Academic Calendar

Department of Food & Nutrition (Honours)
2020 2nd 4th sem 6th sem CBCS

Semester/ Year	Syllabus Module/ Unit	No of Lectures	Teachers	distribution
2nd Semester	**FNTACOR03T: FOOD CHEMISTRY(THEORY)**	**5**	BG	WITHIN MAY
	1. proteins & amino acids	1		
	Proteins: Classification. FUNC,deficiency	1		
	Protein structure and organization: primary, secondary, tertiary and quaternary structure.	1		
	Amino acid classification.	1		
	Physical and chemical properties of amino acid and protein.	1		
	Biological value of proteins (BV), Net protein utilization (NPU) and Proteinefficiency ratio (PER).	**6**	BG	JUNE
	2.carbohydrate chemistry	1		
	Carbohydrates: classification- mono-, di- & polysaccharides; func, deficincy	1		
	Stereoisomerism in carbohydrates.	1		
	Physical and chemical properties of mono-, di- and polysaccharides;	1		
	Dietary fibre - definition;	1		
	Fibre components - cellulose, hemicellulose, pectin substances, lignin.	1		
	3, Lipid chemistry	**5**	SS	WITHIN MAY
	Lipids: Classification- Fatty acids, triglycerides, phospholipids, Glycolipids, sterols and steroids. Eiconoids.	1		
	Edible fats and oils - physical and chemical properties, Hydrogenation and importance of fats in the diet.	1		
	Physical and chemical properties of saturated, monounsaturated, polyunsaturated fatly acids, trans fatty acids, phospholipids, cholesterols and liposomes.	1		
	Essential fatty acids.	1		
	4. water	**3**	BG	WITHIN JULY
	Definition of water in foods, water activity, phase transition of food containing water.	1		
	Water activity and its influence on quality and stability of foods, methods for stabilization of food systems by control of water activity	1		
		1		

	5. physiochemical principles Laws of thermodynamics, Enthalpy, Entropy. Gibbs' free energy Thermodynamics and living system. Definition, explanation, importance and biological application of diffusion, osmosis, absorbtion, absorption, viscOsity and surface tension. Colloids: definition and importance. Acids and bases, Hydrogen ion concentration. Buffers. Oxidation reduction potential of bioactives (e.g. flavonoids, phenolic acids, quinols) and their applications in food systems **6. enzymes** Enzmes: Definition and structure. Enzyme substrate interaction. Enzyme kinetics, MichaelisMenten constant(Km).equation Enzyme inhibition. Factors regulating enzyme activities, Isoenzymes, Pro- enzymes, Ribozymes, Abzymes, Concept of Rate limiting enzymes **INTERNAL EXAMINER :=SS** **FNTACOR03P:** **FOOD CHEMISTRY, BIOPHYSICS AND BIOCHEMICAL PRINCIPLES(PRACTICAL)** 1. Qualitative tests for the identification of: Glucose, Galactose, Fructose, Sucrose, Lactose, Starch, Dextrin. 2. Glucose estimation in blood . 3. Qualitative tests for the identification of - Albumin, Gelatin, Peptone, urea, uric acid. 4. Protein estimation by Biuret and Lowry methods. 5. Estimation of urea and uric acid in blood. 6. Determination of acid value of oils by titrimetric method.	**6** 1 2 1 1 1 **4** 1 2 1 1 4 2 2 2 2 2 2	SS SS DP	JUNE JULY ‘=- MAY-JULY

	7. Determination of osmotic pressure of colloidal solutions.			

	8. Determination of specific gravity of liquid (fruit juice, blood).	2		
	INTERNAL EXAMINER :- DP **FNTACOR04T: PHYSIOLOGY IN NUTRITION (THEORY)**	**10**		
	1. physiology of excitable cells Different types of muscles and their structures	1		
	Mechanism of skeletal muscle contraction and relaxation,	2	M. SETH	MAY-JUNE 2ND WEEK
	Muscle energetic, Isometric and isotonic muscle contraction.	2		
	Structure of nerves.	1		
	Nerve impulse and its conduction. Synapse and Neuromuscular junctions.	2		
	Synaptic transmission.	1		
	Neutrotrophins	1		
	2. nervous system	**10**		
	Brief anatomy of Brain and spinal cord. Central and Peripheral nervous system.	**1**		
	Reflex action and Reflex arc.	1	M.SETH	JUNE 2ND WEEK-JULY END
	Outline of functions of cerebrum, cerebellum, hypothalamus. Autonomic nervous system:	1		
	Sympathetic and parasympathetic nervous system.	1		
	Sensory physiology: Sensory Receptors as biotransducers.	1		
	Brief outline of the special senses.	1		
	Structure and functions of photoreceptors in eye and hair cells in cochlea	3		
	3. reproductive system			
	Structure of ovary, fallopian tubule and uterus.	12		
	Oogenesis and ovulation.	1	MS	JUNE
	Changes during menstrual cycle,	2		

	Hormonal regulation of menstrual cycle and menopause Fertilisation and implantation of blastocysts , Placenta. Hormonal control of pregnancy, parturition, lactation, Structure of testis, prostrate and seminal vesicle. spermatogenesis and its hormonal regulation. 4.**endocrine system** Structure, hormones and functions of pituitary, thyroid, parathyroid, adrenal gland and pancreas. Hypothalamus as an endocrine gland. Gastrointestinal hormones. Growth factors. INTERNAL EXAMINER :- GC **FNTACOR04P: PHYSIOLOGY IN NUTRITION(PRACTICAL)** 1. Test for Visual acuity, Colour vision. 2. Identification with reasons of histological slides (Lung, Liver, Kidney, Small intestine, Stomach, Thyroid, Adrenal, Pancreas, Testis, Ovary and Muscle of mammals). 3. Qualitative determination of glucose in blood or urine. 4. Total count (TC) and Differential count (DC) INTERNAL EXAMINER	2 2 2 1 2 **12** 2 2 2 2 2 2 4 4 2 4	GC M.SETH	WITHIN JUNE WITHIN JUNE

Academic Calendar

Department of Food & Nutrition (Honours)
2020 2nd 4th sem 6th sem CBCS

		M.SETH		
4th Semester	**FNTACOR08T: community nutrition(THEORY)** **1.Concept on Community** Concept of Community, types of Community, Factors affecting health of the Community. **2.Nutritional Assessment and Surveillance** Nutritional Assessment Surveillance: Meaning, need, objectives and importance. **3. Assessment methods for human** Nutritional assessment of human: Clinical findings, nutritional anthropometry, biochemical tests, biophysical methods. **4. Diet survey** Diet survey: Need 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. **5. Clinical Signs** Clinical Signs: Need and importance, identifying signs of PEM, vitamin A deficiency and iodine deficiency, Interpretation of descriptive list of clinical signs. Nutritional anaemia. Rickets, B-Complex deficiencies. **6. Nutritional anthropometry** Nutritional anthropometry:Need and importance,	**2** **4** 2 2 **5** **1** **2** 1 1 **10** 3 4 3 **10** 1 2 2 2 2 1	SS SS MS SS MS	May 2nd week June 1st week JUNE 1ST WEEK WITHIN JUNE JULY 1ST WEEK

	standard for reference, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements. Growth & Development; Body Composition: Changes through lifecycle Use of growth charts. 7. **Agencies and programmes** International, national, regional agencies and organisations. National nutritional intervention programmes to combat malnutrition:ICDS, Midday meal, Special nutrition program, National programs for prevention of anaemia, Vitamin A deficiency control programme Iodine deficiency disorders. INTERNAL EXAMINER :- MS **FNTACOR08P: 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 of growth charts, growth monitoring and promotion. 4. Clinical assessment and signs of nutrient deficiencies specially PEM (Kwashiorkor, marasmus) I vitamin A deficiencies, Anaemia, Rickets, B-Complex deficiencies. 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 INTERNAL EXAMINER : BG	**4** **10** 4 3 3	MS MS SS SS SS BG	MID JULY JULY END WITHIN JULY

	FNTACOR09T: EPIDEMIOLOGY AND PUBLIC HEALTH(THEORY)	**4**		
	1. Introduction on Health Health and its importance: Definition of health (WHO), Dimension of health,	1 1	GC	2ND WEEK OF MAY
	Positive health.	1		
	Determinants of	1		
	health.	2		
	Concept of disease and its causations**.**			
	2. Data of Community health Secondary sources of community health data: Indicators of health. Secondary sources of data from NFHS, Vital Statistics, Census of India, ICMR.	**10**	GC GC	MAY END JUNE END
	3. Epidemiology		GC	
	Definition of epidemiology,		GC	
	components and aims of		GC	
	epidemiology, basic measurements		GC	
	in epidemiology. Demography and			
	family planning.		MS	
	Brief idea about epidemics,		MS	
	epidemiological methods: analytical epidemiology (case control and cohort study);		GC	
	Experimental epidemiology.	**12**	GC	
	Infectious diseases in			
	epidemiology. Dynamics of			

	disease transmission, modes of transmission of disease.			

	4.Diseases: Prevention and control Epidemiology of diseases, prevention and control [(Nutritionally related disease:- Hyperlipidaemia, clotting disorder, scurvy, beriberi , goiter); (vector borne disease: - HIV/AIDS, malaria, poliomyelitis, dengue, tuberculosis, mumps measles rubella, chicken pox, pertussis, chikungunya); **(food borne disease:- salmonellosis, shigellosis,** **Typhoid , botulism, amoebiasis, rotavirus, E.coli food poisoning, staphylococcal food poisoning);** (water borne disease: arsenic toxicity, cholera); (non communicable disease:- obesity, diabetes, coronary heart disease) **5.Public health** Definition of public health,	3	GC SS MS BG MS	WITHIN JULY 4TH week MAY

	relation between health and nutrition**.**			

	6. Immunization Immunization : definition. Host defenses and immunity, immunizing agents: its types, national immunization schedule- its importance, immunization in adults and travellers, hazards of immunization health advice to foreign travellers.	**2**	SS	MAY
	7. Community health care Health care of the community, health care delivery, health care system, Primary health care in India, Indian public health standards for subcenters, PHCs, community health centers. Hospital waste management**.**	**2**	MS	JUNE 1ST WEEK
	8. Community water management Community water management: importance of water to the community, sources of water. Concept of water pollution. Purification of water in small and large **scale.** Drinking water handling and safe drinking water	6 2 2 2	SS	WITHIN JUNE
	9. Community waste management Community waste management: types and methods of disposal of wastes, sewage disposal and treatment**.**	**4**	BG	MAY
	10. Air pollution Air pollution: source of air pollution, factors of air pollution. Indoor air pollution. Monitoring of air pollution. Effects, prevention and control of air pollution. **INTERNAL EXAMINER GC** **FNTACOR09P: EPIDEMIOLOGY AND**	**4**	BG	JUNE

	PUBLIC HEALTH(PRACTICAL))			

	.1. Preparation of 3 audio visual aids like charts, posters, models related to health and nutrition education. 2. Formulation and preparation of low cost and medium cost nutritious/ supplementary recipe. 3. Field visit (health centre, immunization centre, ICDS, MCH centre, NGOs etc.) **FNTACOR10T: DIET THERAPY FOR LIFE STYLE DISORDERS(THEORY)**		GC	WITHIN JULY
	1. Lifestyle disorder Introduction, types, aetiology, management.	**4**	BG	MAY 2ND WEEK
	2. Diabetes Mellitus Definition, Etiology, Classification, long and short term complications, Diagnosis, Management (Insulin Therapy, Dietary Management with food exchange list, Exercise,Pharmacological), Role of artificial sweeteners. Overview of special conditions: Diabetes in Childhood, Pregnancy, Role of Nutrition Education, Role of Nutrition in Prevention.	8	BG	MID JUNE
	3. Cardiovascular diseases Prevalence, incidence, mortality with special reference to Indian situation. Patho - physiology and Management of Atherosclerosis, Endothelial dysfunction, Thrombosis, Angina Pectoris, Congestive cardiac failure, stroke, MI. Hyper-lipidemia– classification, diagnosis and nutritional management,	**8**	GC	WITHIN MAY

	Hypertension: Oetiology, Risk factors, Patho-physiology, Management **4. Weight management** Obesity and Overweight: Body weight components, Classification of obesity,(gynoid/android and Regulation hypertrophy/hypersplasia, Etiology and assessment of obesity and prevalence in Indian situation, Complications of obesity. Management: Medical (Pharmacological), Nutrition and lifestyle, Surgical, Behavioural Juvenile Obesity. Underweight: Etiology , Diet management, Eating disorders: (Anorexia Nervosa and Bulimia), Management (Medical,Nutritional care), Psychological support and Prevention. **5. Nutritional management of metabolic disease**: Gout : Role of proteins and purine, Etiology, Symptoms and complications, Dietary management,Inborn errors of metabolism: PKU, MSUD, Glycogen storage disorders, Galactosemia **6. Nutrition and respiratory health** Physiology and functions of the respiratory system, Nutritional management of Asthma **7. Nutritional management in cancer (Oral and colon)** Cancer: Pathogenesis and progression of cancer, Role of Nutrients and food additives in cancer therapies and their nutritional implications, Symptoms, Diagnosis, Cancer therapies: Nutritional implications, Dietary management **8. Arthritis and Osteoporosis** Etiology dietary treatment in arthritis and osteoporosis.	**8** **6** **4** **4** **2**	BG GC BG GC GC	WITHIN MID JULY WITHIN JUNE WITHIN JULY WITHIN JULY

	INTERNAL EXAMINER :- BG **FNTACOR10P: DIET THERAPY FOR LIFE STYLE DISORDERS(PRACTICAL)** Planning and preparation of Diets for the following diseases: i) Obesity and Underweight SS ii) Diabetes mellitus SS iii) Hypertension and Atherosclerosis MS iv) Overweight and Underweight SS v) Gout MS vi) Osteoporosis MS INTERNAL EXAMINER :- SS **FNTGCOR02T: HUMAN BODY AND NUTRITION (THEORY)**		SS , MS	WITHIN JULY
	1. Animal cell Animal cell: definition, structure and functions of different parts. Organelle	**4**	BG	2ND week of MAY
	Blood and body Fluids: Blood, composition, blood corpuscles, functions, blood groups and its importance in transfusion, hazards of mismatch blood transfusion. Rh factor, blood coagulation. Lymph: Composition and function.	**4**	GC	2ND WEEK OF MAY
2ND SEM GENERAL	**Cardiovascular and Respiratory system** Heart: Junctionl tissues and functions. Cardiac cycle, cardiac output, blood pressure and its regulation. Mechanism of respiration, Respiratory centre. Respiratory regulation.	**6**	BG M.SETH	2ND week of JUNE
	4. Digestive system and Digestion Digestive system: Structures involved in digestive system (mouth, oesophagus, stomach, small intestine, large intestine,liver pancreas, gallbladder), and their functions, composition of different digestive juices & their functions.	**4**	GC	WITHIN JUNE

	Digestion and absorption of carbohydrate, protein and fat. **5. Excitable cells** Brief description about the mechanism of muscular contraction. Neuro-muscular transmission. **6. Regulatory systems** General idea about the Hormones in human body and their significance on nutrition. Brief idea about brain and sinal cord. somatic and autonomic control of body INTERNAL EXAMINER :-GC **FNTGCOR02P: HUMAN BODY AND NUTRITION (PRACTICAL)** 1. Determination of pulse rate in Resting condition and after exercise (30 beats/10 beats method) 2. Determination of blood pressure by Sphygmomanometer (Auscultatory method). 3. Identification of permanent sections (Blood cells, Stomach, Small intestine, large intestine, Liver, pancreas). 4. Determination of Bleeding Time (BT) and Clotting Time (CT). 5. Detection of Blood group (Slide method). FNTGCOR04T:DIETETICS (THEORY) TOTAL HOURS: 60 CREDITS: 4 **1. Concept on Diet therapy** Definition and objective of dietetics, Definition-diet therapy, Dieticians;principles and classification of the therapeutic diet. Responsibility of dieticians. **2. RDA, Meal planning and Dietary guidelines** RDA- Definition, Nutritional requirements (RDA), **BG** Principles and objectives of meal planning, **BG**	**8** **4** **8** **4** **6**	BG M.SETH GC SS BG SS	WITHIN JULY WITHIN JULY WITHIN JULY WITHIN MAY 2ND WEEK WITHIN MAY 3RD WEEK

4TH SEM GENERAL	Dietary guidelines of pregnant & lactating women, BG infants(Weaning, supplementary food), DP pre-school children & school children BG (School lunch programme), DP adult males and females, DP old age people. BG 3. **Hospital diet** Hospital diet: regular, soft, fluid, s pecial feeding methods- advantages, disadvantages **4. Dietary management of different diseases** **Dietary management in Gastro intestinal diseases (diarrhoea,** **constipation,** **gastritis,** **peptic ulcer &** **flatulence),** **Fever (short term),** **Diabetes mellitus (Type II - NIDDM),** Heart diseases (hypertension, a therosclerosis, hyperlipidaemia), Liver diseases (infective hepatitis, cirrhosis of liver), Gout, Obesity (including assessment indices), Underweight. **5. Food Allergy** Food allergy- Definition, sources, symptoms, diagnosis, treatment, food intolerance. **INTERNAL EXAMINER:- MS**	**4** **8** **4**	BG BG SS BG	WITHIN JUNE 1ST WEEK WITHIN JULY 2ND WEEK WITHIN JULY WITHIN JULY

	FNTGCOR04P:DIETETICS(PRACTICAL) **TOTAL HOURS: 60** **CREDITS: 2** 1. Planning and Preparation of fluid diet, soft and solid diet. MS 2. Planning & preparation of a day's diet for the following conditions: Peptic ulcer GC Fever, GC Hypertension, GC Diabetes mellitus (Type II NIDDM), MS Hepatitis, MS Obesity. MS **SEC 2** 1. Introduction to clinical nutrition, clinical conditions requiring dietary intervention, role of dietitian in hospitals/clinics, GC staff training, RD –requirements, procedure, functioning. DP 2. Practical 1. Visit to an ongoing program in ICDS: one rural, one urban. (eg. mahilamandal meeting or nutrition week celebration . 2. Visit to a health centre (ANC clinic run by Government health department and observe quality of counseling imparted to pregnant women (especially awareness of anemia, importance of IFA). 3. To visit an NGO either rural or urban and observe one intervention program implemented for 59 women, school children or adolescence (For all the above observation appropriate observation check lists will be made and used) 4. Visit to old age home/Nutrition Rehabilitation Centre/slum area and prepare report on nutritional		GC MS GC GC	Within JULY WITHIN JULY Within JULY

	status /health concern(at least 10 case studies to be done) 5. Internship in any hospital/nursing home -case study of diseases 6. Preparation of visual aids indicating clinical problems related to nutrition – Charts, posters, models etc. and demonstration INTERNAL EXAMINER GC SEMESTER 6 (HONOURS) **FNTACOR13T: FOOD PROCESSING AND FOOD TECHNOLOGY(THEORY)** **1 Food Storage and Spoilage** 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 sea foods, meat and meat products, eggs and poultry, milk and products, spices and canned foods. **2 Food preservation** 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		DP MS	MAY MAY

	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 ofevaporators 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** Jam, Jelly, Marmalade, Sauces, Pickles, Squashes, Syrups types, composition and manufacture, selection, cost, storage, uses and nutritional aspects **4. Food Standards and Food Laws** 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 **6.Food Packaging** Packaging Functions and Requirements,, Printing of packages .Barcodes & other marking, Labeling Laws INTERNAL EXAMINER :-DP MS **FNTACOR13P: FOOD PROCESSING AND FOOD TECHNOLOGY(PRACTICAL) TOTAL HOURS: 60 2 CREDITS** 1. Study on Blanching and Browning Process. 2. Preparation of Fruit preserves(Jam, Jelly). 3. Preparation of vegetable preserves.(Pickles) 24 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.		DP MS DP MS ENTIRELY BY SS	JUNE JUNE JULY JULY WITHIN JULY

	9. Detection of Adulterants in common Food Stuffs like Milk, Oil, Laddu, Turmeric etc. INTERNAL EXAMINER :- SS			
	FNTACOR14T: RESEARCH METHODOLOGY AND BIOSTATISTICS(THEORY) **1. Research Methodology** Meaning, objectives and Significance of research. Types of research, research approaches and scientific methods, Research process, Criteria of good research.	6	DEBASHIS MAZUMDAR	WITHIN MAY
	2. Research problem Definition and identification of a research problem, Selection of research problem. Technique Involved in Defining a Problem.	6	DEBASHIS MAZUMDAR	WITHIN JUNE
	3. Study design 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**.**	12	EXTENSION LECTURE	WITHIN JULY
	4. Sampling of data and analysis 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.	12	DR SONALI MUKHERJEE ECONOMICS DEPT	WITHIN JULY
	5. Preparation of report a. Graphical and diagrammatic			

	presentation. b. Interpretation of – Meaning of			

	interpretation, Technique of interpretation, c. Precaution in interpretation- Interpretation of tables and figures. d. Report writing – Significance of report writing, Steps in writing report, Types of reports. **INTERNAL EXAMINER :- DR SM AND DM**		DEBASHIS MAZUMDAR	WITHIN JULY
	FNTACOR14P: RESEARCH METHODOLOGY AND BIOSTATISTICS(PRACTICAL) 1. Assignment for calculation of mean, median, mode, standard deviation, standard error of mean and students' 't' test with provided data.		DR SONALI MUKHERJEE	WITHIN JULY
	FNTADSE05T: DAIRY TECHNOLOGY (THEORY) **1. Introduction** Status of dairy industry in India **2. Physical properties of milk** Color, taste, pH and buffering capacity, refractive index, viscosity, surface tension, freezing, boiling point, specific heat, OR, electrical conductivity. **3. Lactose** Lactose (alpha and beta forms and their differences) Significances of lactose in dairy industry. **4. Milk fat** Composition and structure, factors affecting melting point, boiling point, solubility and Refractive Index, fat constants (saponification value, iodine value, RM value, Polenske value, peroxide value). Chemical reactions of fat (hydrolysis, auto-oxidation), condition favouring auto-oxidation, prevention, measurement of auto-oxidation. **5. Protein and Enzymes** General structure, amphoteric nature, difference between casein and serum protein, different types of		ENTIRELY BY DP	WITHIN JULY

	casein (acid and rennet), uses of casein,			

	fractionation of protein. Enzymes- catalase, alkaline phosphatase, lipases and proteases. **6 .Market milk industry** Systems of collection of milk Reception, Platform testing Various stages of processing Filtration, Clarification, Homogenization, Pasteurization, Description and working of clarifier, cream separator, homogenizer and plate heat exchanger . **7. Milk products** Butter, ghee, flavored milk, yoghurt, dahi, shrikhand, ice-cream, condensed milk, milk powder, channa, paneer, cheese (cheddar). INTERNAL EXAMINER :- DP **FNTADSE05P: DAIRY TECHNOLOGY (PRACTICAL) CREDITS: 2** 1. To perform platform tests in milk.(Acidity,COB,MBRT,specificgravity,SNF). 2. To estimate milk protein by Folin method. 3. To estimate milk fat by Gerber method. 4. Preparation of flavoured milk/. Pasteurization of milk. 5. To prepare casein and calculate its yield. 6. **Visit to a milk industry**. **FNTADSE06T: NUTRITIONAL MANAGEMENT AND COUNSELLING (THEORY)** **1. Basics of diet counselling** 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	8	DP MS MS	WITHIN JULY WITHIN JUNE

	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 counsellingon health and disease of individuals – discussion of hospital case studies 2.**Introduction on Psychology and counselling** 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, Psychoanalytic 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** 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 **4. Diet Counselling at Hospital and Community Level** Role of counselling in hospital, Role of counselling in	10 10 10	PSYA DEPT EXTENSION LECTURE GC	WITHIN JUNE 2ND WEEK WITHIN JULY WITHIN JUNE

	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. INTERNAL EXAMINER:- MS GC **FNTADSE06P: NUTRITIONAL MANAGEMENT AND COUNSELLING (PRACTICAL)** **CREDITS: 2** 1. Organizing health camps and patient feedback – both at hospital level and community level 2. Diet counselling for mother and child care,adolescent, obese people, Diabetic patient CVD. 3. Patient follow up / home visits INTERNAL EXAMINER :- BG **6TH SEM G** **FNTGDSE04T- NUTRITIONAL BIOCHEMISTRY(THEORY)** **1. Carbohydrate** Classes of carbohydrates, Properties and dietary importance of starch, sucrose, lactose, glucose and fructose. Metabolism: Glycolysis, Tricarboxylic acid (TCA) cycle, Gluconeogenesis, Glycogenesis, Glycogenolys **2. Protein** Classes, properties, functions and secondary structure of protein (alpha helix, beta pleated sheet). Concept and definition: Complete and incomplete proteins, Biological value, Protein Efficiency Ratio (PER), Net Protein Utilisation (NPU), Essential and non-essential amino acids, Deamination, Transamination and Urea cycle. **3. Lipid** Classes of lipids, Properties and functions of fats, oils and fatty acid (PUFA, MUFA, SFA.	8 8	BG MS SS	WITHIN JULY WITHIN MAY WITHIN MAY

	TFA), Concept of Beta - oxidation of fatty acids	8	SS	WITHIN JUNE
	4. Enzyme Classification, properties and factors affecting enzyme activity. Brief idea on mechanism of enzyme action (Fischer Lock and key model).	6	MS	WITHIN JUNE
	5. Water Definition of water in foods, Wateractivity and its influence on quality and stability of foods,phase transition of food containing water.	6	MS	WITHIN JULY
	FNTGDSE04P- NUTRITIONAL BIOCHEMISTRY(PRACTICAL) **CREDITS: 2** 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. Protein estimation by Biuret and Lowry methods.		ENTIRELY BY DP	WITHIN JULY