



CMS COLLEGE KOTTAYAM

(AUTONOMOUS)

Affiliated to the Mahatma Gandhi University, Kottayam, Kerala

CURRICULUM FOR POSTGRADUATE PROGRAMME

M.Sc DIETETICS AND FOOD SERVICE MANAGEMENT

UNDER CHOICE BASED CREDIT SYSTEM 2016
(With effect from 2016)

DIETETICS AND FOOD SERVICE MANAGEMENT

SEMESTER 1

NUTRITION AND DIET IN HEALTH

Course Code: HS21101

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

- To Understand the basic principles of nutrition and the role of nutrition in different conditions
- To Develop competency in planning diets to meet the nutritional requirements of different socio- economic levels
- To Gain knowledge about the methods of assessment of nutritional problems and their implications.

Course outline

Module1: Nutrition and Health

Nutrition- Definition,Types. Nutrients - Macro and Micro Nutrients- Functions and its role in maintaining nutritional status. Health- definition, Vital link between nutrition and health, Scope of Nutrition.. Concept of adequate nutrition and malnutrition, Assessment of Nutritional Status.

Module 2: Recommended Allowances

ICMR recommended allowances for Indians. Approaches for deriving nutritional requirements and Recommended Dietary Allowances. Concept of reference man and woman, Reference body weights ,Basis for requirements for energy,protein,fats,minerals and vitamins.Adult reference man and reference woman. Different food groups, ICMR ñ Five food group ñDietary guide lines and basic principles of meal planning.

Module 3:Nutrition in Pregnancy

Nutritional status and general health, physiological adaptations in pregnancy, effect of nutritional status on pregnancy outcomeñ the nature of weight gain. , storage of nutrients in normal pregnancy, RDA and basis for requirements during pregnancy. Diet during pregnancy, complications of pregnancy with dietary implications, adolescent pregnancy, exercises during pregnancy

Module 4:Nutrition in Lactation

Physiological adjustments during lactation, hormonal controls & reflex action, lactation in relation to growth and health of infants, problems of breast feeding, nutritional components of colostrum and mature milk, special foods during lactation, nutritional requirements and its basis during lactation, diet during lactation.

Module 5: Nutrition in Infancy

Nutritional status of the infants- growth of infants, growth monitoring, nutritional requirements, basis and recommended dietary allowances for the infants, breast- feeding Vs. formula feedings, weaning foods suitable for infants, feeding the premature infants.

Module6: Nutrition in Pre- School Age

Growth and development of pre school children, need and health care of pre-school children, food habits and nutrient intake of pre- school children. Nutritional problems in pre-school period. requirements, basis and recommended dietary allowances.supplementary foods.

Module 7: Nutrition During School Age

Physical growth, nutritional status of school age children, food habits and nutritional requirements, basis and recommended dietary allowances. Packed lunch.

Module 8: Nutrition During Adolescence

Physical, physiological and psychological changes in adolescents, nutritional needs and requirements and RDA of adolescents, food habits and promotion of desirable eating habits in adolescents, changes needed to prevent malnutrition in adolescents, habits and disorders affecting food intake.

Module 9: Nutrition for the Adult

Nutrition for the adult, food trends and patterns, nutritional requirements and basis for deriving RDA .work efficiency, dietary guidance, nutrition related risk factors, reference man and woman.

Module 10: Nutrition for the Elderly

Physiological and psychological changes during old age, nutritional requirements, factors affecting food intake, common nutritional problems in old age.

Related Experience

Planning diets to meet the nutritional requirements for the following stages in life at different incomes levels.

- Pregnancy
- Lactation ,Weaning .
- Infancy
- Pre-school age
- School age
- Adolescence
- Adulthood
- Old age

References:

- Bamji S.M., Rao N.P., and Reddy V.(1998): (editors) Textbook of Human Nutrition. Oxford & IBH Publishing Co., New Delhi.
- Davidson, passmore., Brock J.K.(1993) Human Nutrition & dietetics, F & S Livingston Ltd., Edinburgh & London.
- Gopalan, C., Rama Sastri, B.V., and Balasubramanian S.C.,(2010): Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR .
- Joshi A.S., Nutrition and Dietetics 2nd edition Tata McGraw Hill Publishing Company, New Delhi.
- Mahan L.K & Sylvia Escott-Stump. (2008) Krause's Food Nutrition & Diet Therapy, 12th edition, Saunders Company.
- Reddy V., Rao P., Gowrinath Sastry, J.P and Kasinath K.C.(1993): Nutrition Trends in India, National Institute of nutrition.
- Robinson C. H., Lawler M.R., Chenoweth W.L., Garwich A.E(1986): Normal and Therapeutic Nutrition, 17th edition, Mac Milan publishing Co., New York .
- Shills M.E., Olson J., Shike, M and Roos, C .(1998): Modern Nutrition in Health and Disease 9TH Edition. Williams and Williams A Beverly Co. London
- Srilakshmi B.(2002): Nutrition Science, New age international P.Ltd. Publishers, New Delhi.

APPLIED HUMAN PHYSIOLOGY

Course Code: HS21102

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

- To learn the different physiological systems in our body and its functions.
- To gain knowledge about nutritional physiology.

Course Outline

Module 1: Elementary Composition of Human Body

Proximate principles – Proteins, Lipids, Fats, Carbohydrates, Enzymes and Co-enzymes.

Module 2: Blood

Introduction to haematology, Functions of blood, Functions of plasma proteins, Erythrocytes, Haemoglobin, Iron, Important indices of RBC and Hb, Leucocytes/ WBC – Functions and blood groups. Blood Transfusion – Medical ethics, Importance of stem cells, Scientific and potential use of stem cells.

Module 3: Cardiovascular System

Anatomical consideration of heart and CV system, cardiac cycle, Heart sounds, ECG and its interpretation, heart rate and regulation, Blood pressure ñ Significance and physiological variations, Haemorrhage, Compensatory changes after haemorrhage, Cardiovascular modification during exercise, Pacemaker, Heart block, Ventillation, Ca++ Channel blockers.

Module 4:Respiratory System

Functional anatomy, Non respiratory functions of the lungs, resuscitation and its methods.

Module 5: Digestive System

Anatomy, Composition and functions of salivary, gastric, intestinal & pancreatic secretions, Functions of bile salts, Mechanism of secretion of digestive juices and its regulation, movements of stomach. Small intestine- villi, defecation, emesis. Liver ñ anatomy and physiology, fatty liver, Jaundice and Liver function tests. Gastro intestinal hormones and related issues.

Module 6: Excretory System

Structure and functions of kidney, Reabsorption, Structure of nephron, GFR, Regulation of reabsorption and common kidney disorders.

Module 7: Nervous System

General aspects of neurology, Synapse conduction, Types of transmission, at synapse and reflex action.

Module 8: The Musculo-Skeletal System

Structure and functions of bone, Cartilage and connective tissue. Disorders of the skeletal system. Types of muscles ,structure and function.

Module 9: Endocrinology

Endocrine secretions, glands, role and regulatory function of endocrine, site of secretions, regulation of secretions.Nutrigenomics ñ concepts and principles, applications, Epigenetics.

Related Experience

1. Demonstration of measuring BP using sphygmomanometer
2. Blood analysis for:
 - a. Haemoglobin
 - b. Creatinine
 - c. Glucose
 - d. Urea
 - e. Serum proteins
3. Urine analysis for
 - a. Albumin

- b. Sugar
- c. Creatinine
- d. Urea
- e. Vitamin C

References

- .Best, H. And Taylor, B (1991)íThe Physiological Basis for Medical Practiceí, 8th Edition, The Williams and Wildins Company.
- Berne, M.R.,(1998):Physiology.Amazon.UK.
- Burke and Taylor (1986) The Living Body, Saunders Company
- Chatterjee C C (1987) ëHuman Physiologyí, Volume I and II, Medical Allied Agency
- Guyton J. E (1991), ëTextbook of Medical Physiologyí, WB Saunders Publications, Philadelphia
- Michael J Gibney (2003) Ian A MacDonald, Helan M Roche, Nutrition and Metabolism, Blackwell Publishing.
- Samson and Wright (1989), ëApplied Physiologyí, Tandon Publications.

FOOD FACILITIES, LAYOUT AND EQUIPMENT

Course Code: HS21103

Teaching hours: 5hrs/week

Credit: 4

CORE

Objectives:

- To gain knowledge and develop skills in handling food service equipment.
- To apply knowledge in space allocation of food plants.

Course Outline

Module 1: Introduction to Food Service and Food Service Institutions.

A brief introduction on the above concepts.

Module 2: Equipment in Food Service

Classification in equipment, factors affecting the selection and use of equipment in food service institutions-Electrical and non-electrical equipments used for food storage, food preparation and service. Dish washing, & laundering equipments,holding and modular equipments.

Module 3: Materials Used

Base materials, materials used for finishes ñ materials used for accessory parts. Strength and limitations of materials.

Module 4: Food Plant

Layout and Space allocation of food plant according to different capacities- Restaurants, dietary kitchen, cafeterias, banquet space. Flow of traffic - receiving food, preparing food, storage and serving, removing soiled utensils to dishwashing area, hand washing. Traffic of guest- entrances and exit.

Module 5: Kitchen Planning

Planning kitchen in relation to equipment, different work centers and sizes in relation to equipment. Modular kitchens

Module 6: Lighting and Ventilation

Lighting suitable for different food plant- Restaurants, Dietary kitchen, Cafeterias, banquet space. Ventilation-purpose, types suitable for different food plants.

Module 7: Finishes

Finishes used for equipment, walls and floors.

Module 8: Catering Systems

Traditional, cook chill and cook freeze systems.

Related Experiences

- Assessment of the medium and heavy duty equipments commonly used in the food service establishments of the locality.
- Visit to various food service establishments to study the layout and equipments commonly used there.

Reference:

- Dennis L. Foster (1995), "An Introduction to Hospitality", McGraw Hill International Edition.
- Dennis, R. Lillicrap, Jnan, A. Cousins (1993), "Food and Beverage Service", Older and Stoughten Publishers Ltd, England, IV Edition.
- Jack D. Nimeier (1995), "Food and Beverage Management", 2nd Edition, American Hotel and Motel Association, U.S.A.
- Khan, M.A. (1987): Food Service Operations, AVI Publishing Inc Westport, Connecticut.

- Marian C. Spears(1995), Food Service Organistioní, IIIrd Edition, Prentice Hall Inc., USA
- Mohini Sethi and Surjeet Malhan (1993), ëCatering Management- An Integrated Approachí, 2nd Edition, Wiley Publication, Mumba
- Sudhir Andrews (1997), ëFood and Beverage Service- Training Manualí, 23rd Reprint, Tata McGraw Hill Publishing Co.
- Taylor, E. and Taylor J. (1990): Mastering Catering Theory. Mac Millan Press Ltd. London.
- West B.B and Wood L.(1988): Food service Institutions, 6th edition, Mac Millian Publishing Co.

ADVANCED FOOD SCIENCE

Course Code: HS21104

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

- Understand the principles and chemistry of food.
- Apply the principles of food chemistry in practical cooking

Course Outline

Module 1: Physico ñChemical changes

- Physico- chemical changes in relation to cookery
- Gelatinization of flours, starch as thickening agent, gluten formation, retrogradation, gluten formation
- Stages of sugar cookery- fondant, fudge
- Denaturation of protein
- Properties of colloids, emulsions, stabilizers
- Enzymatic and non enzymatic browning

Module 2: Acceptability testing

- Evaluation of food by sensory and objective methods
- Factors affecting acceptability of food
- Selection of taste panel

Module 3: Study of cereals and cereal products

- Wheat- Classification and grading. Wheat Flour- Constituents, Processing, Functions and behavior of flour components in dough, flour improvers

- Rice- Quality classification, processing, parboiling
- Corn- Processing of corn flakes
- Malting, popping and puffing of cereal grains
- Bakery Products
- Extruded Foods

Module 4: Legumes, oilseeds and nuts

- Selection and grading
- Anti-nutritional factors
- Edible flours- protein concentrates and protein isolates
- Novel proteins
- Germination ,fermentation
- Uses of oil seed meal
- Processed infant weaning foods

Module 5: Processing of perishable foods

- Fruits and vegetables- Constituents, pigments, role of pectic substances, fruit preservation
- Meat , Egg, Poultry and Seafoodís- Selection, composition and cooking methods
- Milk and milk products- Constituents in milk, processing of milk and milk products

Module 6: Beverages and spices

- Classification, grading and composition
- Active compounds and pigments
- Spices and condiments

Module 7: Fats and Oils

- Classification, physical and chemical properties
- Rancidity, reversion- changes during fat storage
- Anti-oxidants and synergists
- Changes during frying and trans fatty acids. Role of fat in the development of cakes and salad dressings.
- Use of fats and recent developments

Module 8: Functional foods

Definition and classification

- Antioxidant nutrient and free radical scavenging
- Commonly consumed functional foods and their action
- Pre-biotics and Pro-biotics- Definition, chemistry ,sources, bio- availability, effect on human health and application in risk reduction of diseases (non-digestible carbohydrates- oligosaccharides, dietary fibre, resistant starch, gums.)

Module 9: Food Adulteration

Type and pattern of adulteration, food laws and standards

Module 10: Food Additives

Definition of food additives; acids, bases, buffer systems and salts, chelating agents, antimicrobial agents, sweeteners, stabilizers and thickeners, fat replacers, firming texturizers, appearance control and clarifying agents. Flavour enhancers, sugar substitutes, sweeteners, antioxidants, Anticaking agents, bleaching agents, protective gases.

References

- Fox B.A.(1997): Food Science, Nutrition and Health, Edward Arnold, London, VI Edition.
- Many S.N., and Shadaksharaswamy, M.N.(1998) Foods- Facts and principles, wileyEstern Ltd., New Delhi.
- Peckham, C.G and Graves H.J.,(1979): Foundation of food preparation, Mac Milan publishing Co., New Delhi.
- Potter, N., Hotchkiss, H.J. (1996): Food Science (5thed) CBS Publishers and Distributors. New Delhi.
- Srilakshmi,B.(1997) Food Science, New Age International (p) Ltd, Chennai.
- Sumati,R .(1997):Food Science New Age International (p) Ltd. Publishing House.
- Swaminathan M. (1999): Handbook of Food and Nutrition. The Bangalore Printing and Publishing Co.Ltd.

ADVANCED FOOD SCIENCE - PRACTICAL

Course Code: HS21105

Teaching hours: 5hrs/week

CORE

Credit: 2

Objectives:

- To apply the theoretical knowledge of food chemistry in practice.
- To develop insight on the practical aspects of experimental cookery.

Course Outline

Module 1: Physico Chemical Changes in Cookery

- a) Gelatinization of starch
- b) Gluten formation and baking quality of gluten.
- c) Stages of sugar cookery.

Module2: Cereal Cookery

- a) Effect of mechanical action and ingredients (milk, fat and hot and hard water) in development of gluten.(variations in chappathis).
- b) Development of bread.

Module 3: Pulse Cookery

- a) Effect of fermentation in the development of batters - development of idli /dosa batters with variation in the cereal pulse ratio.
- b) Development of recipes using sprouted greengram.

Module4: Milk Cookery

- a) Development of paneer and khoa.
- b) Development of ice creams.

Module 6: Egg Cookery

- a) Factors affecting formation of egg white foams (beating time, vessel temperature,acid,fat,salt, water, sugar)
- b) Development of cakes.

Module7: Sugar Cookery

- a) Development of recipes with the different stages of sugar cookery.

Module8: Food Preservation Methods

- a) Demonstrate the different stages of jam preparation.
- b) Blanching
- C) Preparation of pickles squashes and jellies.

Module9: Fat Cookery

- a) Determination of smoking point.
- b) Iodine value
- c) Preparation of an emulsion- mayonnaise.

Module10: Subjective Evaluation of Food Quality

- a) Sensitivity tests
- b) Acceptability of a new product
- c) To know likes and dislikes

SEMESTER ñ II

DIETETICS

Course Code: HS22106

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

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

Course Outline

Module 1: Nutritional Care Process

Nutritional care plan- setting goals and objectives- short term and long term. Assessment and therapy in patient care; Implementation of nutritional care- counselling and patient education, diet prescription. Role of dietitian in hospital and community- Types, professional ethic, responsibilities. Indian dietetic association- Oigin, objectives, membership, chapters, registration.

Module 2: Nutritional Intervention - Diet Modifications

Adequate normal diet as a basis for therapeutic diets; Diet Prescription; Modification of Normal Diet; Nomenclature of Diet Adequacy of Standard Hospital Diets; Psychological factors in feeding the sick person

Module 3: Modifications of Diets in Febrile Conditions

Acute, chronic and recurrent fevers- typhoid, rheumatic fever, poliomyelitis, cholera, and malaria.

Module 4: Dietary Modifications for Metabolic Stress ñ Sepsis, Trauma, Burns, Surgery

Metabolic response to stress, determination of nutrient requirements, Preoperative and postoperative diet.

Module 5: Medical Nutrition Therapy for Pulmonary Diseases

Relationship between Nutrition and Pulmonary System, Impact of Malnutrition on Pulmonary System, Nutrition therapy for:-Asthma, tuberculosis, Pneumonia Chronic lung disease, Chronic Obstructive pulmonary disease, Cystic fibrosis, Lung Cancer, Respiratory Failure.

Module 6: Disease of the Gastro Intestinal System ñ Etiology and Modification of Diet

(a) Gastric Diseases

Diseases of esophagus ñ Gastro esophageal Reflux and Esophagitis

Diseases of stomach-Indigestion and Dyspepsia, Gastritis, Gastric and duodenal ulcers, Carcinoma of the Stomach, Gastrectomy, Dumping syndrome.

(b) Intestinal Diseases

Flatulence, Constipation, Irritable Bowel Syndrome, Hemorrhoids, Diarrhoea, Steatorrhoea, Diverticular disease, Inflammatory Bowel Disease, Ulcerative Colitis.

(c) Malabsorption Syndrome

Celiac Sprue, Tropical Sprue, Intestinal Brush border deficiencies (Acquired Disaccharide Intolerance) Protein Losing Enteropathy.

Module 7: Diet in Diseases of the Liver, Pancreas and Biliary System

Nutritional care in Liver disease in the context of results of specific Liver Function Tests. Dietary Care & Management in Viral Hepatitis, Cirrhosis of Liver, Hepatic Encephalopathy, Wilson's disease. Dietary care and management in diseases of Gall Bladder and Pancreas. Biliary Dyskinesia, Cholelithiasis, Cholecystitis, Cholecystectomy, Pancreatitis, Zollinger-Ellison Syndrome.

Module 8: Metabolic Disorders

Predisposing factors and modification of diet in diabetes mellitus, hypothyroidism, hyperthyroidism and gout.

Module 9: Diseases of the Circulatory System -Atherosclerosis

Hyperlipidemias; Clinical and nutritional aspects of Hyperlipidemias, Classification and Dietary care of Hyperlipidemias, Nutritional care in cardiovascular disease (Ischemic heart disease, Pathogenesis of sodium and water retention in Congestive Heart Disease. Acute and Chronic Cardiac Disease, Heart failure and transplant , Acute - Stimulants, food & consistency, Chronic - Compensated and decompensated states, Sodium Restriction in Cardiac Diseases, Diet in Hypertension - Etiology, Prevalence, Renin-Angiotensin mechanism, Salt and Blood pressure, Cerebrovascular diseases and diet in brief).

Module 10: Renal Disorders

Etiology and dietary modification in acute renal failure, chronic renal failure acute and chronic glomerulonephritis, nephrosis, nephrosclerosis, uraemia, nephrolithiasis, end stage renal disease. Renal transplants. Dialysis and types hemodialysis, Peritoneal Dialysis, Continuous Ambulatory Peritoneal Dialysis (CAPD). Dietary Management, conservative treatment, dialysis and after renal transplantation.

Module 11: Nutritional Deficiency Disorders

Protein energy malnutrition, Vitamin A deficiency, Nutritional and non-nutritional Anemias, other common vitamin mineral deficiencies. Pathogenesis and dietary management in the above conditions

Module12: Diet Therapy in Diseases of Infancy and Childhood

Inborn errors of metabolism, lactose intolerance and problems of feeding children in hospitals, low birth weight infants, nutritional problems in childhood.

References:

- Antia F.P.(1997):Clinical Dietetics and Nutrition,(4th Edition).,Oxford University Press,New Delhi.
- Bamji S.M., Rao N.P., and Reddy V. (editors). (1998): Textbook of Human Nutrition. Oxford & IBH Publishing Co., New Delhi.
- Davidson, passmore, Brock J.K. (1993): Human Nutrition & dietetics, F & S Livingston Ltd., Edinburgh & London.
- Davidson,Passmore P,and break J.P.(1986):Nutrition and Dietetics,English Language Book Society,Livingston.
- Garrow J.S and James W.P.T.(1993):Human Nutrition and Dietetics.Churchill Livingston.
- Gopalan, C., Rama Sastri, B.Vand Balasubramanian S.C(2010): Nutritive Value of Indian Foods, National Institute of Nutrition, ICMR .
- Joshi A.S. Nutrition and Dietetics 2nd edition Tata MaGraw ñ hill Publishing Company, New Delhi.
- Mahan L.K & Sylvia Escott-Stump.(2008): Krauseís Food Nutrition & Diet Therapy,12th edition, Saunders Company.
- Reddy V., Rao P.,GowrinathSastry J.P and Kasinath K.C.(1993): Nutrition Trends in India, National Institute of nutrition.
- Robinson C. H., Lawler M.R., Chenoweth W.L., Garwich A.E.(1998): Normal and Therapeutic Nutrition, 17th edition, Mac Milan publishing Co., New York
- Shills M.E.,Olson J:-Shike,M and Roos,C(1998)Modern Nutrition in Health andDisease 9TH Edition. Williams and Williams A Beverly Co. London
- Srilakshmi B. (2008): Nutrition Science, New age international P.Ltd. Publishers, New Delhi.

BIOCHEMICAL CHANGES IN DISEASES

Course Code: HS22107

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

- To understand the biochemical and pathological changes in diseases.
- To acquire skills to estimate selected body metabolites.

Course Outline

Module 1: Essentials of Pharmacology

Fundamental concepts, Drug action- Cardio vascular systems, Infections and Cancer chemotherapy, Digestive system, Hyperlipidemia, Local anesthetics, hormones & related drugs.

Module 2: Drug Interactions and Miscellaneous Drug Effects

Drug and nutrient interactions, Diuretics, Anti hypertensives

Module3: Disorders of Carbohydrate Metabolism

Normal carbohydrate metabolism- Review, Decrease of plasma glucose concentration and increase of glucose concentration, Disorders associated with hyperglycemia, hypoglycemia and reducing sugars in the urine. Estimation of serum glucose concentration, chemical methods, enzymatic methods, Urine glucose concentration, Glucose in cerebro spinal fluid, Ketone Bodies in urine, Identification of reducing bodies in urine- Anti diuretics.

Module 4: Abnormal Lipid Metabolism

Review of normal metabolism, Serum total Cholesterol, Triglyceride and lipo proteins, phospholipids, and glycolipids, plasma lipids in various diseases- Atherosclerosis, hypertension, hypolipidemia, and ketosis. Factors associated with development of heart diseases, anti hypertensives, Diuretics, lipid lowering drugs. Plasma lipoprotein levels in various diseases, chemical and enzymatic estimations of cholesterol and other lipids, beta blockers.

Module 5: Protein Metabolism

Clinical significance of protein concentration in blood, Cerebrospinal fluid and other body fluids- urine, synovial fluid, pleural fluid, transudate and exudate, Nitrogen metabolism with reference to urea, uric acid, creatinine, creatine, plasma protein in PEM, pregnancy and other diseases. Estimation of protein body fluids.

Module 6: Disorders Associated With Gastric Mucosa

Chemical pathology, gastric function tests, endoscopy, gastric stimulation tests, antinausea drugs.

Drugs acting on the digestive system- Constipation, antacids, antidiarrhoeal drugs, drugs modifying secretory functions.

Module7: Liver, Gall Bladder and Pancreas

Bilirubin and liver function, Clinical significance of altered bilirubin levels, ammonia and liver, hepatitis and liver damage, alcohol and liver damage, Reyes syndrome.

Disorders of gall bladder, bile salts and bile pigments. Disorders of pancreas, liver, gall bladder and pancreas function tests.

Module8: Intestinal Disorders

Disorders associated with intestine - diarrhoea, constipation diverticulitis, diverticulosis, flatulence, gluten- sensitive enteropathy, inflammatory bowel disease, irritable bowel syndrome, lactose intolerance, short bowel syndrome, steatorrhea, ulcerative colitis ñ colonoscopy.

Module 9: Kidney Disorders

Pathological conditions involving kidney, Concept of renal clearance, excretion of creatinine, urea, uric acid, laboratory diagnosis of renal diseases ñ nephrosis, nephrotic syndrome, acute renal failure, renal tubular disorders. Artificial kidney, principles of dialysis, type of dialysis; Drug interactions ñ inhibition of renal eliminations

Module 10: Blood Picture

Different types of anemia, blood coagulation ñ normal and abnormal, clinical changes in AIDS. Anti anemic, immune suppressant drugs.

Module 11: Body Electrolytes

Law of electron neutrality, maintenance of PH, buffer system in the body, regulation of acid base balance, respiratory control and renal control. Role of sodium, potassium and chlorine. Estimation of body electrolytes. Drug and nutrient interactions.

Related Experience

1. Quantitative estimation of glucose in blood and urine ñ Qualitative tests for sugar in urine.
2. Quantitative estimation of cholesterol in blood. Qualitative tests for acetone and acetoacetic acid
3. Quantitative analysis of urine for urea, protein, uric acid, creatinine and albumin - Quantitative estimation of urea in blood and urine.
4. Demonstration experiment on serum bilirubin.
5. Observation of dialysis.

References

- Basu, D.K, Essentials of pharmacology, CBS Publishers Asia, Printograph ñ Shahdara, Delhi.
- Chatterjee, M.N and Shinde, R.(1994): Text book of Medical Biochemistry, Jay Rees Brothers Medical pub Pvt Ltd, New Delhi.

- Lahn timer, A.L, Nelson,D.C and Cox, M.M., Principles of Biochemistry, CBS Publishers and Distributors, Jain Bhawan Bhala Natu Nagar.
- Mukherjee, K.L.(1994): Medical Laboratory Technology, Tata McGraw Hill Publishing Co.Ltd, New Delhi.

Journals

- Current Science
- Indian journal of nutrition and dietetics
- Trends in biochemical science

NUTRITION IN SPECIAL CONDITIONS

Course Code: HS22108

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

- Understand the special conditions which require nutritional support
- Learn the type of diet needed in special conditions.

Course Outline

Module 1: Space Nutrition

Space Physiology-Bone, muscle, blood; Types of space foods-Rehydratable Food, Thermostabilized Food, Intermediate Moisture Food, Natural Form Food, Irradiated Food, Frozen Food, Fresh Food, Refrigerated Food, Dietary intake during Space Flight.

Module 2: Nutrition for Muscular Skeletal System

Bone structure and bone physiology, bone mass, nutrition and bone, osteopenia and osteoporosis, musculo skeletal system disorders-- muscular dystrophy, osteoporosis, osteoarthritis and rheumatoid arthritis.

Module 3: Nutrition for Oral and Dental Health

Nutritional factors in tooth development, dental caries, preventive care, periodontal disease, early childhood caries, tooth loss and dentures, oral manifestations of systemic disease.

Module 4: Nutrition Therapy for Neurological Disorders

Neurological disorders- neuropathies, migraine, stroke.

Module 5: Nutrition Therapy for Allergic Conditions

Food Allergy, symptoms, common food allergens, food intolerance - food additives, carbohydrate intolerance, food elimination diet, immunologic basis, allergic reactions, risk factors for the development of food allergy.

Module5: Nutrition Therapy for Critically Ill Patients

Enteral Nutrition (EN)-Definition,Principles,Routes of administration,Delivery of enteral nutrition, Hyper alimentation,Enteral formulas and feeds.Parenteral Nutrition(PN)-Indication for total Parenteral Nutrition,Purpose,Parenteral Nutrition formulas,content of TPN solution.Calculation of nutrient allowances ñRequisites for energy,fatty acids,nitrogen,vitamins,electrolyte and trace elements.,Enteral Vs parenteral Nutrition.

Module 6: Nutrition Therapy for HIV Disease

Pathophysiology, etiology and classification, opportunistic infections, complications and malnutrition, women and HIV, pediatric consideration, medical nutrition therapy.

Module 7: Nutritional Considerations in Brief for the Following:

- Military(army, war), naval personnel
- High Altitudes, Low Temperature, Submarines
- Emergencies such as drought, famine, floods etc.

Module 8: General Nutritional Guidelines for Intellectual and Developmental Disabilities

Defining developmental and Intellectual disabilities, etiology, principles of nutrition care.

Module 9: Nutrition Therapy for Psychiatric Conditions

Mental illnesses access I and access II Disorders, Nutritional aspects of Brain and Nervous system, Nutrition recommendations for psychiatric conditions.

Module 10: Nutrition in Cancer: Nutrition in the Etiology of Cancer

- Types& symptoms
- Cancer therapies and treatment - side effects and nutritional implications.
- Goals of care and guidelines for oral feeding
- Accommodating side effects
- Feeding and blend preparation for cancer.
- Enteral tube feeding - Nasogastric, Gastrostomy, Jejunostomy
- Parenteral Nutrition
- Pediatric patients with cancer
- The terminal cancer patient
- Antioxidants during Anti cancer therapy

Module 11: Diet Therapy for Genetic Diseases

- Amino acid disorders
- Carbohydrate disorders
- Others

References

- Garrow J.S and James W.P.T.(1993):Human Nutrition and Dietetics.Churchill Livingston.
- Mahan L.K & Sylvia Escott-Stump.(2008): Krause's Food Nutrition & Diet Therapy, 12th edition, Saunders Company.
- Robinson C. H., Lawler M.R.,Chenoweth W.L., Garwich A.E.(1996): Normal and Therapeutic Nutrition, 17th edition, Mac Milan publishing Co., New York .
- Shills M.E.,Olson J.,Shike,M and Roos,C.(1998):Modern Nutrition in Health and Disease 9TH Edition. Williams and Williams A Beverly Co. London.

RESEARCH METHODS AND STATISTICS

Course Code: HS22109

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives

- To understand the significance of research methods and statistics in Home Science research.
- To understand the types, tools and methods of research and develop the ability to construct data gathering instruments appropriate to the research design.
- To understand and apply the appropriate statistical techniques to analyse numerical data and draw inferences.

Course Outline

Module 1 ñ Introduction to Research

Definition, Objectives and Characteristics of research, Types of Research ñ Basic, Applied and Action research, Exploratory and Descriptive, Ex-post facto research.

Module 2 ñ Identification of Research Problem

Sources of research problem, Criteria for the selection of research problem. Research design, Rationale, Statement of problem, Setting objectives, Definition of concepts, operational definition, variables ñ independent and dependent, control and intervening variables, limitations and delimitation. Hypothesis ñ Meaning and importance, types of hypotheses.

Module 3 ñ Sampling

Population and Sample, Sampling techniques, Size of sample, Merits and Limitations of sampling, Sampling and Non sampling errors.

Module 4 ñ Research methods and tools

Methods ñ Survey, observation, interview, experimental, clinical methods. Tools ñ Questionnaire, Schedule (for interview and observation) Rating Scales, Attitude Scales. Reliability and validity.

STATISTICS

Module 1 - Descriptive Statistics:

Measures of Central Tendency ñ Mean, Median, Mode; Partition Values ñ Quartiles, Deciles and Percentiles, Measures of Dispersion ñ Range, Quartile deviation, Standard deviation. Absolute and Relative measures of dispersion, Coefficient of variation.

Module 2 - Correlation and Regression:

Correlation and Regression. Scatter diagram, Correlation, Coefficient of Correlation ñ Karl Pearson and Rank Correlation Coefficients. Interpretation of Calculated co-efficients. Concept of Regression, Regression Lines and their estimation.

Module 3 - Concept of Probability and Random Variable.

Concept of Probability and Random Variable. Normal distribution and its properties. Standard normal distribution and calculation of probability of events. Importance and use of distribution in research.

Module 4 - Sampling distributions

Sampling distributions, F and χ^2 distributions. Central Limit theorem, Standard error and its importance and applications. Testing of Hypothesis ñ Hypothesis, Null and Alternative hypothesis, Type I and Type II errors, Significance Level and size of test, Critical Region, Testing Procedure concept of P Value in testing. Large and small sample tests (Z, t, F and χ^2 statistics)

Related Experience

Afive day training in using SPSS or similar package used in statistical analysis of data.

References

- Bandarkar, P.L. and Wilkinson T.S. (2000) : Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.
- Batnagar, G.L. (1990): Research Methods and Measurements in Behavioural and Social Sciences, Agri. Cole Publishing Academy, New Delhi.

- Dooley, D. (1995) : Strategies for Interpreting Qualitative Data: Sage Publications, California.
- Gay, L.R. (1981, 2nd Ed): Educational Research, Columbus, Ohio.
- Long, J.S. (Ed) (1988): Common Problems Proper Solutions: Avoiding Errors in Quantitative Research, Beverly Hills, Sage Publications, California.
- Mukherjee, R. (1989): The Quality of Life: Valuation in Social Research, Sage Publications, New Delhi.
- Stranss, A. and Corbin, J. (1990): Basis of Qualitative Research: Grounded Theory Procedures and Techniques, Sage Publications, California.

DIETETICS ñPRACTICAL AND INTERNSHIP

Course Code: HS22110

Teaching hours: 5hrs/week

CORE

Credit: 2

Objectives

- To emphasize skill development in the formulation and use of diet prescriptions.
- To develop skills in preparing therapeutic diets.
- To develop capacity for taking dietetics as a profession.

Course Outline

- 1. Practical experience in weighing and measuring.**
- 2. Preparation of clear and full liquid diets and soft diet.**
- 3. Planning and preparing diets for:**
 - a) Febrile conditions- typhoid, cholera, rheumatic fever.
 - b) Pulmonary diseases-Tuberculosis, Pneumonia ,Chronic lung disease,
 - c) Surgical conditions and burns
 - d) Gastrointestinal disorders- constipation, diarrhea, ulcerative colitis, peptic ulcer.
 - e) Live and gall bladder disorders ñ Hepatitis, cirrhosis, Cholelithiasis.

- F) Metabolic disorders- diabetes, hypo and hyperthyroidism, gout
- g) Cardio vascular disorders- hyperproteinemia, arteriosclerosis, hypertension.
- h) Renal disorders- nephritis, renal failure, nephrolithiasis, dialysis.
- i) Obesity and underweight
- j) Nutritional deficiency- Vitamin A and iron deficiencies

4. Planning and preparing paediatric diets

- a) Lactose intolerance
- b) Juvenile diabetes
- c) Diets for inborn errors of metabolism.

5. Visit to hospital dietaries

5. Dietetics Internship

Objectives:

- Get an exposure to the working situation of the dietary department of a reputed hospital.
- Develop skills in Diet counseling and feeding of patients.
- Develop capacity for taking up dietetics as a profession.

1. Hospital internship in an established dietary for one month.

Gain experience in:

- Organization and layout of diet kitchen.
- .Food purchase stores and issues.
- .Food production and menu planning
- .Food service and distribution.
- Calculation of diets and dietary management of patients.
- . Nutrition education and diet counseling of patients.

2 Case Study

1. .Selection of three admitted patients from a hospital

2. .Study the clinical, nutritional and biochemical profile on admission during hospital stay and at discharge.
3. .Critically evaluate therapeutic modification of diet
4. .Plan maintenance diet on discharge after diet counseling.
5. Writing of report.

3 Project

Any one from dietetics with special emphasis on therapeutics

SEMESTER III

FOOD SERVICE MANAGEMENT

Course Code: HS23111

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives

- To develop a knowledge base in key areas of institutional food administration
- To gain knowledge about the principle of management
- To develop skill in organizing and establishing Food Service Institutions.
- To impart necessary expertise to function as a Food Service Manager.

Course Outline

Module 1: History and Development of Food Service System

History, Food service establishments, Types-commercial and non-commercial, their characteristics

Module 2: Planning a Food Service Unit

Planning, Investment, funds, Project report, registration

Module 3: Setting a Food Service Unit

Layout, Design (definition), Layout for different food service establishments, planning a layout. Evaluation of plans

Module 4: Food Service Management

Managing an organization, Process involved, Principles of management, Functions of management-planning, organizing, directing, co-ordinating, evaluating, and controlling.Total quality management.

Module 5: Directing and Administrative Leadership

Direction, leadership, delegation, decentralization, centralization, supervision, human relations in industry, authority and responsibility, motivation, communication.

Module 6: Staff Planning and Management

Manpower planning, selection, recruitment and training, wages, salaries, incentives, promotion, demotion, transfer, dismissal

Module 7: Food Management-Records for Control

Maintenance of accounts ñ Daily, weekly, monthly accounts for food, labour equipment and furnishing, rent, water, fuel, light, licenses, cleaning supplies maintenance and miscellaneous.Budgetary control, non budgetary control, cost control, cost control, fixed, variable cost, marginal and unit cost, Break-even analysis, production planning control.

Module 8: Evaluation

Objectives, techniques and problems.

Module 9: Personal Functions: - Work Productivity

Work study, Work simplification, Work design, and Job design

Module 10: Managerial Problems

Managerial problems of food service unit. Methods to tackle problems.

References

- Khan, M. A.(1987): Food Service Operations, AVI Publishing INC,Connecticut.)
- Malhan, S and Sethi, M. (1987):Catering management,An Integrated Approach,Wiley Eastern Ltd.New Delhi.
- Malhotra, R. K.(2002):Food Service and catering Managemebnt,Anmol Publication Pvt Ltd.
- Minor L J and Cichy R. F.(1984): Food Service System Management,AVI Publishing INC,Connecticut.
- Sullliavan, C.F. (1990): Management of Medical Food Service, Van Nostrand Reinhold, Newyork.
- Taylor, E., and Taylor, J. (1990): Mastering Catering Theroy, Macmilan press Ltd.London.

QUANTITY FOOD PREPARATION AND FOOD SERVICE TECHNIQUES

Course Code: HS23112

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives:

- To understand the objectives of different types of food service institutions
- 2 To gain knowledge in menu planning, preparation of recipes in large scale and serving and also in food costing.

Course Outline

Module 1: Food Service Theory

Scope of hospitality in Industry, Different types of food service institutions, and their objectives.

Module 2: Menu Planning- The Primary Control of Food Service

Menu pattern, Planning, presentation, pricing and evaluation.

Module 3: Purchasing

Procurement, product selection, specification, methods of purchasing and purchasing process.

Module 4: Storage

Receiving, storage and inventory control.

Module 5: Production Planning and Standardisation of Recipes

Standardisation and portion control production forecasting and production scheduling

Module 6: Quantity Food Production and Quality Control

Objectives of food production, Methods of production, product standards and production control - HACCP

Module 7: Distribution and Service of Food

Types of cuisine and food service, styles of Food service, service management and service equipment.

Module 8: Fuel

Equipment and fuel economy, Substitutes for meeting fuel shortage.

Module 9: Beverages

Alcoholic and Nonalcoholic beverages, preparation, service and control measures.

References

- Khan, M.A. (1987): Food Service Operations, AVI Publishing Inc Westport, Connecticut.
- Peckham, G.C.(1994): Foundation of Food Preparation. The Mac Milan Company, London .
- Taylor, E. and Taylor J.(1990): Mastering Catering Theory. Mac Millan Press Ltd. London.

West, B.B and Wood L.(1986): Food service Institutions, 6th edition, Mac Millan Publishing Co.

HOSPITALITY ADMINISTRATION

Course Code: HS23113

Teaching hours: 5hrs/week

CORE

Credit: 4

Objectives

- To develop skill in managing accommodation department and dealing with the procedures
- To know the organizational and procedural aspects of front office and housekeeping departments of hospitality institutions
- To identify the need and use of different tools and equipments belonging to the two departments
- To develop social skills and effective communication in dealing with guests, colleagues and management

Course Outline

Module 1: Introduction to hospitality and hotel industry and tourism

Classification of hotels and other hospitality Institutions, importance of tourism for hospitality industry, types of operations, Hostess training

Module 2: Organisation of departments

Departmental classifications, numbering of rooms and food plans, room types and rates, Tariff structure, rate policies

Module 3: Front Office and Guest reservation

Importance of the department, Layout and planning, Staffing pattern and duties, Basic Terminology used in the department, Qualities and etiquettes of front office staff

Module 4: Basic reservation system

VIP Procedures, Computerized reservation forecasting, Cancellation, penalty, Arrival and departure, C-Form, procedures of check-in and check-out, Key handling and control, Luggage handling, Book Keeping and Record Maintenance, Lobby management, Public relations, Co-ordination and communication of front office with other departments

Module 5: Records for control

Importance of reports, the front desk log, maintaining room status, maintaining account balance, monitoring availability, electronic front office, electronic point sale system, room status indicator, accounting equipment

Module 6: Housekeeping

Importance and need of Housekeeping Department, Organisation and duties, Hierarchy and Job descriptions, Layout, Inter-departmental coordination and communication, Interrelationship with Personnel Department: Importance and functions, Manpower planning, Recruitment, training and appraisals

Module 7: Linen room and Laundry management

Classification and selection of linen, par stock determination, storage, distribution and control of linen and uniforms, condemnation and reuse, bed making and turning down, Layout and physical attributes of Linen room and storage and laundry, Staff and duties, wet and dry washing, finishing processes and stain removal

Module 6: Upkeep, Sanitation and hygiene

Cleaning Guest rooms and service areas, Rules, procedures and principles, Methods of Cleaning of various materials, types of room cleaning- daily, weekly, spring cleaning etc. Equipments, cleaning agents and maid's trolley, Sterilization, disinfection, Control of infestation, Integrated Waste Management (IWM), Room inspection checklist, repair and maintenance, Refrigeration and A/C, Public address system and music

Module 7: Aesthetic treatments of Interior environment

Interior decoration in Commercial / hospitality areas, window treatments, Selection and care of Furniture, furnishings, lighting and accessories, Floral decorations and table setting and layout, Indoor gardens and Landscaping

Module 8: Safety Education and First Aid

For shock, fainting, stroke, burns, fits, heart attack, etc. Safety measures, fire preventions and control, accident prevention, security measures

Related Experience:

1. Visit to front office and housekeeping departments of various institutions
2. Role play of guest handling / First Aid / Hostess duties / etiquettes
3. Practical Bed making / Table setting / Flower Arrangement / Curtain Styles
4. Internship in Housekeeping/ Front Office at any Institution/ Preparation of modules for training housekeeping attendants

Reference:

- Andrews S., (2000) Hotel Front Office Training Manual, Tata Mc Graw Hill Publications, New Delhi
- Andrews S., (2000) Hotel Housekeeping Training Manual, Tata Mc Graw Hill Publications, New Delhi
- Ball S. et al, (2003) Hospitality Operation-A System Approach, Thomson Learning, U. K.
- Branson J.C. and Lennox M., (1988) Hotel, Hostel and Hospital Housekeeping, Edward Arnold Publishers, London
- Express Health Care Management
- Ismail A., Front Office ñOperations and Management, Thomson and Delmar Publishers, Canada
- Krishna, B. And Churchland, S., (2004) Hotel Accommodation and Operations, Indo-Swiss Publishers, Mumbai
- Negi J., (1997) Professional Hotel Management, S, Chand Company, N. Delhi
- Raghubalan and Smritee Raghubalan, Hotel Housekeeping- Operations and Management, Oxford University Press, New Delhi

SCIENTIFIC WRITING AND PROJECT FORMULATION

Course Code: HS23114**Teaching hours: 5hrs/week****CORE****Credit: 4****Objectives:**

- To be able to appreciate and understand importance of writing scientifically.
- To develop competence in writing and abstracting skills.

Course Outline**Module 1: Scientific writing as a means of communication**

Different forms of scientific writing. Articles in journals, Research notes and reports, Review articles, Monographs. Dissertations, Bibliographies, Book chapters and articles.

Module 2: How to formulate outlines

The reasons for preparing outlines: as a guide for plan of writing, as skeleton for the manuscript, Kinds of outlines, Topic outlines, Conceptual outline, Sentence outlines, Combination of topic and sentence outlines

Module 3: Drafting titles, Sub titles, tables, illustrations

Tables as systematic means of presenting data in rows and columns and lucid way of indicating relationships and results. Formatting tables: Title, Body, Stab, Column, Column Head, Spanner Head, Box Head, Appendices : use and guidelines

Module 4: The writing process

Getting started, Use outlines as a starting device, Drafting, Reflecting, re-reading; Checking organization, Checking headings, Checking content, Checking clarity; Checking grammar, Brevity and precision in writing, Drafting and re-drafting based on critical evaluation

Module 5: Parts of dissertation/research report/article

Introduction, Review of literature, Methods, Results and discussion, Summary and abstract, References. Ask questions related to : content, continuity, clarity, validity, internal consistency and objectivity during writing each of the above parts.

Module 6: Writing for Grants

The question to be addressed, Rationale and importance of the question being addressed, Empirical and theoretical framework, Presenting pilot study/data or background information, Research proposal and time frame. Speciality of methodology, Organization of different phases of study, Expected outcome of study and its implications, Budgeting, Available infrastructure and resources, Executive summary

References

- APA (1994). Publication Manual of American Psychological Association (4th Edition), Washington : APA.
- Cooper, H.M. (1990) Integrating research: A guide for literature reviews (2nd Edition). California : Sage.
- Dunn, F.V. & Others. (Ed.) (1994). Disseminating research: Changing practice. NY : Sage.
- Harman, E & Montagnes, I. (Eds.) (1997). The thesis and the book. New Delhi : Vistaar.
- Locke, L.F. and others (1987). Proposals that work : A guide for planning dissertations & Grant proposals (2nd Ed.). Beverly Hills : Sage.
- Mullins. C.J. (1977). A guide to writing and publishing in social and behavioural sciences. New York: John Wiley & Sons.

- Richardson, L. (1990) Writing strategies. Reaching diverse audience. California : Sage.
- Sternberg, R.J. (1991), The psychologist's companion: A guide to scientific writing for students & researchers. Cambridge: CUP.
- Thyer, B.A. (1994) Successful publishing in scholarly journals. California: Sage.
- Wolcott, H.F. (1990). Writing up qualitative research. Newbury Park : Sage

FOOD SERVICE MANAGEMENT -PRACTICAL AND FIELD EXPERIENCE

Course Code: HS23115

Teaching hours: 5hrs/week

CORE

Credit: 2

Objectives:

- To enable students get practical experience in planning, organizing, controlling and evaluating the management of human, material and financial resources.

Course Outline

Module 1: Practicals

Food production

1. Selection of recipes suitable for various types of food services establishments ñ Multi cuisine, especially fast foods.
2. Standardisation of recipes.
3. Stepping up of standardized recipes for quantity products (more than 50 portions)

Module 2: Field Experience

Planning, purchasing, preparing and serving foods in the college cafeteria. Cost and profit analysis.

Module 3: Field Study on Any One of the Following Aspects

1. Planning and design of a food service establishment.
2. Equipment design and arrangement related to food service.
3. Costing, pricing and profit calculation of a food service unit.
4. Sanitation and hygienic practices followed in a unit.
5. Quantity control in various stages of food service.
6. Food purchasing, selection and storage practices in a food service unit.

Module 4: PROJECT

Design and conduct a study related to any of the topics in the course content of Food Service Management.

SEMESTER ñ 1V

PUBLIC HEALTH NUTRITION

Course Code: HS24116

Teaching hours: 5hrs/week

ELECTIVE

Credit: 4

Objectives:

- To develop a holistic knowledge base and understanding of the nature of nutritional problems and their prevention and control for the disadvantaged and upper socioeconomic strata in society.
- To understand the causes/determinants and consequences of nutritional problems in society.
- To be familiar with various approaches to nutrition and health interventions programmes and policies.

Course Outline

Module 1: Food and Nutrition Situation in India

Hunger in India, India state Hunger Index (ISHI) Food and Nutrition security, production and availability of foods in India, consumption pattern, trends in nutrient intake and nutritional status

Module 2: Principles of epidemiology and epidemiological methods

Introduction to epidemiology, aims, classifying epidemiological study methods, nutrition epidemiology and public health nutrition.

Module3: Assessment of nutritional status in community setting

Nutritional assessment, Importance and Objectives, Indirect assessment of Nutritional status ñ Age, specific mortality rates, cause specific mortality rates, nutritionally relevant morbidity rates, ecological factors. Direct assessment of nutritional status - Nutritional Anthropometry-Height, length, weight, waist circumference, waist hip ratio, body fat, skin fold measurements. Clinical assessment of Nutritional disorders, Biochemical assessment for nutritional deficiencies and Dietary assessment-Family diet survey, Individual diet survey, quantitative diet surveys, Institutionalised surveys and Food balance sheet.

Module4: Epidemiology of Nutritional disorders

Prevalence, Aetiology, Consequences and treatment of- PEM-Clinical syndromes, prevention of malnutrition, managing PEM; Vitamin A Deficiency- Consequences, epidemiology, aetiological factors, intervention strategies for preventing Vitamin A deficiency disorders (VADD)

Iron Deficiency Anaemia-Epidemiology, Prevalence, aetiological consequences, approaches for prevention and control of anaemia, National Nutritional Anaemia Control Programme; Iodine Deficiency Disorders-Epidemiology, aetiological factors, consequences of IDD, IDD as a public health problem, elimination of IDD-An International focus, National Iodine Deficiency Disorders Control Programme Of India; Zinc Deficiency-Epidemiology, public health significance, clinical manifestations of zinc deficiency, Zinc supplementation in pregnancy, Flourosis

Module5: Organisations and Programmes in the field of nutrition monitoring and Interventions

Brief outline of WHO, FAO, UNICEF, CARE, NFHS, NNMB, ICDS, ICMR, ICAR

Module6: Nutrition Education

Definition, Significance, Design and implementation of NHE Programme Receiver, Communicator, Message Channel, Theories of Nutrition Education, Evaluation-Purpose and Types of evaluation.

Module7: Food Fortification

Technical considerations, technology for food fortification, fortificants, planning food fortification intervention, fortification of selected food items

Module8: Nutrition related non communicable chronic disorders

Prevalence at global and national level, cardiovascular disease, hypertension, obesity, diabetes mellitus, cancer. Risk factors for Non Communicable Diseases-Community based programmes for primary prevention, Health education and role of mass media, secondary and tertiary prevention.

References

- Modern Nutrition in Health and Disease edited by Maurice B Shils, Moshe Shike, A. Catherine Ross, Benjamin Cabellero, Robert J Cousins, Lippincott Williams and Wilkins 2006.
- Nutrient Requirements and Recommended Dietary allowances for Indians. A report of the expert group of the Indian Council of Medical Research ICMR 2010.
- Public Health Nutrition in Developing Countries Edited by Sheila Chander Vir Woodhead Publishing India. Part I & II. 2011

FOOD MICROBIOLOGY AND SANITATION

Course Code: HS24117

Teaching hours: 5hrs/week

ELECTIVE

Credit: 4

Objectives:

- Understand the common organisms associated with food borne illnesses.
- Gain knowledge on the necessity for cleanliness in preparation and service of foods.

Course Outline

Module 1: Fundamentals of Microbiology

Introduction to microbiology and food sanitation; Bacteria: morphology, reproduction physiology, growth curve and biochemical changes in bacteria; Yeasts: Morphology, method of multiplication, hybridization, physiology; Classification and importance of yeasts; Moulds: Morphology, multiplication, physiology and nutrition, significance of moulds and common household moulds; Viruses: bacteriophages, morphology, reproduction, human viral diseases- Identification and control, and viruses in relation to food science.

Factors affecting the survival and growth of microorganisms in food. Intrinsic and Extrinsic parameters that affect microbial growth. Intrinsic factors for growth- Generalized, nutrient effect, pH, buffer, anaerobic/aerobic conditions, moisture content, temperature, gaseous atmosphere. Implicit factors- properties of microorganisms-response

Module 2: Microbiology of Natural Products

Water: Sources, bacteriology of water supplies, bacteriological examination and purification of water.

Module 3: Microbiology of Milk and Milk Products

Kinds of micro organisms in milk, source of contamination, pathogens in milk, control of micro organisms, quality and method of study, microbiology of dairy products- fermented milk, butter and cheese.

Module 4: Microbiology of Fruits and Vegetables

Fruits: External contamination, preservation and spoilage of fruits; Vegetables: contamination and control of micro organisms in vegetables.

Module 5: Microbiology of Cereal and Cereal Products

Organisms associated with grains, common microbial spoilages in bread.

Module 6: Microbiology of Flesh Foods

Bacteria found in meat, microbiology of poultry, fish and meat products.

Module 7: Principles of Food Spoilage

Spoilage: Microbiological, physical and chemical factors. Spoilage and examination of canned food. Methods of food preservation, food borne diseases and their outbreak

Module 8: Sanitation and Safety

Food safety ñ basic concepts, introduction, food safety and importance of food, factors affecting food safety:-physical hazards, biological hazards and chemical hazards.HACCP system and food safety used in controlling microbiological hazards; Microbiological criteria of foods and their significance. Personal hygiene, sanitation in handling food. Equipment, Plant constructions, equipment, water supply and sewage disposal. Causes for kitchen accidents and prevention causes. Falls, Burns, suffocation, poisoning, injury by sharp instruments, solving the accident problem and education in safety habits.

Module 9: Role of Microbes in Fermented Foods and Genetically modified foods.

Module 10: Food borne diseases

Bacterial and viral food ñborne disorders, Food-borne important animal parasites, Mycotoxins

Module 11: Food Preservation

Methods of food preservation, dehydration, canning, freezing and pickling.Use of syrup, irradiation and microwave.

Related Experience:

- Preparation of media for cultivating micro organisms. Inoculation of the media. Isolation of pure culture
- Identification of bacteria in water, air, food and utensils.
- Demonstration of available rapid methods and diagnostic kits used in identification of micro organisms or their products.
- Identification of micro organism in processed foods

References:

- Adams, M.P and Moss, M.O. (1996): Food Microbiology, New Age International (p) Limited Publishers.
- Frazier, W. C and Westhoff, D.C.(1999):Food microbiology ,Tata MC Graw.Hill Publishing Company Ltd,New Delhi.
- Joshua, AK.(1994):Microbiology, popular Book depot Publishers.

- Westhoff, D.C.(1993): food Microbiology. Tata McGraw Hill Publishing Co Ltd., New Delhi.

NUTRITION FOR SPORTS AND FITNESS

Course Code: HS24118

Teaching hours: 5hrs/week

ELECTIVE

Credit:4

Objectives:

- 1) To understand the components of health and fitness and the role of nutrition in these.
- 2) To make nutritional, dietary and physical activity recommendations to achieve fitness and well-being.
- 3) To develop ability to evaluate fitness and well-being
- 4) To understand physiological changes and nutritional requirements during sports events.

Course Outline

Module 1: Physical fitness and health

1. Introduction to physical fitness and wellness
2. Contributing factors to health
3. Objectives of physical fitness
4. Motivation for a physically active life, motivational strategies
5. Principles of nutrition for health.

Module2: Weight management and fitness

1. Body weight components
2. Body composition assessment
3. Regulation of bodyweight(energy)
4. Weight imbalance- underweight, overweight and obesity(types)
5. Management of obesity

Module 3: Dietary management for health

1. Critical review of various dietary regimes for weight and fat reduction
2. Dietary guidelines appropriate to health and fitness with special reference to obesity, cardiovascular diseases and diabetes.

Module 4: Exercise Performance and Nutrition

1. Energy expenditure during physical activity
2. Carbohydrates and performance
3. Fat metabolism and performance
4. Effect of exercise on protein requirements
5. Vitamins and Minerals
6. Fluid and electrolyte loss and replacement in exercise

Module 5: Sports nutrition

- Sports physiology
- Nutritional requirements in sports events- team, power, endurance events
- pre-game and post-game regime
- Carbohydrate loading, water and electrolyte balance
- Role of nutrition, stress, fracture and injury.

Module 6: Nutritional Ergogenics

Ergogenic aids and Supplements-Types, Potential and Concerns

Module 7: Measures of performance and physical fitness

References:

- Bamji S.M., Rao NP and Reddy V.1998.Text book of Human Nutrition. Oxford and IBH Publishing C. New Delhi.
- Fink H.H., Mikesky E.A and Burgoon A.L.2012.Practical Applications in Sports Nutrition.3 rd ed.Jones and Barlett Learning.USA.
- Gibney J.M. Macdonald A.I and Roche M.H.2003.Nutrition and Metabolism. Blackwell Publishing.

- Modern Nutrition in Health and Disease edited by Maurice B Shils, Moshe Shike, Catherine Ross, Benjamin Cabellero, Robert J Cousins, Lippincott Williams and Wilkins 2006.
- Nutrition for Health, Fitness and Sport, eighth edition, by Melvin Williams, 2007, McGraw-Hill.
- Practical Nutrition for a Fit Life, by Cherie Moore, 2004, Kendall-Hunt Publishers
- WHO. 1995. Physical Status: The Use and interpretation of Anthropometry. Report of a WHO Expert Committee, Geneva.

ENTREPRENEURSHIP MANAGEMENT

Course Code: HS24119

Teaching hours: 4hrs/week

ELECTIVE

Credit: 4

Objectives

- To gain an understanding of the various aspects and types of business organizations
- To impart information on the various sources of finance and also on the process of setting up small enterprise.
- To enable students to understand the relevance of entrepreneurship and to develop effective entrepreneurship skills among students.

Course Outline

Module 1: Entrepreneurship and its development

Entrepreneurship-Definition, types, characteristics, Entrepreneurship development for employment generation- importance, Factors affecting entrepreneurial growth- economic, social, cultural and personal factors.

Module 2: Women and Employment

Women employment in India - categories of employment, problems related to employment, Unemployment in India- causes & remedies, Importance of self employment.

Module 3: Forms of Entrepreneurial Organizations

Scope and Objectives of modern business, Essentials of successful business, Sole proprietorship, Partnership, Joint Stock company, State enterprises and Co-operative societies - meaning, merits and demerits of each, Types of important documents of companies

Module 4: Entrepreneurship and Institutional support

Objectives, functions and assistance given by SIDCO, SIDO, SFCK, IDBI, SIDBI, KSIDC, KSWDC, KITCO, SEWA,SGSY (Swarnjayanti Gram SwarozgarYojana), JGSY (Jawahar Gram SamridhiYojana) , Agencies promoting entrepreneurship ñ role of NSIC (National Small Industry Corporation) , Small Industry Extension Training Institute (SIETI), Central Small Industry Organisation (CSIO) DCK, DRDA, KVIC (Khadi and Village Industry Commission) and other voluntary organizations, Small Scale Industries (SSI) - Definition, types, procedure for setting a small scale unit, training facilities for smallscale unit, Problems faced by emerging small scale units and remedies

Module 5: Source of Finance

Importance of finance- sources of company finance - long term and short term, Role of banks and other financial institutions, Basics of Costs and Cost Control, Project Appraisal

Module 6: Book keeping & Accounting

Concepts and Basics of accounting methods- Journal and ledger, balancing, trial balance, cash book, subsidiary books, Brief study of Financial Statements, Basics of Auditing , Sales Tax- meaning and types, Registration of business, turnover, filing & assessment of returns.

Module 7: Marketing & Sales promotion

Marketing- Marketing mix, Functions, types, Advertising & Salesmanship, Public relations, Personal selling, Interpersonal skills, factors affecting the entrepreneurís skill

Related Experience:

- 1 Visits to agencies involved in development of entrepreneurship
- 2 Preparation of a project proposal by
 - Selection of a trade
 - Visits to 1 or 2 units related to trade
 - Study the infrastructural requirements
 - Records to be maintained
 - Procedure for obtaining loan

References

- Arora, S. P., Business Organization, Vikas Publishing House Pvt. Ltd. New Delhi, (1980)
- Bhattacharyya, S.K Accounting for Management, Vikas Publishing House Pvt. Ltd., New Delhi

- Bhushan, Business Organization, Sultan Chand & Sons, New Delhi, (1985)
- Chetnakal, Women and Development, Discovery Publishing House, New Delhi (1991)
- Desai V., Entrepreneurial Development- Vol -3, Himalaya Publishing House, New Delhi (1993)
- Gupta C.B. (Dr.), Office Organization and Management, Sultan Chand & Sons, New Delhi, (1999)
- Kanikar Entrepreneurs and Micro Enterprises in Rural India, New Age International Publishers Ltd., New Delhi (1995)
- Khanka S.S, Entrepreneurial Development, S.Chand&Co.Ltd., New Delhi, (1999)
- Ramesh Babbu's Handbook of Entrepreneurs, Business Intelligence Publications
- Sherlekar S.A, Principles of Business Management, Himalaya Publishing house, New Delhi, (1999)
- Shukla M.C., Business Organisation, S. Chand & Co. New Delhi, (1970)

PUBLIC HEALTH NUTRITION PRACTICAL AND FIELD WORK

Course Code: HS24120

Teaching hours: 6hrs/week

ELECTIVE

Credit:3

Objectives:

- To develop skill in field level application of the techniques of assessing nutritional status
- To acquire skill in organising and implementing community nutrition projects
- To give an insight into the various low cost ingredients available in market and prepare low cost nutritious dishes for vulnerable segments in the community

Course Outline

1. Assessment of nutritional status of pre-schoolers
2. Use and interpretation of Growth Charts
3. Preparation of low cost recipes-low cost recipes, Cyclic menu and one dish meal
4. Formulating messages for Nutrition and Health Education

5. Development, Use and Evaluation of methods and aids for NHE
6. Assessing Nutritional concerns among vulnerable groups ñ Use of anthropometry, biochemical tests, Clinical assessment, dietary assessment or Rapid assessment techniques
7. Planning and implementation of a Nutrition and Health Education programme in the community
8. Development of tools to assess Nutrition Knowledge, Attitudes and Practices
9. Study of a Community Agency

NUTRITION EDUCATION AND DIETETIC COUNSELING

Course Code: HSDF4ET06

Teaching hours: 5hrs/week

ELECTIVE

Credit: 4

Objectives:

- Know the role of a dietitian.
- Gain knowledge on giving dietary prescription and diet counseling
- Understand the method of working with hospitalized patients.

Course Outline

Module 1: Role of Dietitians in the Hospital and Community

Professional qualification and personal attributes, types of dietitians, Professional ethics, responsibilities. Dietitian as part of the Medical Team and Outreach Services

Indian dietetic association- origin, objectives, membership, chapters, registration.

Module 2: Diet Therapy and Nutritional Care in Disease

The Nutritional Care Process - Nutritional Care Plan -Setting goals and objectives short term and long term; Assessment and Therapy in Patient Care - Implementation of Nutritional Care- Counseling and Patient Education, Dietary Prescription

Module 2:

Clinical Information - Medical History and Patient Profile Techniques of obtaining relevant information, Retrospective information, Dietary Diagnosis, Assessing food and nutrient intakes, Lifestyles, Physical activity, Stress, Nutritional Status. Correlating Relevant Information and identifying areas of need.

Module 3: The Care Process

Module 4: Motivating Patients.

Module 5: Working with - Hospitalized patients (adults, pediatric, elderly, and handicapped), adjusting and adopting to individual needs. Outpatients (adults, pediatric, elderly, handicapped), patients' education, techniques and modes.

Module 6: follow up, Monitoring and Evaluation of outcome, Home visits

Module 7: Maintaining records, Reporting findings, Applying findings, Resources and Aids for education and counseling, Terminating counseling, Education for individual patients, Use of regional language, linguistics in communication process, Counseling and education.

References:

1. Garrow JS, James WPT and Ralph AC, (1993) Nutrition and Dietetics, Churchill Livingstone
2. Mahan L.K, and Stump S.E, (2001), Krause's Food, Nutrition and Diet Therapy, WB Saunders Limited. 10th Edition
3. Schils N.E, Olson J.A., Shike A, Ross A.C, (2006), Modern Nutrition in Health and Disease, 9th Edition, William and Wilkins.

NUTRITION IN CRITICAL CARE

Course Code: HSDF4ET07

Teaching hours: 5hrs/week

ELECTIVE

Credit: 4

Objectives:

To understand the physiology, metabolism and special nutritional requirements of the critically ill.

Be familiar with the special nutritional support techniques and feeding formulations to meet their nutritional needs.

Course Outline:

Module 1: Nutritional screening and nutritional assessment of critically ill.

Module 2: Nutritional support system and other life saving measures for the critically ill.

Module 3: Role of immuno enhancers ,conditionally essential nutrients, immuno suppressants and special diets in critically care.

Module 4: Pathophysiological, clinical and metabolic aspects, understanding of the special nutritional requirements, nutritional goals and monitoring the therapy in critically illness like

Stress,trauma ,sepsis,burns ,CV complications and surgery,ESRD, dialysis, transplant
Multiple organ failure ,GI tract surgery, GER (Gastro oesophageal reflux) and complications,Hepatic failure and transplants ,NeuroSurgery.

Module 5: Complications of Nutritional support systems including Refeeding Syndrome.

Module 6: Rehabilitation diets-Stages

Module 7: Diet related ethical issues in terminally ill.

References

- Galambos, J.P. (1979) Cirrhosis in the series .Major Problems in internal medicine,WB.Saunders Company.Philadelphia
- Kinney .J.M.and Borum.P.R.(Editors)(1989) Perspectives in Critical Nutrition.Urban and Schwarzenberg.
- Kenes, W.M.and Fowler, P.B.S.(1984) Clinical Endocrinology.William Heinemann Medical Books,London.

NUTRITION IN EMERGENCIES AND DISASTERS

Course Code: HSDF4ET08

Teaching hours: 5hrs/week

ELECTIVE

Credit: 4

Objectives:

- To familiarize the students with various natural and manmade emergencies and disasters having an impact on nutrition and health status.
- To understand the special nutritional concerns out of these situations.
- To understand strategies for nutritional rehabilitation management of the health of emergency affected populations.

Course Outline

Module 1: Natural/Manmade disasters resulting in emergency situations.

Famine, drought, flood, earthquake, cyclone, war, civil and political emergencies. Factors giving rise to emergency situation in these disasters. Illustration using case studies from Indian subcontinent.

Module 2: Nutritional problems in emergencies in vulnerable groups

Causes of malnutrition in emergency situations. major deficiency disease during emergencies. Protein Energy Malnutrition, specific deficiencies

Module 3: Communicable disease: Surveillance and treatment

Control of communicable disease in emergencies. Role of immunization and sanitation.

Module 4: Assessment and surveillance of Nutritional status in emergency affected population.

Scope of assessment of malnutrition in emergency affected populations.

Indicators of malnutrition, Clinical signs for screening acute malnutrition.

Anthropometric assessment of nutritional status. Indicators and cut-offs indicating seriously abnormal nutrition situation: weight for height based indices, MUAC, Social indicators. Organisation of nutritional surveillance and individual screening.

Module 5: Nutritional Relief and Rehabilitation

Assessment of food needs in emergency situations, food distribution strategy. Identifying and reaching the vulnerable group. Targeting Food aid, Mass and Supplementary feeding, Therapeutic feeding, Special foods, Local foods in rehabilitation, Organisation of mass feeding / general food distribution, Feeding Centres, Transportation and food storage, Sanitation and Hygiene, Evaluation of feeding programmes, Household food security and nutrition in emergencies.

Module 6: Public Nutrition approaches to tackle nutritional problems in emergencies.

References:

- Bradley, A, Woodruff and Arabella Duffield (2000), Assessment of Nutritional Status in Emergency affected populations-Adolescents, special supplement UN ACC/SCN sub-committee on nutrition.
- The Management of Nutrition in Major Emergencies. WHO in collaboration with UNHCR, International federation of red cross and red crescent societies and WFP.
- FAO (1997), FAO's emergency Activities, Rome, FAO.
- WHO (1997): Applied Health Research, priorities in complex emergencies, Geneva, WHO.
- Goyet, Fish, V, Seaman, J and Geijer, U. (1978): The Management of Nutritional emergencies in Large population, World Health Organisation, Geneva.

- Steve Collins and Arabella Duffield (2000) Assessment of Nutritional status in Emergency affected populations-Adults, Special supplement, UNACC/SCN.Sub-committee on Nutrition.

SENSORY EVALUATION

Course Code: HSDF4ET09

Teaching hours: 5hrs/week

ELECTIVE

Credit: 4

Objectives:

To provide adequate theoretical background and understanding about sensory evaluation of food.

Enable students to use various sensory methods for evaluating variety of food.

Enable students to analyse and interpret sensory evaluation data.

Course Outline:

Module 1: Introduction to sensory analysis and uses of sensory tests.

Module 2: Neural networks in sensory perception.

Module 3: General testing conditions.

Module 4: Selection of tests subjects and training of panel.

Module 5: Types of tests.

Discrimination /difference tests, triangle tests and duo-trio test ;tests for multiple sample, difference from control/reference. Qualitative difference tests.: Ranking, numerical scoring test ,magnitude estimation. Descriptive tests :Ranking for sensory profile, consensous profiling ,conventional profiling, free choice profiling ,Threshold tests.,Acceptance test:monadic ,paired and sequential monadic

Module 6 : Descriptive analysis ,concept alignment and selection of terms.

Module 7: Designing of questionnaire and /or evaluation score card.

Module 8: Experimental design and data analysis.

Module 9: Statistical applications and interpretations.

Module 10: Consumer acceptability using sensory evaluation.

Related Experience:

1. Establishing sensory panels: Selecting and recruiting panelists, orienting, screening for trained panels, training panelists, monitoring performance. Recognition tests for four basic tastes, four and aroma .Tests with other senses. Threshold tests.
2. Analytical tests: a. Difference, b.Ranking c.Descriptive d.Scoring and e.Rating.
3. Planning a Sensory Experiment:
 - 1.Designing the questionnaire and score card
 - 2.Identifying descriptions.
4. Designing Sensory Testing Facilities: Permanent and Temporary.
5. Conducting the test
6. Collecting and analyzing sensory data, statistical analysis, interpretations.
7. Report Writing.

References

- Amerine,M.A;Pangborn,R.M;Roessler,E.B.(1965): Principles of Sensory Evaluation.Academic Press, New York.
- Jelinek,G.(1985):Sensory Evaluation of Food Theory and Practice ,Ellis Horwood,Chichester.
- Kapsalis, J.G.(1987):Objective Methods in Food Quality Assessment.CRC Press,Florida.
- Lyon,D.H;Francombe,M.A; Hasdell,T.A;Lawson,K.(eds)(1992):Guidelines for Sensory Analysis in Food Product Development and Quality Control .Chapman and Hall,London.
- Moskowitz, H.R.(1983):Product Testing and Sensory Evaluation of Foods: Marketing and R&D Approaches. Food and Nutrition Press, Connecticut.

