

FOOD CRAFT INSTITUTE, ALIGARH

(Under Department of Tourism, Govt. of UP)

DIETETICS & HOSPITAL FOOD SERVICE



SYLLABUS



DIETETICS & HOSPITAL FOOD SERVICE

1. An Introduction

Dietetics is a health-related career that involves translating the sciences of nutrition and food to promote good health and when a person is sick, diet is modulated by the dietician. In short, it's Nutrition, Food & Health! It is a vital and growing profession with many career possibilities. Dietitians have an aptitude for science, an interest in nutrition and food, and enjoy working with people.

Dietetics is a challenging biological field in which diet is changed as per the requirement of patients to heal them through food therapy. In addition to courses in nutritional sciences and food science, you will study microbiology, physiology and biochemistry. Dietetics students also study foodservice systems management, business, psychology, accounts and communication.

An interest in food is important because you will help people select and obtain food to nourish their bodies in health and disease. You may also manage the preparation and service of food for groups of people.

Working with people is a major part of the job, usually in a teaching or supervisory role. You may teach individuals or groups how to improve their eating behavior. You may hire and train employees in food production as a food and nutrition manager.

Dietitians and nutritionists plan food and nutrition programs, supervise meal preparation basically the choice of cooking method recommended and oversee the quantity of serving of meals. They prevent and treat illnesses by promoting healthy eating and recommending dietary modifications. For example, dietitians might teach a patient with high blood pressure how to use less salt when preparing meals, or create a diet reduced in fat and sugar for an overweight patient. They might counsel patients with kidney disease or diabetes on diet and nutrition principles important in treating their disease. They determine methods and develop special formulations to feed patients who are unable to eat (e.g. critically ill and comatose patients, etc.).

Dietitians manage food service systems for institutions such as hospitals and schools, promote sound eating habits through education, and conduct research. Many dietitians specialize, becoming a clinical dietitian, community dietitian, management dietitian, or consultant.



1. Learning Objectives

After completion of the course students should be able to:

- Locate, interpret, evaluate, and use professional literature to make ethical evidence-based practice decisions
- Use current information technologies to locate and apply evidence-based guidelines and protocols
- Demonstrate effective and professional oral and written communication and documentation
- Demonstrate counseling techniques to facilitate behavior change
- Apply professional guidelines to a practice scenario
- Identify and describe the roles of others with whom the Registered Dietitian collaborates in the delivery of food and nutrition services
- Use the nutrition care process to make decisions, to identify nutrition-related problems, and determine and evaluate nutrition interventions
- Develop interventions to affect change and enhance wellness in diverse individuals and groups
- Develop an educational session or program/educational strategy for a target population
- Apply management theories to the development of programs or services
- Evaluate a budget and interpret financial data
- Apply the principles of human resource management to different situations
- Apply food safety principles related to food, personnel, and consumers
- Analyze data for assessment and evaluate data to use in decision-making
- Explain the impact of a public policy position on dietetics practice
- Explain the impact of health care policy and different health care delivery systems on food and nutrition services
- Explain the coding and billing of dietetics/nutrition services to obtain reimbursement for services from public or private insurers

Teaching and Examination Scheme

SEMESTER I

S.No	Subject code	Subject	Hours per week		Term-End Marks	
			Th.	Pr	Th.	Pr.
1	DHFS11	Human Physiology	2	-	50	--
2	DHFS12	Applied Biochemistry	2	3	50	50
3	DHFS13	Therapeutic Dietetics -1	4	4	100	100
4	DHFS14	Nutritional Perspective In Community-1	4	2	100	50
5	DHFS15	Nutrition Industry Management-1	2	3	50	50
6	DHFS16	Food Safety in Food Service Establishment	2	2	50	50
TOTAL			16	14	400	300
SEMESTER TOTAL			30		700	

HUMAN PHYSIOLOGY THEORY- DHFS 11

TOPIC	HOURS
1. Cell & Blood Unicellular & Multicellular Organism Structure of cell. Tissue and their functions Blood Composition Erythropoiesis and Blood group Anemia Homeostasis The Immune System	05
2. Cardiology Structure and functions of blood vessels Structure of Heart- Cardiac Cycle and Cardiac Output Blood Pressure and factors affecting it Heart rate and control mechanism Hypertension- types and mechanisms of development	03
3. Respiratory System Structural plan of Respiratory System Mechanism of respiration ,vital capacity Chloride shift Control of respiratory mechanism Brief outline of common respiratory diseases	03
4. Digestive system Structure and functions of GI tract Digestion and absorption of Proteins, fats and carbohydrates. Brief outline of GI tract, disorders and physiologic changes.	03
5. Nephrology Dialysis Kidney Transplant	03
6. Regulation of body homeostasis Homeostasis Body fluids Measurement of body fluid volume Transport across cell membrane Solute- solvent interaction	03
7. Endocrinology Endocrine system- Pituitary Gland, Thyroid Gland, Parathyroid gland, Pancreas, Adrenal gland, Pineal gland , Thymus gland	05
8. Reproductive System Physiology of reproduction Physiology of pregnancy & Lactation Disorders of reproductive System Contraceptives	05

APPLIED BIOCHEMISTRY THEORY- DHFS 12

Theory	Hours
1. Carbohydrates and its metabolism Chemistry of CHO- Monosaccharide, Disaccharides and polysaccharides Metabolism- Glycolysis, glycogenolysis, glycogenesis, , Regulation of Blood glucose level	05
2. Lipids and its metabolism Chemistry of lipids Metabolism- Oxidation of fatty acids, Lipogenesis, Ketosis, Biosynthesis and regulation of cholesterol	05
3. Proteins and its metabolism Chemistry of proteins Metabolism-Urea cycle Transamination , Deamination	05
4. Integration of metabolism of macronutrients Tissue specific metabolism Supply of metabolic fuels in both the fed and starving states Metabolic interrelationship between adipose tissue, the liver and extra hepatic tissue	05
5. Enzymes Introduction to enzyme and coenzymes Nomenclature Mechanism of enzyme action Role of enzymes and coenzymes in metabolism	05
6. Hormones Classification Biochemical Role of Hormones	05

APPLIED BIOCHEMISTRY PRACTICAL- DHFS 12

TOPIC	HOURS
1. To perform colour test of proteins: a. Xanthoproteic Test b. Biuret Test	06
2. To perform Colour Test for reducing sugar (Glucose) in Grape extract.	03
3. To perform Colour Test for Non reducing Sugar (sucrose) in Sugarcane extract.	03
4. To perform Molisch's and Benedict's test for the identification of carbohydrate.	03
5. To perform Bial's and Saliwanoff's test for the given sample of Carbohydrate.	03
6. To perform Ninhydrin and Biuret test for the given sample of protein.	03
7. To test the presence of polysaccharide (starch) in the potato extract and to reveal its biological importance.	03
8. To demonstrate the action of Catalase in potato extract.	03
9. To observe the Thermolability of enzyme Catalase.	03
10. To demonstrate the activity of the enzyme Invertase or Sucrase extracted from the Yeast powder on sucrose.	03
11. To demonstrate the activity of the enzyme Amylase, extracted from the germinating seeds of wheat or barley on starch.	03
12. Estimation of Glucose level in in a given sample of blood.	03
13. Estimation of Cholesterol level in a given sample of blood.	03
14. Estimation of Triglyceride level in a given sample of blood.	03
15. To investigate the action of the protease enzyme (papain/bromelain) on gelatin and its ability to gel.	03

THERAPEUTIC DIETETICS PART I THEORY– DHFS 13

TOPIC	HOURS
<p>1. INTRODUCTION TO NUTRITION AND DIETETICS</p> <p>Introduction Definitions and Role of Dietician in Health Care Dietetics the Science and Art of Human Care Role of Dietician in Health Care</p>	05
<p>2. NUTRITION CARE PROCESS FOR PATIENTS</p> <p>Definition Stages of the NCP Nutrition Assessment Nutrition Diagnosis 2.2.3 Nutrition Intervention Nutrition Monitoring and Evaluation Documentation</p>	06
<p>3. THERAPEUTIC DIETARY ADAPTATION</p> <p>Introduction Types of Dietary Adaptation for Therapeutic Needs Therapeutic Diets Routine Hospital Diets Liquid Diets Soft Diets</p>	10
<p>4. NUTRITION SUPPORT THROUGH SPECIAL FEEDING METHODS</p> <p>Introduction Special Feeding Methods in Nutrition support Enteral Nutrition Types of Enteral feeding Various Enteral Feeds / Formulas Administration Parenteral Nutrition Types of parenteral Nutrition 4.4.2 Parenteral Nutrition Solutions</p>	09
<p>5. NUTRITIONAL INTERVENTION FOR INFECTIONS AND FEVER</p> <p>Introduction Nutrient and Immune response Nutrition and Infection Metabolic Changes during Infection Classification and Etiology of Fever/ Infection Typhoid Chronic Fever/ Infection Tuberculosis HIV (Human Immune Deficiency Virus) Infection and AIDS (Acquired Immune Deficiency Syndrome)</p>	12

6. NUTRITIONAL CARE FOR WEIGHT MANAGEMENT	18
Introduction	
Weight Imbalance - Prevalence and Classification	
Guidelines for Calculating Ideal Body Weight	
Obesity	
Etiology	
Energy Balance	
Health Hazards of Overweight and Obesity	
Management of Obesity	
Dietary and Lifestyle Modification	
Surgical Management and other extreme approaches to weight loss	
Underweight	
Etiology	
Health Hazards of Underweight	
Dietary Management	

THERAPEUTIC DIETETICS PART-I PRACTICAL- DHFS 13

TOPIC	HOURS
1. Introduction of comprehensive Exchange list.	04
2. Identification of Household Measurements.	04
3. Cyclic menu (Advantages and Disadvantages, and preparation of one such example of cyclic menu).	04
4. Preparation of Normal, Soft and Liquid diet.	08
5. Meal Planning for Sedentary woman.	04
6. Meal planning for patient suffering from Acute Typhoid and patient in recovery stage of Typhoid.	04
7. Meal planning for patient suffering from Tuberculosis.	04
8. Meal planning for an obese woman.	04
9. Meal planning for an Overweight man.	04
10. Meal planning for an underweight person.	04
11. Meal planning for patient suffering from Diabetes.	04
12. Meal planning for patient suffering from Hypertension.	04
13. Meal planning for patient suffering from Hyperlipidemia.	04
14. Meal planning for Pregnant woman in different trimesters.	04
15. Meal planning for lactating mother.	04

NUTRITIONAL PERSPECTIVES IN COMMUNITY- PART I THEORY- DHFS14

TOPIC	HOURS
<p>1. Introduction to Community Nutrition</p> <p>Primary Health Care, health system in India, Role of Community Nutritionist, Demography, Demographic Transition</p>	04
<p>2. Meal Planning</p> <p>Fundamental of Meal Planning, Exchange list in Meal planning , One Serving Portion of Foods</p>	16
<p>3. Nutrients</p> <p>Carbohydrates: Classification on basis of degree of polymerization, Dietary fibre, components of dietary fibre, effects of dietary fibre, resistant starch, glycemic index</p> <p>Proteins: Classification(chemical nature and amino acid content), Methods of determining protein and amino acid content in foods(PER, Digestibility coefficient, BV, NPU and NPR), Nutritional requirements at various stages of life, Methods of improving protein quality in diet</p> <p>Fats: Classification, Essential fatty acids, Functions, Nutritional requirements at various stages of life, Choice of fat and oil for cooking, Tips to reduce fat intake</p> <p>Vitamins: Fat soluble (A,D,E,K), Water soluble(thiamine, niacin, riboflavin cyanocobalamine, C), functions, food sources , RDA</p> <p>Minerals: calcium, phosphorous, sodium, potassium, chlorine- functions, food sources, RDA</p>	20
<p>4. Nutrition through life cycle</p> <p>Adulthood: reference man and woman, nutrient needs and RDA, diet and feeding pattern</p> <p>Pregnancy and lactation: physiological changes, complications during pregnancy, physiology of lactation, nutrient needs and RDA, diet and feeding pattern</p> <p>Infancy: growth and development, growth monitoring, nutrient needs and RDA, diet and feeding pattern, complimentary feeding, nutrition for low birth weight babies</p> <p>Childhood and adolescent: growth and development, nutrient needs and RDA, diet and feeding pattern Elderly: changes associated with ageing, nutrient needs and RDA, diet and feeding pattern</p>	20

NUTRITIONAL PERSPECTIVE IN COMMUNITY PART-I PRACTICAL- DHFS 14

TOPIC	HOURS
1. Proposed visit of the following places i. Hotels (Melrose Inn, Lemon Tree, Ramada, etc) ii. Gymnasium iii. VLCC Slimming Centre iv. Jawahar Lal Nehru Medical College & Hospital v. Rajiv Gandhi Centre for Diabetes and Endocrinology vi. Aanganwaadi vii. Slum areas	20
2. Calculation of BMI, BMR and Energy Expenditure	04
3. Project on “Fibrous food – The Crunchy Truth.”	02
4. Project on “Role of Vitamins and minerals as Immunity Boosters.”	06

NUTRITION INDUSTRY MANAGEMENT THEORY- DHFS15

TOPIC	HOURS
1. INTRODUCTION Institutional Food Management, development of food service management	02
2. Approaches to management Classical, Neo Classical, Scientific Management, Qualitative, Management by Objective, System Approach, Behavioral Approach, Contingency Approach, JIT, TQM	03
3. Principles and Function of Management Principles, functions- Planning, Organising, Directing, Coordinating, Controlling, Evaluating	04
4. Management of Resources Money- ways of raising money, Space, Material, Staff, Time, Energy	03
5. Financial management Scope of Financial management, Financial accounting, Management accounting, Costing and Budgeting, Cost Components, Cost Control Techniques, Types of Budget, Pricing- Factors affecting Pricing	05
6. New Product Development Factors influencing Product development, How to develop a New Product , Statistical Experimental methods, Modelling for Process and Recipe, Sensory Evaluation during Product life cycle, Functional Foods, Shelf life of food	04
7. NUTRITIONAL INTERVENTION CARE IN DIABETES MELLITUS Introduction Diabetes Mellitus Prevalence of Diabetes Mellitus Classification and Etiology of Diabetes Factors Affecting Normal Blood Sugar Levels Metabolic Aberrations and Symptoms	05

<p>Diagnosis Complication of Diabetes Management of Diabetes Management of Diet Food Exchange System Glycemic Index (GI) Exercise and Drugs Exercise Drugs and Insulin Therapy Prevention</p>	
<p>8. NUTRITIONAL INTERVENTION CARE IN DIABETES MELLITUS</p> <p>Introduction Diabetes Mellitus Prevalence of Diabetes Mellitus Classification and Etiology of Diabetes Factors Affecting Normal Blood Sugar Levels Metabolic Aberrations and Symptoms Diagnosis Complication of Diabetes Management of Diabetes Management of Diet Food Exchange System Glycemic Index (GI) Exercise and Drugs Exercise Drugs and Insulin Therapy Prevention</p>	05
<p>9. NUTRITIONAL CARE IN CARDIOVASCULAR DISEASES</p> <p>Introduction Coronary Heart Diseases (CHD) Prevalence Etiology: Cardiovascular Risk Factors Pathophysiology of CHD Common Disorder of Coronary Heart Diseases and their Management Dyslipidaemia Atherosclerosis : A Coronary Artery Disease Hypertension (HT)</p>	04

NUTRITION INDUSTRY MANAGEMENT PART-I PRACTICAL- DHFS 15

TOPIC	HOURS
1. To measure the blood pressure by Sphygmomanometer.	06
2. Glycemic index and Glycemic Load	03
3. To detect Blood group & Rh factor in a given sample of blood.	06
4. To estimate the blood glucose level in a given sample.	03
5. To estimate cholesterol level in a given sample.	03
6. To estimate the triglyceride level in a given sample.	03
7. To estimate the haemoglobin level in given blood sample.	06
8. To detect the HIV in the given blood sample.	03
9. To Identify the Malarial Parasite in the given sample of blood.	03
10. To detect the presence of glucose and protein in the given sample of urine by dipstick method.	03
11. To identify Typhoid fever by Typhi dot method.	03
12. To measure the Erythrocytes sedimentation rate by ESR tube.	06

FOOD SAFETY IN FOOD SERVICE ESTABLISHMENT THEORY- DHFS16

TOPIC	HOURS
<p>1. Introduction of Food microbiology, safety and hygiene</p> <p>1. Food Microbiology definition & basic concept 2. History of Food Microbiology 3. Role of Microbiology in Biotechnology – Genetically modified food like tomatoes, maize, 4. Role of Microbiology in fermented food – Sauerkraut, Cucumber pickle, Tempeh, Soya sauce, Cheese, Dahi & Yogurt, Butter, Idli, Vada, Dosa, Bhatura, Dhokla. 5. Economically important fermented product – Beer, Wine, Antibiotics, Amino acids & Vitamins 6. Personal Hygiene 7. Health status of Food handler</p>	09
<p>2. Food hazard and its prevention</p> <p>1. Food Safety & importance of safe food 2. Factors affecting food safety – Physical, Chemical & Biological hazards. 3. Microorganisms in food – Bacteria (structure of bacterial cell & growth curve), Fungi (structure of Fungi & their classes), Virus (general structure), Parasites (Amoeba, Giardia, Trichinella) 4. Control of micro-organisms & food preservation Methods of food preservation – Physical method & Chemical method</p>	07
<p>3. Food Adulteration</p> <p>Definition, Common adulterant, Classification of adulterant, Harmful Effects, Method for detection of same adulterants</p>	03
<p>4. Food Laws National & International</p> <p>Food safety and standard Act, National Legislation, Voluntary Based product certification, Regulation related to Genetically modified food, International agreement in the area of food Standard & quality control: Codex</p>	05
<p>5. Food Quality Assurance</p> <p>GMP, TQM, Risk Assessment, HACCP and ISO 22000</p>	02
<p>6. Food packaging</p> <p>Packaging Significance & function, Classification of packaging material, Packaging methods, Biodegradable material & environmental issues, Labeling requirement and bar-coding</p>	04

FOOD SAFETY IN FOOD SERVICE ESTABLISHMENT PRACTICAL- DHFS 16

TOPIC	HOURS
1. Role of Microbiology in fermented Food	
a. Preparation of Idli	02
b. Preparation of Dosa	02
c. Preparation of Bhatara	02
d. Preparation of Dhokla	02
e. Preparation of Hot Cross Buns / Masala Buns	02
2. Food Adulteration	
a. Detection of water, detergent, starch in milk and milk products (milk, khoya, paneer)	14
b. Detection of mashed potatoes, sweet potatoes in ghee / butter	
c. Detection of other oils in coconut oil	
d. Detection of sugar solution in honey	
e. Detection of Chalk powder in sugar	
f. Detection of Lead chromate / artificial color in turmeric	
g. Detection of malachite green color in green chillies	
h. Detection of common salt and iodised salt	
i. Detection of wax polishing on apple	
j. Detection of Exhausted tea in tea leaves	
k. Detection of artificial colours in chilli powder	
l. Detection of papaya seeds in whole black pepper	
3. Methods of Food Preservation	
a. Preparation of Tomato Ketchup/ Sauce	02
b. Preparation of cucumber / Mixed Pickle	02
c. Preparation of potato chips	02
d. Preparation of Apple Jam	02

SEMESTER II

S.No	Subject code	Subject	Hours per week		Term-End Marks	
			Th.	Pr.	Th.	Pr.
1	DHFS21	Therapeutic Dietetics-II	4	4	100	100
2	DHFS22	Nutritional Perspective in Community-II	4	3	100	50
3	DHFS23	Nutrition Industry Mgt.-II	2	3	50	50
4	DHFS24	Sports Nutrition	4	--	100	--
5	DHFS25	New Product Development Research	--	6	--	100
TOTAL			14	16	350	300
SEMESTER TOTAL			30		650	
INTERNSHIP			22 Weeks		100	

GRAND TOTAL : SEM-1 + SEM-2 + INTERNSHIP
: 700+650+100
: 1450

Aggregate pass Marks i.e. 45% of 1450= 653
Passing criteria : 40% marks in Theory
: 50% marks in Practical
: 50% marks in NPD Research and internship
: 45% marks in aggregate

THERAPEUTIC DIETETICS PART-II THEORY- DHFS 21

Sl. No.	Topic	Hours
1.	<p>Nutritional care in Gastro intestinal disorders Introduction</p> <p>Oesophagitis Etiology, Symptoms and complication, Nutritional Management.</p> <p>Gastro oesophageal reflux disease (GERD) Etiology, Symptoms and complications, Nutritional management</p> <p>Hiatus hernia Introduction, Symptoms, Nutritional management.</p> <p>Dyspepsia Etiology and symptoms, Nutritional Management</p> <p>Gastritis Etiologies and symptoms, Nutritional Management</p> <p>Peptic ulcers Types of ulcers, Etiology Factors affecting gastric acid secretion, Symptoms, Nutritional management.</p> <p>Diarrhea Acute and chronic diarrhea, functional and organic diarrhea, causes of diarrhea, Nutritional Management of both acute and chronic diarrhea,</p> <p>Constipation Types of constipation, Etiology and symptoms, Nutritional Management of constipation</p> <p>Mal absorption Syndromes Causes of Mal absorption syndromes, Celiac Disease/Gluten sensitive Enteropathy, symptoms and Nutritional management, lactose Intolerance, Etiology, symptoms and Nutritional Management, Crohn's disease – symptoms and Nutritional Management,</p>	14
2	<p>Nutritional care in Diseases of the liver, gall bladder and pancreas Functions of the liver, Etiology of liver disorders</p> <p>Jaundice Types of jaundice</p> <p>Viral hepatitis Etiology and symptoms, Nutritional management</p> <p>Liver Cirrhosis Etiology, Symptoms and complication, Nutritional management</p> <p>Hepatic encephalopathy Etiology, Clinical Symptoms and the four clinical stages of hepatic encephalopathy, Nutritional management</p> <p>Diseases of the Gall Bladder Etiology, symptoms and nutritional Management of chole cystitis chopelitheasis–</p> <p>Pancreatitis Acute and chronic Nutritional Management,</p>	10

3	Nutritional care in Renal Disease Risk factors and general causes of kidney disease function, General principles of dietary management in renal diseases, Common renal diseases	12
	Glomerulonephritis Etiology, Clinical symptoms , Nutritional Management	
	Nephritic syndrome Etiology, Symptoms, Dietary Management	
	Acute renal failure (ARF) Etiology, Symptoms, Dietary Management	
	Chronic Renal failure (CRF) Etiology, Symptoms , Dietary Management	
	ESRD Dialysis Nutritional Management	
4	Nutrition and Cancer Incidence, Carcinogenesis Process, Risk Factors and Etiology, Metabolic Changes During Cancer, Clinic Manifestation of Cancer, Nutritional Management,	12
	Cancer Therapies Chemotherapy, Radiation, Therapy, Surgery, Cancer Prevention	
5	Nutritional care in pre and post operative stages Preoperative Nutritional care, Post operative nutritional care	10
6	Eating Disorders Definitions of some eating disorders,	10
	Anorexia nervosa Diagnostic criteria for anorexia nervosa, Etiology, Clinical features, Nutritional and Psychological Management	
	Bulimia nervosa Diagnostic criteria, Etiology, Symptoms, Nutritional and Psychological Management	

THERAPEUTIC DIETETICS PART –II PRACTICAL- DHFS 21

TOPIC	HOURS
Meal planning for patients suffering from the following diseases.	
1. Diarrhoea	04
2. Constipation	04
3. Peptic ulcer	04
4. Glomerulonephritis	04
5. Nephrotic syndrome	04
6. Hepatic Coma	04
7. Hepatitis	04
8. Jaundice	04
9. Lactose Intolerance	04
10.Celiac Disease	04
11.Liver cirrhosis	08
12.Kidney failure (patient on dialysis/without dialysis)	08
13.Cancer	08

NUTRITIONAL PERSPECTIVE IN COMMUNITY –II THEORY – DHFS 22

Sl.No	Topic	Hours
1	<p>Nutritional problems</p> <p>PEM- vulnerable groups, impact of malnutrition on nation development, causes of malnutrition, classification, clinical symptoms, biochemical changes, etiology, treatment and prevention</p> <p>IDD- prevalence, symptoms, etiology, treatment and prevention, National Iodine Deficiency Disorder Control Programme,</p> <p>Vitamin A deficiency- clinical signs and classification, prevalence criteria, etiology, treatment and prevention, National Prophylaxis Programme</p> <p>Iron deficiency anemia Clinical signs, etiology, treatment and prevention National Nutritional Anaemia Control Programme,</p> <p>Food allergy,</p> <p>Inborn errors of metabolism,</p>	24
2	<p>Nutritional Status Assessment</p> <p>Direct Methods- clinical- signs and symptoms of deficiency disorders, advantage and disadvantage</p> <p>Biochemical- various indices, advantage and disadvantage</p> <p>Anthropometric measurement- weight, height, MUAC, skinfold thickness, Head Circumference, Chest Circumference, precautions to be taken during measurements, instruments to be used, reference standards- ICMR Standards)</p> <p>Dietary Assessment – 24 hr Recall, FFQ, food balance sheet, food Records, Weightment method advantages and disadvantages.</p>	12
3	<p>Combating public nutrition problems</p> <p>Strategies to combat public nutrition problems - Diet or food based strategies- dietary diversification. Horticulture Interventions, Food fortification, Nutrition Education, Supplementation, Immunization, Supplementary feeding program, indirect assessment –Mortality rates, ecological variables food consumption practices, health care facilities</p>	24
4	<p>Nutrition Communication for behavior change objectives of CBC</p> <p>Communication Method – Individual, Group, Mass setting objectives of a NED communication program Identifying target audience designing messages designing an effective training program – training the change agent , training strategy , training guidelines, plan for training program assessment of training</p>	8

NUTRITIONAL PERSPECTIVE IN COMMUNITY –II PRACTICAL – DHFS 22

TOPIC	HOURS
1. Visit of Hospitals	15
2. Visit of Slum Areas / Aanganwaadi	
3. National Immunization schedule for Infants, Children and pregnant Women	03
4. Project on “Fortification of Food Items”	03
5. Project on “Promotion of Nutrition Education”	03
6. Project on Steps taken by Government to control Anaemia , Goitre and Vitamin A deficiency Diseases	09
7. Project on “Different Modes of Nutrition Communication”	03
8. Project on “Comparative study of Marasmus and Kwashiorkar”	03
9. Project on “Goals of National Nutrition Policy”	03
10. Project on “Programmes to Control Malnutrition”	03
11. Role of Public Nutritionist in Community	03

NUTRITION INDUSTRY MANAGEMENT-II THEORY - DHFS-23

S.No	Topic	Hours
1	<p>Entrepreneurial Skills Definition of entrepreneur, Characteristics of successful entrepreneur, Process of creativity and innovation, Business requirements for food products – government requirement, marketing , Business plan, managing business entrepreneurship development and training , merchandising skills.</p>	8
2	<p>Principles of Cooking Menu planning, function of a menu, planning menu on basis of situation and customer- boarding school, conference and canteen, essentials of menu card, Menu design, Types of menu – A1a carte, Table d hote Combination menu, Occasional menu , Single use, Du juor, Cyclic menu, Construction of menu, Food production process – Preliminary treatment of food, Cooking techniques – Moist Heat Dry Heat Combination methods , Effective use of leftovers.</p>	8
3.	<p>Service management Styles of service – formal- banquet, restaurant, buffet, semiformal, - informal – self-service mechanic of waiter service, types of service in a restaurant, presentation and display of food.</p>	9
4.	<p>Standardization of recipes Production forecasting, scheduling, control, use of standardization recipes types of food – natural, Processed Convenience Restaurant, substitute, RTE, Qualitative and Quantitative Aspects of food.</p>	9

NUTRITION INDUSTRY MANAGEMENT – II PRACTICAL- DHFS-23

TOPIC	HOURS
A. Preparation of the following items :-	
1. Boiled Vegetables / Vegetable stock and its use for savory rice & Soup Preparation	03
2. Paneer Tikka with Green chutney	03
3. Baigan Bharta with Baati	03
4. Sabudana Khichdi	03
5. Gujiyaan	03
6. Sewayyan	03
7. Til, Peanut, Flax seeds, Gud Laddoo / Dry fruit and poppy seeds laddoo	03
8. Besan Barfi	03
9. Bread Roll / Multigrain Bread	03
10. Masala paratha with Liquid Daal	03
11. Leftover Roti Poha / Laddoo / choorma	03
12. Plum Cake (Christmas cake)	03
B. Identification of cutlery, Crockery, Glassware	12
C. Hygiene and Sanitation Practices in service.	
D. Cover Layout.	
E. Buffet Setup.	
F. Banquet Arrangement.	
G. Tray Setup and sideboard Setup.	
H. Different types / forms of Services.	
I. Accompaniment and Garnishes.	

SPORTS SCIENCE NUTRITION –DHFS 24

Sl.No	Topic	Hours
1	Introduction of sports science Definition, nature, scope; Role and involvement of different disciplines; Historical to contemporary perspectives	6
2	Exercise and Physiology Definition; Acute responses and chronic Adaptations; Kinds of exercise; Neuroendocrine; Metabolic and Hemodynamic responses; Energy concepts-ATP,CP, aerobic and anaerobic pathway; Muscle fiber types; Respiratory and cardio vascular systems in exercise; Thermoregulation and Evaporation	12
3	Physical Fitness and Physiological Measurement Training Principles and practices; Introduction to fitness-skill and health related fitness; Fitness tests, performance and physiological measurements	10
4	Nutrient metabolism and requirements Principles of nutrition: Macro and micro nutrient requirements: Energy intake and sports performance; fuelling and recovery phases; carbo loading and fuel usage	8
5	Diet during phases of training Nutrition for optimal sports performance-pre and post; Diet during phases of training exercise meals;	8
6	Fluid balance and Hydration Sweating and fluid loss; Dehydration and performance; Hydration requirements; fluid intake and electrolyte Replacement in athletes	8
7	Ergogenic Aids and Latest Trends in Sport Nutrition Ergogenic aids: Introduction; Types and functions; labeling claims and advertisements; Functional Foods	8
8	Sports injuries and special consideration Injuries: chronic and acute; Hard and soft tissue injuries; Causes and treatment; Female athlete triad and nutrition treatment guidelines	8

NEW PRODUCT DEVELOPMENT RESEARCH PRACTICAL- DHFS-25

TOPIC	HOURS
Preparation of the following Healthy and nutritious Recipes	
1. Date Energy Balls	06
2. Oats Laddoo	06
3. Energy Bars	06
4. Peanut Laddoo	06
5. Atta Jaggery Cake	06
6. Flax Seed Namak Para	06
7. Diet Mixture Namkeen	06
8. Multiflour Chakli	06
9. Flaxseed Laddoo	06
10. Millet Kheer	06
11. Multigrain Dosa	03
12. Vegetable oats pancake	06
13. High Protein Pizza	06
14. Millet Quiche	06
15. Bajra laddoo	03
16. Bajra Barfi	03
17. Instant Bajra Pan pizza	03
18. Millet / Dates Muffin	06

Note : Recipe may change as per final product.

New innovative recipes may also be added.