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| II   | 14U2LT2/2A2/L2/2H2/2U2 | 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  | 14U3LT3/3A3/L3/3H3/3U3 | 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   | 14U4LT4/4A4/L4/4H4/4U4 | 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:

<table>
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<tr>
<th>SEM</th>
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<td>II</td>
<td>Food and Health</td>
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<td>III</td>
<td>Nutrition for the Family</td>
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* 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.
1.2 Bacteria: Morphological characteristics- structure, size, classification based on shape, motility, nutrition, reproduction, respiration. Bacterial diseases and its prevention- cholera, typhoid.
1.3 Virus: Morphological characteristics- size, classification, structure, host specificity resistance, replication, viral diseases and its prevention-hepatitis, poliomyelitis.

UNIT – II 15 hours
Mould, Yeast, Protozoa
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:
4.1 Spoilage - 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

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

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

#Role of cereals in cookery#
UNIT-IV  
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  
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


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

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, carburreted 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 nitrate. Micronutrients 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 [FeCN₆]⁴⁺, [Ni(NH₃)₄]²⁺ and [Ni(CN)₄]²⁻. Biological role of
haemoglobin 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, CCl₄ - 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
4.1 Chemical kinetics

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
5.1 Surface chemistry

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


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:


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. Organic Reactions of the following compounds
   a. Glucose    d. Aldehyde
   b. Urea       e. Benzoic acid
   c. Aniline    f. Phenol

2. Permanganometry 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

4.1 Energy – 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

Vitamins and Minerals

5.1 Vitamins –

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

(ii) Water Soluble Vitamins (B₁, B₂, B₃, B₄, B₆, B₁₂ & C): Functions, Sources, Requirements, Deficiency and Excess

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

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

TEXT BOOKS


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. **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.

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.
1.2 Definition-food, nutrition, optimum nutrition.
1.3 Functions of foods- physiological, psychological and social functions.

UNIT-II           6 hours
Factors affecting Health:
2.1 Factors 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.
3.3 Health 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

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
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.

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 amino acid 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,
    (P) Ltd, Kolkata (2010).

UNIT I Text book – I Chapter – XVII
UNIT II Text book – I Chapter – XXI, XXII
UNIT III Text book – I Chapter – II, XIX, XX
UNIT IV Text book – I Chapter – XII, XXVIII
UNIT V Text book – I Chapter – XXVII

REFERENCE BOOKS
    and sons (1986).
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
Basic Principles of Meal Planning:
1.1 Definition, principles of meal planning and factors affecting meal planning.
1.2 Recommended allowance - #RDA for Indians, uses and limitations#.

UNIT-II
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
Infancy and Preschool Children:
3.2 Nutritional needs of Pre-school children - growth and development, nutritional and food requirements of preschool children. Factors to be considered while planning meals for preschool children. Nutritional problems of preschool children.

UNIT-IV
School Going Children and Adolescence:
4.1 Nutrition 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.

UNIT-V 12 hours
Adulthood and Geriatric Nutrition:
5.1 Nutritional needs of adults (men and women) – #Reference man and woman#, Nutritional and work efficiency. Nutritional requirement of adult in relation to occupation.
5.2 Nutrition 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

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. 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
2.2. 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

UNIT V 6 hours
5.1. Nutritional needs of Adults (men and women) - dietary guidelines for adults.
TEXT BOOKS


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

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:
1.2 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:
3.1 Digestive 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.
3.2 Excretory 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**


**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. Histology of tissues- columnar, cubical, ciliated, squamous, stratified, squamous.

2. Microscopic structure of organs- stomach, ovary and pancreas.

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


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.


10. Visit to a laboratory.
**SEMESTER-IV: CORE-IV**  
**DIET THERAPY-I**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Max. Marks</th>
<th>Hours/Week</th>
<th>Internal Marks</th>
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**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**

**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**

**Routine Hospital Diets and Therapeutic Feeding**

2.1 **Routine hospital diets** – clear fluid diet, full fluid diet, soft diet and 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**

**Nutritional Care for Weight Management**

3.2 **Underweight** – etiology, signs and symptoms and dietary management.
UNIT- IV

Diseases of the Gastro Intestinal Tract


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

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


UNIT IV  
Text book – 1 Chapter – XVI  
Text book – 2 Chapter – XII  
Text book – 3 Chapter – XXXXII, XXXXIII, XXXXIV, XXXXV  
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. 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.

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).
3.2 Printing – 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
   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**


**UNIT I**  
Text book – I Chapter – V, VI

**UNIT II**  
Text book – I Chapter – VI, VII

**UNIT III**  
Text book – I Chapter – VIII

**UNIT IV**  
Text book – I Chapter – IV

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

**REFERENCE BOOKS**

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


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

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

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

UNIT II Text Book 1 Chapter IV & V

UNIT III Net Ref http://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

REFERENCE BOOKS
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 sweeteners - 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
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


UNIT I
Text book – 1 Chapter – XVIII
Text book – 2 Chapter – IX
Text book – 3 Chapter – XXXXXXXVIII
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, XXXXXXXXI, XXXXXXXXII
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 – XXXXXXVIII, XXXXXXXIX, XXXXXXXIV
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 – XXX, XXXI  
Ref book –2 Chapter – XXIV, XXV

REFERENCE BOOKS
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.
1.3 Food 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:
2.1 Appearance factors: size, shape, colour, gloss.
2.2 Textural factors: brittleness, tenderness, consistency, astringency.
2.3 Flavour 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  
**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  
**Quality control:**

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

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

5.3 **Quality systems** - BS5750 and ISO9000series.

# # # self-study portion.

**TEXT BOOKS**


UNIT I  
Text book –3 Chapter – XIV 
Net Ref [www.fssai.gov.in](http://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

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.
3.2 Receiving- procedures and forms.
3.3 Storing 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, continental, chiense menu#.
4.3 Standardization of recipes, portion control, #utilization of leftover foods#.
UNIT-V
Quantity food service and cost control: 12 hours
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


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

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
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
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
Nutritional problems confronting the community:
3.1 Protein Energy Malnutrition- prevalence, classification- kwashiorkar 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

Role of national and international organizations:


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


UNIT-V

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


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

Objective
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
    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 glazed 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  


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 and economy.  
#................ self-study portion.

TEXT BOOKS


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

7. NIIR Board of Food & Technologist, Modern Technology of Food Processing & agro based industries, 2nd edition, National institute of Industrial Research, New Delhi.
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.


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
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
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
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
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
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


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

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 Starting 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 entrepreneurs 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


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

UNIT II
Text book –1 Chapter – VII
Net reference commerce.nic.in/publications/pdf/chapter_4.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

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

UNIT –V

**Fuel management, Hygiene and Sanitation**

15 hours

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**


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**

5. Mohini Sethi and Malham, Catering Management and Integrated Approach, John Wiley&

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
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


5.2. 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


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

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  
12 hours

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

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


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

TEXT BOOKS


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.
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,
slicing, 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

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

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

#.....# self study portion

TEXT BOOKS

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. 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 cookies, Nankhatai.

4. Visit to a well established bakery.
SEMMESTER-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 - materials used 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.

#.....# self- study portion
TEXT BOOK


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

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
UNIT I  
Text book – 1 Chapter – VII

UNIT II  
Text book – 1 Chapter – VIII

UNIT III  
Text book – 1 Chapter – 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