# JAMAL MOHAMED COLLEGE (Autonomous), Tiruchirappalli-620 020

PG Programme – Course Structure under CBCS

(For the candidate admitted from the academic year 2017-2018 onwards)           01.03.2016

<table>
<thead>
<tr>
<th>SEM</th>
<th>Course Code</th>
<th>Course</th>
<th>Course Title</th>
<th>Ins.Hrs / Week</th>
<th>Credit</th>
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**GRAND TOTAL** 90 2000

*Not considered for grand total and CGPA

**Elective**
- Elective - I: Applied Physiology, Nutritional Needs for Special Children
- Elective – II: Functional Foods and Nutraceuticals, Nutritional Management and Safety for Food Service
- Elective – III: Sports Nutrition, Nutritional Counselling and Education
1. To obtain knowledge about food preservation.
2. To help the students to contribute proper utilization of foods and prevent wastes.
3. To understand the need for food packaging and the recent packaging materials and labelling.
4. To Learn and gain knowledge on food packaging and applications during transportation.

UNIT-I 18 hours
Cereal and Cereal Products:
1.1 *Rice* - Structure, composition, nutritive value and functional properties.
   **Processing:** Parboiling- hot soaking process, by-products –rice bran, processed products- rice flakes, rice puff, rice starch.
1.2 *Wheat* - Structure, composition, nutritive value and functional properties, milling, processed products- semolina, macroni and noodles.
1.3 *Corn* - Structure, composition, nutritive value and functional properties, milling, by products- bran, germ, powder, processed products- flour, syrup, flakes and pop corn.
   Millet processing- Ragi, Jowar, Bajra.
1.4 *Breakfast cereal:* Rice and Wheat- Ready-to-cooked cereals, ready-to-eat cereals.

UNIT-II 18 hours
Pulses and Oil Seeds:
2.1 *Pulses:* Composition, nutritive value and functional properties. Processing-Cleaning, grading, pitting, splitting and polishing, extrusion technology.
2.2 *Oilseed seeds:* Composition, nutritive value and functional properties. Oilseed pressing, solvent extraction, purification, degumming, refining, bleaching, deodorization, hydrogenation, plasticizing and tempering, By-products: oilcake. Processed products: Margarine, shortening, lard, sute.

UNIT-III 18 hours
Vegetables, fruits and dairy processing:
3.1 *Vegetables:* Composition, nutritive value and functional properties. Freezing of vegetables - potato, cauliflower, carrot.
3.2 *Fruits:* Composition, nutritive value and functional properties. Pre-processing of tomatoes – field processing, washing in lye, peeling, freeze peeling, peeling in calcium chloride solution. Dehydrated products- juice powders by foam mat drier. Preserved products- jam, Jellies, ketch-up’s and sauces.
3.3 Preservation of fruits and vegetables - Canning, Freezing, Dehydration of Fruits and Vegetables in cabinet drier.
3.4 **Milk and milk products:** Composition, nutritive value and functional properties
Clarification, separation, standardization, pasteurization, homogenation and packaging of milk. **Non fermented**- whey protein concentrates, skim milk, cream, khoa, ice-cream. **Fermented**- cheese processing. Milk powder by Spray Drier.

UNIT-IV

18 hours

**Meat, poultry, fish and egg processing:**

4.1 **Meat:** Composition, nutritive value and functional properties Ageing, tenderising, curing, Smoking, Freezing of meat. **Processed products:** Gelatin, sausages.

4.2 **Poultry:** Composition, nutritive value, slaughter, bleeding, scalding, defeathering, eviscerating, Chilling, Packaging, processed products: dehydrate form of poultry.

4.3 **Fish:** Composition, nutritive value, Dehydration, chilling and smoking, Processed products: Fish protein concentrates.

4.4 **Egg:** Structure, composition, nutritive value pasteurization, freezing and drying, processed products: egg substitutes, #Egg powder by spray drier#.

UNIT-V

18 hours

**Food packaging and Labelling:**

5.1 **Food Packaging:** Definition, functions of packaging materials for different foods, characteristics of packaging material. **Modern Packaging Materials and Forms:** Glass containers, metal cans, composite containers, aerosol containers, rigid plastic packages, semi rigid packaging, flexible packaging. **Biodegradable packaging material** - biopolymer based edible film. **Packaging Methods:** Vacuum packaging, Shrink Packaging, CA and MA packaging.

5.2 **Labelling and patent:** Standards, purpose, description types of labels, labelling regulation barcode, nutrition labelling, health claims, and mandatory labelling provision. **Patent:** Definition, requirements, patent law in India, administrator, need for patent system, advantages, precautions to be taken by the applicants, patent procedures, non-patentable.

5.3 **Recent methods in preservation:** Pulsed electric field processing, High pressure processing, Processing using ultrasound, Dielectric, Ohmic and Infrared heating, Hurdle technology.

#............# Self-Study portion

**TEXT BOOKS**

UNIT I  
Text Book 2 Chapter III  
Text Book 3 Chapter XIII  

UNIT II  
Text Book 1 Chapter II & III  
Text Book 2 Chapter IV & XV  
Text Book 3 Chapter IV  

UNIT III  
Text Book 1 Chapter VIII  
Text Book 2 Chapter VII  
Text Book 3 Chapter VIII  
Text Book 6 Chapter V  

UNIT IV  
Text Book 2 Chapter XIV  
Text Book 3 Chapter VI  

UNIT V  
Text Book 1 Chapter V, VI, VII & XII  
Text Book 2 Chapter IX, X & XI  
Text Book 4 Chapter XXIV  
Text Book 5 Chapter II  

REFERENCE BOOKS  
1. Manoranjan kalia, professor, Dept of Food Science and Nutrition, Himachal Pradesh  
   Agricultural University, Palampur, Himachal Pradesh.  
   6. Paine F.A. The packaging media. Blackie and Sons Ltd., London
SEMESTER-I: CORE - II

HUMAN NUTRITION

Course Code : 17PND1C2
Max. Marks : 100
Hours/Week : 6
Internal Marks : 25
Credit : 5
External Marks : 75

Objectives
To enable the students to
1. Understand the role of macronutrients
2. The metabolism of macronutrients
3. Gain knowledge about different micro nutrient deficiencies
4. Obtain depth on the study of major nutrients

UNIT I
ENERGY 18 hours

1.1 Energy
a) Energy value of foods, SDA, Energy Production
b) Factors affecting Thermogenesis, Energy utilization by cells
c) Energy output – BMR, physical activity level, physical activity rate

1.2 Carbohydrates
a) Classification, Functions, Digestion, Absorption, Sources, RDA
b) Dietary Fiber – Role of fibre in degenerative diseases, Colon Function, Blood Glucose Level and GI tract functions
c) Sweeteners – Nutritive and Non-Nutritive

UNIT II 18 hours

2.1 Proteins and Amino Acids
a) Classification, Functions, Digestion, Sources
b) Protein Quality Evaluation – DC, BV, NPU, NPR, PER and NDPER
c) Nutritional Classification of Amino Acids, Amino acid balance, Imbalance and Toxicity,
   Essential and Non-essential amino acids
d) Therapeutic applications of amino acid.

Lipids and Carbohydrates

2.2 Lipids
a) Classification, Functions, Digestion, Absorption, Sources, RDA
b) Effects of Deficiency and Excess fat
c) Role of Saturated fat, Cholesterol, Lipoprotein, Triglycerides and Essential Fatty Acids
d) Role of n-3, n-6 fatty acid in Health and Diseases.
UNIT III
3.1 Macro Minerals
Calcium – Distribution in the body, absorption, Storage, utilization, transport, excretion, balance, deficiency, toxicity, Factors influences and hinders absorption of calcium, sources, RDA, calcium interaction with other nutrients.
Phosphorus – Distribution, digestion, absorption, utilization, transport, storage, excretion, sources. Factors influences and hinders absorption of phosphorus, calcium phosphorus ratio, deficiency and toxicity.
Iron - Distribution, absorption, utilization, transport, storage, excretion, Factors influences and hinders absorption of iron, sources, RDA, deficiency and toxicity.
3.2 Micro Minerals
Iodine, fluoride, magnesium, copper, Zinc, selenium, manganese, chromium, distribution in the human body, function, sources, RDA, deficiency, toxicity.

UNIT IV
4.1 Fat Soluble Vitamins
Vitamins A, D, E, K: Functions, absorption, storage, excretion, Sources, RDA, Deficiency, toxicity, Interaction of fat soluble vitamins with other nutrients.
4.2 Water Soluble Vitamins
Thiamine, Riboflavin, Niacin, Biotin, pantothenic acid, pyridoxine and B12, folic acid, Ascorbic acid: Function, absorption, excretion, sources, RDA, deficiency, toxicity, Interaction of water soluble vitamins with other nutrients.

UNIT V
Water and Electrolyte
5.1 Water
5.2 Electrolyte
Electrolyte content of fluid compartments and functions of electrolyte – Sodium, Potassium and chloride, absorption, balance, factor affecting electrolyte balance and hydrogen ion balance.

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

TEXT BOOKS
UNIT I  Text book – 1  Chapter – I, II
        Text book – 2  Chapter – VII

UNIT II  Text book –2  Chapter – IV, III

UNIT III  Text book –2  Chapter – IX, X, XI, XII

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

UNIT V  Text book – 2  Chapter – XX

REFERENCE BOOKS

3. L.K. Mahan. and S.E. Stump, Krause’s Food Nutrition and Diet Therapy, W.B Saunders Company, USA.
4. S. Nix. William’s Basic Nutrition and Diet Therapy, Mosby, India.
SEMMESTER-I: CORE - III

DIET THERAPY- I

Objectives
To enable the students to

1. Understand the role of dietician in therapeutic feedings.
2. Gain knowledge about the principles of diet therapy and different therapeutic diets.
3. Learn recent concepts in nutritional care for various disorders.
4. Know the effects of food and drug interactions.

UNIT-I

Dietician and nutritional care: 18 hours

1.1 Dietician - definition, classification of dietician, code of ethics, Indian dietetic association- objectives, membership, chapters and registration boards.
1.2 Nutritional assessment - Biochemical assessment of hospitalized patient.
1.3 Nutritional care process - Nutrition screening, nutrition diagnosis, nutrition intervention, monitoring and evaluation, schematic model of nutritional care process.

UNIT-II

Therapeutic Diet 18 hours

2.1 Therapeutic Diet - Routine hospital diet- clear fluid, full fluid, soft and bland diet, special feeding methods- enteral feeding- oral feeding, tube feeding-gastrostomy and jejunostomy. Parenteral feeding-formula and complications. Dietary supplements- definition, requirements, types, forms and supplement pyramid.
2.2 Nutritional care in Metabolic Disorder - gout, phenylketonuria and lactose intolerance.
2.3 Nutritional care in musculo-skeletal diseases - muscular dystrophy, osteoarthritis and rheumatoid arthritis.

UNIT-III

Nutritional Care in Stress, burns, surgery and febrile conditions: 18 hours

3.1 Nutritional Care in Stress

3.2 Nutritional care in burns and surgery- pre and postoperative.

3.3 Nutritional care in febrile conditions: Short term fever - typhoid and influenza, Intermittent – Malaria, Long term fever – AIDS.
UNIT-IV

18 hours

Nutritional Care in Cancer and diseases of Nervous System

4.1 Cancer- definition, aetiology, pathophysiology, risk factors, types, symptoms, dietary management.

4.2 Nutritional effects of cancer therapy- problems related to surgery, chemotherapy, radiation therapy. Nutritional requirements. #Role of food in the prevention of cancer#

4.3 Diseases of Nervous system- Pathophysiology and medical nutrition therapy in Alzheimer’s diseases, epilepsy, migraine, multiple sclerosis and Parkinson’s disease.

UNIT-V

18 hours

Food, nutrients and drug interactions:

5.1 Effects of food on Drug therapy – drug absorption, medication and enteral nutrition, interactions, drug distribution, drug metabolism and drug excretion.

5.2 Effects of drug on food and nutrition – nutrient absorption, nutrient metabolism and Nutrient excretion.

5.3 Effects of drugs on nutritional status – oral, taste, smell, gastro – intestinal effects, appetite changes, organ system toxicity and glucose levels.

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

TEXT BOOKS


UNIT- I

Text book –1 Chapter – XXIV
Text book – 2 Chapter – VIII,XI
Net reference-www.idaindia.com

UNIT- II

Text book –1 Chapter – XII
Text book -2 Chapter – XXXX, XXXXIV

UNIT- III

Text book –2 Chapter – XXXIX

UNIT - IV

Text book –2 Chapter – XXXIX,XXXXI

UNIT – V

Text book –2 Chapter – IX

REFERENCE BOOKS

SEMESTER-I: CORE-IV

FOOD ANALYSIS PRACTICAL

Course Code : 17PND1CP4
Hours/Week : 6
Credit : 4
Max. Marks : 100
Internal Marks : 20
External Marks : 80

1. Determination of Moisture content in the food sample
2. Determination of pH content in the fruit juice
3. Determination of Total Acidity content in the fruit juice
4. Estimation of Crude Fibre content in the food sample
5. Estimation of Total Carbohydrate content present in the food sample
6. Estimation of Protein content in the food sample by Lowry’s method
   a) Estimation of amino acid present in food sample by Paper Chromatography
7. Estimation of Fat content in the Food Sample by Soxhlet Apparatus
   a) Estimation of Acid Number
   b) Estimation of Iodine Number
   c) Estimation of Peroxide Value
8. Ashing of food sample and preparation of Ash Solution for Mineral estimation
   a) Estimation of calcium
   b) Estimation of Iron
   c) Estimation of Sodium
   d) Estimation of Phosphorous
9. Estimation of Vitamins present in the food sample
   a) Estimation of Carotene
   b) Estimation of Ascorbic acid

REFERENCE BOOKS

SEMESTER-I: ELECTIVE – I
APPLIED PHYSIOLOGY

Course Code : 17PND1CE1
Max. Marks : 100
Hours/Week : 6
Internal Marks : 25
Credit : 4
External Marks : 75

Objectives
To enable the students to
1. Understand the physiological functions related to nutrition.
2. Understand the alterations in physiology in diseases.

UNIT –I 18 hours
Blood and immunology
2. Blood cells- plasma proteins- origin and its functions. RBC- structure and functions, normal values, erythropoiesis, haemoglobin. WBC- structure and functions, types, Normal values and its abnormalities
3. Blood Platelets-structure and functions, reticulo endothelial system, normal values.
5. Immunity –Definition and types of immunity, development of cellular immunity and humoral immunity.

UNIT-II 18 hours
Respiratory system and Circulatory
1. Respiratory system - Structure and function of respiratory organ, mechanics of respiration, exchange of gases ,lung volume, Extracorporeal membrane oxygenation (ECMO), artificial respiration.
2. Circulatory system- Heart – Anatomy and physiology. Blood vessels – structure of artery, vein, capillaries, cardiac output, factor affecting cardiac output, arterial blood pressure , clinical measurement of blood pressure , properties of cardiac muscle, origin and conduction of heart beat , cardiac cycle, electro cardiogram (ECG), Artificial pacemaker, CPR techniques.

UNIT-III 18 hours
Digestive and Excretory system
1. Digestive system- General anatomy of digestive system. Digestion in the mouth, stomach and intestines, Movements of intestine. Structure and function of liver and pancreas, Role of hormone secreted by pancreas.
2. Excretory system – Anatomy and Physiology of kidney- nephron, formation of urine, micturation. Dialysis and its types. #Skin- structure and functions, regulation of body temperature#
UNIT-IV  

Endocrine and Reproductive system  
4.1 Endocrine system – Structure and functions of pituitary, thyroid, parathyroid, adrenals, islets of langerhans of pancreas, sex glands and its hypo and hyper secretions  
4.2 Reproductive system – General anatomy of male and female reproductive system. Spermatogenesis and Oogenesis, Menstrual cycle Fertilization, Conception, implantation, pregnancy, labour.

UNIT-V  

Nervous system and special senses  
5.1 Nervous system - Structure and functions of nerve cells synapse. Spinal cord - Ascending and descending tracts, reflex action, cerebro spinal fluid  
5.2 Brain – structure and functions of cerebrum, optic thalamus, mid brain, pons, medulla oblongata, hypothalamus, cerebellum. Autonomic nervous system – sympathetic and parasympathetic nervous system - functions.  
5.3 Sense organs - Eye - Physiology of vision: Structure of eye, dark and light adaptation, accommodation of the eye. Ear - Structure and physiology, functions of hearing. Special senses - structure and function of Tongue, Smell and cutaneous sensation.

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

TEXT BOOKS  

UNIT I : Text Book- 1 Chapter- VI-XXVII  
UNIT II : Text Book- 1 Chapter-V, XII  
UNIT III : Text Book- 2 Chapter- X, XIII  
UNIT IV : Text Book- 2 Chapter-IX, XVIII  
UNIT V : Text Book- 1 Chapter-VII, VIII  

REFERENCE BOOKS  
SEMESTER: I ELECTIVE-I

NUTRITIONAL NEEDS FOR SPECIAL CHILDREN

Course Code : 17PNDICE1
Max. Marks : 100
Hours/Week : 6
Internal Marks : 25
Credit : 4
External Marks : 75

Objectives:
To enable the students to
1. Understand the role of food for special children
2. Understand the role and special nutritional care for special children

UNIT I 18 hours

1.1 Regulations and School Food Service - Disabilities Definition, Individuals with Disabilities Education Act (IDEA).
1.2 Diet Prescription - #Role of Physician for Children with Disabilities#, Medical Statement for Children with Special Dietary Needs
1.3 The Role of School Food Service - school issues, school food service responsibilities, Providing Special Meals to Children with Disabilities, Menu Modifications for Children with Disabilities, Texture Modifications for Children with Disabilities.

UNIT II 18 hours

2.1. Description of Selected Disabilities – Attention deficit hyperactivity disorders - Autism, Spectrum disorders, Cerebral Palsy, Epilepsy or Seizure Disorder - Muscular Dystrophy.
2.2. Mental Retardation - Down Syndrome - Prader Willi (PW) Syndrome - Spina Bifida - Cystic Fibrosis - Rett Syndrome.
2.3 Metabolic Diseases - Inborn Errors of Metabolism (IEM) – Galactosemia, Phenylketonuria.

UNIT III 18 hours

3.1. Food Allergies and Food Sensitivities - Common Food Allergens, Foods that commonly contain the “Big Eight” allergens and should be avoided, Symptoms of Food Allergy.
3.2. Gastrointestinal symptoms associated with food allergy - Cutaneous, or skin, symptoms associated with food allergy - Respiratory symptoms associated with food allergy – Anaphylaxis and its signs.
3.3. Managing Food Allergies in Children – In the kitchen -Know which foods to avoid, Keep the kitchen organized to avoid cross-contamination, clean- Outside the kitchen. Monitoring for an allergic reaction. Food Intolerance.
UNIT IV  
4.1 Issues Impacting Nutrition and Special Dietary Orders - Energy Needs –  
- Overweight- Intervention strategies for reducing calories in school lunch and Breakfast.  
- Underweight - Ways to Increase Calories .  
4.2 Feeding Problems. Oral-Motor Problems. Modification of Food Texture – Chopped,  

UNIT V  
5.1 Special Formulas and Special Medical Foods - The Purchase of Special Formulas and  
Special Medical Foods. Fluids and Fiber.  

# ..... # self-study portion

TEXT BOOKS

1. Hand book for Children with Special Food and Nutrition Needs, Item No ET69-06,  
National Food Service Management Institute, The University Mississippi (2006).

UNIT I   Text book 1 Chapter – I  
UNIT II  Text book 2 Chapter – II  
UNIT III  Text book 2 Chapter – III  
UNIT IV  Text book 2 Chapter – IV  
UNIT V   Text book 2 Chapter – V

REFERENCE BOOKS

food and nutrition needs. In Martin, J., & Conklin, M.T. (Eds.), Managing Child Nutrition  
Cloud, H.H., Ekvall S.W., & Hicks, L. (2005). Feeding problems of the child with special  
health-care needs. In Ekvall, S.W. & Ekvall, V.K. (Eds). Pediatric nutrition in chronic  
diseases and developmental disorders (2nd ed.) New York: Oxford University Press
1. Get acquainted with growth and development changes from conception till death.
2. Understand the inter-relationship between nutrition, growth and development during life cycle.
3. Understand the role of nutrition facts in vulnerable groups and special group of society.

UNIT-I Nutrition during Pregnancy: 18 hours
1.1 Importance of nutrition in pre gestational and gestational periods. Effect of malnutrition on maternal and fetal health.
1.2 Nutritional requirements during pregnancy, nutritional adaptations in pregnancy, complications of pregnancy and management.

UNIT-II Nutrition during lactation: 18 hours
2.1 Growth and development of mammary gland, physiology of lactation-synthesis of milk components let down reflex, role of hormones, and effect of breast feeding on maternal health.
2.2 Feeding problems due to – sore nipples, inverted nipples, engorged breast, nutrient need and dietary modification. Nutrient requirement during lactation.

UNIT-III Nutrition during Infancy: 18 hours
3.1 Nutrition during Infancy - Growth and development, factors influencing growth. Breast Feeding- Colostrum, Transition milk, Fore milk and Hind milk, Advantages of breast feeding to the infant, Difference between breast feeding and bottle feeding, factors to be considered in bottle feeding. Different types of milk formulae.

UNIT-IV Nutrition for Preschool children, School children and Adolescence: 18 hours
4.1 Nutrition for Preschool Children - Growth and development, nutritional requirements. Food habits, meal pattern and dietary modification, supplementary foods – provided by ICDS and nutritional composition for homemade supplementary foods. Malnutrition – under nutrition and over nutrition.
4.2 Nutrition for School children- Growth and development, nutritional requirements, Factors influencing nutritional status, packed lunch, establishing healthy eating habits, # Nutritional problems – under weight and obesity, iron deficiency anemia, anorexia nervosa, bulimia nervosa and dental caries#.


UNIT-V
Adulthood and Old Age:
5.1 Nutrition in Adulthood- Reference man and woman, nutritional requirements based on occupation – sedentary, moderate and heavy. Menopausal, pre menopausal and post menopausal women.

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

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

REFERENCE BOOKS
SEMESTER –II: CORE-VI
NUTRITIONAL BIOCHEMISTRY

Course Code : 17PND2C6      Max.Marks : 100
Hours/Week : 6      Internal Marks : 25
Credit : 5      External Marks : 75

Objectives:

To enable students to

1. Understand the interrelationship between different metabolic pathways in the body.
2. Become proficient for specialization in nutrition.

UNIT - I  18 hours
Carbohydrates:
1.1 Structure, classification and properties of monosaccharides, disaccharides and polysaccharides.
1.2 Intermediary metabolism – glycolysis, TCA cycle, HMP shunt, gluconeogenesis, glycogenesis, glycogenolysis. Role of liver on carbohydrate metabolism.
1.3 Disorders of carbohydrate metabolism – galactosemia, glycogen storage disease, pentosuria, fructosuria.

UNIT II  18 hours
Proteins:
2.1 Structure and classification of amino acids, peptide bond formation, structure of proteins.
2.2 Protein metabolism, Transamination, Deamination and Urea cycle, Amino acid pool. Protein biosynthesis.
2.3 Inborn errors of metabolism – Phenyl Ketonuria, Cystinuria, albinism, alkaptonuria, maple syrup disease.

UNIT III  18 hours
Lipids:
3.1 Definition, classification, structure, Metabolism of lipids in Denovo synthesis of fatty acids, Beta (β) Oxidation. Cholesterol Biosynthesis and regulation.
3.2 Ketone bodies, Prostaglandins – significance. Plasma lipoproteins and Hyperlipidemias.
3.3 Disorders of lipid metabolism – Dyslipidemia and lipid storage diseases. Role of liver on fat metabolism.

UNIT IV  18 hours
Nucleic Acids:
4.1 Composition and classification. Structure and Properties of DNA and RNA#. DNA replication, DNA mutation.
4.2 Metabolism of Purines, Metabolism of pyrimidines.
4.3 Disorder of nucleic acid metabolism – Gout, aciduria, xanthinuria.
UNIT V

Vitamins and Minerals:
5.1 Major Vitamins (thiamine, riboflavin, niacin, pyridoxine, biotin and folic acid) with coenzyme functions.
5.2 Mode of action of thiamine, riboflavin, niacin, pyridoxine, biotin and folic acid.
5.3 Macro minerals (sodium, potassium, calcium) with other nutrients, interaction of micro minerals (Iron, Iodine, zinc).

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

TEXT BOOKS

UNIT I Text book 1 Chapter – I, XVII
UNIT II Text book 1 Chapter – III, XXI
UNIT III Text book 1 Chapter – II, XIX, XX
UNIT IV Text book 1 Chapter – VI, X
UNIT V Text book 1 Chapter – V, XXV

REFERENCE BOOKS
SEMESTER-II : CORE – VII

DIET THERAPY- II

Course Code : 17PND2C7  
Max. Marks : 100
Hours/Week : 6  
Internal Marks : 25
Credit : 4  
External Marks : 75

Objectives
To enable the students to

1. Understand the pathophysiology, aetiology, symptoms for various life style diseases.
2. Learn about the risk factors for degenerative diseases.
3. Gain knowledge about the role of dietary modifications in several disease conditions.

UNIT-I
Dietary management in Pulmonary, Liver and gall bladder disorders:

1.1 Dietary management in Pulmonary disorders: Pathophysiology, medical nutrition therapy for asthma, broncho pulmonary dysplasia (BPD), chronic obstructive pulmonary disease, lung cancer, respiratory failure, tuberculosis.
1.2 Dietary management in Liver disorders: Pathophysiology, aetiology, symptoms and dietary regimen for Hepatitis- Fatty infiltration of liver, cirrhosis, hepatic encephalopathy.
1.3 Dietary management in gall bladder disorders: Cholecystitis, cholelithiasis

UNIT-II
Dietary management in Gastro Intestinal Tract Disorders

2.1 Upper gastro intestinal tract disorders – aetiology, symptoms and dietary management for Esophagitis, gastritis, oral cavity cancer, peptic ulcer, stomach cancer and dumping syndrome.
2.2 Lower gastro intestinal tract disorders - aetiology, symptoms and dietary management for constipation, diarrhoea, steatorrhoea, flatulence, celiac disease, tropical sprue.
2.1 Aetiology, symptoms and dietary management for inflammatory bowel disease – Cohn’s disease, ulcerative colitis, irritable bowel syndrome, diverticulosis and colon cancer.

UNIT- III
Dietary management in Obesity, Under weight and Thyroid related disorders:

3.1 Obesity- definition, aetiology, theories, type, dietary management, guidelines for a dietician in weight management programme.
3.2 Under weight-definition, aetiology, dietary modifications.
3.3 Pathophysicsology and medical nutrition therapy for hypothyroidism, polycystic ovary syndrome and hyperthyroidism.

UNIT- IV
Dietary management in Pancreatic disorders:

4.1 Pancreatitis- Acute and chronic Pancreatitis.
4.2 Diabetes Mellitus - Classification, symptoms and complications. Management– Insulin therapy and oral hypoglycemic agents. Dietary considerations, meal plan with and without insulin. Glycemetic index and glycemic load of food.
4.3 Other conditions: Gestational diabetes – causes, complications and dietary management. Hypoglycaemia-causes, complications and dietary management

UNIT- V 18 hours
Dietary management in Cardiovascular and Renal diseases:
5.1 Cardiovascular disorders: Atherosclerosis - role of fat in the development of atherosclerosis, clinical effects, risk factors and dietary modification. Hypertension-pathophysiology, types, symptoms and dietary modification.
5.4 Heart failure – Cause, signs and dietary management in heart failure. #Role of functional Foods in prevention of cardiovascular disorders#.
5.5 Renal disorders – Glomeuronephritis, nephrotic syndrome, acute and chronic renal failure and nephrolithiasis. Dialysis- Types and dietary management in dialysis.

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

TEXT BOOKS

UNIT –I Text book - 3 Chapter – XXX,XXV.
UNIT-II Text book –1Chapter – XVI
UNIT – III Text book – 1 Chapter – XIV
Text book-3 Chapter-XXXII
UNIT –IV Text book –1 Chapter – XVIII
Text book –3 Chapter-XXXI
UNIT-V Text book –1 Chapter – XV, XIX
Text book –3 Chapter-XXIV

REFERENCE BOOKS
1. Develop skills in planning, calculating, modifying the nutrient requirements and in preparation of therapeutic diets
2. Develop skills in diet counseling and feeding of patients.

Plan, calculate, modify the nutrient requirements and prepare the diets for the below mentioned pathological conditions:

1. **Routine hospital diet**: clear fluid, full fluid, soft and bland diet.
2. **Diet in febrile conditions**: Short term fever – typhoid, intermittent fever - Malaria. Long term fever- Tuberculosis, Acquired immune deficiency syndrome
3. **Diet in burns and surgery**: post operative conditions.
4. **Diet in special feeding**: Enteral feeding (any one blend preparation for tube feeding).
5. **Diet in metabolic conditions**: Gout
6. **Diet in gastro-intestinal disorders**: Ulcer, irritable bowel syndrome.
7. **Diet in Liver diseases**: Fatty liver, hepatic encephalopathy.
8. **Diet in diabetes mellitus conditions**: Insulin dependent, Non –insulin dependent, Gestational diabetes mellitus.
10. **Diet in renal diseases**: chronic renal failure, Renal calculi.
11. **Diet in Heart diseases**: Hypertension, Atherosclerosis, Congestive heart failure.
12. **Diet in cancer**
13. Prepare a diet counselling chart for any one disease condition.

**REFERENCE BOOK**
SEMMETER II: ELECTIVE-II

FUNCTIONAL FOODS AND NUTRACEUTICALS

Course Code : 17PND2CE2  Max. Marks : 100
Hours/Week : 6  Internal Marks : 25
Credit : 4  External Marks : 75

Objectives
To enable the students to
1. Gain knowledge about functional foods and Nutraceuticals
2. Have thorough understanding about the health effects

UNIT- I
Functional Foods and Nutraceuticals
1.1 Definition – History of functional foods- Classification of Functional Foods, classifying Nutraceutical factor based on chemical nature.
1.2 Secondary metabolites in plants. a) Terpenoids, b) Phenols and Polyphenols c) Sulphur containing compounds d) Nitrogen containing alkaloids.

UNIT- II
Organizational models for Nutraceuticals
2.1 Food Source: Plant, dairy, microbial
2.2 Chemical Nature: Isoprenoid derivatives, phenolic substances, structural lipids, fatty acids, carbohydrates and derivatives, amino acid base substances, minerals, microbes

UNIT- III
3.1 Prebiotics: Definition, Sources, effect of processing, physiological effects, effects on human health and potential applications in risk reduction of diseases
Perspective for food applications for the following:
- Non-digestible carbohydrates/Oligosaccharides
- Dietary fibre, Resistant Starch
- Gums
3.3 SYNBIOTICS: Introduction and importance of synbiotics.

UNIT- IV
4.1 USEFUL FOOD COMPONENTS WITH POTENTIAL HEALTH BENEFITS: Definition, Sources, bioavailability, Effects on human health and potential applications in risk reduction of disease:
- Polyphenols: flavonoids, catechins
- Isoflavones, tannins
- Phytoestrogens
- Phytosterols
- Glucosinolates
- Pigments- Lycopene, curcumin
- Sulphur compounds
- Other components- phytates, protease inhibitors, saponins, amylase inhibitors
- Active compounds if spices and condiments (Allicin, trignollin, gingerol, capcisin)

UNIT -V
5.1 Application of herbs as functional ingredients
5.2. Role of Herbs in Health and its Efficacy status
   a) Nervous System-Ashwagandha (withania Somnifera)
   b) Heart and Circulatory System- Green tea, Garlic
   c) Immune System –Neem, Shallot(small onion)
   d) Digestive System-Ginger, fennel
   e) Respiratory System-Tulsi(oecimum Sanctum)
   f) Urinary System-, Didymocarpus pedicellata (shilapushpa), Cichorium intybus(kaasini keerai).
   g) Musculoskeletal System-Indian gooseberry, Indian Aloe

REFERENCES

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                      www.nutrition.org/content/136/6/1636s.long
                      www.bodybuilding.com/store/cla.html
                      www.whfoods.com/gen page.php? tname = nutrient
                      www.eufic.org/article/en/expid/basics-functional -foods -
                      Ref Book-1      Chapter-I,II

                      www.medicinet.com

UNIT- III Ref Book - 1 Chapter – XV
              Ref Book – 2 Chapter – X
              Net Reference  www.medicinet.com

UNIT - IV Net Reference www.Pitt.edu/~super7/45011-46001/45161
                       www.ipv.pt/millenium/mellineum
                       Net Reference
                      Ref Book –2 Chapter – V

UNIT - V Net Reference www.ashwangandha.com
                      www.herbwisdom.com/herb-ashwafgandha.html

TEXT BOOKS
Net Reference
www.ajpcr.com/vol3Issue1/265.pdf
www.ncbi.nlm.nih.gov/pubmed/
www.nutrition.org/content/136/6/1636s.long
www.bodybuilding.com/store/cla.html
www.hspb.harvard.edu
www.eufic.org/article/en/expid/basics-functional -foods -
www.ashwagandha.com
www.herbwisdom.com/herb-ashwagandha.html
https://en.wikipedia.org/wiki/Shallot
SEMESTER-II: CORE BASED ELECTIVE – II

NUTRITIONAL MANAGEMENT AND SAFETY FOR FOOD SERVICE

Course Code : 17PND2CE2
Max. Marks : 100
Hours/Week : 6
Internal Marks : 25
Credit : 4
External Marks : 75

Objectives:
To develop managing skill in food service industry.

UNIT - I
18 hours
1.1 Food Service Industries in India – acts and responsibilities. Fables, foibles, fraud and fact – note on eating preference and misinformation, reliable information, source of reliable information, government information and regulations on healthful food program.

UNIT - II
18 hours
2.1 Menu Planning and Service - Projecting and preserving nutrients during production, purchase, storage, cooking and serving. Types and function of menu, planning a menu according to food service type, recipes and special menu for food service.

UNIT – III
18 hours
3.1 Kitchen management - principles of layout, determination of equipment – factors affecting the selection, criteria for selection, types of equipment, basic materials used in manufacture of equipments, installation and care of equipments, fuel saving techniques, physical planning- architectural features, floor, walls, lighting, plumbing and ventilation.

UNIT - IV
18 hours
4.1 Food service - service areas, methods and styles, table winding up, setting, presentation techniques, clearing and customer relations.
4.2 Laws governing food service institutions – food laws, labour laws, laws concerning hygiene and safety.

UNIT - V
18 hours
5.1 Environmental Hygiene and Sanitation - Hygiene in food plant hygiene, safety handling, personal hygiene, to prevent procedure followed in food service establishment to prevent accidents, facilities and benefits to workers in each establishment. Indices of food and water field of catering establishment, biological criteria of food, testing and control measures. Management of food waste and waste water.

#…..# self-study portion.
TEXT BOOKS:


UNIT I
Text book 4 Chapter-VII, VIII, IX

UNIT II
Text book 1 Chapter- XV, XVII
Text book 2 Chapter-XVII
Text book 3 Chapter-XII

UNIT III
Text book 1 Chapter –IV, V, VIII, IX, XI
Text book 2 Chapter- IX, X, XI, XII, XIII
Text book 5 Chapter-XXXXXIV

UNIT IV
Text book 1 Chapter –XXVI, XXX
Text book 2 Chapter – XIX, XXX, XXXI
Text book 6 Chapter – XI, XIII, XV, XVI

UNIT V
Text book 1 Chapter –XVI, XXVIII, XXIX
Text book 2 Chapter-XX, XXX

REFERENCES BOOKS

The Practical work consists of internship in a multi-speciality hospital for one month.

i. Visits to the different wards to observe the patients.
ii. Patient’s medical history
iii. Planning the diet according to medical prescription.
iv. Supervising the food preparation and service in the dietary department of the hospital.
v. Calculating the diet according to medical prescription.
vi. Accompanying the doctor while visiting the patient.
vii. Diet counseling to the patient
viii. Case study- Selecting and observing 2 patients requiring a therapeutic diet in relation to Patient’s dietary history - income, occupation, food habits and social factors.

Preparation of the report should include

i. History of the hospital.
ii. Location
iii. Organization structure
iv. Facilities provided
v. Layout of the kitchen
vi. Work organization
vii. Duties of the dietitian
viii. Special dietary preparation
ix. Types of service
x. Equipments
xi. Storage of food
xii. Handling of leftovers and shortages
xiii. Sanitation and hygiene.
xiv. Case study
Objectives:
This course will enable the students to
1. understand deeply about the importance of micro-organisms in food.
2. study about the factors affecting the growth of microorganism in food.
3. understand the microorganisms and food borne illness.
4. create awareness about emerging trends in the field of the food microbiology.

UNIT-I  
1.1 Food microbiology – Definition and scope of food microbiology.
1.2 Importance of micro-organism in food microbiology:
   Bacteria – lactis, acetics, butyrics, propionics, proteolytic bacteria, lipolytic bacteria, pectinolytic bacteria, thermophiles, thermotrophic bacteria, psychrotrophs, halophiles, osmophilic bacteria, pigmented bacteria, gas forming bacteria, coliforms.
1.3 Mould- penicillum. Yeast- saccharomyces cerevisiae. Algae- red sea weed

UNIT-II  
Contamination and spoilage of food:  
2.1 Contamination-definition, sources of contamination- green plants and fruits, animals, sewage, water, air, during handling and processing.
2.2 Spoilage-definition, causes of spoilage.
2.3 Factors responsible for spoilage-Factors affecting kind, numbers, growth of micro-organism in food. Changes caused by micro-organism in nitrogenous and non-nitrogenous compound of food

UNIT-III  
Contamination, spoilage, preservation of foods:  
3.1 Contamination, spoilage, preservation of Cereals and cereal products, Fruits and Vegetable Products.
3.2 Contamination, spoilage, preservation of Milk and milk product,
3.3 Contamination, spoilage, preservation of Meat, fish, egg and poultry.

UNIT-IV  
Food-borne illness:
4.1 Food Infection and Food Intoxication: definition, classification of food diseases.
   Bacterial Food-borne illness: staphylocococal intoxication, botulism, salmonellosis, Enteropathogenic Escherichia coli infection.
4.2 Non Bacterial Food-borne illness: mold-aflatoxin, virus-infectious hepatitis, poliomyelitis, rickettias, parasites- trichinosis.
UNIT-V

Current trends in food microbiology

5.1 Microbiology of food products- ingredients, packaging materials, equipments, sanitizing, the preservation process, vending machines for food and beverages, food handling on large scale. Microbiology criteria for food- specification, standards and guidelines

5.2 Probiotics- Antimicrobial activity and health promoting effects of Lactic acid bacteria.

5.3 Encapsulation- definition, Microencapsulation technology to protect probiotics.

TEXT BOOKS


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

UNIT II
Text book –1 Chapter – III, IV

UNIT III
Text book –1 Chapter – XI, XIII, XIV, XV, XVI, XVII, XVIII.

UNIT IV
Text book –1 Chapter – XXIV, XXV

UNIT V
Text book –1 Chapter – XXVII, XXVIII,
Text book –3 chapter -IX

Net Reference: www.cdn.intechopen.com/pdfs/.../In Tech_Encapsulation_ technology_to_prote...

REFERENCE BOOKS


NET REFERENCE

1. www.cdn.intechopen.com/pdfs/.../In Tech_Encapsulation_ technology_to_prote...
Objectives:
To enable the students to
1. Understand the importance of research
2. Learn about the various applications of students in the research
3. Familiarize on writing the project reports

UNIT I 18 hours
1.1 Meaning of Research, objectives of research, Types of Research and their application. Research Design – Qualities of good research, problems encountered by a researcher.
1.2 Sampling – Introduction, methods -Random sampling methods (random, stratified, systematic, cluster sampling), Non-Random sampling methods (judgement, convenience, quota sampling) sampling and non-sampling errors.

UNIT II 18 hours
2.1 Methods of data collection - primary and secondary, Primary data - Questionnaire, preparation of schedules, Interview method. Secondary data - Sources of secondary data, precautions while using secondary data.
2.2 Classification of data - Classification – meaning and objectives, types of classification, formation of discrete and continuous frequency distribution, Tabulation – parts of a table, general rules of tabulation, Types of tables.

UNIT III 18 hours
Representation of data – Diagrammatic and graphical representation, Significance of diagrams and graphs, general rules for constructing diagrams, Types of diagrams, graphs of Time series, graphs of frequency distribution.

UNIT IV 18 hours
4.1 Statistical analysis Measures of central Tendency – Mean, Median, Mode, their relative advantages and disadvantages, Measures of dispersion- Mean deviation, standard deviation, quartile deviation. Correlation analysis, types of correlation, regression, difference between correlation and regression.
4.2 Tests of significance- large and small samples, “t” and “f” test, chisquare test, ANOVA technique – ANOVA table, types, one way and two way, ANOVA in research.

UNIT V 18 hours
5.1 Report writing - layout of research report, significance of report writing, #Steps in report Writing#, types of research report, oral presentation, mechanism of report writing, precautions and essentials of writing a good research report, footnotes and bibliographical citations.
#.....# self- study portion.
TEXT BOOKS

UNIT I Text Book 1 Chapter-I, II
UNIT II Text Book 3 Chapter- VI
UNIT III Text Book 3 Chapter-VI, VIII
UNIT IV Text Book 3 Chapter –IX, XII, XIII, XX
UNIT V Text Book 1 Chapter -IX

REFERENCE BOOKS
Quantitative analysis of blood:
   a) Glucose - WV method (or) Orthotoludine method
   b) Cholesterol – Zak’s method
   c) Urea-DAM method
   d) Serum A/G ratio and Total Protein

Quantitative analysis of Urine:
   a) Creatinine
   b) Urea-DAM Methods
   c) Calcium
   d) Phosphorus

FOOD MICROBIOLOGY PRACTICAL

1. Safety practices in Microbiological laboratory
2. Microscope and its operation
3. Principles and operations – Autoclave, Hot Air Oven, Incubators, colony counter,
   Centrifuge, pH meter, Colorimeter and Spectrophotometer
4. Preparation of culture media, cleaning of glassware and sterilization methods
5. Pure culture techniques - Streak plate, Pour plate and Spread plate.
6. Staining techniques – Simple staining, Gram’s staining, Spore-staining, Capsular staining.
7. Test for motility of bacteria – Hanging drop technique.
8. Identification of Gram positive organisms (using food strains): Streptococcus pneumoniae,
   Staphylococcus aureus and Bacillus sp. and Gram negative organisms (using food strains):
   Escherichia coli and Proteus sp.
9. Identification of important bacteria, moulds and yeast in food (by using slides/cultures)-
   E-coli, rhizopus, penicillium, mucor, aspergillus, yeast.
11. Demonstration of bacterial count in the given sample by using colony counter.
12. Water analysis by MPN technique – presumptive coliform test – confirmed coliform test
    and completed coliform test.

Related Experience: Visit to an established microbiology laboratory.
Objectives:
1. To gain the knowledge and understanding of nutrition required for sports in order to enhance performance.
2. To learn the role and significance of macro nutrients and micronutrients in achieving fitness.

UNIT I  
Introduction to sports nutrition  
1.1 Meaning and importance of sports nutrition. Different types of sports. Physiological changes during sports and exercise.
1.2 Nutritional consideration for sports person as compared to normal active person. Energy substrate for activities of different intensity and duration.

UNIT II  
2.1 Role of macronutrients – Carbohydrate  
Carbohydrate reserves. Carbohydrate as energy source for sports and exercise. Glycogen re synthesis and carbohydrate loading. Carbohydrate requirements.
2.2 Consumption of carbohydrate –  
Consumption of carbohydrate in pre exercise, duration and recovery period. Carbohydrate supplementation during exercise. Factors affecting utilization of carbohydrates during exercise.

UNIT III  
3.1 Role of lipids as an energy source for sports – Fat stores, oxidation of fats, factors affecting fat oxidation (intensity, duration, training status and carbohydrate feeding).
3.2 Consumption of fats – Fat requirements and utilisation. Influence of dietary factors on fat utilization – total fat intake, high carbohydrate diets, dietary fibre and alcohol.

UNIT IV  
4.1 Protein and amino acid requirements - Importance of protein and amino acid requirements during sports. Factors affecting protein turnover during endurance exercise, resistance exercise and recovery process. Protein supplementation.
4.2 Importance of micronutrients for sports – Role of vitamins, minerals and antioxidants. Dietary supplements and ergogenic aids (Mechanical, nutritional, pharmacological, physiological and psychological) – concept .

UNIT V  
5.2. **Performance – influencing factors** – Chronic dieting and eating disorder.
Female athlete triad, stress, type of exercise, gender influence, lipid metabolism and weight loss, caffeine and athletic performance.

**TEXT BOOKS**

**UNIT I**

**UNIT II**
- Text Book- 2 Chapter –VIII
- Text Book-3 Chapter-XIV

**UNIT III**
- Text Book-2 Chapter -VIII
- Text Book-3 Chapter-XIV

**UNIT IV**
- Text Book- 2 Chapter -VIII
- Text Book- 4 Chapter -XIII
- Text Book- 5 Chapter -XIII

**UNIT V**
- Text Book- 5 Chapter -XIV

**REFERENCE BOOKS**
2. Don MacLaren., Advances in Sport and Exercise Science : Nutrition and Sport , ChPublished by Churchill Livingstone, Elsevier (2007).
11. Wolinksy Ira, Drishill Judy, Sports and Nutrition Vitamins and Trace elements,
Objectives:
To enable students
1. To understand the principles and methods of counselling.
2. To apply counselling methods to patients with different diseases

UNIT I 18 hours
1.1 Nutritional Counselling - counselling techniques, stage of change. Activities that facilitate behavior change, understanding cultural factors, developing Discrepancy, avoiding arguments / defensiveness, rolling with resistance, supporting self- efficacy.
1.2 Intervention Model – Interviewing, assessment of current eating behavior and assessment of readiness to change.

UNIT II 18 hours
2.2 Nutritional Counselling Sessions – not ready to change counselling sessions - asking open – ended questions, reflective listening, affirming, summarizing, eliciting self-motivational statements, intention to change, ending the session.
2.3 Ready to change counselling sessions- action plan, arranging for the next contact, resistance behaviors and potential strategies to modify them-reflecting, double-sided reflection, shifting focus, emphasizing personal choice, reframing.

UNIT III 18 hours
3.1 Psychology- Introduction, definition., basic concepts –Attention, Perception, Learning, Memory, Personality, Cognition, Motivation.
3.2 Counseling Psychology- Introduction, definition, meaning and importance.

UNIT IV 18 hours
4.1 Counselling Process - Various phases / stages in counseling process. Types of Counselling: crisis counselling, facilitative counselling, preventive counselling and Development counseling.
4.2 Counsellor-Counselee Relationship - nature and characteristics, factors influencing the relationship. Counselling and Psychotherapy, values in counselling.

UNIT V 18 hours
5.1 Family Counselling - family planning counselling, abortion counselling, #importance of counselling for children and adolescents#
5.2 Geriatric counseling - for patients with specific diseases like HIV/AIDS, cancer, and Diabetes.
UNIT I  Ref book 3 Chapter – V  
UNIT II  Ref book 1 Chapter – XVII  
UNIT III  Ref book 2 Chapter – XXIV  
UNIT IV  Ref book 2 Chapter – XXIV  
UNIT V  Ref book 1 Chapter – XXX, XXXII, XXXVIII  
Ref book 3 Chapter – V  

# ..... # Self -Study Portion  

REFERENCE BOOKS  

**SEMESTER –III: EXTRA CREDIT COURSE - I**  
**PAEDIATRIC AND GERIATRIC NUTRITION**

<table>
<thead>
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<th>Course Code</th>
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**Objectives:**
To enable the students to
1. Learn the importance of nutritional care and nourishment of children
2. Understand the nutritional requirements of children and the effects of various diseases on their nutritional status
3. Gain knowledge on the various dimensions of ageing to improve quality of life
4. Understand the multifaceted aspects of aging the importance of nutrition during old age
5. Become competent to provide nutritional and health care for the elderly.

**UNIT I**  
**Infancy & Immunization Schedule**
1.4 Immunization schedule during pregnancy, infancy and childhood.
1.5 Identification of Sick Newborn- Detection of abnormal signs- cyanosis, jaundice, respiratory distress, bleeding, seizures, refusal of feeding, abdominal distention, dehydration, failure to pass meconium and urine.

**UNIT II**  
2.2 Nutritional Management for Children with Special Conditions- Causes, symptoms and dietary management for autism, ADHD (Attention Deficit Hyperactivity disorder), cerebral palsy.

**UNIT III**  

**UNIT IV**  
4.1 Nutritional Requirements – Nutritional requirements during old age, food requirements and balanced diet. Food habits of the elderly. Supplements for the elderly.
4.2 Nutritional and health status of elderly- Nutritional assessment during old age. Factors influencing food and nutrient intake- Changes in organ function and impact on nutrient intake, nutritional concerns of the elderly, modification of diet during old age.
UNIT V

5.1 **Nutritional problems of the elderly, chronic degenerative diseases and disability disorder** – Malnutrition, osteoporosis, obesity, neurological dysfunction, anaemia, constipation, dental problems, indigestion, cardiovascular disease, diabetes mellitus, cancer, vision problems and arthritis – their etiology and prevention – a review. Drug and Nutrient Interaction.

**TEXT BOOKS**

**REFERENCE BOOKS**

**UNIT – I** Text Book - 1 Chapter –I, III
**UNIT-II** Text Book –2
Ref Book – 2 -Chapter – III, Chapter – XXXXI, XXXXXXXXVI, XXXXXXXXXI
**UNIT -III** Text Book - 2 Chapter-IX
Text Book -4
**UNIT -IV** Text Book -2 Chapter – IX
Text Book -3 Chapter – XVI, Text Book – 5
**UNIT-V** Text Book -2 Chapter – IX
SEMESTER: IV  CORE: XIII

INSTITUTIONAL FOOD MANAGEMENT

Course Code : 17PND4C13  Max. Marks : 100
Hours/Week : 6  Internal Marks : 25
Credit : 5  External Marks : 75

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  18 hours
Food service industry
1.1 Different Type of catering institutions - commercial and non-commercial.
1.2 Institutional food service- definition, objectives, types of institutional food service.
1.3 Food service system - Conventional systems, Convenience systems, ready food system, cook chill, cook freeze and vending systems.

UNIT-II  18 hours
Management and resources
2.1 Management – Definition, Principles and Tools of Management- tangible and intangible tools, styles of leadership, Qualities of a good Leader. Approaches –MBO,TQM
2.2 Resources-money, space, time, energy.
2.3 Equipments- classification of equipments, care and maintenance of equipment,

UNIT-III  18 hours
Food management
3.1 Menu planning – definition, functions and types of menu. Designing the menu card. - points to be considered while writing menus.
3.2 Food purchase - Purchasing procedure, food specification-objectives, methods of purchasing, forms used in food purchase, receiving, storing and issue.
3.3 Food production and service- process, effective use of leftover foods. Styles of service – Formal and Informal styles of service

UNIT-IV  18 hours
Financial management
4.1 Financial and management accounting -definition, application of management accounting in catering operation.
4.2 Concept and components of cost, cost control, pricing of food.
4.3 Accounting system – Accounting techniques-single and double entry system, advantages. Types and Book of accounts.
UNIT – V  
18 hours

Fuel management, Hygiene and Sanitation
5.1 Fuel management- types of fuel, merits and demerits, fuel saving economy in relation to food service industries.
5.2 Hygiene and sanitation - definition, importance, environmental hygiene and sanitation.
5.3 Hygiene in food handling, personnel hygiene, importance of pest and rodent control in food service units.

TEXT BOOKS

UNIT I Text Book- 1 Chapter I,IV
UNIT II Text Book- 1 Chapter I,III
UNIT III Text Book- 1 Chapter IV
UNIT IV Text Book- 1 Chapter V
UNIT V Text Book- 1 Chapter VII

REFERENCE BOOKS
COMMUNITY NUTRITION AND PUBLIC HEALTH

SEMESTER: IV CORE: XIV

Course Code : 17PND4C14
Max. Marks : 100

Hours/Week : 6
Internal Marks : 25

Credit : 5
External Marks : 75

Objectives:
To enable students
1. To understand national nutritional problems and their implications.
2. To become familiar with the national and international contributions towards improvement of nutrition in India.
3. To become better prepared to evaluate nutrition projects in the community.

UNIT- I

1.1 Food and Nutrition Security
Food production, access, distribution, per capita food availability of food grains, losses, consumption, Food Security

1.2 Nutrition and National Development
Nutrition in National Development in terms of Socio – Economic, Industrial and Agricultural development

UNIT-II

2.1 Major Nutritional problems – Etiology, prevalence, Clinical manifestations, preventive and nutritional measures of
Malnutrition – causative factors - Low birth weight, faulty child feeding practices, dietary inadequacy, frequent infections, large families, high family illiteracy, taboos and superstitious, Vicious cycle, Under Nutrition in Children and Adults
Macro and Micro Nutrient Deficiencies – PEM, Anaemia, Fluorosis, #Iodine deficiency# Osteoporosis, Prophylaxis Programme – Vitamin A,

2.2 Special Health Problems – Smoking, alcoholism, Drug addiction, AIDS and AIDS Control Programme

2.3 Determinants of Nutritional Status -
Nutritional Assessment – Anthropometry, Clinical Examination, Laboratory and Biochemical Assessment, Dietary Assessment.

UNIT-III

National, International organization and Nutrition Education
3.1 National Nutrition policy – XII five year plan, Recommendations, Action Plan
Action Programmes (International)– WHO, ICDS, FAO, UNICEF, World Bank, Voluntary Services, CARE

3.2 National organization – ICMR, NIN, CSWB, SSWB, FNB, NNMB, CFTRI, DFRL, NIPCCD

3.3 Nutrition Education - Definition, importance, Principle in Planning, Programme Execution and Evaluation, Mass Media, Types, Preparation of Educational Material-Coverage, Evaluation
UNIT- IV  
18 hours

4.1 Approaches and strategies for improving nutritional status and health:
   Increased agricultural production and animal husbandry foods and Nutrition Gardens

4.2 Issues and policies on access to food and Nutrition – Income, women and health,
   Growth and poverty

4.3 Social protection measures- PDS, TPDS

4.4 Food based interventions including fortification and genetic improvement of foods,
   Supplementary feeding.

UNIT- V  
18 hours

Nutrition In Emergencies and Disasters

5.1 Natural and manmade disasters resulting in emergency situations

5.2 Assessment and surveillance of affected population groups – Clinical, Anthropometric and
   Dietary methods

5.3 Nutritional relief and rehabilitation – Assessment of food needs, food distribution
   strategy, mass and supplementary feeding, sanitation and hygiene, evaluation of feeding
   programmes

5.4 Nutrition for special conditions - Introduction to Nutrition for physical fitness and sport
   Feeding problems in children with Special needs, Considerations during natural and
   man- made disasters, e.g. floods, War.- Basic guidelines in disaster management.

# ….. # self-study portion.

TEXT BOOKS


   Delhi (2007).

UNIT : I  
Ref Book : 1  
Chapter VIII

UNIT – II  
Text Book - 1  
Chapter IX, X, XI, XII, XIII, IXX, XX , XXI, XXII, XXXVII

UNIT – II  
Text Book - 2  
Chapter XVIII, XV

UNIT- III,  
Net Ref  
www.oxfamindia.org
   www.Planningcommission.nic.in

UNIT - IV  
Net Ref  
www.oxfamindia.org
   www.fao.org

UNIT - V  
Text Ref : 3  
Chapter – XXII

REFERENCE BOOKS

1. A. Park, Textbook of preventive and Social Medicine, Nineteenth Edition, M/S


1. Working with computer,
   - Working with files and folders
   - Working with control panel: Installation of new programs, changing password and security options
   - Working with mail: creating e-mail ID, composing, sending and receiving mails

2. Application of Ms word in Nutrition related Research
   - Starting, creating, editing, saving, print previewing and printing a document
   - Creating Table and working with Graphs
   - Tabulating nutrient content of foods and editing the Table

3. Usage of Ms Power point in Nutrition
   - Starting, Creating, Inserting pictures and slides, transition and effects
   - Creating slide show presentation with animations on nutrition related topics.

4. Dietary calculations using Excel
   - Starting Excel, working with spread sheet
   - Working with formula, functions, graphs and charts
   - Applying Excel for dietary and nutrient calculations

5. Application of SPSS software in nutrition related research
   - Coding
   - Mean, Median, Standard deviation, t-test, f test, ANOVA, Sign test and Chi square test
   - Significance and interpretation

6. Online publication in Journals
   - Writing of a review or a research article
   - Framing the content
   - Submission of the article through online
Objectives
To enable students to
1. Acquaint with the different textiles and their performances
2. Impart knowledge on different textile finishes

UNIT I
1.1 Resource Management: Understanding, meaning, classification and characteristics of resources, factors affecting utilization of resources.
1.2 Maximizing use of resources and resource conservation.
   Availability and management of specific resources by an individual / family – money, time, energy, space
1.3 Functions of Management: Decision making, planning, supervising, controlling, organising.

UNIT II
2.1 Design and good taste: Objectives and meaning of designs and taste, expressiveness, functionalism. Concept of design, purpose of design, elements of design, types of design, structural design, and decorative design.
2.2 Colour: Sources of colour- dimension of colour (hue, value, intensity / chroma). The prang colour system (primary, secondary, intermediate hue, tertiary and quaternary colour)
2.3 Colour scheme for a room: factors affecting the use of colour scheme for room (the room, mood, style, fashion, personality, possessions).
2.4 Principles in the use of colours for a room (balance, proportion, harmony, rhythm, emphasis).

UNIT III
3.1 Fibres - Definition - Classification of fibre
3.2 Natural fibre – vegetable fibre (Cotton, Linen, Kapok) animal fibre (Silk, Wool) mineral fibre (Asbestos, Rocks).
3.3 Manmade fibre (artificial fibre) – synthetic fibre (Nylon, Polyester), Regenerated fibre (Rayon, Cellulose acetate).
3.4 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).
3.5 Weaving-Definition-Classification-Basic weaves, Plain weave (Rib weave, Busket weave), Twill weave, Satin weave, Sateen weave, Fancy weaves, Pile weave, Leno weave, Swivel weave, Jacquard weave, Lappet weave, Dobby weave.
UNIT IV
4.1 Finishing – Definition-Aim-Make the material attractive, Improves suitability, Produce variety, and Give weight- process – Degree of permanence, Designers and sales.
4.2 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).
4.3 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 V
5.1 Selection of suitable clothing – Factors affecting selection of clothing – Age, Season, Income, Occasion, Fashion.
   a) Clothing for different age groups- Clothing for the infant (8-9 months).
   b) Clothing for creeper (8 months to 1 year).
   c) Clothing for the toddler (1 – 2 years)
   d) Clothing for school going children (5 – 11 years).
   e) Clothing for pre-adolescents (12 – 18 years).
   f) Clothing for adolescents (15 years).
   g) Clothing for elderly.
5.2 Care of storage of clothing – care during wearing and taking off cloths, care of different fabrics (cotton, woollens, silks).
5.3 Storage of clothes – steps while storing cloths.

TEXT BOOKS

UNIT I Text book 1 Chapter – V, VI
UNIT II Text book 1 Chapter – VI, VII
UNIT III Text book 1 Chapter – VIII
UNIT IV Text book 1 Chapter – IV
UNIT V Text book 1 Chapter – IV

REFERENCE BOOKS