

**PG DIPLOMA
IN
NUTRITION AND
DIETETICS**

(2018 admission onwards)

SEMESTER 1

PG DIPLOMA IN NUTRITION AND DIETETICS

CORE COURSE	TITLE OF THE COURSE	INSTRUCTION HRS/WK		CREDIT	EXAM HOURS	SCHEME OF EXAMINATION		TOTAL MARKS
		THEORY	PRACTICAL			EE (80%)	IE (20%)	
VPDND1C01	HUMAN PHYSIOLOGY	5		4	3	80	20	100
VPDND1C02	NUTRITION THROUGH LIFECYCLE	5		4	3	80	20	100
VPDND1C03	ADVANCED FOOD SCIENCE	4		4	3	80	20	100
VPDND1C04	PRINCIPLES OF NUTRITION	4		4	3	80	20	100
VPDND1C05	COMMUNITY NUTRITION	4		4	3	80	20	100
VPDND1P01	PRACTICAL ADVANCED FOOD SCIENCE & NUTRITION THROUGH LIFECYCLE		3					
	TOTAL	25		20				500
VPDND2C01	FOOD SERVICE MANAGEMENT	5		4	3	80	20	100
VPDND2C02	CLINICAL AND THERAPEUTIC NUTRITION	5		4	3	80	20	100
VPDND2C03	FOOD MICROBIOLOGY AND SANITATION	4		4	3	80	20	100
VPDND2C04	NUTRITION MANAGEMENT IN LIFESTYLE DISEASES	4			3	80	20	100
VPDND2C05	DIABETIC CARE AND MANAGEMENT	5		1	3	80	20	100
VPDND2P02	PRACTICAL- CLINICAL AND THERAPEUTIC NUTRITION		2	2	3	80	20	100
VPDND2P03	HOSPITAL INTERNSHIP AND DIET COUNSELLING					80	20	100
	TOTAL	25		10				1200

EVALUATION

A) Theory: Every Semester

100 Marks for each paper.

QUESTION PAPER PATTERN FOR CORE

For a paper total marks is $70+30=100$.

External : **70** marks , Internal : **30** marks

Distribution of marks

Internal marks distribution

Sl.No	Criteria	Marks
1	Attendance	6
2	Assignments	6
3	Seminar	6
4	Test papers-2-	12
Total		30

External marks distribution

Category	Total Questions	To be answered	Marks for each question	Total
Section A – Short answers	7	5	3	15
Section B - Paragraph	9	7	5	35
Section C - Essay	4	2	10	20
Total				70

B) VPDND2 P03 PRACTICAL - CLINICAL AND THERAPEUTIC NUTRITION

Internal marks distribution

Sl.No	Criteria	Marks
1	Attendance	4
2	Performance	4
3	Record	4
4	Class test (2)	8
Total		20

External marks distribution

Sl . No	Criteria	Mark
1	Presentation	16
2	Taste and Serving	4
3	Time and Cleanliness	4
4	Principle	4
5	Menu Plan	16
6	Calculation	8
7	RDA	8
8	Record	20
TOTAL		80

SEMESTER I
VPDND1 C01 HUMAN PHYSIOLOGY

Hours per week: 5

Credits: 2

Objectives

1. To enable students to understand the metabolic changes in health and different disease conditions.
2. Gain knowledge about the relationship between nutrition and human system.

UNIT I BLOOD

Blood and its composition, Functions and structure of each constituents of blood, Formation and Destruction, Blood group, Rhesus factor, Erythroblastosis foetalis, ESR, Hemostasis.

UNIT II CARDIOVASCULAR SYSTEM

Structure and functions of heart. Blood vessels and its type, Special conducting tissues of Heart, Properties of cardiac muscle, Heart rate. Cardiac cycle, Heart sound, Cardiac output, Pulse, Tachycardia and Bradycardia. ECG & its significance. Hemorrhage, Compensatory changes after hemorrhage. Blood Pressure, Cardio vascular modification during exercise. Different types of circulation- foetal circulation, pulmonary, hepatic, capillary. Techniques to identify cardiovascular disorders –angioplasty, angiogram.

UNIT III RESPIRATORY SYSTEM

Organs & functioning, Mechanism of respiration, Gaseous exchange in lungs and tissues. Composition of inspired and expired gas, Regulation of respiration, Lungs volumes and capacities. Apnea, Hypoxia, dyspnea, asphyxia, hyperpnoea, Resuscitation and its methods.

UNIT IV DIGESTIVE SYSTEM

Structure and functions of Alimentary tract (Mouth, Stomach, Small Intestine, Large Intestine), Functions and composition of various secretions and juices- Saliva, Gastric, Bile, Intestinal, Pancreatic secretion. Mechanism of swallowing, Phases of secretion of digestive juices and its regulation, movements of gastrointestinal tract, defecation, Regulation of appetite.

Liver, gall bladder, pancreas, spleen – anatomy & physiology Functions of bile salts.

UNIT V URINARY SYSTEM

Structure and functions of kidney, Structure of nephron, Urine formations, GFR, Composition of normal and abnormal urine, Regulation of reabsorption, Role of Kidney in maintaining pH of Blood, Acid base balance, Micturition and its regulation

UNIT VI NERVOUS SYSTEM

Structure of neuron, Conduction of nerve impulse, Nervous transmission, Synapse, Reflex action, Classification of nervous systems (only the parts and general functions- CNS and SNS), Common test in neurological disorders- EEG , EMG, MRI, NCV

UNIT VII ENDOCRINE SYSTEM

Endocrine glands, Secretions, Functions, Regulation of secretions.

UNIT VIII REPRODUCTIVE SYSTEM

Male Reproductive system (structure, functional anatomy, and spermatogenesis) and female reproductive system (structure, functional anatomy, Oogenesis). Ovarian and uterine cycle's, Puberty, Menarche, Menopause, Fertilization, Conception, Implantation. Male and female contraception's- Etiology of male and female infertility

RELATED EXPERIENCE

1. Measurement of pulse and blood pressure.
2. Demonstration of blood group determination.
3. Microscopic examination of blood.

REFERENCES

1. Chatterjee.C.C, Human Physiology (11th edition), vol 1 & 2, Medical Allied Physiology (2016).
2. Guyton and Hall Textbook of Medical Physiology, 12e (Guyton Physiology), by John E. Hall PhD (Author) , Hardcover – Import, Publishers- Saunders; 12 edition 19 Jul 2010
3. Ross and Wilson Anatomy and Physiology in Health and Illness: With access to Ross & Wilson website for electronic ancillaries and eBook, Publisher: Churchill Livingstone; 11 edition, 2010

SEMESTER I

VPDND1 C02 NUTRITION THROUGH LIFE CYCLE

Hours per week: 5

Credits:2

Objectives

1. Understand the role of nutrition in different conditions.
2. Develop competency in planning diets to meet the nutritional requirements of different socio economic levels.

UNIT I NUTRITION AND DIET IN HEALTH

Vital link between nutrition and health. Review– concept of adequate nutrition and malnutrition. Different food groups – guide in menu planning. Balanced diets.

UNIT II NUTRITION IN PREGNANCY

Physiological changes during pregnancy, Nutritional need during pregnancy, Maternal Nutrition and foetal outcome, complications of pregnancy, Management of high risk pregnancies, LBW babies – causes and complications, Tests during pregnancy, Prenatal and postnatal care.

UNIT III NUTRITION IN LACTATION

Physiology of lactation, Malnutrition- effects on milk and effects on mothers, Nutritional requirement and dietary management.

UNIT IV NUTRITION IN INFANCY

Nutritional status of the infants, Rate of growth as the indicator. Nutritional allowances for the infants, Breast feeding Vs formula feeding, Food square, Weaning foods suitable for infants, Feeding the premature infants and LBW infants, Interventions to prevent malnutrition.

UNIT V NUTRITION IN PRESCHOOL AGE

Growth and development of preschool children, food habits and nutrient intake of preschool children. Dietary allowances – supplementary foods, reasons for under 5 MR. Nutritional problems and interventions to prevent malnutrition.

UNIT VI GROWTH AND HEALTH MONITORING

Growth Monitoring- Importance, Growth Chart- ICDS, WHO. Immunization Schedule

UNIT VII NUTRITION DURING SCHOOL AGE

Physical development, Nutritional status of school going children, Food habits, Nutritional requirements, Nutrition and academic performance, Nutritional disorders, Interventions to prevent malnutrition.

UNIT VIII NUTRITION DURING ADOLESCENCE

Physical, physiological and psychological changes in adolescents, Sexual maturity rating. Nutritional needs, Nutritional Problems, Changes needed to prevent malnutrition.

UNIT IX NUTRITION FOR THE ADULTS

Nutrition for the adult-Nutritional requirements according to the mode of activity. Nutrition and health of women-general nutritional problems of women, anemia, osteoporosis, pre and post menopausal syndrome, Hormonal changes during menopause .Infertility –risk factors, prevention, methods of detection.

UNIT X NUTRITION IN OLD AGE

Theories of ageing – physiological changes during ageing, Changes in body composition, Techniques for assessing body composition and Nutritional requirement and Dietary Modifications.

UNIT XI NUTRITION IN SPECIAL EVENTS

Sports nutrition – Energy systems, nutritional requirements, carbohydrate loading, role of water and electrolytes, ergogenic aids.

Nutrition in high altitude

Nutrition in Disaster Management- requirements, major nutritional deficiency diseases in emergency monitoring assessment, surveillance of nutritional status and Relief measures in emergencies.

Space nutrition – space food formulation

RELATED EXPERIENCE

Planning diets to meet the requirements at different economic level- low, middle and high income for the following conditions.

1. Pregnancy
2. Lactation
3. Preschool age
4. School age
5. Adolescents
6. Adult
7. Old people
8. Athletes

REFERENCES

1. Mahan.L.K and Stump SE, Krause's Food, Nutrition and Diet Therapy, WB Saunders Company, 10th edition, 2001

SEMESTER I
VPDND1 C03 ADVANCED FOOD SCIENCE

Hours per week: 5

Credits:2

Objectives

1. To understand the nutritive value of foods.
2. To understand the principles and chemistry of foods and apply the principles during preparation & cooking

UNIT I INTRODUCTION TO FOOD SCIENCE

History and development of food Science, Functions of food, Different methods and objectives of cooking

UNIT II FUNCTIONAL PROPERTIES OF FOODS

Definition and properties of colloids, solution, sol, gel, emulsion, food dispersion. Enzymes- definition, classification, specificity of enzymes, enzyme inhibition, allosteric enzymes, application of enzymes in food industry. Sensory tests. Types of tests. Procedures for determination and monitoring of shelf life

UNIT III CEREALS & MILLETS

Cereal- Structure and composition. Parboiling, germination. Cereal cookery — effect of moist and dry heat, gluten- factors affecting gluten formation, Starch granules structure and characteristics. Nonstarch poly saccharides- (fibres, cellulose, hemicellulose, pectic substances, gums, carboxy methyl cellulose(CMC))Application in food industry- batters and dough, breakfast cereals, fermented products

UNIT IV PULSES, NUTS AND OILSEEDS

Composition, protein foods for infants and children, soy products, protein concentrates and isolates textured vegetable proteins.

UNIT V VEGETABLES AND FRUITS

Classification and Composition, Nutritional importance, Pigments and acids in vegetables and fruits, Effect of cooking on pigments and nutrients. Ripening, Browning reactions- enzymatic and non-enzymatic browning

UNIT VI FLESH FOODS

Composition, post-mortem changes in meat, changes produced during cooking, Fish – Composition , selection of spoilage, importance of fish. Egg- Effect of heat on egg proteins, egg foams, and egg products.

UNIT V II MILK

Composition, processing, effect of heat, milk products, cheese making

UNIT VIII FATS AND OILS

Classification of lipids and fatty acids, Role of fat in cookery, Physical & chemical properties of fat, Rancidity, Changes of fat on heating, Salad dressing.

UNIT I X FOOD ADDITIVES AND ADULTERATION

Food additives- Types, Unintentional additives, Additives and food safety, Food adulteration

UNIT X SUGAR

Properties, Sugar related products, Crystallization, Factors affecting crystallization, Crystalline & no- crystalline candies, Stages of sugar cookery, Artificial sweeteners.

UNIT XI EVALUATION OF FOOD QUALITY

Quality attributes of food – appearance , texture, flavor, colour, taste. Subjective evaluation and objective evaluation. Types of sensory evaluation tests

UNIT XII EMERGING TRENDS IN FOOD SCIENCE

Food Fortification, Biofortification, GM foods, novel foods, SCP, Leaf Protein, Nanotechnology in food industry

UNIT XIII NUTRACEUTICALS

Phytochemicals, antioxidants, probiotics, prebiotics, foods with nutraceutical effects- green tea grape seed, wheat grass, *Garcinia cambogia* and aloe vera

RELATED EXPERIENCE

1. Microscopic examination of different starch granules and effect of heat on starch (cake and bread making)
2. Preparation of stable emulsion (mayonnaise)
3. Determination of gluten content of different flours.
4. Stages of sugar cookery, crystalline and non-crystalline candies- Fondant, fudge, marshmallow.
5. Preparation of foam and effect of additives on stability, Meringue.
6. Effect of heat on milk / scum formation. Preparation of any 3 products.
7. Changes in pigments due to different cooking methods.
8. Enzymatic browning of fruits and vegetables.
9. Sensory evaluation of foods.
10. Product development- preparation and standardization of novel nutritious recipes.
11. Market survey on new processed items available in the local market.

SEMESTER I
VPDND1 C04 PRINCIPLES OF NUTRITION

Hours per week: 4

Credits:2

Objectives

1. Obtain depth on the study of major nutrients and
2. Develop competence for undertaking nutritional investigations.

UNIT I UNDERSTANDING NUTRITION

Nutrition science: Basic concepts, Latest concepts, Methods for studying the nutrient requirements.

UNIT II CARBOHYDRATES

Classification, Properties, Functions, Digestion, & absorption, Food sources & RDA. Metabolism: Glycolysis, Gluconeogenesis, TCA cycle, HMP shunt, Glycogenesis, Glycogenolysis, Bioenergetics. Regulation of blood glucose concentration, threshold for glucose, abnormal levels in blood glucose. Glycemic index (Factors affecting GI). Dietary Fiber (Classification, functions) & Resistant starch (Classification, functions), Modification of carbohydrate intake for specific disorder. Deficiencies and toxicity

UNIT III PROTEINS

Classification (Protein and Amino acid), Properties, Functions, Digestion, absorption, Food sources & RDA. Metabolism: General catabolism of amino acids, deamination, transamination, decarboxylation, urea cycle. Protein quality evaluation, Protein turnover, Amino acid balance. Deficiency and toxicity.

UNIT IV FATS AND LIPIDS

Classification (Fatty acids and Lipids), Eicosanoids- importance. Properties, Functions, Digestion. Absorption, Transportation & Utilization. Food sources & RDA. Metabolism of lipids: biosynthesis and oxidation of saturated and unsaturated fatty acids, Biosynthesis of cholesterol and regulation, Toxicity and deficiency. Plasma lipoproteins and their significance and ketone body formation.

UNIT V ENERGY

Definition. measurement of energy, Direct and indirect calorimetry. Determination of energy value of food- Bomb Calorimeter. Physiological value of food, Gross calorific value, Total energy Expenditure, Components of energy expenditure- Resting Energy Expenditure, Thermic Effect of food, Energy expended in physical activity. Methods of estimation of energy expenditure, BMR- definition its determinants & factors affecting BMR, Factors affecting energy requirement, Recommended dietary allowances, Factors affecting RDA, Indian reference man and woman, Energy Requirements. Calculation of energy expenditure of an average man and woman, energy balance. Nutrition and work capacity- factors affecting physical work capacity and efficiency.

UNIT VI INTERMEDIARY METABOLISM AND REGULATION OF NUTRIENT METABOLISM

Interrelationship between carbohydrates, proteins, and fats.

Regulation of body weight, Control of food intake, role of hunger and satiety centre, metabolic consequences of starvation.

UNIT VII WATER

Functions. Water distribution in our body. Water balance. Regulation of water balance, Requirements of water. Disturbances in fluid balance-dehydration and oedema.

UNIT VIII VITAMINS AND MINERALS

Functions, distribution, absorption, transportation utilization, storage, excretion, sources, requirement, deficiency and toxic effects of calcium, phosphorus, magnesium, sulphur, sodium, potassium, iron, fluorine, zinc, copper, selenium.

Water and fat soluble vitamins, antivitamins, conversion of betacarotene to vitamin A and requirements (RDA), Interrelationship between vitamins and minerals.

UNIT IX XENOBIOTICS

Meaning, detoxification, mechanism and types. Pharmacodynamics, pharmacokinetics- absorption, distribution, metabolism, excretion. Food or nutrient effects on drug action. Drug side effects that affects nutritional status- appetite, oral cavity, taste, smell GI tract, glucose levels, allergy, enteral feeds.

REFERENCES

1. Mahan.L.K and Stump.S.E , Krause's Food, Nutrition and Diet Therapy, W.B Saunders Company, USA.
2. Nix.S, William's Basic Nutrition and Diet Therapy, Mosby, India.
3. Sreelakshmi.B, Nutrition Science, New Age International, New Delhi.
4. Bamji, MS, Rao,MP; Reddy.V, "Textbook of human Nutrition", Oxford and IBH Publishing Co, New Delhi.

SEMESTER I
VPDND1 C05 COMMUNITY NUTRITION

Hours per week: 4

Credits:2

Objectives

1. Gain insight in to the national nutritional problems and their implications and
2. Understand the international contribution towards nutritional improvements in india.
3. Develop skills in organizing and evaluating nutrition projects in the community.

UNIT I ASSESSMENT OF NUTRITIONAL STATUS

Nutritional assessment in community- methods used in individual, Households and institutional level, Direct- anthropometry, biochemical methods, clinical examination, dietary survey and indirect methods - Vital statistics.

UNIT II PREVALENCE OF MALNUTRITION IN INDIA

Ecological, socio- cultural, economic and demographical factors of malnutrition. Nutritional disorders-anaemia, Vitamin A deficiency, Iodine Deficiency Disorder, PEM- Etiology, prevalence, symptoms and preventive measures. Measures to overcome malnutrition in India. Need for an integrated approach to solve the problems of malnutrition.

UNIT III NUTRITION INTERVENTION PROGRAMMES

Nutrition intervention programmes and policies. Importance and impact evaluation.SLP, SNP, ANP, NIPCCD, and other programmes organized by governmental and non governmental agencies for the vulnerable sections of the population. Public health nutrition. Nutritional surveillance.

UNIT IV ROLE OF NATIONAL AND INTERNATIONAL ORGANIZATIONS TO COMBAT MALNUTRITION

International organizations concerned with food and nutrition, FAO, WHO, UNICEF, UNESCO, CARE, AFPRO, World Bank and others, National organizations concerned with food and nutrition- ICMR, ICAR, CHEB, CSWB, SSWB, ICAR, NIN, NNMB, CFTRI

UNIT V NUTRITION EDUCATION

Meaning, importance and methods of nutrition education to the community. Nutrition education programmes- planning, execution and evaluation. Problems of nutrition education programmes.

UNIT VI FOOD PRODUCTION

Food production in India – history, current status, Green Revolution, Blue Revolution, White Revolution and Yellow Revolution. Food and nutritional securities of India, indicators of food security, importance of PDS, FCI.

RELATED EXPERIENCES

1. One week community nutrition camp & report.
2. Assessment of nutritional status through anthropometry and dietary survey.
3. Planning, conducting and evaluating nutrition education programmes.
4. Evaluation of School Lunch programmes and nutrition awareness for the beneficiaries.

REFERENCES

1. Reddy.V; Rao.P.N; Sastry.G and Nath.K.K, Nutrition trends in India, NIN, Hyderabad.
2. Bamji, MS, Rao,MP; Reddy.V, “Textbook of human Nutrition”, Oxford and IBH Publishing Co, New Delhi.

3. Jelffee.D.B, "Assessment of Nutritional Status of the community", World Health Organisation, Geneva.

4. Swaminathan.M, "Principles of Nutrition and Dietetics", Bangalore publishing company

Ltd, Bangalore.

5. Park.K, "Park's textbook of preventive and social medicine", 16th edition, M/S , Banarsidas Bhanot publishers, Jabalpur.

SEMESTER II

SEMESTER II
VPDND2 C01 FOOD SERVICE MANAGEMENT

Hours per week: 5

Credits:2

Objectives

1. Understand the objectives of different types of food service institutions.
2. Apply knowledge in space allocation of food plants
3. Gain knowledge in menu planning preparation of recipes in large scale and serving and in food costing.

UNIT I FOOD SERVICE INDUSTRY

Scope of food industry: food industry segmentation, Types of Hotel

UNIT II ORGANISATION & ADMINISTRATION OF FOOD SERVICE INDUSTRY

Organization –types, organization structure and management

UNIT III PHYSICAL FACILITIES AND LAYOUT

Size and Type of Kitchen, Work simplification, Designing Kitchen, Layout of Kitchen, Work centres in kitchen layout

UNIT IV FOOD SERVICE EQUIPMENT

Classification, Selection, Care and Maintenance

UNIT V QUANTITY FOOD PREPARATION

Types of menu, Purchasing, Storage, Method of food production, Conventional and non conventional sources of energy, Standardization and portion control.

UNIT VI TYPES AND STYLES OF SERVICE

Self service, Waiter-waitress service, Vending and mobile food service system, Counter service, English service, French service, American service, Russian service and service techniques.

UNIT VII SANITATION AND HYGEINE

Hygiene & sanitation, Hygiene in foods handling, Personal hygiene, Product standards. HACCP

UNIT VIII HUMAN RESOURCE MANAGEMENT

Recruitment & selection, Induction, Training, Performance appraisal, Leadership, Communication, Employee benefits, Laws governing food service establishment.

UNIT IX FINANCIAL MANAGEMENT

Budgets, Records for control, Factors affecting food cost control, Concepts and behavior of cost. Menu Pricing- Factor method, Prime cost method and Actual cost method. Break even analysis.

UNIT X MARKETING

Definition, Marketing mix in food service.

RELATED EXPERIENCE

1. Standardization of 10 selected recipes.
2. Quantity preparation of any 2 food item.
3. Visit to any food service institution / flight kitchen.
4. Table setting.

REFERENCES

1. Marian C Spears; Food Service Organization; III Edition, Prentice Hall Inc., USA. 1995
2. Lendal. H. Kotschever, Richard Donnely, "Quantity Food Purchasing, Mac Millan Publishing Company, New York, IV Edition, 1993.
3. West and Woods, Introduction to Food Service, Macmillan Publishing

SEMESTER II

VPDND2 C02 CLINICAL AND THERAPEUTIC NUTRITION

Hours per week: 5

Credits:2

Objectives

1. Understand the physiology, metabolism and special requirements of critically ill.
2. Know the effect of diseases on nutritional status and nutritional and requirement.

UNIT I ROLE OF DIETITIAN IN THE HOSPITAL AND COMMUNITY

Dietitian- definition, scope, role, qualifications, professional ethics and obligations. Psychology of feeding the patient, Assessment of patient's needs.

UNIT II ROUTINE HOSPITAL DIETS

Regular diet, light diet, soft diet, full liquid diet, clear liquid diet and tube feeding. Enteral and parenteral feeding –composition, monitoring and complications. Transitional feeding.

UNIT III MODIFICATIONS OF DIET IN FEBRILE CONDITIONS

Acute, chronic and recurrent fevers, typhoid, rheumatic fever, tuberculosis, malaria, H1N1, dengue fever and chikun guinea

UNIT IV GASTROINTESTINAL DISORDERS

Esophagitis, cancer of oral cavity, ulcer, indigestion, gastritis, carcinoma of the stomach, gastric

surgery and dumping syndrome. Diarrhoea, constipation, flatulence, celiac disease, tropical sprue, steatorrhoea. Irritable bowel disease (IBD) – crohn's disease, ulcerative colitis, Irritable bowelsyndrome (IBS), diverticulitis, colitis and colon cancer.

UNIT V LIVER, GALL BLADDER AND PANCREAS DISORDERS

Cirrhosis of liver, hepatitis, hepatic coma, cholecystitis, cholelithiasis and pancreatitis

UNIT VI METABOLIC DISORDERS

Hypothyroidism, hyperthyroidism, gout, phenylketonuria and lactose intolerance

UNIT VII RENAL DISORDERS

Acute and chronic glomerulonephritis, Nephrosis, Acute and Chronic Renal Failure, Nephrolithiasis, Dialysis.

UNIT VIII FOOD ALLERGY

Definition, types, tests, dietary management and prevention

UNIT IX DISEASES OF MUSCULO SKELETAL SYSTEM

Arthritis, Osteoporosis

UNIT X NEUROLOGICAL DISORDERS

Alzheimer's disease, Parkinson's disease and epilepsy.

UNIT XI - DIET DURING METABOLIC STRESS

Burns, sepsis and trauma. Surgical conditions- CV complications, stroke and surgery, respiratory failure, hepatic failure, multi organ failure, GI tract (surgery and complications) and neurosurgery.

REFERENCES

1. Antia FP, Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 4th edition, 1997.
2. Davidson, Pasmore P and Break LP, Human Nutrition and Dietetics, English language book society, Livingstone, 1986.
3. Robinson, normal and Therapeutic Nutrition, Oxford & LBM Publishing, Calcutta,

Bombay, 17th edition, 1990.

4. Garrow.JS & James W.P.T, Human Nutrition and Dietetics, Church Hill Living Stone, 1993.

5. Mahan.L.K and Stump SE, Krause's Food, Nutrition and Diet Therapy, WB Saunders Company, 10th edition, 2001.

SEMESTER II

VPDND2 C03 FOOD MICROBIOLOGY AND SANITATION

Hours per week: 4

Credits:2

Objectives

1. Understand the common organisms associated with food borne illness
2. To study about the microorganisms present in different food products.
3. To study about the food packaging and labeling methods.

UNIT I FUNDAMENTALS OF MICROBIOLOGY

Introduction, development of microbiology and food sanitation. Bacteria-morphology, reproduction, physiology, growth curve. Yeast- morphology, methods of multiplication, process of hybridization, physiology, classification and importance of yeast. Viruses- discovery, morphology, reproduction, bacteriophages and viruses in relation to food science.

UNIT II DENATURATION OF BACTERIA

Sterilization: physical agents- light, dessication, electricity and heat. Chemical agents, removal of microorganisms and filtration.

UNIT III MICROBIOLOGY OF NATURAL PRODUCTS

Water- sources, bacteriology of water supplies, bacteriological examination and purification.

UNIT IV MICROBIOLOGY OF MILK AND MILK PRODUCTS

Kinds of microorganisms in milk, sources of contamination, pathogens in milk, control of microorganisms, quality and methods of study. Microbiology of dairy products- fermented milk, butter and cheese.

UNIT V MICROBIOLOGY OF FRUITS AND VEGETABLES

Fruits and vegetables- external contamination, preservation, spoilage and control of microorganisms.

UNIT VI MICROBIOLOGY OF CEREALS AND CEREAL PRODUCTS

Cereal and cereal products- organisms associated with grains, Classification and control of moulds in bread.

UNIT VII MICROBIOLOGY OF FLESHY FOODS

Flesh foods- Microbiology of meat and meat products, poultry, fish and egg.

UNIT VIII PRINCIPLES OF FOOD SPOILAGE

Causes, Factors affecting spoilage, Spoilage of perishable and non perishable foods, Spoilage and examination of canned foods

UNIT IX FOOD PRESERVATION

Preservation- temperature, osmotic pressure, dehydration, irradiation, preservatives

UNIT X FOOD BORNE DISEASES

Food borne diseases and their outbreak

UNIT XI SANITATION AND SAFETY

Personal hygiene-care of hands, sanitation, equipment plant, plant constructions, personal facilities, water supplies and sewage disposal.

UNIT XII FOOD PACKAGING

Packaging :concepts ,significance and functions. Classification of packaging materials- flexible packages, rigid packages, retail or shipping containers. Packaging methods.

Moisture sorption properties of foods and selection of packaging materials. Interactions between packaging and food toxicity hazards. Biodegradable material and environmental issues. Labelling requirements and bar coding- Nutrition labeling and nutrition claims, Coding of food products. Packaging laws and regulations

UNIT XIII FOOD LAWS AND STANDARDS

Mandatory measures-PFA, Essential commodities act, 1955. Voluntary standards and certification system- Bureau of Indian standards, AGMARK. Consumer protection act, 1986. Food standardization and regulation agencies in India-CCFS, CFL. International standards- Codex alimentarius, ISO, WHO, FAO, WTO, HACCP.

REFERENCES

- 1.Roday,S 1999. Hygiene and Sanitation in Food Industry. Tata Mc Graw Hill Publishing Company Ltd., New Delhi
- 2.Frazier,W.C & Westhoff, D.C. Food Microbiology. Tata MC Graw –Hill Publishing Company Ltd., New Delhi, 5th Edition, 1997
- 3.Adams,M.R and Moss ,M.O .Food Microbiology .New Age Intenational (P) Ltd., Publishers.1996
4. Anna K.Joshua, Microbiology. Popular Book Depot. Publishers. 1994
New Delhi , 1996
- 5.Potter,N.Hotchkiss, H.J. Food Science (5th edition) CBS Publishers and Distributors, New Delhi , 1996

6. Srilakshmi B. Food Science. 4th Edition . New Age International Private Limited, New Delhi, 2008

7. Shakuntala M.N., Shadaksharaswamy M. Foods –Facts and Principles. New Age International Publishers, New Delhi, 2002

SEMESTER II

VPDND2 C04 NUTRITIONAL MANAGEMENT IN LIFE STYLE DISEASES

Hours per week: 4

Credits:2

Objectives

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

UNIT I STRESS

Stress – definition, types, physiological and psychological impact. Stress enhancing food, anti-stress foods and nutrients. Dietary guidelines.

UNIT II NUTRITION FOR WEIGHT MANAGEMENT.

Body composition and maintenance. Obesity- types, causes, assessment and complications. Theories of obesity. Weight reduction techniques- dietary, surgical, lifestyle modification, Under weight- causes, complications and dietary management.

UNIT III DIABETES MELLITUS

Classification, causes, symptoms, diagnosis, complications and management- dietary and lifestyle.

UNIT IV CARDIOVASCULAR DISEASES.

Risk factors, Blood lipids-Classification, assessment, dyslipidemia and hypercholesterolemia, Atherosclerosis-disease progression, causes, symptoms and clinical findings. Management-dietary and lifestyle. Hypertension classification, causes, complications and dietary management.

Dietary management in angina pectoris, myocardial infarction and cardiac failure and CABG .

UNIT V NUTRITION IN ONCOLOGY

Classification, development of cancer, risk factors-environmental, hereditary & nutritional factors.. Medical Nutritional Management in Oral cancer, Breast cancer, Esophageal cancer, Lung cancer, Uterus cancer, Colon cancer, Stomach cancer, Pancreas cancer, Renal cancer. Nutritional problems related to chemotherapy, radiation therapy, surgery, Immuno therapy, and marrow transplantation. Role of food in the prevention of cancer. Nutrient supplementation in cancer therapy and its need.

UNIT XI MEDICAL NUTRITION THERAPY FOR HUMAN IMMUNODEFICIENCY VIRUS (HIV) DISEASE

Etiology, Pathophysiology and classification. Stages, opportunistic infections, complications and Malnutrition. Medical Nutrition therapy.

RELATED EXPERIENCE

- 1) Study the weight reduction techniques followed by various health centres.
- 2) Case study report of the patient with related disease.

REFERENCE

1. Mohan L.K. and Shump, S.E.Krause's Food Nutrition & Diet therapy, W.B.Sauders Company, XII edition, 2001.. Shills,E.M., Olson,S.J. and Shiks,M.C. Modern Nutrition in health and disease, Lea and Febringer, Philadelphia, 8th edition, 1994

SEMESTER- II
VPDND2 C05 DIABETIC CARE AND MANAGEMENT

Hours per week: 5

Credits: 1

Objectives

1. Obtain in-depth knowledge about Diabetes Mellitus (DM)
2. To make the students aware of various complications during Diabetes Mellitus
3. To gain knowledge about the management of Diabetes Mellitus through diet, exercise and medication

UNIT I BASICS OF DIABETES MANAGEMENT

Introduction, definition, classification of Diabetes Mellitus, Prevalence- International, national and state, risk factors and symptoms.

UNIT II ANATOMY AND PHYSIOLOGY OF PANCREAS

Pancreas – functional anatomy, Secretion, synthesis of insulin, Mechanism of action of Insulin, Effect of Insulin. regulation and utilization of insulin, glucagon and somatostatin. Glucose Homeostasis.

UNIT III PATHOPHYSIOLOGICAL CHANGES IN PANCREAS, BETA CELLS AND ALPHA CELLS

Pathological changes in metabolism. Pathophysiology of Diabetes Mellitus.

UNIT IV DIAGNOSIS AND ROUTINE INVESTIGATIONS

Monitoring the blood glucose level, Urine testing for the presence of sugar, random blood glucose, GTT and Glycosylated Hb (Hb A1C).

UNIT V MANAGEMENT OF DIABETES MELLITUS

Dietary Management- Role of carbohydrate, protein, fat and fiber in Diabetes Mellitus. Glycemic index. Alcohol and diabetic diet, Fruits and diabetes, Refined sugar and alternative sweeteners and dietary supplements.

Physical activity and exercise- Physiological changes occurring during exercise, Benefits of exercise in patients with Diabetes, Potential adverse effect of exercise in patients with Diabetes, Type of Physical Activity (SAFE)

Medication and Diabetes- Oral agent for diabetes. Main group of OHA'S, General aspects in OHA therapy, Insulin therapy in Diabetes Mellitus- types of insulin and time activity characteristics. Practical aspects of insulin therapy- storage, sterilization, injection sites, timing. Factors that affecting rate of insulin absorption, Complications of insulin Therapy, Commonly seen side effects.

UNIT VI COMPLICATION OF DIABETES MELLITUS AND THEIR MANAGEMENT

Hyperglycaemia- definition and clinical manifestation- treatment, prevention and clinical levels of hyperglycaemia, prevention and hyperglycaemia awareness.

Ketoacidosis-definition and causes, clinical manifestation.

Non- Ketotic Hyper osmolar coma and lactic acidosis.

Macrovascular complications: Cardio vascular complications and dyslipidemia- Definition, clinical manifestation, prevention and treatment.

UNIT VII PREVENTION AND MANAGEMENT OF LONG TERM DIABETIC COMPLICATIONS/ MICROVASCULAR COMPLICATIONS

Diabetic retinopathy- Epidemiology, Risk factors, Classification and Features of Diabetic Retinopathy, Complication and Management.

Neuropathy- definition, Classification, pathogenesis, prevention and treatment.

Importance of early diagnosis, diagnosis, the feet and diabetes.

Diabetic nephropathy- definition, etiology, stages, risk factors for the development of diabetic nephropathy, diagnosis, Pathogenesis, Treatment and prevention.

UNIT VIII MANAGEMENT OF CO- MORBID CONDITION

Hypertension, dyslipidaemia, obesity, metabolic disorders.

RELATED EXPERIENCE

- 1) Analysis of urine blood sugar
- 2) Detection of blood glucose by using glucometer.
- 3) Case study of two diabetic patients (complicated cases)

REFERENCES

1. TC Raghuram et al., Diet and Diabetes, NIN, ICMR
2. PG Raman and LC Gupta, Step by Step Management of Diabetes, Jaypee Brothers Medical Publishers (P) LTD
3. Frenny Billimoria and Surinder W, The Diabetics Look Book,
4. MMS Ahuja, Diabetes Care In Clinical Practise, Jaypee Brothers, Medical Publishers (P) LTD, New Delhi
5. M D Mnams et al., Diabetes, Jaypee Brothers Medical Publishers (P) LTD
6. Rudy B and Richard D, Hand book of Diabetes, A John wiley and sons, LTD

SEMESTER II

VPDND2 P03 PRACTICAL - CLINICAL AND THERAPEUTIC NUTRITION

Hours per week: 2

Credits: 2

Objectives

To enable students to obtain knowledge on different therapeutic diets and their preparation

UNIT I PREPARATION OF HOSPITAL DIETS.

Visit to dietary kitchen, preparation of routine hospital diets-regular diet, soft diet, full fluid diet and preparation of tube feeding blends.

UNIT II DIET IN FEBRILE CONDITIONS.

Acute & chronic fevers – typhoid, tuberculosis.

UNIT IV DIET IN GASTRO INTESTINAL DISORDERS.

Peptic ulcer, gastritis, diarrhoea, constipation, malabsorption syndrome.

UNIT V DIET IN LIVER, GALL BLADDER AND PANCREAS DISORDERS

Cirrhosis, hepatitis, cholelithiasis and pancreatitis.

UNIT VI DIET IN METABOLIC DISORDERS.

Diabetes mellitus, hypothyroidism, hyperthyroidism, gout, phenyl ketonuria, Lactose intolerance.

UNIT VII DIET IN RENAL DISORDERS.

Glomerulonephritis, nephrosis, nephrolithiasis & diet in dialysis.

UNIT VIII DIET IN OBESITY AND UNDERWEIGHT.

UNIT IX DIET IN CARDIOVASCULAR DISORDERS.

Atherosclerosis, hypercholesterolemia, hypertension, myocardial infarction.

UNIT X DIET IN NUTRITIONAL DEFICIENCY DISEASES.

Anaemia, protein calorie malnutrition, vitamin A deficiency.

UNIT XI DIET IN CANCER.

UNIT X DIET FOR CRITICALLY ILL

Diet in Surgical conditions – stroke, multi organ disorders and burns.

VPDND2P03- HOSPITAL INTERNSHIP

Objectives

To enable students to:

1. Get an exposure to the working situation of the dietary department of a reputed hospital.
2. Develop skills in diet counseling and feeding of patients.
3. Develop capacity for taking dietetics as a profession.

1. One month internship in a multispecialty hospital with dietary department (30 days) - Report

2. Diet counseling for the college students (10 students) - Report