# B.Sc. Nutrition, Food Service Management and Dietetics: Syllabus (CBCS)

**THIRUVALLUVAR UNIVERSITY**

**BACHELOR OF SCIENCE**

**B.Sc. NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS**

**DEGREE COURSE**

**CBCS PATTERN**

(With effect from 2017-2018)

**The Course of Study and the Scheme of Examinations**

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### B.Sc. Nutrition, Food Service Management and Dietetics: Syllabus (CBCS)

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OBJECTIVES

To enable the students to:

2. To understand the role of micro-organisms in spoilage of various foods.
3. To gain knowledge of micro-organisms in relation to food and food preservation.

UNIT-I

- Introduction to Microbiology and its relevance to everyday life.
- General Characteristics of Bacteria, Viruses, Yeast, Molds, Protozoa, Algae.
  a. Bacteria: Bacterial cell, Morphology, Reproduction and function
  b. Viruses: Morphology, Classification, Phages - Life cycle, functions.
  c. Yeast: Morphology - Cell structure multiplication (Budding), functions.
  d. Molds: Morphology, classification, reproduction of molds.
  e. Algae: Morphology - Structure and reproduction.
  f. Protozoa: Morphology, reproduction, motility and classification.
  g. Economic importance of Molds, Yeast and Bacteria.

UNIT-II - PRINCIPLES OF FOOD PRESERVATION
• Use of high and low temperature. Canning of fruits and vegetables.

• Preservation of drying, use of chemicals in food preservation. Part played by antibiotics in the preservation of fleshy foods.

**DESTRUCTION OF MICRO-ORGANISM**

• Sterilization:
  (i) Application of Dry heat, burning, flaming and hot air oven.
  (iii) Sterilization with the use of filters.

**UNIT-III - MICRO ORGANISM IN HUMAN WELFARE**

• Importance of microbes in food biotechnology, genetically engineered organisms, probiotics and single cell proteins.

• Fermentation: Aerobic and Anaerobic respiration. Products of Fermentation- Brief knowledge on the preparation of Bread, Malt beverages, Wine, Distil liquor, Vinegar, Fermented Vegetables and Dairy products.

**UNIT-IV - CONTAMINATION AND SPOILAGE OF FOODS**

• Principles of food spoilage by microbiological, physical and biological factors - Causes of spoilage – Classification of foods based on spoilage – factors affecting – kinds and numbers of micro-organism in food; Growth and chemical changes caused by microorganisms.

• Contamination, preservation and spoilage of cereal and cereal products, baked products, Fruits and vegetables and their products, Fleshy foods, Milk and Milk products, Egg and Egg Products, and Fats and oils.

**UNIT-V - MICROBIOLOGY OF FOOD POISONING, FOOD INFECTIONS AND FOOD BORNE DISEASES**

• Microbial food poisoning by Staphylococci, Salmonella and clostridium botulinum (Botulism). Measures to prevent microbial food poisoning.

• Public health hazards due to contaminated foods - Food borne Infections and Food intoxication symptoms, mode of transmission and methods of prevention of Dysentery diarrhea, Typhoid, Cholera.
REFERENCES


ALLIED PAPER - 1
CHEMISTRY I

OBJECTIVE:

- Basic knowledge on Metallurgy, Cycloalkanes, Polarising Effects, Stereochemistry, Chemical Kinetics, Catalysis, Photochemistry, VSEPR Theory, Fuels, Osmosis, Nuclear Chemistry, Petroleum Chemistry, Chemistry of Naphthalene, Conductors and Applications wherever necessary are to be taught for I- Semester.

UNIT – I


1.2 Calcination, Smelting, Roasting, Fux, Slag - Definition - Reduction methods - Goldschmidt Aluminothermic process and Carbon Reduction method - Refining of Metals - Electrolytic, Van Arkel and Zone Refining.

1.3 Ores of Titanium and Cobalt - Extraction of Titanium and Cobalt.

UNIT – II

2.1 Cycloalkanes - Preparation – Wurtz reaction and Dieckmann’s condensation - Properties of Cycloalkanes – Substitution and Ring opening reactions.

2.2 Polarisation - Inductive effect, Mesomeric effect and Steric effect (Acid and Base Strength).

UNIT – III

3.1 Chemical Kinetics – Rate of a reaction – Definition of Order and Molecularity – Distinction between Order and Molecularity - Derivation of First order rate equation - Half Life Period of first order reaction.

3.2 Catalysis - Catalyst - Autocatalyst - Enzyme catalyst - Promoters - Catalytic poisons – Active Centre - Differences between Homogeneous and Heterogeneous Catalysis - Industrial Applications of Catalysts.


UNIT – IV

4.1 VSEPR Theory – Hybridisation and Shapes of simple molecules BF₃, PCl₅, SF₆ and XeF₆.


4.3 Osmosis - Osmotic pressure - Reverse osmosis – Definition - Desalination of Sea water.
UNIT – V

5.1 Nuclear Chemistry – Atomic number, Mass number - Isotopes, Isobars and Isotones – Definition and Examples - Definition of Half life period - Nuclear Binding Energy, Mass Defect and N/P ratio - Nuclear Fission and Nuclear Fusion (Elementary idea) - Applications of Radioisotopes in Medicine, Agriculture and Industries – Carbon Dating.

5.2 Crude Oil - Petroleum - Petroleum Refining - Cracking - Applications of Cracking – Naphthalene – Preparation – Haworth’s method – Properties – Oxidation, Reduction and Uses of Naphthalene - Structure of Naphthalene (Structural elucidation not necessary).

5.3 Conductors, Insulators, Semiconductors, N- and P- Type Semiconductors – Definitions and Examples.
OBJECTIVES

1. To enable the students to understand the structure and basic physiology of various organs of the body.

2. To obtain better understanding of the principles of Nutrition through the study of physiology.

UNIT-I: CELL-TISSUES

- Introduction to the cell – Structure and function of a typical cell, cell division – Mitosis and Meiosis.
- Tissues - classification, structure and function of epithelial, muscular, connective and nervous tissues.

UNIT-II: BLOOD, HEART AND CIRCULATION


- Heart and circulation: Structure of the heart and blood vessels, origin and conduction of heart beat, cardiac cycle, ECG, blood pressure – definition and factors affecting it.

UNIT-III: RESPIRATORY AND EXCRETORY SYSTEM


- Excretory system: Structure and function of kidney and Nephron, urine formation, micturition.

UNIT-IV: DIGESTIVE SYSTEM & NERVOUS SYSTEM

- Structure and function – Secretory Digestive and absorptive functions. Role of Liver, Pancreas and Gall bladder.

- Neuron structure and functions, Structure of Brain and Spinal cord
• Autonomic nervous system – sympathetic and parasympathetic.

UNIT-V: ENDOCRINE AND REPRODUCTIVE SYSTEM
• General structure of male and female reproductive organs, puberty, menstrual cycle.

• Functions and Disorders of Endocrine Glands – Pituitary, Thyroid, Parathyroid, Adrenal and Islets of Langerhans.

REFERENCES


CORE PRACTICAL I

A. MICROBIOLOGY

1. Microscope and its use.

2. Examination of Yeast, molds, Protozoa and Bacteria.

3. Examination of wet methods and hanging drop preparations.

4. Examination of stained organisms, Simple Staining and gram method of staining.

B. HUMAN PHYSIOLOGY

1. Microscopic study of
   a. Tissues - Epithelial, connective, muscular and nervous tissue
   b. Endocrine Glands – Thyroid, Pituitary, Adrenal and Pancreas.

2. Study of anatomy of Heart, Brain, Kidney and digestive system using readymade models.

3. Demonstration of determination of blood count.


5. Estimation of Hemoglobin.
OBJECTIVE:

- Basic knowledge on Coordination Chemistry, Industrial Chemistry, Carbohydrates, Amino acids, Proteins, Electrochemistry, Paints and Pigments, dyes, Vitamins, Medicinal Chemistry, Corrosion and Applications wherever necessary are to be taught for II- semester.

UNIT – I

1.1 Coordination Chemistry - Nomenclature of Coordination Compounds - Ligands, Central Metal Ion and Complex Ion – Definition and Examples – Coordination Number - Werner’s Theory of Coordination Compounds - Chelates - Functions and Structure of Haemoglobin and Chlorophyll.

1.2 Industrial Chemistry - Fertilisers and Manures – Biofertilisers - Organic Manures and their importance - Role of NPK in plants - Preparation and Uses of Urea, Ammonium Nitrate, Potassium Nitrite and Super Phosphate of Lime.

1.3 Contents in Match Sticks and Match Box - Industrial making of Safety Matches – Preparation and Uses of Chloroform, DDT, Gammexane and Freons.

UNIT – II

2.1 Carbohydrates - Definition and Examples - Classification – Oxidation and Reduction Reactions of Glucose - Structure of Glucose (Structural elucidation not necessary) - Uses of Starch - Uses of Cellulose Nitrate and Cellulose Acetate.

2.2 Amino Acids – Definition and Examples - Classification of Amino Acids -

2.3 Proteins – Definition - Classification of Proteins based on Physical properties and Biological functions - Primary and Secondary Structure of Proteins (Elementary Treatment only) – Composition of RNA and DNA and their Biological role - Tanning of Leather - Alum (Aluminum chloride tanning ) - Vegetable tanning – Chrome Tanning.

UNIT – III

3.1 Electrochemistry - Electrolytes – Definition and Examples – Classification - Specific and Equivalent Conductance - their determination – Variation of Specific and Equivalent conductance with Dilution – Ostwald’s Dilution Law and its Limitations.

3.2 Kohlrausch’s Law - Determination of Dissociation Constant of weak Electrolytes using Conductance measurement - Conductometric titrations.

3.3 pH – Definition and pH determination by indicator method - Buffer solutions - Buffer action - Importance of buffers in the living systems.

UNIT – IV


4.3 Chromatography - Principles and Applications of Column and Paper chromatography- $R_f$ value.

UNIT – V

5.1 Drugs - Sulpha Drugs – Preparation and Uses of Sulphapyridine and Sulphadiazine - Mode of Action of Sulpha Drugs - Antibiotics - Uses of Penicillin, Chloramphenicol and Streptomycin - Drug Abuse and Their Implication - Alcohol – LSD.

5.2 Anaesthetics - General and Local Anaesthetics - Antiseptics - Examples and their Applications - Definition and One Example each for Analgesics, Antipyretics, Tranquilizers, Sedatives - Causes, Symptoms and Treatment of Diabetes, Cancer and AIDS.

5.3 Electrochemical Corrosion and its Prevention – Electroplating – Applications.
ALLIED CHEMISTRY

PRACTICAL

VOLUMETRIC ANALYSIS

2. Estimation of Borax - Standard Sodium Carbonate.
4. Estimation of FeSO₄ – Standard FAS.
8. Estimation of Fe²⁺ using Diphenylamine / N- Phenyl Anthranilic acid as indicator.

ORGANIC ANALYSIS


Reactions of Aromatic Aldehyde, Carbohydrates, Mono and Dicarboxylic acids, Phenol, Aromatic Primary Amine, Amide and Diamide.

REFERENCE BOOKS


SEMESTER III
PAPER - 3
FOOD SCIENCE

OBJECTIVES

To enable students to:

1. Obtain knowledge of different food groups and their nutritive value, Understand the scientific principles underlying food preparation

2. Develop skill and techniques in food preparation with conservation of nutrients and palatability using cooking methods generally employed.

UNIT-I

Definition, Classification, Functions of foods- Functions of food in relation to health - classification of foods based on nutrients., Need For Grouping Foods, Application Of Food Groups in Planning Adequate Diets, Food Pyramid, Food groups - Basic Four, Basic Five, Basic Seven and Basic Nine.

UNIT-II


UNIT-III: EXPERIMENTAL STUDY OF FOODS


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

Vegetables and Fruits - Classification, composition and Nutritive value - methods to minimize the loss of nutrients, types of pigments, effects of acid on color, texture, flavor. Browning reaction and changes during cooking.
UNIT-IV: ANIMAL FOODS

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

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

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

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

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

UNIT-V

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

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

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

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

REFERENCES

ALLIED - 2
PAPER - 3

NUTRITIONAL BIOCHEMISTRY

UNIT-I
Introduction to biochemistry and relation to nutrition, carbohydrates- structural classification, metabolism of glucose- Glycolysis, krebs cycle, gluconeogenesis, glycogenesis, glycogenolysis, blood glucose maintenance and its regulation.

UNIT-II
Proteins – classification based on amino acid, primary, secondary and tertiary structure of proteins, hydrolysis of proteins, denaturation, precipitation and coagulation, deamination, transamination, decorboxylation- urea cycle and metabolic disorders of urea cycle

UNIT-III

UNIT-IV
Nucleic acids and protein biosynthesis, nucleotides, Nucleosides, nucleic acids- structure and functions.

UNIT-V
Enymes- classification, factors affecting enzyme activity, mechanism of enzyme action, enzyme inhibition, coenzymes and prosthetic group, isoenzymes, diagnostic value of clinical enzymes.

REFERENCES


10. Illustrated biochemistry-lippincott’s,5th edition
SKILL BASED SUBJECT I
PAPER – 1
BAKERY

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
Introduction of bakery—definition, principles, types of baked and confectionary products. Major and minor equipment – required to start a small bakery unit. 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
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
CAKE


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

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

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.


REFERENCES


NON-MAJOR ELECTIVE I

PAPER - 1

HEALTH AND FITNESS

UNIT I


UNIT II

FITNESS - Definition, parameters of fitness, cardiovascular endurance, muscular strength, muscular endurance, physical fitness tests- for flexibility.

UNIT III

YOGA AND FITNESS - principles of yoga therapy, social skills and living value based education. Yogic concepts in various diseases like diabetes, CVD, digestion and immune system.

UNIT IV

WARM UP EXERCISES & BASIC ASANAS - Simplified physical exercises and body stretching practices. Basic asanas, suryanamaskar, breathing exercise- pranayama

UNIT V

SPECIAL NUTRITION - Basic knowledge on sports nutrition, special nutritional needs for sea voyage, military and space [basic only]

REFERENCES

HUMAN NUTRITION

OBJECTIVES

1. To introduce the students to the principle of Human Nutrition.

2. To gain skill in qualitative tests and quantitative estimation of nutrients.

UNIT-I

1. Introduction to Nutrition - Development of Nutrition as a Science - Definition of Nutrition.


UNIT-II

1. Energy units - Calories, Joules, determination of energy value of foods, using Bomb calorimeter, gross calorific values, Physiological energy, value of foods, relation between oxygen used and calorific value, determination of direct calorimetry.

2. Relation between Respiratory quotient and energy output - Specific dynamic action of food, indirect calorimetry - Basal metabolism - definition, determination - benedict Roth basal Metabolism Apparatus - factors affecting BMR - determination of energy metabolism during work - energy requirements for various types of activities, factorial methods for calculation of the daily energy requirements of an adult for varying degrees of physical activity - recommended allowances for calories, energy requirements of adults expressed in terms of Reference man and Reference woman - ICMR committee percent calories supplied by carbohydrates, fats and proteins in average Indian diets - Energy requirements for different age groups.

UNIT-III


UNIT-IV
1. Fat soluble vitamins - Vitamin A, D, E and K – functions, deficiency, sources, requirements and hyper-vitaminosis.
2. Water soluble vitamins - ascorbic acid, thiamine, riboflavin, Niacin, folic acid, Vit B-12, pyridoxine, Biotin and Pantothenic acid - Functions, deficiency, sources and requirements.

UNIT-V
1. Macro, Mirco and Trace elements - calcium, sodium, potassium, phosphorous, Iron, copper, fluorine, zinc and Iodine – classification, distribution in the body, functions, sources, requirements and deficiency.
2. Selenium and Vitamin E relationship.
3. Chromium and glucose tolerance factor.

REFERENCES
2. Shubhangini. A. Joshi; Nutrition and Dietetics III edition, McGraw Hill Education (India) private limited
CORE PRACTICAL II
A. FOOD SCIENCE

1. Cookery Practical’s;
2. Grouping of foods - Discussion on nutritive value
3. Technique in measurement of food stuff - use of standard measuring cups and spoons.
4. Different recipes from cereals, pulses, vegetables, fruits, fleshy foods, egg, milk and milk products.
5. Beverages - preparation of stimulating, nourishing and refreshing beverages
7. Sugar cookery - preparing recipes at different stages of sugar cookery.

II EXPERIMENTAL FOODS PRACTICAL

1. Cereals
   Microscopic study of different starches
   a. Methods of combining starch and boiling water
   b. Study of effects of moist heat on starch
   c. Preparation of white sauces and soups
   d. Gluten formation


3. Vegetables - Effect of acids, alkali, covering, steaming and pressure cooking on the different pigments and acceptability of vegetables.


6. Milk cookery - Coagulation of milk protein, paneer, cooking of vegetables in milk

7. Fats and oils - comparison of smoking temperature of some fats and oils.

8. Sugar and Jaggery - Different stages of crystallization of sugar.

9. General visit to food Industry and Factories.
1. Qualitative tests for sugars - glucose, fructose, lactose, maltose and glucose.

2. Qualitative estimation of reducing sugar

3. Qualitative tests for proteins (Lowry’s method).

4. Qualitative tests for minerals.

5. Quantitative estimation of calcium


7. Quantitative estimation of vitamin C.

8. Demonstration Experiments.
   a. Estimation of total nitrogen in foods (Micro or Macrokjeldahl method)
   b. Lipid extraction
   c. Demonstration of Iodine value
   d. Estimation of Iron
   e. Qualitative tests for vitamin A
   f. Quantitative estimation of Carotene
OBJECTIVES

To enable the students to

1. Understand the principles of preservation.
2. Understand the type of spoilages and the various methods of preventing spoilage.
3. Learn about the methods of preservation.

UNIT-I
PRINCIPLES OF FOOD PRESERVATION
Importance and principles of food preservation, Need for preservation, types of spoilage, role of micro organism in food spoilage, prevention of food spoilage, shelf life of food products, Factors affecting shelf life.

UNIT-II
PRESERVATION BY HIGH OSMOTIC PRESSURE
High concentration of sugar, Procedure for fruit jelly and jam, fruit preserves, failure to jelly and jam to set.

HIGH CONCENTRATION OF SALT
Pickling and Curing of meat.

FERMENTATION
Types, advantages and factors affecting fermentation.

UNIT-III
PRESERVATION BY USE OF HIGH TEMPERATURE
Factors affecting heat resistance, canning procedures, spoilage of canned foods, heat sterilization, pasteurization.

PRESERVATION BY USE OF LOW TEMPERATURE:-
Refrigeration – Advantages, factors to be considered, common spoilage.

FREEZING
Difference between refrigeration and freezing, methods of freezing, steps involved in freezing, common food spoilage. Basic concepts about hurdle technology and membrane technology.
UNIT-IV
PRESERVATION BY USING CHEMICALS
Definition, classification, mode of action, mechanism.

FOOD IRRADIATION
Properties and safety of irradiation, advantages, mechanism permitted doses.

UNIT-V
DRYING AND DEHYDRATION

REFERENCES
ALLIED PRACTICAL

A. NUTRITIONAL BIOCHEMISTRY

1. Identification of carbohydrates (Qualitative Tests)
2. Identification of proteins (Qualitative Tests)
3. Estimation of glucose in urine by Benedict's methods

B. FOOD PRESERVATION

1. Preservation of food items by the use of high and low temperatures.
2. Traditional methods of food preservation a) Drying b) Salting c) Changes during drying
3. Preservation of foods by the use of class I and class II Preservatives
4. Use of sorbic acid and sulphurdioxide as an antimicrobial preservatives.
5. Visit to Preservation Unit.
SKILL BASED SUBJECT II

PAPER – 2

FOOD PRODUCT DEVELOPMENT AND MARKETING STRATEGY

OBJECTIVES

To enable the students to

- Develop new marketable, nutritionally and economically viable food products
- Develop entrepreneurship skills for setting up small scale food industries
- Understand packaging of different food products

Unit I - FOOD CONSUMPTION PATTERN


Unit II - INTRODUCTION TO FOOD PROCESSING AND PRODUCT DEVELOPMENT

Food Components, Types of Food Processing, Status of Food Processing Industry in India and Scope of Growth in Future , Principles and Purpose of New Product Development, Product Design and Specifications.

Unit III - RECIPE DEVELOPMENT


Unit IV - TESTING, EVALUATION AND PACKAGING OF PRODUCTS

Standardization, Portion size, Portion Control, Quantity Cooking, Shelf Life Evaluation- Sensory and Microbial Testing of Processed Foods, Nutrient Analysis. Suitable Packaging Materials for Different Foods, SWOT Analysis

Unit V - FINANCIAL MANAGEMENT AND MARKETING OF FOOD PRODUCTS

Institutional Support (Training and Finance) for Entrepreneurship Development. Financial Institutions (Central and State Government) banks/Funding Agencies, Financial Accounting Procedures, Book Keeping, Market Research, Marketing Strategies, Cost
Calculation, Advertising Methods, Product sales, Product License, Legal specifications, Consumer Behaviour and Food Acceptance.

REFERENCES


NON-MAJOR ELECTIVE
PAPER - 2
NUTRITION FOR THE FAMILY

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
Food groups- basic five, nutritional classification of foods - energy yielding, body building and protective foods - Basic principles of Meal planning – balanced diet-meaning, food guide pyramid.

UNIT II

UNIT III
Nutrition during Infancy and Preschool age - dietary guidelines for infants, advantages of breast feeding, disadvantages of bottle feeding; Weaning foods (definition) and types of supplementary food. Nutritional needs of Pre-school children, factors to be considered while planning meals for pre-school children. Food habits of Pre School Children.

UNIT IV

UNIT V
REFERENCES


OBJECTIVES
To enable students:
1. To obtain knowledge on the role of diet in disease conditions.
2. To gain experience in planning, preparing and serving therapeutic diets.

UNIT – I
DIET THERAPY: - Definition, purpose and principles of a therapeutic diet, factors to be considered in the modification of normal diet into therapeutic diets. Types of hospital diet – Clear fluid, full fluid, soft, light, bland and regular diet. Special feeding methods – tube feeding, parenteral nutrition.

DIETITIAN: – Role of dietitian in managing hospital dietary.

UNIT – II
DIABETES MELLITUS: - Prevalence, Types – Type-I, Type-II, Malnutrition Related Diabetes Mellitus, Gestational Diabetes Mellitus, Etiology, symptoms, nutritional requirements and dietary management of Diabetes Mellitus – (Glycemic Index, Food exchange list) and complications.

UNIT – III

UNIT – IV
DIET IN INFECTIONS AND FEVERS: - Host defense mechanisms causes and general dietary conditions of fevers – Symptoms and signs of Typhoid, Influenza, Malaria, Tuberculosis and pneumonia.

UNIT – V
DISEASES OF THE GASTRO INTESTINAL TRACT: - Causes, Symptoms and Dietary management of Gastritis, Peptic ulcer, diarrhea, constipation, Ulcerative colitis, diverticulous, Irritable Bowel Syndrome, malabsorption syndrome – Crohns Disease, Sprue/ Tropical Sprue, hemorrhoids, ulcerative colitis.
REFERENCES


JOURNALS


OBJECTIVES
To understand the role of Nutrition in all stages of life.

UNIT-I: RECOMMENDED ALLOWANCES
RDA for Indian basis for requirement, computation of allowance based on energy expenditure, components of energy expenditure. General concepts about growth and development through different stages of life.

UNIT-II - NUTRITION IN INFANCY, PRESCHOOL AND SCHOOL GOING AGE:


c. School going age - Physical development, Nutritional status of school children, school lunch program, factors to be considered in planning a menu, food habits and nutritional requirement, packed lunch.

UNIT-III - NUTRITION DURING ADOLESCENCE AND ADULTS:


UNIT-IV - NUTRITION IN PREGNANCY
UNIT-V - GERIATRIC NUTRITION


REFERENCES


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


PAPER – 7
COMMUNITY NUTRITION

OBJECTIVES:

To enable the students to:

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

UNIT-I

Nutrition and Health in National Development. Concept of Community, Types of Community, Factors affecting the health of community. Malnutrition - Etiology, symptoms, Prevalence of malnutrition, factors contributing to malnutrition - Under nutrition and Over nutrition, balance between food and population growth.

UNIT-II

Nutritional problems confronting our country - PEM - Prevalence, classification - Kwashiorkor and Marasmus - etiology, symptoms, pathological changes, biochemical changes, Anaemia - Prevalence, etiology, symptoms, prophylaxis programmes.

IDD - Etiology, Prevalence, symptoms, prophylaxis Fluorosis - Etiology, prevalence, symptoms, prophylaxis.

Vitamin A deficiency - Etiology, prevalence, symptoms, prophylaxis.

UNIT-III

UNIT-IV


UNIT-V


REFERENCES

ELECTIVE
PAPER – 1
HOSPITAL FOOD SERVICE ADMINISTRATION

OBJECTIVES:

To enable students to

1. Gain knowledge in hospital functions and administration
2. Acquire skills in maintaining medical records
3. Understand the management of resources in hospitals

UNIT I

Hospital based health care and its changing scenario, Effects of globalization on health care, concepts of corporate hospitals in developing countries, infrastructure and lay out of an ideal corporate hospital, functioning of modern, hospital and changing needs of patients, hospitality in hospital care

UNIT II

Patient Care Services Patient Admission / discharge, cafeteria and dietary services, front office services, housekeeping services, blood bank, diagnostic services, lab, physiotherapy, pharmacy operation theatre, outpatient and inpatient ward – admission

UNIT III

Principles of Hospital management Managerial activities for effective hospital functioning duties and responsibilities of hospital managers, qualities of office managers, effective inter and intra departmental co-ordination, understanding functioning of corporate multi specialty hospital

UNIT IV

Marketing and Material management, Human resource management, managerial accounting and financial management, importance of material management, principles of material management, inventory management. Types of computer systems used for reservation systems, point of sale systems (POS) and property management systems.(PMS)
UNIT V

Hospitality in hospital care Management of dietary department, diet planning for hospital diets, purchasing, storage and quantity food production, patient compliance, food production, serving to patient- tray and trolley service, plate waste management, washing and garbage disposal.

REFERENCES:


SKILL BASED SUBJECT

PAPER – 3

INTERNISHIP

Internship:

A phase of training where in a graduate is expected to conduct actual practice in a hospital industry for a period of 30 Days so as to acquire job oriented skills.

Assessment:

Interns shall maintain a record book which shall be verified and certified by the training authority under whom he or she works during his/her internship period.

An objective evaluation of his/her knowledge, skills and attitude during training will be recorded by the center in-charge and monitored by faculty in-charge and marks shall be allotted accordingly.

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OBJECTIVES:
To enable students to

1. Gain knowledge about principles of diet therapy and different therapeutic diets.
2. Develop aptitude for taking up dietetics as a profession

UNIT I

DISEASES OF LIVER, GALL BLADDER AND PANCREAS – Etiology, clinical symptoms and modification of diet in disease of Liver and Gall bladder.


UNIT II

OBESITY AND UNDERWEIGHT – Etiology, Assessment of Obesity and modification of diet in Obesity and Underweight.

UNIT III

KIDNEY DISEASES - Etiological factors, Etiology and modification of diet in disease of the Kidney-Glomerulo Nephritis, Nephrosis, Acute and Chronic Renal Failure, Dialysis, Urinary Calculi.

UNIT IV


UNIT V

FOOD SENSITIVITY AND GENETIC DISORDERS

FOOD SENSITIVITY - Types of reaction, symptoms, Diagnosis and treatment.

GENETIC DISORDERS - Symptoms and management of diet in phenylketonuria, Galactosemia, Fructosuria.
REFERENCES


OBJECTIVES:

1. To create an awareness on the organizational aspect and functioning of different types of food service institutions.
2. To develop managerial skills among the students.
3. To understand the space allocation and arrangement of food service units.

UNIT- I

a) FOOD SERVICE INDUSTRY: Definition – types of catering- Hotel, Motel, Restaurant, Cafeteria and chain hotels.

b) WELFARE – Hospital, School lunch, Residential establishment and Industrial catering.

c) TRANSPORT – Air, Rail, Sea and Space, Miscellaneous – Contract and outdoor.

UNIT – II: PHYSICAL PLANT AND FOOD PURCHASE

a) Layout of kitchens, types of kitchens – Planning of Receiving preparation, storage and service area with relevant too spacing.

b) FOOD PURCHASE- Procedures and Factors involved in the selection of food.

UNIT – III: QUANTITY FOOD SERVICE AND EQUIPMENTS

a) QUANTITY FOOD SERVICE: Definition, objectives, styles of service-waiter service, self–service, vending. Mechanics of waiter service.

b) EQUIPMENT: Classification, factors involved in selection, use and care of major equipments, traditional and modern equipment.


Standardisation of Recipes and portion control.

UNIT – IV

a) MANAGEMENT- Definition, principles, Functions and tools of management, qualities of a good leader, styles of leadership.

b) RESOURCE MANAGEMENT – Money, Time, Energy, Computer applications in menu planning.
UNIT – V

PERSONNEL MANAGEMENT- Recruitment, selection and induction. Financial management- Cost control- methods of food cost control, Book- keeping; advantages of the double entry system.


REFERENCES


5. Ltd and Institute of sustainable development, Lucknow, New Delhi, 2001

OBJECTIVES:

1. To understand development aspects (both normal and exceptional) from conception to old age as they can be guided effectively.
2. To have complete knowledge about the behavior pattern of the individual and various factors influencing them.

UNIT-I

1. The concept of development and growth - principles governing growth and development, developmental tasks of different stages.
2. Stages of Life span - conception, infancy, early childhood, late childhood, adolescence, adulthood, middle age and old age.

UNIT-II

1. Prenatal Development - Conception, test tube baby, Periods of prenatal development - signs of pregnancy.
3. Labor - signs of labor, stages of labor - types of birth, multiple pregnancy.
5. Adjustment of the newborn to temperature, breathing, feeding and elimination.

UNIT-III

1. Infancy (Birth to 2 years) - Development - physical and motor, social, emotional, cognitive and language, Minor ailments.
2. Effect of stimulation - care of infants, feeding, toilet training, bathing, clothing, sleeping and immunization, prevention of accidents, importance of mothering and emotional growth. Importance of psychological needs.
UNIT- IV

1. 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, behavior problems - causes and treatment.
2. Importance of preschool education.
3. Late childhood (Elementary school period 6 - 12 years) - Developments - physical, social, emotional, cognitive and language. Sex Education.
4. Children with special needs - identification and rehabilitation.
5.

UNIT-V

2. Adulthood (18 - 60 years) - Characteristics and developmental tasks. All aspects of development and vocational development.
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.

REFERENCES

2. Parikh, S; Sudarshan, R. Human Development and Structural Adjustment, UNPP, Delhi, 1993.
CORE PRATICAL - III

DIETETICS-I & NUTRITION THROUGH LIFE CYCLE PRACTICAL

DIETETICS-I

Planning and preparing of diets for the following conditions/stages.

1. Clear fluid, full fluid and soft diet.
3. Diet in atherosclerosis and hypertension.
4. Diet in ulcer, diarrhea and constipation.
5. Diet in diabetes mellitus with and without insulin.

NUTRITION THROUGH LIFE CYCLE PRACTICAL

1. Menu planning and food exchange list.
2. Nutritional and food requirements to meet the needs of the following.
   a. Infant and Children
   b. School children
   c. Adolescent
   d. Adult
   e. Old people
3. Nutritional and food requirements to meet the special needs of
   a. Expectant women.
   b. Lactating women.
CORE PRACTICAL –IV

A. FOOD SERVICE MANAGEMENT

1. Visit to well-organized food service units

   Hostel, hotel, restaurant, Industry, hospital Transport.

2. Table setting and service-appraising and drawing silver cutlery and crockery Folding of Napkins – Laying of table cloth, table mats – Arrangement of cover and table – appointment according to the menu – serving food at the table clearing of the table.


4. Quantity Cookery: Preparation of South Indian, North Indian and Western menu for 25 members.

5. Organizing, preparing and serving of one special meals for 50 members.

B. DIETETICS - II

Planning and preparing of diets for the following conditions / stages.

1. Diet in obesity and underweight.
2. Diet in hepatitis and cirrhosis of liver.
3. Diet in Nephritis and Nephrosis.
4. Diet in Cancer.
5. Dietary internship program for a month.
OBJECTIVES

To enable students
- To gain knowledge on food safety and food laws.
- To study about quality control and common food standards.

UNIT-I

Quality Control: Objectives, Importance, functions of quality control, stages of quality control in food industry.

Food Quality Assurance: Design of company quality assurance program, Microbiological concerns.

Managing quality in supply chain and marketing of food products.

UNIT-II

Government Regulations In Quality Control: FAO/WHO codex Alimentarious commission, PFA, AGMARK, BIS, FPO, fair average quality (FAQ) specification for food grains, ISO 9000 series.

HACCP: Background, current status, structured approach, principles, benefits and limitation.

Consumer Protection Act (CPA)

UNIT-III

Food Standards: Cereals and products - bread, biscuits, cakes products.

Food Packaging: Food packaging and labelling various methods. Recent trends in Packaging and labelling.

Fruits Products: Jam, juices, squashes, ketchup, sauce.

Oils and Fats: Coconut oil, groundnut oil, palm oil, sunflower oil, vanaspati.

Milk and Products: Skimmed milk powder, partly skimmed milk powder, condensed sweetened milk. Other products - coffee, tea, sugar, honey, toffees.

UNIT-IV

Food Safety: Meaning of food safety

Importance of Food: Quality and safety for developing countries.

Patent: Definition, requirements, patent law in India, administrator, need for
patent system, advantages, precautions to be taken by applicants, patent procedures, non-patentable.

Food Hazards: Physical, Chemical, Biological hazards associated with food types. Effect of processing and storage on microbial safety.

UNIT-V

Food Adulterator: Adulteration of food - common adulterants and tests detect common adulterants.

REFERENCES


ELECTIVE
PAPER – 3

NUTRACEUTICALS AND NUTRIGENOMICS

OBJECTIVES
To enable the students to

1. Gain knowledge on Nutraceutical and Nutrigenomics
2. Study the applications of Nutrigenomics in health and disease.

UNIT I - NUTRACEUTICALS AND FUNCTIONAL FOODS
Definition of functional and traditional foods, nutraceuticals, designer foods and pharma foods, history of functional foods, components of functional foods, foods containing nutraceuticals and classification of nutraceuticals – based on plant sources, mechanism of action and chemical nature

UNIT II - ROLE OF DIETARY SUPPLEMENTS AND NUTRACEUTICALS IN HEALTH AND DISEASE
Concept of dietary supplements, sources and functions of phytochemicals with suitable examples, FOSHU foods – concepts, regulatory aspects

UNIT III - PROBIOTICS AND PREBIOTICS
Human gastrointestinal tract and its microbiota, functions, concept of probiotic, prebiotics and symbiotics; applications of probiotics in human nutrition

UNIT IV - NUTRIGENOMICS
Definition of nutrigenomics, gene expression – transcription, translation, post translational modification, nutrition in the omics era- elementary concepts on epigenetics, transcriptomics, proteomics, metabolomics; genetic variation and nutritional implications

UNIT V - NUTRITION AND GENE EXPRESSION AND NUTRIGENOMICS AND COMPLEX DISEASES
Nutrient control of gene expression – amino acids, nucleotides, basic concepts of nutrigenomics and complex diseases – diabetes, cancer and obesity

REFERENCES


5. Tamine, A., 2005, Probiotic Dairy Products, Blackwell Publishing Ltd., UK


SKILL BASED SUBJECT IV
PAPER - 4
PERSPECTIVES OF HOME SCIENCE

OBJECTIVES
To enable the students to
- Understand the concept and scope of home science and its components.
- Enable the students to gain knowledge on different areas of home science
- Know the trends and job opportunities in home science

UNIT I - MEANING AND COMPONENTS OF HOME SCIENCE

Meaning of Home Science Education- Philosophy of Home and Family- Components of Home Science- Carrier Perspectives- Its Relation to other Disciplines- Science and Humanities

The Home Science Association of India- History and Objectives, Achievements of the Association- Representation in National Bodies

UNIT II - INTERIOR DESIGN AND RESOURCE MANAGEMENT AND TEXTILE AND CLOTHING

Concept of Interior Design- Importance of Good Taste, Components of an Artistic Interior- Resource Classification, Methods of Conserving Energy, Importance and Type of Goals, Values- Types, Value to be Imbibed by Youth.


Basic concepts of Home management and steps – Basic Characteristics of Resources, Decision making, Work simplification.

UNIT III – HOME SCIENCE EXTENSION EDUCATION

Member of Parliament Local Area Development Scheme (MPLADS), Member of Legislative Assembly Area Development Scheme (MLAADS), Rajiv Gandhi Rehabilitation Package (RGAP), Mahatma Gandhi National Rural Employment Scheme (MNRES)

UNIT IV - HUMAN DEVELOPMENT


UNIT V - FOODS, NUTRITION, DIETETICS AND FOOD SERVICE MANAGEMENT

Classification of Foods according to Function and Origin, Food Groups- Balanced Diet- Meaning and Importance of Balanced Diet, Meal Planning, Macro and Micro Nutrients of Foods- Introduction of Dietetics- Principles of Diet Therapy.

Aims, Objectives and Classification of Commercial and Non Commercial Food Service- Operations and Functioning of Commercial and Non Commercial Food Service, Indian Cuisines and their Features, Setting up a Cover and Simple Service.

REFERENCES


