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Semester/ Year (H/G)	Syllabus Module/ Unit TOPIC	Teachers	Tentative Periods Of Completion	Distribution/ week
2nd Semester MAJOR	**FNTDSC202T: CHEMISTRY OF NUTRIENTS (THEORY)** 1. **Chemistry of Carbohydrates**: Carbohydrates: classification-mono-, di and polysaccharides; Stereoisomerism in carbohydrates. Physical and chemical properties of mono-, di-and polysaccharides. 2. **Chemistry of Lipids**: Lipids: Classification – Fatty acids, triglycerides, phospholipids, Glycolipids, sterols and steroids. Eiconoids. Edible fats and oils- physical and chemical properties, Hydrogenation and importance of fats in the diet. Physical and chemical properties of saturated, monounsaturated, polyunsaturated fatty acids, trans fatty acids, phospholipids, cholesterols and liposomes. Essential fatty acids, nuts 3.**Chemistry of Amino Acids and Proteins**: Proteins: Classification. Protein structure and organization: primary, secondary, tertiary and quaternary structure. Amino acidsclassification. Physical and chemical properties of amino acid and protein. Biological value of proteins (BV), Net protein utilization (NPU) and Protein efficiency ratio (PER). 4. **Dietary Fibers**: definition; types, composition, health benefits 5. **Water**: Water in foods, water activity, phase transition of food containing water. Water activity and its influence on quality and stability of foods, methods for stabilisation of food systems by control of water activity. 6. **Select Food groups**: Cereals, millets and Pulses: Structure, composition, important properties including toxic constituents, and health benefits Dairy Products – types, composition, properties and health benefits Flesh foods: types, composition and health benefits Sugar and sugar products including artificial sweeteners: composition and properties	ENTIRELY BY DP	**All syllabus will be completed Within May 2025**	DP 4/ WEEK

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2 ND SEM MINOR	**FNTDSC202P: CHEMISTRY OF NUTRIENTS (PRACTICAL)** 1. Qualitative tests for the identification of: Glucose, Galactose, Fructose, Sucrose, Lactose, Starch, Dextrin. 2. Qualitative tests for the identification of - Albumin, Gelatin, Peptone, urea, uric acid. 3. Determination of acid value of oils by titrimetric method. 4. Determination of specific gravity of liquid (fruit juice, blood). **FNTSEC02*:** Fundamental Skills of Fruit and Vegetable Processing . • Preparation of common Fruit preserves like Jam, Jelly. • Preparation of common vegetable preserves like Pickles **SEMESTER 2** **FNTMIN202T:** **ELEMENTS OF HUMAN HEALTH -1** (THEORY) 1. **Introduction to Human Health** 2. **Chemistry and Functions of Nutrients**; Deficiency Diseases: Elementary idea on deficiency conditions related to food and nutrition 3. **Elementary Cell Biology: Animal cell**: definition, structure and functions of different parts. Organelles 4. **Digestive system and Digestion Digestive system**: elementary anatomy, and microanatomy of different parts of digestive system and its associated glands, and their functions. Composition of different digestive juices and their functions. Digestion and	CHEMISTRY DEPT DP DP DP ENTIRELY BY SS SS GC GC SS	**All syllabus will be completed Within May 2025**	DP 2 CHEMISTRY 2 SS 2 SS 2 GC 2

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	absorption of carbohydrate, protein and fat. 5. **Metabolism:** Elementary Idea, BMR-definition, factors affecting; SDA; Enzymesconcept, properties 6. **Blood and body Fluids:** Blood, composition, blood corpuscles, functions, blood groups and its importance intransfusion, hazards of mismatch blood transfusion. Rh factor, blood coagulation. Lymph: Composition and function. Elementary idea on immune functions; allergy with special reference to food allergens. Immunization: Importance and Immunization schedule. **PRACTICAL** 1. Determination of Bleeding Time (BT) and Clotting Time (CT). 2. Detection of Blood group (Slide method). 3. Identification of permanent sections (blood cells, stomach, small intestine, large intestine, liver, pancreas).	SS GC ENTIRELY BY MS		MS 2
4TH SEMESTER	**FNTDSC404T: BASICS OF HUMAN HEALTH -1 (THEORY)** 1. **GI system**: Structure and function of different segments of GI tract and associated glands. 2.**Blood and Body Fluids**: 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, Hemoglobin- structure and function. Extra cellular fluid, lymph. 3.**Cardiovascular System**: 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 4.**Respiratory System**: Structure of lungs:	GC GC MS	**All syllabus will be completed Within May 2025**	GC 2 MS 2 + M SETH (SPECIAL CLASS)

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	alveoli and airways. Respiratory volumes and capacities, Mechanics of breathing. Oxygen and carbon di oxide transport, Neural and chemical control of breathing. 5.Renal Physiology, Skin and Body Temperature: Anatomy of renal system: kidney, ureter, urethra and urinary bladder, Nephron: structure, Juxtaglomerular apparatus, GFR and GFI, Tubular functions, Urine formation: Counter current exchanger and multiplier. Role of kidney in 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. **FNTDSC404P: BASICS OF HUMAN HEALTH -1 (PRACTICAL)** 1. Determination of pulse rate in resting condition and after exercise (30beats/10beats method). 2. Determination of blood pressure by Sphygmomanometer (Auscultatory method). 3. Determination of Bleeding Time (BT) and Clotting Time (CT). 4. Detection of Blood group (Slide method). 5. Measurement of Hemoglobin level (Sahli`s or Drabkin method) **FNTDSC405T: METABOLISM OF NUTRIENTS (THEORY)** 1.**Enzymes:** Definition and structure. Enzyme substrate interaction. Enzyme kinetics, Michaelis Menten constant (Km). Enzyme inhibition. Factors regulating enzyme activities, Isoenzymes, Pro-enzymes, Ribozymes, Abzymes, Concept of Rate limiting enzymes. 2.**Carbohydrate Metabolism**: Glycolysis. Glycogen metabolism. Metabolism of pyruvate. Outline of pentose phosphate pathway. Anaplerotic reactions. Gluconeogenesis and its importance.	DR M S DR MS MS MS SS SS DR M SETH ENIIRELY BY BOTANY DEPATMENT DR MD	**All syllabus will be completed Within May 2025**	SS 2 MS 2 BOTANY DR MD (4)

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	3.**Lipid Metabolism**: Fatty acid synthesis and de novo biosynthesis of fatty acid; regulation and mechanism of chain elongation. Metabolism of cholesterol, its control and pathophysiological importance. β-oxidation of fatty acids. 4. **Amino acid Metabolism**: Essential amino acids. Transamination. Deamination. Transmethylation. Decarboxylation. Glucogenic and ketogenic amino acids. Outline of urea cycle . 5. **Biological oxidation**: Mitochondrial electron transport chain. High energy phosphate bond. Formation of ATP. **FNTDSC405P: METABOLISM OF NUTRIENTS (PRACTICAL)** 1. Estimation of Glucose in blood. 2. Estimation of Protein by Biuret and Lowry methods. 3. Estimation of urea and uric acid in blood. **FNTDSC406T: COMMUNITY NUTRITION (THEORY)** 1. Introduction to Community: Factors affecting health of the Community. 2.**Assessment methods**: Nutritional assessment of human: Clinical findings, nutritional anthropometry, biochemical tests, biophysical methods. Nutritional anthropometry: Need and importance, standard for reference, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements. Growth &Development, factors affecting growth and development. Use of growth charts. 3. **Diet survey**: Concept and importance, methods of dietary survey, Interpretation - concept of consumption unit, individual and total distribution of food in family, adequacy of diet in respect to RDA, concept of family food security. 4. **Clinical Signs**: Clinical Signs: Need and	ENTIRELY BY DP DP MP SS	**All syllabus will be completed Within May 2025**	DP 4 MP 1 SS 1 DP 2

	importance, identifying signs of PEM, vitamin A deficiency and iodine deficiency, Interpretation of descriptive list of clinical signs. Nutritional anaemia. 5.**Nutritional Monitoring and Surveillance**: Concept, objectives, procedure, and importance. 6.**Agencies and Programmes**: International, national, regional agencies and organizations. National nutritional intervention programmes to combat malnutrition: ICDS, Midday meal, Special nutrition program, National programs for prevention of anemia, Vitamin A deficiency and Iodine deficiency disorders. **FNTDSC406P: COMMUNITY NUTRITION (PRACTICAL)** 1. Anthropometric Measurement of infant - Height, weight, circumference of chest, mid – upper arm circumference, precautions to be taken. 2. Comparison with norms and interpretation of the nutritional assessment data and its significance. Weight for age, height for age, weight for height, Z scores, body Mass Index (BMI), Waist – Hip Ratio (WHR). 3. Growth charts– plotting and interpretation. 4. Clinical assessment and signs of nutrient deficiencies especially PEM (Kwashiorkor, marasmus) 5. Estimation of food and nutrient intake: Household food consumption data, adult consumption unit, 24 hours dietary recall 24 hours record, Weighment method, food diaries, food frequency data, use of each of the above, information available through each individual, collection of data, estimation of intakes. **FNTDSC407T: FOUNDATION OF DIETETICS -1 (THEORY)** 1. **Dietetics and Dietician** Definition and objective of dietetics, Dieticians-Definition, Classification and Responsibility.	DP SS DP MS MS GC GC MS GC MP	**All syllabus will be completed Within May 2025**	MS 2 GC 2 MP 2 DP 1 GC 1

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	2. **Food groups 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.	DP		
	3. **Dietary guidelines** Nutritive values as a basis for classification of food, Recommended Daily Allowances (RDA), Dietary guidelines for Indians and food pyramids.	MP		
	4. **Menu Planning 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, moderation, variety and aesthetics	DP		
	. 5. **Basics of diet therapy** Basic concepts of diet therapy: Therapeutic adaptations of normal diet, principles and classification of the therapeutic diets, Nutrient modifications.	GC		
	6. **Diet for healthcare**: Team approach to healthcare. Assessment of Patients' needs. Intersectoral coordination	MP		
	7. **Routine Hospital Diet**: Routine Hospital Diets: Regular, light, soft, fluid, parenteral and enteral feeding	GC		
	. FNTDSC407P: FOUNDATION OF DIETETICS -1 (PRACTICAL) Planning and preparation of normal diet, fluid diets, soft, semi solid diets, and nutrient modified diets. Note: Emphasis should be given on principles and quantitative aspects.	GC + MS		GC 2 MS 2
	SEMESTER 4 MINOR **FNTMIN404T:** **ELEMENTS OF HUMAN HEALTH - 2 (THEORY)**			
	1. **Cardiovascular and Respiratory system**:		**All syllabus will be completed Within May 2025**	MS 2 GC 2

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	Heart: Junctional tissues and functions. Cardiac cycle, cardiac output, blood pressure and its regulation. Mechanics of breathing	GC		+ M SETH (SPECIAL CLASS)
	2. Excitable Tissues: types, functions			
	3. Regulatory Systems: Nervous system and Endocrine system: elementary idea about structure and function. Special Senses: Elementary idea on structure and function	M SETH M SETH		
	4. Reproductive System- male and female: elementary idea about structure and function			
	5. Excretory System: kidney- structure and function	MS		
	6. Special Physiological conditions: Pregnancy and Lactation; Health of mother and children	M SETH MS+ GC		
	PRACTICAL 1. Determination of pulse rate in resting condition and after exercise	MS (REVISION ONLY)		MS (1)
	2. Determination of blood pressure by Sphygmomanometer			
	3. Identification of permanent sections (Kidney, testis, ovary, muscles, brain)			
	6TH SEMESTER **FNTACOR13T:** **FOOD PROCESSING AND FOOD TECHNOLOGY(THEORY)** **TOTAL HOURS: 60 4 CREDITS**		**All syllabus will be completed Within May 2025**	
	1.**Food Storage and Spoilage No. of Hours 10** Contamination and microorganisms in the spoilage of different kinds of foods and such as cereal and cereal products, vegetable and fruits, fish and other sea foods, meat and meat products, eggs and poultry, milk and products, canned foods. Classification of food based on pH, Food infection, food intoxication, definition of shelf life, perishable foods, semi perishable foods, shelf stable foods, Storage of different kinds of foods and such as cereal and cereal products, vegetable and fruits, fish and other	GC		GC 2 DP 2

	sea foods, meat and meat products, eggs and poultry, milk and products, spices and canned foods. 2.**Food preservation No. of Hours 12** Definition, objectives and principles of food preservation. Different methods of food preservation. : Freezing and Refrigeration:Introduction to refrigeration, cool storage and freezing, definition, principle of freezing, freezing curve, changes occurring during freezing, types of freezing i.e. slow freezing, quick freezing, introduction to thawing, changes during thawing and its effect on food. Thermal Processing- Commercial heat preservation methods: Sterilization, commercial sterilization, Pasteurization, and blanching. Drying and Dehydration - Definition, drying as a means of preservation, differences between sun drying and dehydration (i.e. mechanical drying), heat and mass transfer, factors affecting rate of drying, normal drying curve, names of types of driers used in the food industry. Evaporation – Definition, factors affecting evaporation, names of evaporators used in food industry. Units of radiation, kinds of ionizing radiations used in food irradiation, mechanism of action, uses of radiation processing in food industry, concept of cold sterilization. 3.**Preserved Products No. of Hours 13** Jam, Jelly, Marmalade, Sauces, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects. **4. Food Standards and Food Laws No. of Hours 15** Introduction on Food standards and Food Laws, FSSAI, ISI, Agmark, FPO, MPO, PFA, HACCP, Codex Aulimentaurius. 5.**Food Adulteration** Definition, Classification, Different types of adulterants No. of Hours 5 6.**Food Packaging No. of Hours 5** Packaging Functions and Requirements,, Printing of packages .Barcodes & other marking, Labeling Laws **FNTACOR13P: FOOD PROCESSING AND FOOD TECHNOLOGY(PRACTICAL)** **TOTAL HOURS: 60 2 CREDITS** 1. 2. Study on Blanching and Browning Process. Preparation of Fruit preserves(Jam, Jelly).	DP DP GC GC DP		SS 4

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	3. Preparation of vegetable preserves.(Pickles) 23 4. Dehydrated Products – tray drying, sun drying etc. 5. Tomato Processing. 6. Fruit Pulping/Juice/Beverages production. 7. Preparation and Standardisation of Traditional Indian Fermented Food. 8. Visit to Food Processing and Preservation unit. 9. Detection of Adulterants in common Food Stuffs like Milk, Oil, Laddu, Turmeric etc. **FNTACOR14T: RESEARCH METHODOLOGY AND BIOSTATISTICS(THEORY)** **TOTAL HOURS: 60 4 CREDITS** 1. **Research Methodology No. of Hours 5** Meaning, objectives and Significance of research. Types of research, research approaches and scientific methods, Research process, Criteria of good research. 2. **Research problem No. of Hours 10** Definition and identification of a research problem, Selection of research problem. Technique Involved in Defining a Problem. 3. **Study design No. of Hours 15** Meaning and needs of design, important concepts relating to research design, variables, experimental and control groups. (Use examples from epidemiology and clinical trials). Different research designs- exploratory, descriptive, analytical and diagnostic (epidemiology and clinical trials). Pilot studies. Qualitative vs quantitative research. 4. **Sampling of dataand analysis No. of Hours 15** Variable, parameter, statistics. Frequency distribution. Cumulative frequency. Graphical presentation techniques including Histogram, Bar chart, Pie chart along with the concepts of frequency polygon. Mean, median, mode, Standard Deviation and Standard Error of mean .Probability. Normal distribution. Student's t-distribution. Testing of hypothesis - Null hypothesis, errors of inference, levels of significance, Degrees of freedom. 5.**Preparation of report No. of Hours 15** a. Graphical and diagrammatic presentation. b. Interpretation of – Meaning of interpretation, Technique of interpretation, c. Precaution in interpretation- Interpretation of	Entirely by SS Dr Soma Ghosh Principal Dr Soma Ghosh Principal Dr Ritwick Chatterjee (economics) Dr sonali Mukherjee (economics) Dr Ritwick Chatterjee		DR SG 2 RC 1 SM 1

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	tables and figures. d. Report writing – Significance of report writing, Steps in writing report, Types of reports. **FNTACOR14P: RESEARCH METHODOLOGY AND BIOSTATISTICS(PRACTICAL)** **24** **TOTAL HOURS: 60 2 CREDITS** 1. Assignment for calculation of mean, median, mode, standard deviation, standard error of mean and students' 't' test with provided data. **FNTADSE04T: FOOD & BEVERAGE MANAGEMENT (THEORY)** **TOTAL HOURS: 60 CREDITS: 4** 1. **Introduction to Food Service No. of Hours 10** Introduction to food service industry in India, factors contributing to the growth of food service industry, sectors of food service industry, food service operations, Kinds of food service establishments, environmental factors influencing food service operations, styles of food service **2. Food Production & Menu Planning No. of Hours 20** Food production methods, food production process, cooking methods ,Menu planning: Importance of menu, Factors affecting menu planning, Menu planning for different kinds of food service units , Food Purchase and Storage, Quantity Food production: Standardization of recipes, quantity food preparation - techniques, recipe adjustments and portion control ,Hygiene and Sanitation 3. **Resources of food service establishments No. of Hours 20** Food and beverage staff, organization structure, qualities of food service staff, training; food service equipment; food & beverage pricing, revenue control. 4**. Personnel Management No. of Hours 10** Personnel Management, Recruitment, selection, induction, employee facilities& benefits, safety at work **FNTADSE04P: FOOD & BEVERAGE MANAGEMENT (PRACTICAL)** **TOTAL HOURS: 60 CREDITS: 2** Planning of A Food Service Unit : Preliminary	Entirely by Dr Sonali Mukherjee Sri Bidhan Baidya (commerce) SS BB BB SS		‘ SM 4 BB2 SS2 SS 4

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	Planning, Survey of types of units, identifying clientele, menu, operations and delivery Planning the set up a) Identifying resources b) Developing Project plan c) Determining investments d) Project Proposal. **FNTADSE06T: NUTRITIONAL MANAGEMENT AND COUNSELLING (THEORY)** **TOTAL HOURS: 60 CREDITS: 4** **1. Basics of diet counselling No. of Hours 10** **30** Diet Counselling-meaning, significance, process, types Goals of counselling, individuals, group and family counselling, Basic sequence in counselling, Materials needed for counselling –models, charts, posters, AV aids, Hand outs etc, Communication process in counselling and linguistics in clinical dietary practices, problems in communication Role of Counsellor & Counselee, Techniques of obtaining relevant information- 24 Hour Dietary recall, List of food likes and dislikes, Lifestyle Dietician as a part of medical team and research team, Impact of counselling on health and disease of individuals – discussion of hospital case studies. **2. Introduction on Psychology and counselling No. of Hours 15** Introduction to psychology – Definition , Nature and Scope Attention and perception – Types of attention and factors influencing attention , principles of perceptual organization and abnormalities in perception learning and memory- Types of learning, Types of memory, Forgetting and its causes motivation and emotion- Types of motives, types of emotions, emotional expression, Personality- nature and definition , factors influencing personality, Psycho analytic theory of personality Nature and goals of counselling Principles of counselling, Characteristics of a good counsellor, Ethical principles of counselling, Special areas of counselling: Educational, family, health, community and counselling of alcoholic, and drug addicts. **3. Counselling Skills No. of Hours 15** Approaches to counselling – Psycho analytic approach, Behaviouristic, Humanistic approach, Pre – Helping phase: Rapport building skills, Attending and listening skills, Stage I skills: Empathy, respect, Genuineness and concreteness, Stage II skills: Advanced empathy, self disclosure, Immediacy and Confrontation. Stage III skills: Goal setting, Action plan Programme and Brainstorming.	ENTIRELY BY MITALI PALODHI		MP 4

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	4. Diet Counselling at Hospital and Community Level No. of Hours 20 Role of counselling in hospital, Role of counselling in community, Organizing health camps and patient feedback – at hospital level, Organizing health camps and patient feedback – at community level, Diet counselling for obese people, Diet counselling for Diabetics, Diet counselling for CVD, Diet counselling for mother and child care, Diet counselling for adolescent, Patient follow up / home visits,geriatric counselling with specific diseases like HIV/AIDS. **FNTADSE06P: NUTRITIONAL MANAGEMENT AND COUNSELLING (PRACTICAL)** **TOTAL HOURS: 60 CREDITS: 2** 1. Organizing health camps and patient feedback – both at hospital level and community level 2. Diet counselling for mother and child 3. care,adolescent, obese people, Diabetic patient CVD. 4. Patient follow up / home visits. (INTERNSHIP AND PROJECT SUBMISSSION) **6TH SEM GENERAL** **FNTGDSE03T-FOOD COMMODITIES(THEORY) TOTAL HOURS: 60 CREDITS**: 1. Perishable Food Commodities No. of Hours 16 Milk, Meat, Fish, Egg and Poultry-Introduction, composition, types, processing, products, uses in Indian cookery. 2. Semi Perishable Food Commodities No. of Hours 16 Fruits and Vegetable, Fats and Oils-Introduction, composition, types, processing, products, uses in Indian cookery. 3. Non Perishable Food Commodities No. of Hours 16 Cereals, Pulses, Legumes, Oil seeds	ENTIRELY BY SS GC GC MS		SS 2 + INTERNSHIP MS 2 GC 2

	and spices-Introduction, composition, types, processing, products, uses in Indian cookery. 4.Beverages Tea; Coffee. Chocolate and Cocoa Powder-Processing, cost and nutritional aspects, other beverages-Aerated beverages, juices. FNTGDSE03P-FOOD COMMODITIES(PRACTICAL) TOTAL HOURS: 60 CREDITS: 2 1. Project formulation and presentation of project in a seminar (especially on the market survey of food commodities).	MS Entirely by SS		SS 2

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