV **12 hours**

School Going Children and Adolescence:

4.1Nutrition for School children- growth and development, nutritional requirement, meal planning for school children, packed lunch, nutritional problems (conditions only)- over weight, obesity, under weight, iron deficiency anemia and dental caries.

4.2Nutrition during Adolescence - growth spurt-physiological and secondary sexual characteristics, menarche and nutritional requirements. Nutritional problems in adolescence – iron deficiency anemia and obesity. Eating disorders- anorexia nervosa and bulimia nervosa.

UNIT-V **12 hours**

Adulthood and Geriatric Nutrition:

5.1Nutritional needs of adults (men and women) – #Reference man and woman#, Nutritional and work efficiency. Nutritional requirement of adult in relation to occupation.

5.2Nutrition during Old Age - physical, physiological, psychological and socio-economic aspects influencing nutritional intake. Nutritional problems of aged and their management.

#.....# self - study portion.

TEXT BOOKS

1. B.Srilakshmi,Dietetics, Sixth edition, New Age International Pvt. Ltd (2010).
2. B.Srilakshmi,Nutrition Science, Fourth edition, New Age International Pvt. Ltd (2012).

UNIT I Text book – 1 Chapter – II
Text book – 2 Chapter – II

UNIT II Text book –1 Chapter – VI
Text book –1 Chapter – VIII

UNIT III Text book –1 Chapter – III
Text book –1 Chapter – IV

UNIT IV Text book – 1 Chapter – V
Text book – 1 Chapter – VI

UNIT V Text book – 1 Chapter – II
Text book – 1 Chapter – IX

REFERENCE BOOKS

1. E.M. Shills,A.J Olson, Shike, Lea and Febiger, Modern Nutrition in Health and Diseases, Lippincott Williams and Wilkins publishing (2006).
2. L.K Mahan, M.T Arlin, Krause's, Food,Nutrition and Diet Therapy, Eleventh edition, W.B.Saunder Company, London (2000).

SEMESTER- III:MAJOR BASED ELECTIVE – III
NUTRITION THROUGH LIFE CYCLE PRACTICAL

Course Code	**: 14UND3M3P**	**Max. Marks**	**: 100**
Hours/Week	**: 3**	**Internal Marks**	**: 40**
Credit	**: 3**	**External Marks**	**: 60**

1. Planning, calculation of nutritive value and preparation of balanced meals for different age and economic groups

(a) Infancy.

(b) Pre-school children.

(c) School children.

(d) Adolescent – boys and girls.

(e) Adult man and woman in relation to activity.

(f) Elderly.

(g) Pregnancy and Lactation.

2. Preparation of various weaning foods and supplementary foods.

SEMESTER-III: NON MAJOR ELECTIVE- II
NUTRITION FOR THE FAMILY

Course Code	**: 14UND3N2**	**Max. Marks**	**: 100**
Hours/Week	**: 2**	**Internal Marks**	**: 40**
Credit	**: 2**	**External Marks**	**: 60**

Objectives:

To enable the non major students

1. Understand the basic concepts of nutrition.
2. Understand the nutritional demands in various stages of life cycle.
3. Acquire skills in planning adequate meals in different stages of life cycle.

UNIT I **6 hours**

1.1. Food groups- basic five, nutritional classification of foods - energy yielding, body building and protective foods.

1.2. Basic principles of Meal planning – basic principles of meal planning, balanced diet- meaning, food guide pyramid.

UNIT II **6 hours**

2.1. Nutritional needs during Pregnancy – dietary guidelines; general dietary problems, complications.

2.2. Nutrition during Lactation - dietary guidelines for lactating women, nutritional components of colostrum and mature milk.

UNIT III **6 hours**

3.1. Nutrition during Infancy- dietary guidelines for infants, advantages of breast feeding, disadvantages of bottle feeding; Weaning foods (definition) and types of supplementary food.

3.2. Nutritional needs of Pre-school children (1-6 years) - factors to be considered while planning meals for pre-school children. PEM – types, symptoms, dietary guidelines.

UNIT IV **6 hours**

4.1. Nutrition for School children - dietary guidelines, factors considered in planning packed lunch.

4.2. Nutrition during Adolescence – general dietary guidelines; causes, complications & dietary guidelines for nutritional anaemia- (Iron, Folic acid, Vitamin B_{12} deficiency), obesity and underweight.

UNIT V **6 hours**

5.1. Nutritional needs of Adults (men and women) - dietary guidelines for adults.

5.2. Nutrition during Old age - physiological changes in ageing, psycho-social factors affecting food intake. Nutritional problems of aged and their management.

TEXT BOOKS

1. Srilakshmi.B, "Dietetics", 7th edition, New Age International Pvt. Ltd., (2014).
2. Joshi.A.S, "Nutrition & Dietetics", 3rd edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, (2010).

UNIT I Text Book 1 Chapter I
Text Book 2 Chapter I
Text Book 2 Chapter IV
Text Book 2 Chapter V

UNIT II Text Book 1 Chapter VII & VIII
Text Book 2 Chapter V

UNIT III Text Book 1 Chapter III & IV
Text Book 2 Chapter V
Text Book 2 Chapter XVIII

UNIT IV Text Book 1 Chapter V & VI
Text Book 2 Chapter V
Text Book 2 Chapter VIII

UNIT V Text Book 1 Chapter II & IX
Text Book 2 Chapter V

REFERENCE BOOKS

1. Mahan,L.K &Arlin.M.T, "Krause's Food,Nutrition and Diet Therapy", 11th Edition, W.B. Saunder Company, London, (2000).
2. Selelstein. S. & Sharlin.J, "Life Cycle Nutrition", Jones & Bartlett publications,(2008).
3. Begum. M. R, "A Textbook of Food, Nutrition & Dietetics", 3rd edition, Sterling publications Pvt. Ltd., (2008).
4. Srilakshmi. B, "Nutrition Science", 5th edition, New Age International Pvt.Ltd., (2008).
5. Mudambi S.R and Rajagopal M.V, "Fundamentals of foods and Nutrition", 3rd edition, New Age International Pvt. Ltd., (1997).
6. Pasricha.S, "Some Therapeutic Diets", 5th edition, National Institute of Nutrition,(2004).
7. ICMR-Nutritive value of Indian Foods, National Institute of Nutrition, Hyderabad, (1989).
8. Mudambi. S.R, Rao. S.M, & Rajagopal.M.V, "Food Science", New Age International Pvt. Ltd. Publishers, New Delhi, (2007).

SEMESTER- IV: AILLED – IV
HUMAN PHYSIOLOGY

Course Code : 14UND4A4 **Max. Marks : 50**
Hours/Week : 5 **Internal Marks : 20**
Credit : 2 **External Marks : 30**

Objectives:
To enable the students to
1. Understand the structure and physiology of various organs in the body.
2. Obtain a better understanding of the principles of nutrition and dietetics through the study of physiology.

UNIT-I **15 hours**

Blood lymph and Body fluids:

1.1 Blood- composition and functions, **RBC, WBC, Platelets**-structure and functions. Blood grouping and Rh factors. **Blood transfusion** –needs and precausions.**Coagulation of blood**-coagulation time.

1.2 Lymph and lymphatic system – structure, function.

UNIT –II **15 hours**

Respiratory and cardiovascular system:

2.1 Respiratory system – structure and functions of respiratory tract, process of respiration, transport and exchange of oxygen and carbon dioxide.

2.1 Heart- structure and functions. Cardiac cycle, cardiac output, factor affecting cardiac output, heart rate, pulse rate, ECG. Blood pressure- measurement and factor affecting blood pressure.

UNIT –III **15 hours**

Digestive and Excretory System:

3.1Digestive system – structural and function of gastrointestinal tract, composition and functions of secretion of saliva, gastric juice, bile, pancreatic juice and intestinal juice, movements of intestine.

3.2Excretory system –Structure and functions of kidney, nephron, formation of urine, factor affecting formation of urine, micturition. **Skin-** Structure and functions.

UNIT-IV **15 hours**

Reproductive and Endocrine System:

4.1 Reproductive system: structure of male and female reproductive system, functions-spermatogenesis and oogenesis, menstrual cycle.

4.2 Endocrine system – functions of hormones secreted by pituitary, thyroid, parathyroid, and pancreas, adrenal.

UNIT –V **15 hours**

Nervous system and special senses:

5.1 Nervous system- structure and functions- nerve cell, spinal cord, brain. Autonomic nervous system – sympathetic and parasympathetic nervous system- functions.

5.2 Ear, Eye, Nose and Tongue- structure and functions.

TEXT BOOKS

1. K. Sembulingam, and Prema Sembulingam Essentials of Medical Physiology, Second Edition, Jay Pee Brothers Medical Publishes (p) Limited, New Delhi.2 (2010).
2. Ross and Wilson, Anatomy and Physiology in Health and Illness, Eleventh Edition, Library Cataloging in Publication (2010).

UNIT I Text Book- 1 Chapter- VI-XXVII
Text book -2 Chapter- VI

UNIT II Text Book- 2 Chapter-V, X

UNIT III Text Book- 2 Chapter- XII, XIII

UNIT IV Text Book- 2 Chapter-IX, XVIII

UNIT V Text Book- 2 Chapter-VII, VIII

REFERENCE BOOKS

1. S.M .Subramanian and Mathavan kutty, Text book of Physiology, Chand and Company, New Delhi (2001).
2. K. Sembulingam and Prema Sembulingam, Essentials of Medical Physiology, Second Edition, Jay Pee Brothers Medical Publishes (p) Limited, New Delhi (2000).
4. Vidya Tatna, Hand book of Human physiology, Seventh Edition Jay Pee Brothers Medical Publishers (p) Limited , New Delhi., (1993).
5. C.C. Chatterjee, Human physiology, Medical allied agency, Volume I &II, 82/1 Mahatma Gandhi road calcutta(1998).

SEMESTER- IV: AILLED – IV
HUMAN PHYSIOLOGY - PRACTICAL

Course Code	**: 14UND4A4P**	**Max. Marks**	**: 50**
Hours/Week	**: 3**	**Internal Marks**	**: 20**
Credit	**: 2**	**External Marks**	**: 30**

1. Histology of tissues- columnar, cubical, ciliated, squamous, stratifiedsquamous.

2. Microscopic structure of organs- stomach ovary and pancreas

3. Histology of muscle- cardiac, stratified, non-stratified

4. Estimation of Haemoglobin

5. Measurement of blood pressure- before and after exercise.

6. Determination of respiratory rate and pulse rate- before and after exercise.

7. Determination of blood group.

8. Enumeration of Red blood cells- Demonstration.

9.Enumeration of White blood cells- Demonstration.

10. Visit to a laboratory.

SEMESTER-IV: CORE–IV
DIET THERAPY-I

Course Code : 14 UND4C4 **Max. Marks : 100**
Hours/Week : 4 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

Objectives
To enable the students to

1. Understand the principles of diet and diet therapy.
2. Understand the modifications of normal diet for therapeutic purposes.
3. Develop capacity and attitude for taking dietetics as a profession.

UNIT – I **12 hours**
Basic Concepts about Dietitian

1.1 Definition of dietetics, dietitian, goals of diet therapy.
1.2 Role of dietitian, educational and#personal qualifications, professional ethics#, role and responsibilities in the hospital. Diet counseling. IDA-Indian Dietetic Association.

UNIT- II **12 hours**
Routine Hospital Diets and Therapeutic Feeding

2.1 **Routine hospital diets –** clear fluid diet, full fluid diet, soft dietand regular normal diet.
2.2 **Specially modified therapeutic diet** - specification and indications. (high fiber diet, bland diet, high calorie diet, low calorie diet, high protein diet, low protein diet, low fat diet and sodium restricted diet).
2.3 **Different types of feeding methods**- enteral feeding-oral feeding, tube feeding- gastrostomy and jejunostomy. Parenteral feeding –principles, TPN-formula and complications.#Pre and post operative diet#

UNIT- III **12 hours**
Nutritional Care for Weight Management

3.1 **Definition -** over weight and obesity. Obesity-etiology, #assessment, grades of obesity and theories#. Principles of diet, dietary management-weight reducing and weight maintenance diet. Complications of obesity.
3.2 **Underweight** – etiology, signs and symptoms anddietary management.

UNIT- IV **12 hours**

Diseases of the Gastro Intestinal Tract

4.1 **Upper gastro intestinal tract disorders -** definition – esophagitis and gastritis. Peptic ulcer- etiology, symptoms and dietary treatment.

4.2 **Lower gastro intestinal tract disorders –** definition –celiac disease and irritable bowel syndrome. Constipation – etiology, types, complication and dietary treatment. Diarrhoea- etiology, types,#diet therapy and oral rehydration therapy#.

UNIT- V **12 hours**

Modifications of Diet in Burns and Allergy

5.1 **Burns –** types, assessment, physiological and biochemical changes in burns, degree of burns and dietary treatment.

5.2 **Allergy -** definition, types, symptoms,#diagnostic tests and elimination diet#.

#.....# self- study portion.

TEXT BOOKS

1. B.Srilakshmi, Dietetics, Fifth Edition, New Age International (P) Ltd. Publishers, Chennai (2005).
2. S.A. Joshi, Nutrition and Dietetics, Second Edition, TATA McGraw Hill publications, New Delhi (2008).
3. F.P. Antia, Clinical dietetics and Nutrition ,Fourth Edition, Oxford University Press, Delhi (2002).
4. M. Swaminathan,Essentials of Food and Nutrition Vol. II, The Bangalore Printing and Publishing Co, Ltd., Bangalore (2008).

UNIT I Text book –1 Chapter – XXIV
Text book –2 Chapter – VII
Text book –4 Chapter – VIII

UNIT II Text book –1 Chapter – XII
Text book –2 Chapter – VII
Text book –4 Chapter – VIII

UNIT III Text book –1 Chapter – XIV
Text book –2 Chapter – VIII
Text book –3 Chapter – XXXXXXVII, XXXXXXVI
Text book –4 Chapter – VIII

UNIT IV Text book – 1 Chapter – XVI
Text book – 2 Chapter – XII
Text book – 3 Chapter – XXXXXII, XXXXXIII, XXXXXIV, XXXXXV
Text book – 4 Chapter – VIII
Ref book - 1 Chapter – XXIX, XXX

UNIT V Text book –1 Chapter –XXVI
Text book - 2 Chapter – XVI
Text book –4 Chapter – VIII
Ref book – 1 Chapter – XXXII
Ref book – 2 Chapter – XVII

REFERENCE BOOKS

1.L.K. Mahan and M.T. Arlin, Krause's Food NutritionandDietTherapy, Eleventh Edition, W.B.Saunder Company, London (2000).
2.S.R.Williams, Nutrition and Diet Therapy, Sixth Edition,Times Mirror / Mosby College Publishing, St. Louis(1989).

SEMESTER-IV: CORE –V
DIET THERAPY - I - PRACTICAL

Course Code : 14UND4C5P **Max. Marks : 100**
Hours/Week : 4 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

1. Planning, preparation and displaying of clear fluid, diet, full fluid diet and soft diet.

2. Planning, preparation and displaying of low and medium cost diet for protein calorie malnutrition, vitamin A deficiency and iron deficiency anaemia

3. Planning, preparation and displaying of low calorie diet for obese and high calorie diet for under weight conditions.

4. Planning, preparation and displaying diet for peptic ulcer, diarrhoea and constipation.

5. Planning, preparation and displaying diet for Surgery and burns.

SEMESTER - IV: SKILL BASED ELECTIVE -II
FUNDAMENTALS OF TEXTILES AND CLOTHING

Course Code	**:14UND4S2**	**Max. Marks**	**: 100**
Hours/Week	**: 2**	**Internal Marks**	**: 40**
Credit	**: 2**	**External Marks**	**: 60**

Objectives

To enable students to

1. Acquaint with the different textiles and their performances
2. Impart knowledge on different textile finishes

UNIT I **5 hours**

Fibres

Definition - Classification of fibre

1.1. Natural fibre – vegetable fibre (Cotton, Linen, Kapok) animal fibre (Silk, Wool) mineral fibre (Asbestos, Rocks).

1.2. Manmade fibre (artificial fibre) – synthetic fibre (Nylon, Polyester), Regenerated fibre (Rayon, Cellulose acetate).

1.3. Yarn – Definition-Types-Simple yarns (Single ply yarns, Multiply yarns, Cord yarns), Novelty yarns (Grandrelle, Spiral, Loop or Boucle, Ratine, Nub or Knoll, Slub, Chenille).

UNIT II **5 hours**

2.1. Weaving-Definition-Classification-Basic weaves, Plain weave (Rib weave, Busket weave), Twill weave, Satin weave, Sateen weave, Fancy weaes, Pile weave, Leno weave, Swivel weave, Jacquard weave, Lappet weave, Dobby weave.

2.2. Finishing – Definition-Aim-Make the material attractive, Improves suitability, Produce variety, and Give weight- process – Degree of permanence, Designers and sales.

UNIT III **5 hours**

3.1. Application of colour – Classification – Vegetable sources, Animal sources (Cochineal, Tyrian purple), Mineral dyes, Artificial dyes or Synthetic dyes (Direct or Salt dyes, Basic dyes, Acid dyes, Sulphur dyes, Mordant dyes, Vat dyes, Developed colour or Dyes, Disperse dyes, Disperse colour, Reactive dyes, Pigment dyes), Resist dyeing (Tie and dye, Batic dye).

3.2Printing – Definition- Types – Hand printing (Block printing, Screen printing, Stencil printing), Machine printing (Direct roller printing, Discharge printing, Resist printing, Pigment printing, Duplex printing, Transfer printing, Photo printing, Flocking or Flock Printing.

UNIT IV **5 hours**

4.1. Selection of suitable clothing – Factors affecting selection of clothing – Age, Season, Income, Occasion, Fashion.

a) Clothing for different age groups- Clothing for the infant (8-9 months).
b) Clothing for creeper (8 months to 1 year).
c) Clothing for the toddler (1 – 2 years)

d) Clothing for school going children (5 – 11 years).
e) Clothing for pre-adolescents (12 – 18 years).
f) Clothing for adolescents (15 years).
g) Clothing for elderly.

UNIT V **5 hours**

5.1.Care of storage of clothing – care during wearing and taking off cloths, care of different fabrics (cotton, woollens, silks).

5.2. Storage of clothes – steps while storing cloths.

TEXT BOOKS

1. Sushma Gupta, Neeru Garg and Rehu Saini Text book of Clothing Textiles and Laundary, Fifth Edition Kalyani Publishers, Chennai(2005).

UNIT I Text book – 1 Chapter – V, VI

UNIT II Text book –1 Chapter – VI, VII

UNIT III Text book –1 Chapter – VIII

UNIT IV Text book – 1 Chapter – IV

UNIT V Text book – 1 Chapter – IV

REFERENCE BOOKS

1. A. Bane, Tailoring, McGraw Hill Publication, New Yark (1974).
2. Readers Digest Complete guide to Sewing, Association Inc, New Yark (1982).
3. Savitri Pandit Manual for Children,s Clothing, Orient Longman (1967).

SEMESTER – IV: EXTRA CREDIT – I

HYGIENE AND SANITATION

Course Code	**:14 UND4EC1**	**Max. Marks**	**:100***
Hours//Week	**:**	**Internal Marks**	**:**
Credit	**: 4***	**External Marks**	**: 100***

Objectives:

This course will enable the students to-

1. Develop correct habits of personal and environmental hygiene.
2. Learn safe handling of food and ensure complete safety of raw and processed foods.

UNIT – I

Definition of hygiene-its application to everyday life.

UNIT – II

Personal hygiene

Care of skin, hair, hands, feet, teeth; use of cosmetics and jewellery.

UNIT-III

Safe handling of food

Personal hygiene including uniform, medical check-up, good food handing habits and training. Control and eradication of flies, cockroaches rodents and other pests.

UNIT-IV

Disinfections

Definition of disinfectant, sanitizer, antiseptic and germicide. Common disinfectants Use in case of working surfaces, kitchen equipment, dish washing, hand washing etc. Sterilization of kitchen and service equipment. Sanitizing of watering equipment.

UNIT–V

Care if Premises and equipment

Impervious washable floors and walls. Table tops, floor etc. Good ventilation and lighting. Care of dark corner, crevices and cracks. Garbage disposal –collection, storage and proper disposal from the premises.

TEXT BOOKS

1. David Foskett, Victor Ceserani and Rohald kinton, The Theory of Catering, Book Power Publication, Tenth Edition (2003).
2. P.S. Bali, Food Production Operation, Oxford University Press Seventh Edition (2012).

UNIT I www.en.wikipedia.org/wiki/Hygiene

UNIT II Text book –1 Chapter – XVI

UNIT III Text book –2 Chapter – I
Text book –1 Chapter – XV, XVI

UNIT IV Text book –1 Chapter – XVI

UNIT V Text book –1 Chapter – XVI

REFERENCE BOOKS

1. M. MacWilliams, Food: Experimental Perspectives,Second Edition, MacMillian Publishing Co, (1989).
2. H. Charley, Food Science, Second Edition, John Wiley & Sons, (1982).
3. N.N. Potter and J.H. Hotchkiss, Food Science, Fifth Edition, CBS Publishers and Distributors, Delhi, (1996).

SEMESTER-IV: EXTRA CREDIT- II
KITCHEN PLANNING AND EQUIPMENT

Course Code	**: 14UND4EC2**	**Max. Marks**	**: 100***
Hours/Week	**:**	**Internal Marks**	**:**
Credits	**: 4***	**External Marks**	**: 100***

Objectives:

This course will enable the students to-

1. Understand the importance of layout in a food service unit.
2. Determine the factors that affect the kitchen plan.
3. Understand the principle of planning layout.

UNIT – I

Factors affecting Kitchen Planning

Type of business, type of customer, type of service, location and area available, scope of expansion.

UNIT – II

Determining Kitchen Layout on menu Pattern

Principles of layout, establishment of work centre-sequence of work from receiving to service, auxiliary activities, determining equipment needed, developing space relationship, physical planning and staffing.

UNIT-III

Formulating Plan

Determiningspace allowance on actual equipment and manpower needed. Schematic plan. Establish flow of work, work and method study.

UNIT-IV

Designing Kitchen

Determining material to be used at work centres, architectural features, floor, walls, lighting, plumbing, ventilation, acoustical measures.

UNIT–V

Determination of Equipment

Factors affecting the selection, criteria for selection, types of equipment (discuss each equipment), installation of equipment, care of equipment.

TEXT BOOKS

1. Sethi.M, Malhan.S, "Catering management: An integrated approach", wiley Eastern, New Delhi, (1993).
2. Lever.W, "Food Service, Layout, Design & Theory", Discovery publishing house Pvt. Ltd. New Delhi, (2011).
3. George.B & Chatterjee.S, "Food Beverage Service & Management", Jaico Publishing house, (2008).

UNIT I Net Ref http://plus.google.com/118131594046256271665/posts/cc441XDXcTP

UNIT II Text Book 1 Chapter IV & V

UNIT III Net Refhttp://chefnoonwal.hpage.co.in/space-allocation_52226101.html
http://www.houzz.com/ideabooks/5650992/list/how-to-plan-a-kitchen-workflow-that-works
http://en.wikipedia.org/wiki/Kitchen_work_triangle

UNIT IV Text Book 2 Chapter II & IV
Text Book 3 Chapter XXXXIV

UNIT V Text Book 1 Chapter VIII, IX & XI

REFERENCEBOOKS

1. B.B West, and .L Wood, Food Science in Institutions, 6th edition, MacMillian Publishing Company, New York(1989).
2. L.H Kotschevar , Terrell.M.E, Food Service planning, Layout and equipment", 3rd edition, John Wiley & Sons New York (1985).
3. E.A. Kazarian, Food Service facilities planning, 2nd edition, AVI Publishing Co., Westport (1983).
4. A.C. Avery, A modern guide to food Serviceequipment, EBI Publishing Co., INC. Boston(1980).
5. G.Soni, Kitchen Stewarding (Operation & Management), Kanishka Publishers & Distributers, New Delhi (2011).
6. P.S. Bali, Food Production Operations, Oxford University Press (2009).

SEMESTER-V: CORE –VI
DIET THERAPY -II

Course Code : 14 UND5C6 **Max. Marks : 100**
Hours/Week : 5 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

Objectives:
To enable students

1. Understand the role of dietician in preventive, promotive and curative health care.
2. Make appropriate dietary modifications for various disease conditions based on the pathophysiology.

UNIT- I **15 hours**

Disease of the Pancreas - Diabetes Mellitus

1.1 **Diabetes Mellitus -** Classification, pathophysiology, etiology, symptoms, diagnostic tests – glycosuria, random blood sugar and glucose tolerance test. Complications. Treatment - insulin and oral hypoglycemic drugs.

1.2 Dietary modifications**,#** food exchange list#, glycemic index and its use. Artificial sweetners - polyols, alitame and aspartame.

UNIT- II **15 hours**

Diseases of Cardio Vascular system

2.1 Pathophysiology, etiology, types, symptoms and dietary treatment for hypertension.

2.2 Pathophysiology, etiology, symptoms and dietary treatment for atherosclerosis, hyperlipidemia,# myocardial infarction and congestive heart failure#

UNIT-III **15 hours**

Diseases of the Kidney

3.1 Pathophysiology, etiology, symptoms and dietary treatment for glomerulonephritis and nephrotic syndrome.

3.2 Pathophysiology, etiology, symptoms and dietary management for acute and chronic renal failure and urolithiasis.#Treatment – dialysis – types**#.**

UNIT- IV **15 hours**

Disease of the Liver and Gallbladder

4.1 Pathophysiology, etiology, symptoms, dietary treatment for fatty liver viral hepatitis, cirrhosis and #hepatic coma**#.**

4.2 Pathophysiology, etiology, symptoms, dietary treatment for cholelithiasis and cholecystitis.

UNIT- V **15 hours**

Nutrition Care in Cancer and AIDS

5.1 **Cancer** – #classification, pathophysiology, etiology#, mechanism of cancer formation, symptoms, dietary management and role of food in prevention of cancer.

5.2 **AIDS –** epidemiological features, mode of transmission, clinical manifestation and dietary management.

#.....# self - study portion

TEXT BOOKS

1. B.Srilakshmi, Dietetics, Fifth Edition, New Age International (P) Ltd. Publishers, Chennai (2005).
2. F.P. Antia, Clinical dietetics and Nutrition ,Fourth Edition, Oxford University Press, Delhi (2002).
3. S.A. Joshi, Nutrition and Dietetics, Second Edition, TATA McGraw Hill publications, New Delhi (2008).
4. M. Swaminathan,Essentials of Food and Nutrition Vol. II, The Bangalore Printing and Publishing Co, Ltd., Bangalore (2008).

UNIT I Text book – 1 Chapter – XVIII
Text book – 2 Chapter – IX
Text book – 3 Chapter –XXXXXXVIII
Text book – 4 Chapter – VIII
Ref book - 1 Chapter – XXXIII

UNIT II Text book –1 Chapter – XV
Text book – 2 Chapter – X
Text book – 3 Chapter – XXXXXXXIII, XXXXXXXIV, XXXXXXXV
Text book – 4 Chapter – VIII
Ref book - 1 Chapter – XXXV

UNIT III Text book –1Chapter – XIX
Text book –2Chapter – XI
Text book –3 Chapter – XXXXXXX, XXXXXXXI, XXXXXXXII
Text book –4 Chapter – VIII
Ref book - 1 Chapter - XXXIX

UNIT IV Text book – 1 Chapter – XVII
Text book – 2 Chapter – XIII
Text book – 3 Chapter – XXXXXVIII, XXXXXIX, XXXXXXIV
Text book – 4 Chapter – VIII
Ref book - 1 Chapter – XXXI

UNIT V Text book – 1 Chapter –XXII
Text book – 2 Chapter – XV, XVI
Ref book –1 Chapter – XXXX, XXXXI
Ref book –2 Chapter – XXIV, XXV

REFERENCE BOOKS

1.L.K. Mahan and M.T. Arlin, Krause's Food NutritionandDietTherapy, Eleventh Edition, W.B.Saunder Company, London (2000).
2.S.R.Williams, Nutrition and Diet Therapy, Sixth Edition,Times Mirror / Mosby College Publishing, St. Louis(1989).

SEMESTER-V: CORE –VII
DIET THERAPY II - PRACTICAL

Course Code	**: 14 UND5C7P**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

PLANNING, PREPARATION AND DISPLAY OF DIET FOR…

1. Diabetes Mellitus-IDDM and NIDDM

2. Hypertension, atherosclerosis and congestive heart disease

3. Nephritis, nephrotic syndrome acute and chronic renal failure and nephrolithiasis.

4. Viral hepatitis and cirrhosis

5. Cancer

6. AIDS

SEMESTER- V: CORE -VIII
FOOD STANDARDS AND QUALITY CONTROL

Course Code	**: 14UND5C8**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

Objectives:

To enable students to

1. Aware about the food adulteration ,food laws and food standards.
2. Know about the basic concepts involved in the quality factors of food.
3. Educate types of evaluations involved in food laboratories.
4. Learn about the importance of quality assurance in food industries.

UNIT – I **12 hours**

Introduction:

1.1 Food adulteration:#Definition, adulterants, types of adulterants-intentional, incidental, other incidental and new adulterants; adverse effects of adulterants on health#.

1.2 Food safety and standards authority of India: Introduction, highlights, legislation- Prevention of food adulteration act, Fruit products order, Meat product order, Milk and milk product regulation, Food safety and standard act.

1.3Food standards with legal aspects: Bureau of Indian standards, Agriculture marketing (AGMARK), Export inspection council, Consumer protection act.

UNIT – II **12 hours**

Quality factors of foods:

2.1Appearance factors: size, shape, colour, gloss.

2.2Textural factors: brittleness, tenderness, consistency, astringency.

2.3Flavour and aroma factors: sensation of flavor, taste, odour, feel; flavor intensifiers-mono sodium glutamate; flavouring extracts-vanilla. The primary flavormatics - group-I,II,III and synthetics in food industries.

UNIT-III **12 hours**

Sensory evaluation:

3.1 Criteria's for sensory tests: Reasons for testing food quality ,trained panel members-selection of panel of judges, types of panels, testing laboratory, preparation of samples, evaluation card.

3.2 Types of Sensory tests:

(a) Difference tests- paired comparison test, duo-trio- test.

(b) Rating tests-Ranking test, single sample (monadic) test, two-sample difference test, multiple sample difference test, hedonic rating test, numerical scoring test, composite scoring test.

(c) Sensitivity test-sensitivity-threshold test, Dilution test.

(d) Descriptive flavor profile method. Limitations of sensory evaluation.

UNIT-IV **12 hours**

Objective evaluation:

4.1 Objective evaluation: Definition, advantages, disadvantages, basic guidelines.

4.2 Tests- chemical, physico-chemical tests -pH, percentage of salt, concentration of sugar, analysis of sugar, butyrometer. Microscopic examination, physical methods-weight, volume, specific volume, index to volume, specific gravity, moisture, wettability, cell structure, measurement of colour.

4.3 Textural evaluation-percent sag, instruments used for liquids and semi-solids, viscometer, penetrometer, instruments used for solids-pressure tester, succulometer, tenderometer, fibrometer, shortometer, texurometer.

UNIT-V **12 hours**

Quality control:

5.1 Quality control: Definition- quality, quality control, principles of quality control, quality control departments,

5.2Hazards Analysis critical control point (HACCP)-principles, hazard analysis, identification and establishment of critical control points, monitoring procedure, verification, record keeping

5.3Quality systems - BS5750 and ISO9000series.

#.....# self -study portion.

TEXT BOOKS

1.N. Potter, Food science, Fifth Edition, AVI Publishing company INC West port Connecticut (1996).

2. M. R. Adams and M. O. Moss, Food microbiology, New Age International Publishers ,New Delhi (2003).

3. B. Srilakshmi , Food Science, New Age International Publishers, New Delhi (2010).

4. Lillian Hoagland Mayer, Food Chemistry, Affiliated East West press Pvt. Ltd., New Delhi (2002).

UNIT I Text book –3 Chapter – XIV
Net Ref www.fssai.gov.in/

UNIT II Text book –3 Chapter – XIII
Text book –4 Chapter – V

UNIT III Text book –3 Chapter – XIII

UNIT IV Text book – 3 Chapter – XIII

UNIT V Text book – 1 Chapter – VI
Text book – 2 Chapter – XI

REFERENCE BOOKS

1. Avantina Sharma, Text book of Food Science & Technology, International Book Distributing co., Lucknow (2006).
2. M. Swaminathan, Hand book of Food Science and Experimental Foods, BAPCO Printing & Publishing Mysore Road, Bangalore (2008).
3. M. Swaminathan, Essentials of Food and Nutrition, Vol. II, BAPCO Printing & Publishing Mysore Road, Bangalore (2008).

SEMESTER- V: CORE -IX
QUANTITY FOOD PRODUCTION AND SERVICE

Course Code	**: 14UND5C9**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

Objectives:

To enable the students to

1. Gain knowledge of food service layout
2. Gain knowledge and develop skills in handling equipment and maintenance
3. Develop skills in menu planning for quantity preparation
4. Gain knowledge regarding selection and purchase of food.
5. Understand the application of basic principles to bulk production of the food.

UNIT-I **12 hours**

Ideal food plant layout:

1.1Layout of food plants- space allocation for the various areas, work simplification.

1.2Kitchen space- size and type of kitchen, layout of kitchen, work centres in the kitchen layout.

1.3Storage space- types of storage, planning storage space.

1.4 Service **area**- location and planning.

UNIT-II **12 hours**

Equipments and Materials:

2.1 Equipments- classification of equipments, factors for selection of equipment, care and maintenance of equipment.

2.2 Materials – strength and limitation of base materials used in the manufacture of equipment- aluminium,iron, steel, stainless steel ,copper,brass,glass,plastic.

2.3 Finishes- mechanical and applied.

UNIT-III **12 hours**

Quantity food purchase, receiving and storage

3.1 Purchase – food buyer, duties of purchasing officer, Purchasing procedure, objectives of food specification, methods of purchasing, forms used in purchasing control.

3.2Receiving- procedures and forms.

3.3Storing and issuing- objectives, types of store records and store issues.

UNIT-IV **12 hours**

Quantity food preparation:

4.1 Menu planning- menu origin, functions of menu, menu planning, qualities of menu planner, principles involved in planning menu.

4.2 Menu- types of menu, #Indian – south, north, continential, chiense menu#**.**

4.3 Standardization of recipes, portion control, #utilization of leftover foods#**.**

UNIT-V **12 hours**

Quantity food service and cost control:

5.1 Food service system-Types of food service – Conventional systems, Commissary systems, cook chill and cook freeze system, assembly line service system.

5.2 Styles of service – Formal and Informal styles of service.

5.3 Cost control, elements of cost – food cost, labour cost and overhead expenses, why food cost control, factors responsible for losses in a food service industry, methods of controlling food cost control leading to profit, costing of dishes and meals, methods of pricing items.

#.....# self-study portion.

TEXT BOOKS

1. West's and Wood's, Introduction to Food service, Second Edition, Mac Mhillan Publishing New York (1998).
2. Mohini Sethi and Surjeet Malham, Catering Management and integrated approach, John Wiley & Sons Eastern Limited New Delhi(2007).
3. MohiniSethi, Institutional Food Management, NewAge International (P) Limit, Publishers, New Delhi (2005).

UNIT I Text Book- 1 Chapter I, II
Text Book- 3 Chapter VIII

UNIT II Text Book- 2 Chapter VII, VIII, IX
Text Book- 1 Chapter IX

UNIT III Text Book- 2 Chapter XIII, XIV

UNIT IV Text Book- 2 Chapter XV
Text Book- 1 Chapter II, V

UNIT V Text Book- 1 Chapter II, VI
Text Book- 3 Chapter XIX
Text Book- 2 Chapter XX, XXI

REFERENCE BOOKS

1. L.H. Kotschevar and M.E. Terrell, Food Service Planning Layout and Equipment, Second Edition, John Wiley and sons New York (1977).
2. R. Kinton and V. Ceserani, The Theory of catering, Arnold – Heinemam (1985).
3. Jag Mohan Negi, Food and beverage management and cost control, Knanishka Publishers, New Delhi (2009).
4. Sudhir Andrews, Text book of Food and Beverage Management, Tata McGraw- Hill Publishing Company Limited New Delhi (2008)
5. Mohini Sethi and Malham, Catering Management and Integrated Approach, John Wiley& Sons, Eastern Limited New Delhi (2007).

SEMESTER- V:CORE– X
COMMUNITY NUTRITION

Course Code	**: 14UND5C10**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

Objectives

To enable the students to

1. Understand the malnutrition problems and prevalence in India.
2. Gain knowledge on the national effort in combating malnutrition
3. Appreciate the national and international contribution towards national improvement in alleviating nutrition problems.

UNIT-I **12 hours**

Meaning and Causes of Malnutrition:

1.1 Definition - community, family, village. Meaning of optimum nutrition.

1.2 Malnutrition- under nutrition and over nutrition.

1.3 Causes of malnutrition– Factors contributing of malnutrition in the community – food habits, customs and practices, availability of food, socio-economic factors, illiteracy, unemployment, poverty, population explosion, social- cultural factors, housing and hygienic conditions.# Food fads and beliefs#.

UNIT-II **12 hours**

Assessment of nutritional status of the community:

2.1 Direct and Indirect Assessment- anthropometry, biochemical, clinical and diet survey.

2.2 Characteristics of community- demography, vital statistics, IMR, MMR, morbidity.

UNIT-III **12 hours**

Nutritional problems confronting the community:

3.1Protein Energy Malnutrition- prevalence, classification- kwasiorkar and marasmus. Etiology, symptoms, pathological changes, biochemical changes.

3.2 Iron Deficiency Anemia- prevalence, etiology, symptoms, prophylaxis programme.

3.3 Iodine Deficiency Disorder- etiology, prevalence, symptoms, prophylaxis programme..

3.4 Fluorosis- etiology, prevalence, #symptoms#.

3.5 Vitamin A deficiency- etiology, prevalence, symptoms, prophylaxis programme.

UNIT-IV **12 hours**

Role of national and international organizations:

4.1Nutrition intervention programmes- ICDS, Noon Meal Programme, Vitamin A prophylaxis, Iron prophylaxis, Iodine prophylaxis.

4.2 National organizations- ICMR, ICAR, CSIR, NIN, CFTRI.

4.3 International organizations- WHO, FAO, UNICEF and World Bank.

UNIT-V **12 hours**

Nutrition education:

5.1 Meaning, nature and importance of nutrition education to the community.

5.2 Channels of Nutrition education, principles of planning, executing and evaluating nutrition education programmes, Problems in conducting nutrition education programmes.

#.....# self -study portion.

TEXT BOOKS

1. Park, Social and Preventive medicine, Twentieth edition,Banarsidas Bhanot Publishers (2009).
2. N Swaminathan, Essentials of Food and Nutrition,Vol I, The Bangalore Printing and Publishing Co, Ltd (2008).
3. N Swaminathan, Essentials of Food and Nutrition, Vol II The Bangalore Printing and Publishing Co, Ltd (2008).
4. B.Srilakshmi, Nutrition Science, Fourth edition, New Age International Pvt. Ltd (2010).

UNIT I Text book – 1 Chapter – XI
Text book – 1 Chapter – XII
Text book – 2 Chapter – XVII

UNIT II Text book –2 Chapter – XXII

UNIT III Text book – 4 Chapter – IX
Text book – 4 Chapter – XI
Text book – 4 Chapter – XII
Text book – 4 Chapter – XIII
Text book – 4 Chapter – IV

UNIT IV Text book – 4 Chapter – XXIV

UNIT V Text book – 4 Chapter – XXV

REFERENCE BOOKS

1. P.K.Shukla , Nutritional problems of India, Prentice hall, India (1982).

2. H.K. Senha, Challenges in rural development, Discovery publishing (2014).

SEMESTER-V: CORE - XI
FOOD PRESERVATION

Course Code	**: 14UND5C11**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credits	**: 4**	**External Marks**	**: 60**

Objectives

1. To develop the knowledge and skills on various methods of food preservation.
2. To train the students in the techniques of preservation.
3. To gain knowledge about principles and methods of food packaging.

UNIT-I **12 hours**

Principles of food preservation:

1.1. Definition and #uses of food preservation#.

1.2. Review of the basic principle and methods.

Principles: 1. Prevention of microbial decomposition
2. Prevention of self decomposition
3. Prevention of damage caused by insects, animals and rodents.

Methods: bacteriostatic and bacteriocidal method.

1.3. Food spoilage- definition, types.

UNIT-II **12 hours**

Preservation by use of High & Low temperature

2.1. Preservation by High temperature

. 1. #Pasteurisation- principle, methods#.
2. Canning - principle, process, spoilage and aseptic canning.

2.2. Preservation by Low temperature

1. Refrigeration-principle, working system: cold storage defects.
2. Freezing –methods of freezing,advantages and disadvantages.

UNIT-III **12 hours**

Preservation by High Osmotic Pressure and Preservatives

3.1. High concentration of Sugar: refract index, jam, jelly-factors affecting jam & jelly formation, marmalade, preserves, candies, crystallized or glaced fruits, ketchup and sauce.

3.2. High concentration of Salt:

Pickling - principles, types and spoilages encountered in pickles.

3.3. Preservation by using Chemicals:- class I and class II preservatives, antibiotics and other developed chemical preservatives. #Demerits of chemical preservatives#.

UNIT-IV **12 hours**

Irradiation, Drying and Dehydration

4.1. Preservation by use of Radiation:-Principles, kinds of ionizing radiations, units of measurement, mode of action on foods and uses of radiation.

4.2. Preservation by Drying and Dehydration: Principle, methods, pre-treatment of foods-blanching and lye peeling,#factors affecting preservation by drying and dehydration#.

UNIT-V **12 hours**

Food additives & Packaging

5.1. Food Additives: Characteristics and uses of colours, flavour enhancers, thickening agents, emulsifiers, stabilisers.

5.2. Food Packages: Definition of packaging, #functions of packages#, packaging materials-specific uses, requisites of food packages- attractiveness (Colour, Label, printed literature), protective strength/durability, consumer convenience andeconomy.

#.....# self-study portion.

TEXT BOOKS

1. V.W. Desrosier, The Technology of Food Preservation, AVU Publishing co., West Port, Conneticut(1967).
2. V.A .Vaclavik & E.W. Christian, Essentials of food Science, 2nd edition, Springer New Delhi-1 (2003).
3. S.R. Mudambi, S.M Rao & M.V. Rajagopal, "Food Science", New Age International Pvt. Ltd. Publishers New Delhi(2007).
4. B. Sivasankar, Food Processing & Preservation, Prentice hall of India Pvt.Ltd, New Delhi(2002).

UNIT I Text Book 1 Chapter I
Text Book 3 Chapter I, XVI

UNIT II Text Book 1 Chapter IV, V & VI
Text Book 2 Chapter XVII
Text Book 3 Chapter XVI

UNIT III Text Book 1 Chapter VIII, XI & XII
Text Book 3 Chapter XVII
Text Book 4 Chapter XVII

UNIT IV Text Book 1 Chapter VII & XIII
Text Book 2 Chapter XVII
Text Book 4 Chapter XVI

UNIT V Text Book 2 Chapter XVIII & XIX
Text Book 4 Chapter VIII

REFERENCE BOOKS

1. N.Potter& J.H. Hotchkiss, Food Science, 5th edition,CBS Publishers and distributors New Delhi (2007).
2. N.S Manay, Food Facts and Principles, 3rd revised edition, New age International (p) Limited New Delhi(2008).
3. S.Natrajan, et. al., Funtamentals of Packaging Technology, PHI Learning private Limited New Delhi(2009).
4. G. Subbulakshmi & B.A. Udipi, Food Processing and Preservation, 1st edition, New Age Publishers(2007).
5. S. Sareen, Food Preservation, 1st edition, Sarup & Sons, New Delhi (2006).
6. NIIR Board, "Food Packaging Technology Handbook", National Institute of Industrial Research, New Delhi-7.
7. NIIR Board of Food & Technologist, Modern Technology of Food Processing & agro based industries, 2nd edition, National institute of Industrial Research, New Delhi.
8. NIIR Board, Handbook on Fruits, vegetables & Food processing with canning & preservation, 2nd edition, Asia pacific business press inc., Delhi.
9. D.S. Lee., K.L. Yam & L. Piergiovanni, Food Packaging Science & Technology, CRC press(2008).

SEMESTER-V: MAJOR BASED ELECTIVE- IV
FOOD PRESERVATION - PRACTICAL

Course Code	**: 14UND5M4P**	**Max. Marks**	**: 100**
Hours/Week	**: 3**	**Internal Marks**	**: 40**
Credit	**: 3**	**External Marks**	**: 60**

1. Preparation of selected jams, jellies, marmalades, preserves, Squashes, ketchup and sauce.
2. Determination of total soluble solids present in fruit juice by refractometer.
3. Determination of acidity content present in fruit juice by digital pH meter.
4. Pickling: Preparation of Lemon, Tomato, Mango, Garlic pickles.
5. Preparation of dehydrated products vathals, vadams, chutney powder.
6. Knowing the functions of different packages by using aluminium foil and polyethylene materials for packing the above prepared products.
7. Visit to a well established bottling unit.

SEMESTER-V: SKILL BASED ELECTIVE -III
BASICS IN COMPUTER

Course Code	**: 14UND5S3**	**Max. Marks**	**: 100**
Hours/Week	**: 2**	**Internal Marks**	**: 40**
Credit	**: 2**	**External Marks**	**: 60**

Objectives:

To enable students

1. Gain knowledge on computer operations and applications
2. Facilitate students to design and use computer based projects and programs.
3. Enable utilization of existing health and nutrition based software.

UNIT I **6 hours**

1.1 Basic concepts on computer - History, types of computers, input and output devices, meaning of software and hardware.

1.2 Ms Windows – Introduction, basic concepts on a windows, control panel. Accessories – paint brush.

UNIT II **6 hours**

2.1 Ms Word – concepts of document and template, creating documents and saving, edit menu, format menu, view menu, working with tables and tabs, file printing, mail merge, word art.

UNIT III **6 hours**

3.1 Ms Excel – Concepts of spread sheet, creating work sheet, formatting a work sheet, basic operations on data, sorting, total, programming in macros, working with charts, printing worksheets.

UNIT IV **6 hours**

4.1 Ms PowerPoint – concepts of PowerPoint, creating, opening , saving presentations, working with different views, working with slides – make a new slide, move, copy, layout, adding and formatting text, adding clipart and other pictures, designing slide show.

UNIT V **6 hours**

5.1 Ms Access – Introduction to Access, working with tables, forms, reports, macros and charts.

5.2 Computer in management of Nutrition Practice-Communication in patient care, nutritional service and nutrition education, Nutrition on web..

5.3 Internet – Basics of internet, basics of e mail, browsing.

TEXT BOOKS

1. Sanjay Saxena, MS Office 2000 for Every one, Second Edition,Vikas Publishing house Pvt Ltd., (2009).
2. V. Rajaraman, Fundamentals of computers, Fourth Edition, Practice- Hall of India Private Limited New Delhi (2004).
3. B.Srilakshmi, Nutrition Science, Third Edition, New Age International, New Delhi (2008).
4. K.L. James, The Internet-The user guide,Second Edition, PHI Learning Private Limited, New Delhi (2008).

UNIT I Text book –1 Chapter –I

UNIT II Text book –1 Chapter – III

UNIT III Text book –1 Chapter – IV

UNIT IV Text book – 1 Chapter – V

UNIT V Text book – 1 Chapter – VI
Text book – 1 Chapter – XXIV

REFERENCE BOOKS

1. Harshad Kotecha , Windows 98, Dreamtech Press, NewDelhi (2001).
2. R.K. Taxali, PC Software for windows 98 (made simple)- Tata McGraw Hill Publishing company Limited New Delhi (2001).
3. K. Pradeep Sinha and Priti sinha, Computer Fundamentals-Concepts, systems and applications, Third Edition, BPB Publications, NewDelhi (2003).
4. L.Kathleen Mahan, Sylvia Escott-Stump, Krause's Food Nutrition and Diet Therapy, Eleventh Edition (2001).
5. Peter Norton, Introduction to computers, Sixth Edition, Tata McGraw Hill Education Private Limited NewYork (2008).

SEMESTER-V: EXTRA CREDIT – III
ENTREPRENEURSHIP MANAGEMENT

Course Code : 14UND5EC3	**Max. Marks : 100***
Hours/Week : -	**Internal Marks :**
Credit : 4*	**External Marks : 100***

Objectives:

To enable students to-
1. Develop entrepreneurship skills.
2. Analyze the environment related to small scale industry and business.
3. Understand the process and procedures of setting up small food enterprises.

UNIT – I
Entrepreneurship
1.1. Definitions, need, scope and characteristics of entrepreneurship.
1.2. Entrepreneurial motivation and employment promotion. Identification of opportunities in food enterprises.

UNIT – II
Business, Environment for Entrepreneurs for Food Enterprises
2.1. Government of India's policy towards promotion of entrepreneurship.
2.2. Exposure to demand based, resource based, service based, import substitute and export promotion industries.
2.3. Foreign trade policy 2012-13.

UNIT-III
Factory Design and Layout
3.1. Concept of factory design
3.2. Importance of factory design
3.3. Types of factory buildings
3.4. Factory layout – objectives & types
3.5. Considerations in deciding the layout
3.6. Design requirements.

UNIT-IV
Steps for Staring a small Industry
4.1. Decision to become an entrepreneur.
4.2.Steps to be taken, preparation of project, report guidelines.
4.3.Procedures & formalities for registration.

UNIT–V

Institutional Finance to entreprenerurs and institutions assisting entrepreneurs

5.1. All India financial & investment institutions.

5.2. State financial & investment institutions.

5.3. Institutional Infrastructure – DIC, TIIC, SID co, SIPCOT, KVIC, IIC, EGB, NPC, ITCOT.

TEXT BOOKS

1. C.B. Gupta Srinivasan, N.P. Entrepreneurial Development,6th edition, Sulthan Chand and Sons,New Delhi (1992).

UNIT I Text book –1 Chapter –II
Text book –1 Chapter –IV

UNIT II Text book –1 Chapter – VII
Net reference www.evm.dk/resources/oem/static/publikationer/ html/english/.../ren.pdf.
Net reference commerce.nic.in/publications/pdf/chapter_4.pdf.
Net reference dgftcom.nic.in/exim/2000/policy/ftpplcontentE1213.pdf.

UNIT III Text book –1 Chapter – V

UNIT IV Text book – 1 Chapter – I

UNIT V Text book – 1 Chapter – I,II

REFERENCE BOOKS

1. A. Kanitkar, Grassroots Entrepreneurship, New Delhi New Age international publishers limited(1995).
2. S. Singh, Entrepreneurship and social change, Jaipur Rawat publications (1985).
3. Francis Cherunilam, Business Environment and Policy, Himalaya Publishing House (2001).

SEMESTER- VI: CORE -XII

FOOD SERVICE MANAGEMENT

Course Code : 14UND6C12 **Max. Marks : 100**

Hours/Week : 5 **Internal Marks : 40**

Credit : 4 **External Marks : 60**

Objectives:

To enable the students to

1. Understand the basic principles of management in food service units
2. Develop managerial skills among the students
3. Develop skills in setting up food service units
4. Create an awareness of the renewable sources of energy

UNIT –I **15 hours**

Food service industry

1.1 Different Type of catering institutions and services- commercial and non-commercial.

1.2 Classification of food service institutions according to function- profit oriented, service oriented and public health facility oriented.

1.3 Hotel industry- Definition, categories of hotels based on location, plan they offer, facilities to be offered for various star category

1.4 Role of hotel in tourism development and national development.

UNIT-II **15 hours**

Management and organization

2.1 Management – Definition, Principles and Tools of Management, Qualities of a good Leader, styles of leadership.

2.2 Organization-Definition, Types and principles, organizational structure for catering institution-small and large hotel.

UNIT-III **15 hours**

Personnel management

3.1Personnel management- introduction, definition, sources /Recruitment of labour, Criteria for selection,orientation/induction,training,motivation,labour-turnover,basic employee facilities, employer-employee relationship, fringe benefits, performance appraisal,

3.2 Salient features of labour laws applicable to food service establishments– working conditions and relations, welfare, payment.

UNIT-IV **15 hours**

Financial management

4.1 Definition, aspects of financial management- financial accounting and management accounting, application of management accounting in catering operations.

4.2 Accounting system – Accounting techniques-single and double entry system, advantages. Types and Book of accounts.

UNIT –V **15 hours**

Fuel management, Hygiene and Sanitation

5.1 Fuel management- types of fuel, merits and demerits, # fuel saving economy in relation to food service industries#.

5.2 Hygiene and sanitation - definition, importance, environmental hygiene and sanitation, hygiene in food handling, personnel hygiene, # importance of pest and rodent control in food service units#.

 # …..# self-study portion.

TEXT BOOKS

1. West's and Wood's, Introduction to Food service, Second Edition, Mac Mhillan Publishing New York (1998).
2. MohiniSethi, Institutional Food Management, New Age International (P) Limit Publishers New Delhi (2005).

UNIT I Text Book- 1 Chapter I

UNIT II Text Book- 1 Chapter X

UNIT III Text Book- 1 Chapter XI
Text Book- 1 Chapter XXIX

UNIT IV Text Book- 2 Chapter XXI

UNIT V Text Book- 2 Chapter XXX

REFERENCE BOOKS

1. L.H. Kotschevar and M.E. Terrell, Food Service Planning Layout and Equipment, Second Edition, John Wiley and sons New York (1977).
2. R. Kinton and V. Ceserani, The Theory of catering, Arnold – Heinemam (1985).
3. Jag Mohan Negi, Food and beverage management and cost control, Knanishka Publishers, New Delhi (2009).
4. Sudhir Andrews, Text book of Food and Beverage Management, Tata McGraw- Hill Publishing Company Limited New Delhi (2008)
5. Mohini Sethi and Malham, Catering Management and Integrated Approach, John Wiley&

Sons, Eastern Limited New Delhi (2007).

SEMESTER- VI: CORE -XIII
FOOD SERVICE MANAGEMENT- PRACTICAL

Course Code	**: 14UND6C13P**	**Max. Marks**	**: 100**
Hours/Week	**: 5**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

1. Common ingredients for western, Chinese, Indian cuisine.

2. Planning, compiling and preparation of menus for different regions

a) Western-breakfast, dinner menu

b) Chinese-lunch, dinner menu

c) Indian-south Indian-Thali meal and mini meal.

3. Protocols of table settings for western, Chinese, Indian menu

4. Table laying for formal service- western – Breakfast, luncheon and tea menu.

5. **Quantity cookery:**

a) Standardization of any three selected quantity recipes and their preparation, calculation of cost and size of serving per yield.

b) Quantity cookery: preparation of south Indian, north Indian menu for 10 members.

6. Visits to well- organized food service units a) Hostel b) Commercial c) Industrial d) Hospital

SEMESTER – VI CORE - XIV
HUMAN DEVELOPMENT

Course Code :14UND6C14 **Max. Marks : 100**
Hours/Week : 5 **Internal Marks : 40**
Credit : 4 **External Marks : 60**

Objectives

To enable students to

1. To introduce the student to the field of human development: concepts, scope, dimensions and interrelations.
2. To sensitize the student to social and cross-cultural contexts in human development.
3. To sensitize the student to interventions in the field of human development.

UNIT I **15 hours**

1.1 Child development and Prenatal Care

a) Principles and Stages – Continuous development – Development is sequential – Stages of growth and development – Maturation and learning – Direction of growth.

b) Prenatal development – conception, test tube baby, periods of prenatal development, signs of pregnancy.

UNIT II **15 hours**

2.1. Postnatal care

a) Prenatal care – management of normal pregnancy – hygiene, diet and medical supervision and hazards during pregnancy.

b) Labour- signs of labour, stages of labour, types of birth, multiple pregnancy.

c) Postnatal care, # prevention of gynaecological complications#.

d) Adjustment of the newborn to temperature, breathing, feeding and elimination.

UNIT III **15 hours**

3.1. Infancy

a) Infancy (birth to 2 years) – Development – physical and motor, social, emotional cognitive and language, minor ailments.

b) Effect of stimulation – care of infants, feeding, toilet training, bathig, clothing, sleep, immunization, prevention of accidents-importance of psychological needs.

UNIT IV **15 hours**

4.1. Early and late childhood

a) Early childhood (preschool stage 2-6 years) – physical and motor development, emotional, social, cognitive and language development, creativity, importance of play, importance of family relationship,behaviour problems – causes and treatment.

b) Importance of preschool education.

c) Late childhood (elementary school period 6-12 years) – developments – physical,

social, emotional, cognitive and language.
d) Children with special needs – identification and rehabilitation.

UNIT V **15 hours**

5.1.Adolescence (12 – 18 years) – physical, emotional, intellectual and motor development, personal adjustment and maladjustment. Delinquency – causes, prevention and rehabilitation. Drug addiction and alcoholism – rehabilitation. Sex education.
5.2.Adulthood (18-60 years) – characteristics and development tasks. All aspects of development and vocational development.
5.3.Old age (60 years and above) – physical and psychological changes, problems of the aged, family attitude towards the aged, place of the aged in Indian society.

#.....# self -study portion

TEXT BOOKS

1. Sushila srivastava and K. Sudha Rani, Text Book of Human development A life span developmental approach, First Edition, S. Chand & company pvt (2014).

UNIT- I - Text book – 1 Chapter – I, III

UNIT –II - Text book – 2 Chapter – IV, V

UNIT-III - Text book – 2 Chapter – VI

UNIT - IV- Text book – 2 Chapter – VII, VIII, IX

UNIT –V - Text book – 2 Chapter – X, I, XII, XIII

REFERENCE BOOKS

1. A.C.Harris, Child development. St. Paul: West Pub. (1986)
2. R.M. Lerner, and F. Hultsch, Human development: A life-span perspective (pp.247-253), New York: McGraw Hill Book Co. unit VI, Unit VII (1983).
3. P. Mussen, J.J. Conger, J.Kagan, and A.C. Huston, Child Development and Personality. New York: Harper and Row. Unit I pp 12-18 (1990).

SEMESTER-VI: CORE - XV
COMMUNITY DEVELOPMENT

Course Code	**: 14UND6C15**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credits	**: 4**	**External Marks**	**: 60**

Objectives:

To enable students to,

1. Understand principles of Extension and Community development work in our country.
2. Understand the problems and needs of rural community.
3. Prepare for higher studies in Extension Education.
4. Become effective Home science extension workers.
5. Offer effective leadership in the community.

UNIT-I **12 hours**

Extension education and community development

1.1. Introduction of extension education and community development.
1.2. Philosophy and principle of extension education.
1.3. Organization and functions of community development and #Extension service in India#.

UNIT-II **12 hours**

Study of rural india

2.1. Characteristics of rural life in India, family life- religion and caste
2.2. Panchayat raj administration.

UNIT-III **12 hours**

Home science extension

3.1 . The home science extension- concept and objectives.
3.2 . #Home science extension workers- qualities and activities#.
3.3 . Nutrition extension services by food & nutrition board.

UNIT-IV **12 hours**

Principles and methods of extension work

4.1. The learning and teaching process – effective teaching through different methods – individual, group and mass approach.
4.2. Cone of experience.
4.3. Audio visual aids in extension work – motion pictures, radios, slides, flannel graphs, flash cards, graphs and #puppet shows#.

UNIT-V **12hours**

5.1. Communication – it's meaning needs types and #problems in communication#.

5.2. Program planning- meaning and importance, steps involved in programme planning.

Welfare programmes for Rural development: IRDP (Integrated Rural Development Programme), ICDS (Integrated Child Development Scheme), Rashtriya krishi vikas yojana, Swarnajayanthi gram swarozgar yojana, Central government health scheme, Rajiv awaas yojana.

#.....# self-study portion.

TEXT BOOKS

1. A.Reddy, Extension Education, 1st edition, Sree lakshmi press, Andrapradesh (1971).
2. A.Chandra, A.Shah and U.Joshi, Fundamentals of Teaching Home Science, Sterling Publishers Pvt Ltd., NewDelhi (1989).

UNIT I Text Book 1 Chapter I

UNIT II Text Book 1 Chapter VI

UNIT III Text Book 1 Chapter V
Text Book 2 Chapter XVIII, XIX

UNIT IV Text Book 1 Chapter II
Text Book 2 Chapter VII, VIII, XI, XII

UNIT V Text Book 2 Chapter XX

REFERENCE BOOKS

1. Food and Nutrition Board, Community Food and Nutrition Extension Unit, Rajaji Bhavan, Chennai.
2. Food and Nutrition Board, Department of Women and Child Development Ministry of Human Resources Development, Government of India,Shastri Bhavan, New Delhi..
3. R.P. Devadas., Introduction to home science, Saradhalaya press, Coimbatore.
4. O.P. Dahama and O.P. Bhat Nagar, Extension and communication for development, Oxford and IBH Publishing company New Delhi(1985).

SEMESTER – VI: CORE -XVI
BASICS IN BAKERY

Course Code	**: 14UND6C16**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

Objectives:
This course will enable the students to
1. Understand basic concepts of baking.
2. Acquaint with the role of various major and minor ingredients in bakery products.
3. Familiarize with baking process and operation.
4. Learn the quality parameter of bakery products.

UNIT I **12 hours**

1.1 Introduction of bakery–definition, principles, #types of baked and confectionary products#.
1.2 Major and minor equipment – required to start a small bakery unit.
1.3 Major and minor ingredient in baking
a) Major ingredients – flour, fat, sugar and leavening agent – types, role in bakery
b) Minor ingredients – milk, water, salt – types, role in bakery

UNIT II **12 hours**

2.1 Bread
a) Principles involved in the yeast products preparation, methods – straight dough method, salt delayed method, no dough time method, sponge and dough method, ferment and dough method.
b) Processing – flying fermentation, bulk fermentation, knock back, dividing and rounding, intermediate proofing, molding and panning, final proofing, baking, depanning, cooling, sliceing, packaging.
c) Faults and remedies in baked bread, types of bread improvers.

UNIT III **12 hours**

3.1 Cake
a) Principles involved in the preparation of cake, sponge cake – types (fatless sponge, Genoese sponge, plain sponge, gel sponge).
b) Methods – sugar batter method, flour batter method, blending method, boiling method, sugar water method, all-in process method (slow speed, medium speed, fast speed), foaming method.
c) Faults and remedies in baked cakes.

UNIT IV **12 hours**

4.1 Biscuits and cookies

a) Principles involved in cookies preparation, methods for mixing cookies – single or one stage method, creaming or sugar batter method, blending or rub in method, foaming method, flour batter method.
b) Types – sheeted types, piped types, bar types, dropped types, rolled types
    i. Different between biscuits and cookies
    ii. Faults and remedies in baked biscuits and cookies

UNIT V **12 hours**

5.1 Icing –Types and Preparation Methods

Butter cream – royal icing - almonds paste (or) marzipau – fondant icing – gum paste (or) pastillage – American frosting – water icing (or) glace icing.

5.2 Pastries and preparation Methods

Pastries – types, short crust pastry – puff pastry – flaky pastry – philo (or) filo pastry – choure pastry – punish pastry - faults and their causes in making pastry .

#.....# self study portion

TEXT BOOKS

1. A. John Kingslee, Professional Text to Bakery and Confectionary, First Edition, New Age International (P) Limited Publishers (2006).
2. Yogambal Ashokkumar Theory of Bakery and Confectionery, Fifth Edition, PHI Learning Private Limited, New Delhi(2009).

UNIT I Text book – 1 Chapter – I, II

UNIT II Text book – 2 Chapter – XI

UNIT III Text book – 2 Chapter – XII

UNIT IV Text book – 2 Chapter – XIV

UNIT V Text book –2 Chapter – XV, XIII

REFERENCE BOOKS

1. Wayne Gisslen, The Professional Baking, Sixth Edition, Publishers John Wiley & Sons (2012).
2. Pat Sinclair, Basic Baking, Publisher Agate (2006).

SEMESTER – VI: CORE –XVII
BASICS IN BAKERY- PRACTICAL

Course Code	**: 14UND6C17P**	**Max. Marks**	**: 100**
Hours/Week	**: 4**	**Internal Marks**	**: 40**
Credit	**: 4**	**External Marks**	**: 60**

1. Preparation of
   a) Bread- Plain bread, Bavarian loaf, Fruit bread.
   b) Bread Rolls- Croissants, Danish, Rolls, Pizza.
   c) Bun – Plain bun, Sweet bun, Fruit bun, Burger.
2. Preparation of Cakes – Sponge cake, Chocolate cake, Plum cake, chocolate cake, Eggless cake, Christmas cake, Muffin cake, Birthday cake with Icing.
3. Preparation of
   a) Pastry – short crust pastry, puff pastry, Philo (or) filo pastry
   b) Biscuits – Salt biscuits, Ginger biscuits, Ragi biscuits, Salt biscuits.
   c) Cookies – butter cookies, melting moments, piped cookies, marble cookies, Dutch cookies, Coco cookes, Nankhatai.
4. Visit to a well established bakery.

SEMESTER-VI: SKILL BASED ELLECTIVE -IV
INTERIOR DESIGN

Course Code : 14 UND6S4 **Max. Marks : 100**
Hours/Week : 2 **Internal Marks : 40**
Credit : 2 **External Marks : 60**

Objectives:

1. To acquire the knowledge of various elements and principles of art in Interior.
2. To apply theoretical knowledge of interior decoration to practical Situations.

UNIT – I **6 hours**

1.1 **Interior decoration-**good taste and its importance.

1.2 **Design -** elements of design, types of design, characteristics of good design. Principles of design – harmony, emphasis, proportion, balance and rhythm.

UNIT – II **6 hours**

2.1 **Color -**qualities of color. hue, value and intensity. The prang color system.

2.2 Factors affecting the use of color in rooms and various color scheme for various rooms.

UNIT-III **6 hours**

3.1 **Furniture -**materialsused in furnishing items, factors influencing the selection of furniture.

3.2 Furniture requirements and their arrangements in the home.

UNIT-IV **6 hours**

4.1 **Soft Furnishings -**factors in the selection, types and use of furnishing materials (Draperies and curtains).

4.2 **Floor Coverings-** factors for selecting floor covering, salient features of carpet, and uses of floor coverings.

UNIT-V **6 hours**

5.1 **Accessories** – flower arrangement – principles types, and steps in preparing flower arrangement.

5.2 **Home illumination** –factors affecting illumination, types of illumination. Planning – illumination for various areas in interior.

#.....# self- study portion

TEXT BOOK

1. Premavathy Seetharaman and Parveen Banu "Interior Design and Decoration" CBS Publishers, New Delhi, (2007).

UNIT- I Text book – 1 Chapter – I, II, III

UNIT –II Text book – 2 Chapter – V, VI

UNIT-III Text book – 3 Chapter – XI

UNIT - IV Text book – 4 Chapter – IX, X

UNIT –V Text book – 5 Chapter – VII, XIII

REFERENCE BOOKS

1. H. Goldstein and V. Goldstein, Art in Everyday Life, Macmillan and Company, New York(1966).
2. H.T. Graig, and C.H. Rush, Homes with Character, D.C. Health and Company, Boston (1965).
3. R.F. Sherwood, Homes Today and Tomorro, Chart Bannet Co., Illinois (1972).

SEMESTER- VI:EXTRA CREDIT - IV
FOOD PACKAGING AND MARKETING

Course Code : 14 UND6EC4	**Max. Marks : 100***
Hours/Week :	**Internal Marks : -**
Credit : 4*	**External Marks : 100***

Objectives:

This course will enable the students to-

1. Know different packing materials available.
2. Be aware of new advances and State-of the art in food packing.
3. Select appropriate packaging materials for varied food products.

UNIT – I

Importance of Packaging

Functions of Packaging. Primary elements of package forms, material and decoration.

UNIT – II

Various Package Forms

Products, tubes, tetra packs, cans, bottle.

UNIT-III

Packaging Materials

Their properties, advantages and limitations- (aluminum, glass, tinned steel plate, carton board, paper, flexible, films, laminates and others)

UNIT-IV

Packaging methods and Performances

Including restorable plastic packaging, asetic packaging, modified atmosphere packing.

UNIT–V

Food and food packing interaction. Biodegradable packaging materials.

TEXT BOOKS

1. Niir Board, Hand Book on Modern Packaging Industries, Asia Pacific Business Press Inc.
2. Doney Sun Lee, Food Packaging Science and Technology, CRC Press (2008).

UNIT I Text book –1Chapter – VII

UNIT II Text book –1 Chapter – VIII

UNIT III Text book –1Chapter – III

UNIT IV Text book – 1 Chapter – IV
Text book – 1 Chapter – V

UNIT V Text book – 1 Chapter – II
Text book – 1 Chapter – IX

REFERENCE BOOKS

1. Fuller and John, Modern Restaurant Service, Hutchinson, London (1983).
2. R.S. Gambhir, Electricity, Magnetism and Modern physics, Third edition (1980).