

**Department of Food & Nutrition(H&G)**  
**2022 1<sup>ST</sup>, 3<sup>rd</sup>, 5<sup>th</sup>sem , CBCS**

Semester/ Year	Syllabus Module/ Unit	Teachers	Tentative period of completion
3rd H	<p style="text-align: center;"><b>FNTACOR05T: NUTRIENTS</b></p> <p><b>METABOLISM(THEORY)</b></p> <p>1.Carbohydrate Metabolism: Glycolysis &amp; its regulation. Glycogen metabolism. Metabolism of pyruvate. Outline of pentose phosphate pathway. Anaplerotic reactions. Importance of gluconeogenesis.</p> <p>2. Lipid Metabolism : Fatty acid synthase and de novo biosynthesis of fatty acid; regulation and mechanism of chain elongation. Metabolism of cholesterol, its control and pathophysiological importance. <math>\beta</math>-oxidation of fatty acids.</p> <p>3.Amino acid Metabolism : Essential amino acids. Transamination. Deamination. Transmethylation. Decarboxylation.glucogenicandketogenicaminoacids.Outline of urea cycle. Inborn errors of Metabolism.</p> <p>4. Biologicaloxidation Mitochondrial electron transport chain. High energy phosphate bond.Formation of ATP.</p> <p>5. Nucleic acid metabolism Chemical structure of purine and pyrimidine, Catabolism and anabolism of pyrimidines. Gout - occurrence, prognosis, progression and therapy.</p> <p>6.Vitamins Classification, characteristics and chemical properties of fat and water soluble vitamins. Functions of fat and water soluble vitamins.Hypervitaminosis.Role of vitamins A ,D,C, B1, B2B6, B12 and folic acid in metabolism.</p> <p>7.Mineral Metabolism Role of minerals in physiology. Trace elements. Sodium potassium balance. Role of calcium, iron and zinc in human body -metabolism, functions, deficiency and toxicity.</p> <p style="color: green;"><b>Internal exam Scripts will be checked by :- DP</b></p>	<p style="text-align: center;">DP</p> <p style="text-align: center;">DP</p> <p style="text-align: center;">DP</p> <p style="text-align: center;">DP</p> <p style="text-align: center;">DP</p> <p style="text-align: center;">DP</p> <p style="text-align: center;">DP</p>	<p style="text-align: center;">September</p> <p style="text-align: center;">Septemb er- October</p> <p style="text-align: center;">Novemb er</p> <p style="text-align: center;">Novembe r- Decembe r</p> <p style="text-align: center;">December</p> <p style="text-align: center;">January</p>

	<p>FNTACOR05P: NUTRIENTS METABOLISM(PRACTICAL) TOTAL HOURS: 60 2 CREDITS</p> <p>1. Estimation of Vitamin C in citrus fruits. 2. Estimation of calcium in blood (using kit) and drinking water (Complexometry).3.Estimation of sodium and potassium in blood(using kit).4.Estimation of iron in vegetables by</p>	DP	September -November
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	<p>spectrophotometry.5.EstimationofDNA(PDAmethod)and RNA(Orcinolmethod)intissuesbyspectrophotometry.</p> <p><b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY : SMT DEBOSMITA PATHAK</b></p> <p><b>FNTACOR06T: NUTRITION THROUGH LIFE SPAN(THEORY)</b></p> <p><b>1. Basics of Meal Planning Principles of meal planning,Food groupsandFoodexchangelist,Factorsaffectingmeal planningand food relatedbehaviour</b></p> <p><b>2. Nutrition in Adults and Elderly Physiological changes in elderly..RDAandnutritionalguidelines,nutritional concernsand healthyfoodchoicesfor:Adultmanandwoman,Elderly.</b></p> <p><b>3. Nutrition during Pregnancy Nutrition During Pregnancy: Factors (non-nutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy,antenatal careanditsschedule,Nutritionalrequirementsduringpregnancy andmodificationofexistingdietandsupplementation,Deficiency of nutrients, specially energy, iron folic acid, protein, calcium, iodine. Common problems of pregnancy and theirmanagements, specially - nausea, vomiting, pica, food aversions, pregnancy inducedhypertension,obesity,diabetes.Adolescent pregnancy.</b></p> <p><b>4.NutritionduringLactation Nutrition during Lactation: Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation.Care and preparation of nipples during breastfeeding.</b></p> <p><b>5.Nutrition during Infancy Nutrition during Infancy: Infant physiologyrelevanttofeedingandcare,Breastfeeding,colostrum, its composition and importance in feeding, Initiations of breast feeding.Advantagesofexclusivebreastfeeding.Basic</b></p>	<p>Smt Mitali Palodhi</p>	<p>September</p> <p>September</p> <p>September</p> <p>October</p> <p>October</p>
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	<p><b>principles of breastfeeding. Introduction of supplementary foods, initiation and management of weaning, Baby-led weaning. Bottle feeding- circumstances under which bottle feeding is to be given. Care &amp; sterilization of bottles. Preparation of formula. Mixed feeding, breast feeding and artificial feeding, Management of preterm and low birth weight babies.</b></p> <p><b>6. Nutrition for Children and Adolescents</b> <b>Growth and development in children, RDA, nutritional guidelines, nutritional concerns and healthy food choices for: Preschool children, School children, Adolescents</b></p> <p><b>INTERNAL SCRIPTS WILL BE CHECKED BY: MP SS</b></p>		
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	<p>FNTACOR06P: NUTRITION THROUGH LIFE SPAN(PRACTICAL)  TOTAL HOURS: 60 2 CREDITS Meal  planning and preparation of adequate meal for different age groups with special reference to different physiological conditions: infants, pre-schooler, school children, adolescents, adults, pregnancy, lactation and elderly.  <b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY: SP AND SS</b></p> <p><b>FNTACOR07T: ELEMENTARY DIETETICS AND MENU PLANNING (THEORY)</b></p> <p><b>1. Dietetics and Dietician</b> Definition and objective of dietetics, Dieticians-Definition, Classification and Responsibility</p> <p><b>2. Food groups</b> Four food groups (Caribbean Food Guide; Canadian Food Guide; USA Food Pyramid; British Food Guide; Recommended Nutrient Intake (RNI); Dietary Value Intake; Dietary Reference Value, Five food group system of ICMR. Structure and composition of cereals. Wheat- structure and composition, types (hard, soft/ strong, weak), Diagrammatic representation of longitudinal structure of wheat grain. Malting, gelatinization of starch, types of browning- Maillard &amp; caramelization. Rice- structure and composition, parboiling of rice- advantages and disadvantages. Structure and composition of pulses, toxic constituents in pulses, Milk and Milk Products-composition, classification and processing, Eggs- composition, Meat, fish &amp; poultry- Types, composition, Sugar &amp; Sugar products- Types and composition, Fats &amp; Oils-Types &amp; sources, Food adjuncts- spices, condiments, herbs, extracts; concentrates, essences, food colours, origin, classification, convenience foods, Beverages- Tea, Coffee, Chocolate, cocoa powder-composition</p> <p><b>3. Dietary guidelines</b> Nutritive values as a basis for classification of food, Recommended Daily Allowances (RDA), Dietary guidelines for Indians and food pyramids.</p> <p><b>4. Menu Planning</b> Menu Planning: Rationale for menu planning, Factors affecting food choice, Nutritional factors, other factors; Exchange list and food composition tables for menu planning, Steps in the development of exchange list, Factors to be considered when planning the regular balanced diet: adequacy, balance, caloric control,</p>	<p>SP &amp; SS</p> <p>SP</p> <p>SWETA NJANA GHOSH</p> <p>SP</p> <p>SP</p>	<p><b>September- November</b></p> <p>September</p> <p><b>September - November</b></p> <p>September</p> <p><b>September</b></p>
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**moderation, variety and aesthetics.**

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	<p><b>5. Basics of diet therapy</b>      <b>Basic concepts of diet therapy: Therapeutic adaptations of normal diet, principles and classification of the therapeutic diets, Nutrient modifications.</b></p> <p><b>6. Diet for health care</b>      <b>Team approach to health care. Assessment of Patient's needs.</b></p> <p><b>7. Routine Hospital Diet</b>      <b>Routine Hospital Diets: Regular, light, soft, fluid, parenteral and enteral feeding.</b>  <b>INTERNAL SCRIPTS WILL BE CHECKED BY: SP AND SG</b></p> <p>FNTACOR07P: ELEMENTARY DIETETICS AND MENU PLANNING (PRACTICAL) TOTAL HOURS: 60 4 CREDITS</p> <ol style="list-style-type: none"> <li>1. Planning and preparation of normal diets.</li> <li>2. Planning and preparation of different liquid diets.</li> <li>3. Planning and preparation of different soft/semi solid diets.</li> <li>4. Planning and preparation of different nutrient modified diet.</li> </ol> <p><b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY :-</b></p> <p><b>SEC SYLLABUS</b></p> <p><b>FNTSSEC01M: INSTRUMENTATION</b></p> <ol style="list-style-type: none"> <li>1. Microscopy      <b>Brightfield and darkfield microscopy, Optical Microscopy, Phase contrast Microscopy, Inverted Microscopy</b></li> <li>2. Chromatography      <b>Principles and applications of paper chromatography (including Descending and 2-D), Thin layer chromatography, HPLC. Separation of mixtures by paper / thin layer chromatography</b></li> <li>3. Spectrophotometry      <b>Principle and use of study of absorption spectra of biomolecules, Analysis of biomolecules using UV and visible range, Colorimetry. Protein concentration of spectrophotometer/ colorimeter.</b></li> <li>4. Electrophoresis      <b>Principle and applications of native polyacrylamide gel electrophoresis</b></li> <li>5. Centrifugation      <b>Preparative and analytical centrifugation, density gradient centrifugation and ultracentrifugation Separation</b></li> </ol>	<p>SWETAN JANA GHOSH</p> <p>SWETAN JANA GHOSH</p> <p>SP</p> <p>SP</p> <p>DM</p>	<p><b>September</b></p> <p>October</p> <p>October</p> <p>September- November</p> <p>September</p> <p>September</p> <p>October</p> <p>November</p> <p>October</p>
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	<p>of components of a given mixture using a laboratory scale centrifuge</p> <p>6. ECG and EEG Principles of ECG and EEG, application of ECG and EEG</p> <p>7. ELISA Principle and applications of ELISA test</p> <p style="color: green;"><b>INTERNAL SCRIPTS WILL BE CHEKED BY: DM</b></p> <p style="text-align: center;"><b>3<sup>RD</sup> SEM G (DSC)</b>  <b>FNTGCOR03T: COMMUNITY, NUTRITION AND HEALTH ASSESSMENT (THEORY)</b></p> <p>1. Concept on Community Concept and types of Community. Concept of community nutrition, Community health, Factors affecting community health.</p> <p>2. Nutritional Assessment Nutritional Assessment: Meaning, need, objectives and importance. Method of assessment of nutritional status – Anthropometry, Clinical, Biochemical, Dietary surveys, Vital health statistics.</p> <p>3. Concept of surveillance system Elementary idea of health agencies - FAO, WHO, ICMR, ICDS, ICAR, CSIR, ANP, VHAI, NIN and CFTRI. Role of voluntary health organisation in the improvement of Community health.</p> <p>4. Nutrition Intervention Programmes Current National Nutrition Intervention Programmes in India- SNP, ANP, Midday meal, NIDDCP, NPPNB, NNAPP. ICDS,</p> <p>5. Nutrition Education Nutrition Education: Definition, objectives of nutrition education. Methods of imparting nutrition education.</p> <p style="color: green;"><b>INTERNAL SCRIPTS WILL BE CHEKED BY: BG AND MS</b></p> <p>FNTGCOR03P: COMMUNITY, NUTRITION AND HEALTH ASSESSMENT(PRACTICAL) TOTAL HOURS: 60 CREDITS:  2 1. Anthropometric Measurement of infant - Height,</p>		<p>November</p> <p>September</p> <p>SS</p> <p>September</p> <p>September</p> <p>October</p> <p>October</p> <p>November</p> <p>November</p> <p>September</p> <p>SS</p> <p>November</p>
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	<p>weight, circumference of chest, mid - upper arm circumference.          Calculation of BMI.</p> <p>2. Clinical assessment and signs of nutrient deficiencies.</p> <p>3. Diet survey by 24 hours recall method.</p> <p>4. Preparation of homemade ORS. 5. Preparation of low cost and medium cost school tiffin.</p> <p style="text-align: center;"><b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY :GC</b></p> <p style="text-align: center;"><b>5<sup>TH</sup> SEM H</b></p> <p style="text-align: center;"><b>FNTACOR11T: CLINICAL NUTRITION AND DIET FOR SPECIAL SITUATIONS IN LIFE (THEORY)</b></p> <p>1. Nutritional management of physiological stress Nutrition in wound healing, Surgery: Pre and post surgical dietary management, Burns, Classification, Complication, Dietary management, Trauma: Dietary management, Sepsis: Dietary management.</p> <p>2. Dietary Modification in febrile Condition Acute, chronic and recurrent fevers, typhoid, rheumatic fever, tuberculosis, malaria, H1N1, dengue fever and chikunguinea.</p> <p>3. Nutritional management of GI diseases Diseases of Esophagus and stomach: Esophagitis(GERD), Dyspepsia, Peptic ulcer, Gastritis, Gastrectomy, Dumping syndrome . Intestinal diseases: Flatulence, Diarrhea, Constipation, Hemorrhoids, Diverticular disease, Duodenal ulcer, Inflammatory Diseases of Bowl: Crohn's disease and ulcerative colitis, Irritable bowel Syndrome, Colostomy, Ileostomy</p> <p>4. Malabsorption syndrome Celiac disease (Tropical sprue), Steatorrhea, Intestinal Brush border diseases, Protein losing enteropathy</p> <p>5. Diseases of Gall bladder and pancreas Pathophysiological changes, etiology and dietary management -(Biliary dyskinesia , Cholelithiasis, Cholecystitis, Cholecystectomy ,Pancreatitis)</p> <p>6. Liver diseases Pathophysiology, Progression of liver disease, Role of specific nutrients and alcohol in liver diseases. Nutritional care in liver disease in the context of results of specific liver function tests, Viral hepatitis , cirrhosis of Liver, Hepatic encephalopathy, Wilsons disease.</p>	<p style="text-align: center;">MP</p>	<p>September</p> <p>September</p> <p>October- November</p> <p>September</p> <p>October</p> <p>November</p>
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	<p>7. Nutrition Management of Renal Disease Etiology and pathogenesis, Clinical and metabolic manifestations Diagnostic tests, Acute and chronic nephritis, Nephrotic syndrome, Renal Failure: Acute and chronic, Nephroletheasis,ESRD</p> <p>8. Nutritional management in Allergy Definition, symptoms mechanism of food allergy, Biochemical and immune testing (short), Elimination diets, Food selection, Food allergy in infancy: Milk sensitive enteropathy, intolerance to breast milk, Prevention of food allergy.</p> <p>9.Neurological diseases Alzheimer’s, Parkinson’s disease and Epilepsy, Anorexia nervosa andbulimia.</p> <p><b>INTERNAL SCRIPTS WILL BE CHEKED BY: MP</b></p> <p>FNTACOR11P: CLINICAL NUTRITION ANDDIET FOR SPECIAL SITUATIONS IN LIFE(PRACTICAL) TOTAL HOURS: 60 2 CREDITS Planning and preparation of Diets for the following diseases: i) Pepticulcer ii) Viralhepatitis iii) Fever iv)Acute and chronic renal failure</p> <p><b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY : SS</b></p> <p><b>FNTACOR12T: FOOD MICROBIOLOGY AND IMMUNOLOGY(THEORY)</b></p> <p>1.General Introductiontomicrobes(Bacteria, Fungus, and Algae) Classification, Nomenclature and Morphology (external and internal features). Principles of staining.</p> <p>2. Growth kinetics of bacteria Growth kinetics, Factors affecting growth, different nutritional media for growth, methods of media sterilization.</p> <p>3. Microbiology of food Microbes commonly present in food and the diseases caused by them, microflora present in milk, cereals, vegetables, flesh food. Seafood and Shell fish poisoning. Mycotoxins, Foodborne Diseases, Prions.</p> <p>4.Microbial Food Spoilage Sources of Microorganisms infoods, Someimportantfoodspoilagemicroorganisms,Spoilageofspecific food groups - Milk and dairy products, Meat, poultryand</p>	<p>SS</p> <p>DP</p> <p>DP</p> <p>DP</p> <p>DP</p>	<p>September</p> <p>September</p> <p>September</p> <p>September- November</p> <p>September</p> <p>September</p> <p>October</p> <p>October</p>
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	<p>seafoods, Cereal and cereal products, Fruits and vegetables and Canned products.</p> <p><b>5.FoodFermentations</b> Fermentation –definition and types, Microorganisms used in food fermentations, Dairy Fermentations starter cultures and their types , concept of probiotics, Fermentated Foods-types, methods of manufacture for vinegar, sauerkraut, tempeh, miso , soya sauce, beer, wine and traditional Indian foods.</p> <p><b>6.Immunesystem</b> Cells &amp; Organs of the immune system, Innate and Acquired, Primary and secondary immune response, Active and Passive, Antigen, Antibody, Haptens, Adjuvants, Immunoglobulin- classification, polyclonal and monoclonal, basic structure and function, antigen and antibody reactions- RIA, ELISA, Immunoblot. Antibody production -processing and presentation of antigen, MHC, Humoral immune response. Cell mediated immunity, Formation, maturation and activation of B and T cells, Immune effectors system- cytokines complement system, K cells and NK cells, Cell mediated effectors response, Interferons, Immunopathology - basic principles of auto immune disease , Vaccine, toxins, toxoids, antiserum. Basic principles of immunological detection of pregnancy and immunohistochemistry.</p> <p style="text-align: center;"><b>INTERNAL SCRIPTS WILL BE CHEKED BY: DP</b></p> <p>FNTACOR12P: FOOD MICROBIOLOGY AND IMMUNOLOGY (PRACTICAL) TOTAL HOURS: 60 4          CREDITS 1. Introduction to microbiology: Use of equipments Understanding and use of compound microscope Use of Autoclave Use of Incubator and Inoculation chamber 2. Preparation of different types of media (complex, differential and selective) 3. Preparation of slant, stab and plates using nutrient agar 4. Morphological study of bacteria and fungi using permanent slides 5. Gram staining 6. Bacteriological Analysis of Water by MPN method 7. Ouchterlony double diffusion test in agar-gel.</p> <p style="text-align: center;"><b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY : DP</b></p>	<p>DP</p> <p>DP</p> <p>DEB OS MIT A PAT HA K</p>	<p>November</p> <p>November</p> <p>September- December</p>
<p style="text-align: center;"><b>5<sup>th</sup> Semester DSE FOR FNTA HONS</b></p>	<p style="text-align: center;"><b>FNTADSE02T: ENTREPRENEURSHIP IN FOOD INDUSTRY (THEORY)</b></p> <p><b>1.Entrepreneurial Development CASE STUDIES of successful entrepreneurs, EXERCISES ON ways of SENSING opportunities–sources of idea, creating efforts,SWOT49 Analysis,Entrepreneurial skill asesmentt est,</b></p>	<p>GC , RED PORTI ON PS</p>	<p>September- December</p>



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	<p>Techniques of development of entrepreneurial skills, positive self-image and locus of control.</p> <p><b>2. Food BUSINESS management AND STUDIES of Food PROCESSING BUSINESS and ITS ASPECTS, BUSINESS opportunity Identification and ASSESSMENT techniques, BUSINESS Idea Generation and devaluation EXERCISE, Market ASSESSMENT study ANALYSIS of competitive situation, SWOT Analysis for business and for competitors, Preparation of BUSINESS plan, Preparation of project report, Methods of Arrangement of inputs – finance and material, Tax planning.</b></p> <p><b>3. Personality development and communication skills No. of Hours 20</b>  <b>Communications SKILLS and Personality Development, IntraPERSONAL communication and Body Language, Interpersonal Communication and Relationships, Leadership Skills, Team Building and public speaking, Corporate Grooming, Dressing Etiquette, Preparing for Interview, Emotional Quotient.</b>  <b>INTERNAL SCRIPTS WILL BE CHECKED BY: GC AND MS</b></p> <p>FNTADSE02P: ENTREPRENEURSHIP IN FOOD INDUSTRY (PRACTICAL) TOTAL          HOURS: 60 CREDITS: 2          1. Preparation of business plan.          2. Preparation of project report.          3. Tax Planning under the head Salary.          4. Visit to a food industry  <b>INTERNAL PRACTICAL MARKS :- POULAMI SINHA COMMERCE</b></p> <p><b>FNTADSE03T: FOOD BORNE DISEASES AND FOOD TOXICOLOGY (THEORY)</b></p>	<p>PS</p> <p>PS COMMERCE</p>	<p>September-December</p> <p>Do</p> <p>Do</p> <p>September-December</p>
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	<p>1. <b>Food borne DISEASES</b> Definition related to food borne DISEASES, types of DISEASES with example (Pandemic, Endemic and Epidemic). Infection, contamination, decontamination, disinfection, transmission (direct and indirect). Brief idea about different vector borne DISEASES, mode of TRANSMISSION prevention and control of following DISEASES: Salmonella, Shigella, Typhoid, Botulism, Cholera, E.coli food poisoning, Staphylococcal food POISONING, Clostridium infection, Bacillary infection.</p> <p>2. <b>Lactose intolerance</b> Lactose intolerance-its mechanism and enzyme deficiency.</p> <p>3. <b>Mechanism of food borne DISEASES</b> Molecular mechanism of food borne DISEASES.</p> <p>4. <b>Food safety</b> Definition: Food safety, TYPES of hazards (Biological, chemical and physical hazards), impact on health, control measures, factors affecting food safety.</p> <p>5. <b>Hygiene and sanitation</b> Hygiene and sanitation: Contamination, control methods using physical and chemical agents, use of preservatives, pest control management, personal hygiene.</p> <p>6. <b>Food safety management</b> Food safety management: Concepts of safety management, prerequisites-GHPs, GMP, HACCP etc.</p>	<p>DM</p> <p>DM</p> <p>DM</p> <p>DM</p> <p>DM</p> <p>DM</p> <p>DM</p>	<p>September</p> <p>October</p> <p>November</p> <p>September- November</p> <p>September- November</p> <p>December</p>
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	<p><b>7. Toxic agents in food</b> Toxic agents in food: Botulism, lathyrism, Ciguatera toxins, Tetrodotoxins, Saxotoxins, conotoxins, Antivitamin, Haemagglutinins, Cyanogenic glycosides, Strychnine, Solanine, atropine, Muscarine.</p> <p><b>INTERNAL SCRIPTS WILL BE CHECKED BY: DP</b></p> <p>FNTADSE03P: FOOD BORN DISEASES AND FOOD TOXICOLOGY (PRACTICAL) TOTAL HOURS: 60 CREDITS: 2  1. Assessment of surface sanitation by swab and rinse method. 2. Assessment of personal hygiene. 3. Designing of various food processing systems and food service areas. 4. Design and layout of cold storage and warehouse. 5. Assessment of physico-chemical properties of waste water. 6. Isolation and enumeration of bacteria from rotten food, bread and vegetables. 7. Testing of sanitizers and disinfectants. 8. Study of phenol coefficient of sanitizers. 9. Visit to Food industry and preparation of report.</p> <p><b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY :- DP</b></p> <p style="text-align: center;"><b>5<sup>TH</sup> SEM G (DSE 1 SYLLABUS FOR FNTG [ONLY FOR DSC])</b></p> <p><b>FNTGDSE02T- FOOD SAFETY AND FOOD PROCESSING</b></p> <p><b>1. Food additive and food safety: Concept of food safety, factors affecting food safety, Food additives - various types and their effects on health.</b></p> <p><b>2. Food spoilage: Cereals, PULSES, Vegetables &amp; Fruits, Milk &amp; milk products, FLESHY foods, Fats &amp; OILS. Foodborne infections &amp; infestation.</b></p> <p><b>3. Food adulterants: PFADefinition of food adulteration, Common adulterants in food and their effects on health, Common household methods to detect adulterants in food.</b></p> <p><b>4. Food laws and regulatory authority No. of Hours 10 Prevention of Food Adulteration (PFA) Act, Regulating authority - Codex Alimentarius, ISI, Agmark, Fruit Products Order (FPO), Meat Products Order (MPO), Bureau of Indian Standards (BIS), MMPO, FSSAI.</b></p> <p><b>5. Food Preservation No. of Hours 10 Food Preservation - Definition, Objectives, Methods - main principle, procedure, common examples. 16</b></p> <p><b>6. Food adjuncts and preserved products No. of Hours 8 Spices (Chilies, Turmeric, Garlic and Ginger), use and nutritional aspect. JAMS, Jellies, Squashes - uses and nutritional aspects.</b></p> <p><b>INTERNAL SCRIPTS WILL BE CHECKED BY: BG</b></p> <p>FNTGDSE02P- FOOD SAFETY AND FOOD PROCESSING (PRACTICAL) TOTAL HOURS: 60 CREDITS: 2  1. Detection of common adulterant in food i) Khesari flour in besan ii) Vanaspati in Ghee/Butter iii) Dried papaya seeds in black pepper iv) Metanil yellow in turmeric or coloured sweet products.v)</p>	<p>DM</p> <p>SWETA NJANA GHOSH</p> <p>SS</p> <p>SS</p> <p>SS</p> <p>SS</p> <p>SS</p> <p>SS</p> <p>SS</p> <p>SWET ANJA</p>	<p>September - November</p> <p>September - December</p> <p>September</p> <p>October</p> <p>September</p> <p>September</p> <p>October</p> <p>October</p> <p>September</p>
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<b>1<sup>ST</sup> SEMESTER</b>	Artificially foreign matter in tea (dust/leaves). 2. Preparation of Jam, Jelly, Pickle and Sauce		
	<b>INTERNAL PRACTICAL MARKS WILL BE GIVEN BY :- SS</b>		
	<p><b>CORE COURSE (CC) FNTACOR01T: HUMAN NUTRITION (THEORY)</b>  <b>TOTAL HOURS: 60 4 CREDITS</b></p> <p><b>1. Introduction to Food and Nutrition No. of Hours 10</b> Foods: Energy giving, body building and protective. Nutrients: macro and micronutrients, Diet and balanced diet, Menu. Health and nutritional status. Malnutrition, functional food, prebiotics, probiotics, 8 phytochemicals, nutraceuticals. Fibre. Functions of foods: physiological, psychological, social. Food groups, food pyramid, Relation between food and nutrition, health and diseases.</p> <p><b>2. Foods, Nutrients and cooking of food No. of Hours 10</b> Foods and their nutrient contents: Nutrients present in cereals and millets, pulses, nuts and oil seeds, fruits and vegetables, milk and milk products, flesh food, eggs, Condiment and spices, salt. Nonnutrient components of foods: phytate, tannins, oxalate, trypsin inhibitor, goitrogens and other toxic agents in food. Cooking: Beneficial and adverse effects of cooking. Different methods of cooking-dry, moist, frying, and micro wave cooking-advantage, disadvantage and the effect of various methods of cooking on foods, Solar cooking.</p> <p><b>3. Food energy and energy requirements No. of Hours 15</b> The energy value of foods: Physical and physiological calories. Bomb calorimeter Energy requirement of an individual: Basal metabolic rate (BMR) and physical activity..BMR: Measurement (direct and indirect), factors affecting BMR, SDA of foods. physical activity ratio (PAR). Classification of activities based on occupations. Nutritional requirements and Recommended dietary allowances (RDA): factors affecting RDA, Application of RDA, Reference man and woman..</p>	<b>SP</b>	September- November
		<b>MP</b>	September- November
		<b>MP</b>	September- November

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	<p>4.<b>Digestion of Foods No.of Hours</b>25 Components of gastro intestinal tract. Structure of different segments of GI tract. Digestive glands: structure of salivary glands, gastric glands and intestinal glands. Structure of pancreas and liver.,Digestive secretions: salivary juice, gastric juice,pancreatic juices and intestinal juices. Bile and bile secretion. Digestion and absorptions of carbohydrate, protein,lipid, fat soluble vitamins, water soluble vitamins(thiamine, riboflavin, niacin, pyridoxine, folate, vit B12, vit C), minerals (Ca, Fe, I, F, Cu, Zn)</p> <p><b>INTERNAL SCRIPTS WILL BE CHEKED BY: SP</b></p>	<p>SP SS</p>	<p>September-October</p> <p>November</p>
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	<p><b>FNTACOR01P: HUMAN NUTRITION (PRACTICAL) TOTAL HOURS: 60 2 CREDITS</b> 1. Process involved in cooking, microwave, steaming, grilling, deep fat frying.</p> <p>2. General concepts of weights and measures, Eye estimation of raw cooked foods</p> <p>3. Preparation of food from different food groups and their significance in relation to health</p> <p>4. Preparation of supplementary food from different age group and their nutritional significance</p> <p>5. Planning and preparation of low cost diet for Grade I and Grade II malnourished child</p> <p style="text-align: center;"><b>INTERNAL PRACTICAL MARKS :- SS</b></p> <p><b>FNTACOR02T: PHYSIOLOGY IN NUTRITION (THEORY) TOTAL HOURS: 60 4 CREDITS</b> 1. Unit of Life: Cell and Tissue Structure No. of Hours 12 Difference between prokaryotic and eukaryotic cells &amp; plant and animal cells, Structure and basic functions of animal cell organelles, Structure and functions of plasma membrane, Role of membrane in transport and communications, Importance of cell junction- tight, gap and desmosome, Types of human tissue- location, structure and functions. Structure of muscles, bones, teeth and joints.</p> <p>2. <b>Blood and body fluids No. of Hours 12</b> Blood and its composition, Morphology, formation and functions of formed elements, Blood groups and its importance in transfusion, hazards of mismatch blood transfusion. Mechanism of blood coagulation, Haemoglobin- structure and function. Extracellular fluid, lymph.</p> <p>3. <b>Cardiovascular system No. of Hours 12</b> Structure of heart, artery, vein and capillary, Properties of cardiac muscle, Cardiac cycle, cardiac output, heart rate, heart sounds, ECG- normal and abnormal. Systemic and pulmonary circulation. Blood pressure, pulse pressure Radial pulse, coronary circulation</p> <p>4. <b>Respiratory system No. of Hours 12</b> Structure of lungs: alveoli and airways. Respiratory volumes and capacities, Mechanics of breathing. Oxygen and carbon dioxide transport, Neural and chemical control of breathing.</p> <p>5. <b>Renal Physiology, skin and body temperature No. of Hours 12</b> Anatomy of renal system: kidney, ureter, urethra and urinary bladder, Nephron: structure, Juxtaglomerular apparatus <b>GFR and GFI</b>, Tubular functions, <b>Urine formation: Counter current exchanger and multiplier</b>. Role of kidney in</p>	<p>September</p> <p>September</p> <p>SS October</p> <p>September</p> <p>October- November</p> <p>September- October</p> <p>SP</p> <p>SP September- October</p> <p>SP September- December</p> <p>MSETH September- November</p> <p>SP Septemb er- Decemb er</p>
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	<p>water and electrolyte balance. pH regulation by kidney. Structure of skin. Sweat and sweat glands. Sebum. Core body temperature, heat loss and heat gain, Regulation of body temperature.</p> <p><b>INTERNAL SCRIPTS WILL BE CHEKED BY: SS, BG.GCMS</b></p> <p><b>FNTACOR02P:PHYSIOLOGY IN NUTRITION(PRACTICAL)TOTAL HOURS:602 CREDITS</b></p> <p>1. Determination of pulse rate in Resting condition and after exercise (30 beats/10 beats method)</p> <p>2. Determination of blood pressure by Sphygmomanometer (Auscultatory method).</p> <p>3. Interpretation of normal ECG curve with 6 chest leads.</p> <p>4. Measurement of Peak Expiratory flow rate. (By spirometer)</p> <p>5. Determination of Bleeding Time (BT) and Clotting Time (CT).</p> <p>6. Detection of Blood group (Slide method).</p> <p>7. HAEMOGLOBIN ESTIMATION</p> <p><b>INTERNAL SCRIPTS WILL BE CHEKED BY: SS AND MS</b></p> <p><b>FNTGCOR01T:FOOD AND NUTRITION (THEORY)TOTAL HOURS:60 CREDITS:</b></p> <p>1. Introduction to Food and Nutrition No. of Hours 4 Definition of Food, Nutrition, Nutrient, Nutritional status, Dietetics, Balanced diet, Malnutrition, Energy (Unit of energy – Joule, Kilo-calorie).</p> <p>2. Food and Nutrients No. of Hours 8 Carbohydrate, Protein, Fat, Vitamins and Minerals (calcium, phosphorus, sodium, potassium, iron, iodine,</p>	<p>MSTH &amp; SS</p> <p>SS</p> <p>SS</p>	<p>September</p> <p>September</p> <p>October</p> <p>November</p> <p>January</p> <p>September</p> <p>October-January</p>
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	<p>fluorine)- sources,classification,functions,deficienciesofthesenutrients. Functions of water and dietaryfibre.</p> <p>3. FivefoodgroupsNo.ofHours10Basic5 foodgroups:Types,composition, nutritional significance, role of cookery of cereals, pulses, milk &amp; milk products,meat,fish,egg,vegetables&amp;fruits,nuts,oil&amp;sugar.</p> <p>4. FoodChemistryNo.ofHours10Chemistryofcarbohydrate,proteinsand fats. Vitamins andminerals</p> <p>5. Nutrients Metabolism No. of Hours 15 Elementary idea of metabolism, enzymesandhormones-nameandtheirimportantfunctions.Metabolism inbrief(Glycolysis,Glycogenesis,Gluconeogenesis,Cori'scycle,Kreb'scycle, Deamination, Transamination. Role of hormones in carbohydrate metabolism.</p>	<p>SS</p> <p>SS</p> <p>SS</p>	<p>September- November</p> <p>December- January</p> <p>December- January</p>
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	<p>6. Basic Metabolism Rate (B.M.R) No. of Hours 6 B.M.R: Definition, factors affecting B.M.R. and Total Energy Requirement (Calculation of energy of individuals). 8</p> <p>7. Deficiency diseases No. of Hours 7 Deficiency diseases (Nutritional anaemia, PEM, IDD, VAD)- Aetiology, Prevalence, Clinical findings, Prevention &amp; Treatment.</p> <p><b>INTERNAL SCRIPTS WILL BE CHECKED BY: SS</b></p> <p>FNTGCOR01P: FOOD AND NUTRITION (PRACTICAL) TOTAL HOURS: 60          CREDITS: 2</p> <ol style="list-style-type: none"> <li>Elementary idea of weights &amp; measures.</li> <li>Preparation of cereals, pulses, vegetable, egg, milk, fish, nuts dishes.</li> <li>Planning and preparation of diet of an adult male/female.</li> <li>Planning of a day's diet for pregnant &amp; lactating mother.</li> <li>Preparations of supplementary foods for infants.</li> </ol> <p><b>INTERNAL PRACTICAL :- SS</b></p>	<p>SS</p> <p>SS</p> <p>SP</p>	<p>December</p> <p>January</p> <p>September</p> <p>October</p> <p>November</p> <p>December</p> <p>January</p>
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