

LESSON PLAN				
SL NO.	UNIT	PAPER	TOPIC	FACULTY
1	DC 1 Human Physiology	PAPER 1	1. Body composition: <ul style="list-style-type: none"> Generalized structural makeup of human body. Structure and functions of animal cell with special reference to Plasma membrane (Fluid Mosaic Model), Mitochondria, Ribosome, Endoplasmic reticulum. Nucleus (nuclear membrane, nuclear chromatin and nucleolus). 	JB
2			2. Circulatory and Cardiovascular system: <ul style="list-style-type: none"> Blood and its composition, Blood groups, Mechanism of blood coagulation. Structure and functions of heart. Cardiac cycle, cardiac output, blood pressure and its regulation. 	AB
3			3. Digestive system: <ul style="list-style-type: none"> Structure and functions of G.I. tract. Process of digestion and absorption of food. Structure and functions of liver, gallbladder and pancreas. 	LR
4			4. Respiratory system: <ul style="list-style-type: none"> Structure of Lungs and gaseous exchange (oxygen and carbon dioxide transport), Brief idea on Acclimatization. 	SM
5			4. Respiratory system: <ul style="list-style-type: none"> Structure of Lungs and gaseous exchange (oxygen and carbon dioxide transport), Brief idea on Acclimatization. 	
6			5. Musculoskeletal System: <ul style="list-style-type: none"> Formation and functions of muscles, bones and teeth (Brief idea). 	SM
		PAPER 2 (Practical)	1. Determination of pulse rate. 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 Haemoglobin level (Sahli's method).	JB+SM
7	DC2: Nutritional Importance of Foods	PAPER 3	• Food, Food Groups, Food Pyramid, Functions of food. • Nutrient and Nutritive value, Concept of Balanced Diet.	JB
8			2. Cereals, Pulses and legumes: <ul style="list-style-type: none"> Nutritional aspects of wheat, rice and oat. Types of pulses and legumes, uses, and nutritional aspects. 	JB
9			3. Milk and milk Products: <ul style="list-style-type: none"> Nutritive value and composition of milk, Concept of milk processing and Pasteurization Types of processed milk, milk products (butter, curd, paneer and cheese). 	AB
10			4. Egg, Fish and meat: <ul style="list-style-type: none"> Nutritional aspects and uses. Nutritional aspects of edible fish and meat, concept of red and white meat. 	AB
11			5. Vegetables and fruits: <ul style="list-style-type: none"> Uses and nutritional aspect of commonly available vegetables. Fresh fruits and dry fruits– raw and processed product. 	LR
12			6. Salts, Fats and oils: <ul style="list-style-type: none"> Uses and nutritional aspects of various salts. Types, sources, use and nutritional aspects of fats and oils. 	LR
13			7. Beverages: <ul style="list-style-type: none"> Common types (tea, coffee and wines) and their uses, nutritional aspect. 	SM

14			8. Methods of cooking: ● Dry, moist, frying and microwave cooking. ● Effect of various methods of cooking on foods, nutrient losses in cooking.	SM	
15		PAPER 4 (Practical)	1. Food preparation and nutritive value as per portion size wherever applicable - 1. Beverages: Milk shake and Lassi. 2. Cereals: Fried Rice and Chapatti. 3. Milk and milk products: Custard and Payasam. 4. Eggs: Egg pudding and Pouch (Water pouch and Butter pouch). 5. Snacks: Poha and Sandwiches.	AB+LR	
16	DC 3: Human Physiology – II	Paper -5	1. Excretory system: ● Structure and function of skin. ● Regulation of temperature of the body. ● Structure and functions of kidney in special reference to nephron. ● Physiology of urine formation.	JB	
17			2. Reproductive system: ● Structure and functions of gonads, concept on menstrual cycle. ● Brief idea of pregnancy, parturition, lactation and menopause. ● Brief concept on spermatogenesis and Oogenesis process.		
18			3. Nervous System: ● Concept on sympathetic and parasympathetic nervous system. ● Brief anatomy and functions of cerebrum, cerebellum, hypothalamus and neuron. ● Concept on synapse and synaptic transmission.		
19			4. Endocrine system: ● Structure and functions of pituitary, thyroid and adrenal gland. ● Structure and functions of pancreas.		
20			PAPER 6 (Practical)	1. Total count (TC) of RBC, WBC and Platelets. 2. Differential count (DC) of WBC. 3. Erythrocyte Sedimentation Rate (ESR) (Westergren method) 4. Identification with reasons of histological slides (Lung, Liver, Kidney, Small intestine, Stomach, Thyroid, Adrenal, Pancreas, Testis, Ovary and Muscle of mammals).	
21			DC 4: : Physiology of Nutrition (Theory)	PAPER 7	1. Concept and definition of terms: ● Growth, Development, Nutrition, Malnutrition and Health, Scope of Nutrition.
22	2. Role of Vitamins: ● Fat soluble vitamin-Physiological role, dietary sources and deficiency disorders. ● Water soluble vitamin- Physiological role, dietary sources and deficiency disorders.				
23	3. Role of Minerals (Ca, Fe, Na, K, I, Zn, Mn, Mg, Co): ● Physiological role, dietary sources and deficiency disorders.				
24	4. Principles of meal planning: ● Food exchange list, Factors affecting meal planning and food related behavior. ● Dietary guidelines for Indians.				
25	5. Minimum nutritional requirement and RDA: ● Formulation of RDA, dietary guidelines with reference to man and woman.				
26	6. Energy in human nutrition: ● Energy and its unit, Energy assessment and balance, Factors of energy requirement, BMR and its regulation, SDA of food				

27		PAPER 8 (Practical)	<p>1. Growth chart: Plotting and Interpretation using primary or secondary data in accordance with both ICMR and WHO Chart.</p> <p>2. Clinical assessment and sign of nutrient deficiency disorders: Protein energy malnutrition (PEM), Anaemia, Rickets, Goiter, Vitamin A, Vitamin C and Vitamin B-complex (Slide/Photography).</p> <p>3. Diet survey in accordance with ICMR method (at least 3 days).</p>	
28	DC 5: Biochemistry (Theory)	PAPER 9	<p>1. Carbohydrate:</p> <ul style="list-style-type: none"> • Classes of carbohydrates (monosaccharides, oligosaccharides and polysaccharides). • Properties and dietary importance of starch, sucrose, lactose, glucose and fructose. • Metabolism: Glycolysis, Tricarboxylic acid (TCA) cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis and regulation of blood sugar level. 	
29			<p>2. Protein:</p> <ul style="list-style-type: none"> • 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. • Protein metabolism: Deamination, Transamination and Urea cycle. 	
30			<p>3. Lipid:</p> <ul style="list-style-type: none"> • Classes of lipids, Properties and functions of fats, oils and fatty acid (PUFA, MUFA, SFA. TFA). • Lipid metabolism (Beta - oxidation of fatty acids). 	
31			<p>4. Enzyme:</p> <ul style="list-style-type: none"> • Classification, properties and factors affecting enzyme activity. Brief idea on mechanism of enzyme action (Fischer Lock and key model) and preliminary concept of enzyme inhibition. 	
32		PAPER 10: (Practical)	<p>1. Qualitative detection of sugar (Molisch's test, Benedict's test, Iodine test), Non-reducing sugar (Hydrolysis test or Inversion test).</p> <p>2. Qualitative detection of protein (Biuret and Ninhydrin).</p> <p>3. Colorimetric estimation of Carbohydrate (Anthrone method).</p> <p>4. Colorimetric estimation of Protein (Folin-Phenol reagent).</p>	
33	DC 6: Nutrition and phases of Life	PAPER 11	<p>1. Nutrition during infancy:</p> <ul style="list-style-type: none"> • Breast feeding, Formula feeding, Weaning, Supplementary foods, Nutritional management of Preterm baby. 	
34			<p>2. Nutrition for children:</p> <ul style="list-style-type: none"> • Diet in early childhood, elementary school age, high school age. 	
35			<p>3. Nutrition during pregnancy and lactation:</p> <ul style="list-style-type: none"> • Nutritional demands of Pregnancy, Food selection during Pregnancy, Complications of pregnancy and dietary management, Diet during Lactation. 	
36			<p>4. Nutrition to athletes:</p> <ul style="list-style-type: none"> • Nutritional requirements and dietary management in sports man and athletes, Meal planning for athletes. 	
37			<p>5. Geriatric nutrition: Planning of meals for older people, Nutrition of aged persons, Physiological complications in geriatric group and dietary modifications required, Oxidative stress and aging and role of antioxidative nutrients for preventing aging.</p>	

38		PAPER 12: Practical	<ol style="list-style-type: none"> 1. Preparation of normal diets for infant (Dahl soup). 2. Preparation of normal diets for preschool children (Dalia). 3. Preparation of normal diets for college student (Suji Upma). 4. Preparation of normal diets for pregnant lady and lactating mother (Khicheri with mixed vegetables). 	
39	DC 7. Therapeutic Diet – I	PAPER 13	<ol style="list-style-type: none"> 1. General ideas of diet therapy: <ul style="list-style-type: none"> • Therapeutic adaptations of normal diet, Classification of therapeutic diets (Progressive diets – Normal, Soft, Clear and Full fluid). 	
40			<ol style="list-style-type: none"> 2. Dietitians and hospital basic diets: <ul style="list-style-type: none"> • Types of dietitians and role of dietitian. • Nutritional adequacy of hospital diets, Basic concept and methods of (i) Oral feeding (ii) Tube feeding (iii) Parenteral feeding. 	
41			<ol style="list-style-type: none"> 3. Etiology, symptoms, diagnostic tests and dietary management: <ul style="list-style-type: none"> • Gastro-intestinal tract and liver diseases - Diarrhoea, Constipation, Irritable Bowel Syndrome, Flatulence, Peptic ulcer, Ulcerative Colitis, Viral hepatitis and Cirrhosis of liver. 	
42			<ol style="list-style-type: none"> 4. Etiology, symptoms, diagnostic tests and management: Malabsorption syndrome. 	
43			<ol style="list-style-type: none"> 5. Dietary management of inborn error in metabolism: <ul style="list-style-type: none"> • Lactose intolerance, Phenylketonuria (PKU) and Alcaptonuria. 	
44			<ol style="list-style-type: none"> 6. Allergies: <ul style="list-style-type: none"> • Definitions, symptoms, diagnosis and dietary management in special reference to food allergy. 	
45		PAPER 14	<ol style="list-style-type: none"> 1. Therapeutic diet chart preparation for Diarrhoea (Case specific). 2. Therapeutic diet chart preparation for Constipation (Case specific). 3. Therapeutic diet chart preparation for Ulcer (Case specific). 4. Therapeutic diet chart preparation for Liver cirrhosis (Case specific). 5. Therapeutic diet chart preparation for Anaemia (Case specific). 	
46			PAPER 15	<ol style="list-style-type: none"> 1. Assessment of Nutritional Status and Surveillance: <ul style="list-style-type: none"> • Direct Nutritional status assessment of human groups - Biochemical, Biophysical and anthropometric methods. • Indirect assessment: Secondary sources of community health data.
47	<ol style="list-style-type: none"> 2. Concept of Surveillance systems: <ul style="list-style-type: none"> • Role of international and national organizations and agencies (WHO, FAO, UNICEF, CARE, NIN, CFTRI, ICMR). 			
48	<ol style="list-style-type: none"> 3. Communication in Nutrition and Health Education: <ul style="list-style-type: none"> • Type, process and media of communication. • Interpersonal, Group and Mass communication. • Importance and relevance of Information, Education and communication (IEC) in Nutrition and Public Health. 			
49	<ol style="list-style-type: none"> 4. National Nutritional Intervention Programmes: <ul style="list-style-type: none"> • Objective, Target group, Scheme details - Integrated Child Development Services (ICDS), Mid Day Meal Programme (MDMP), Vit A prophylaxis Prophylaxis programme, Anemia prophylaxis programme, Iodine deficiency disorders control programme. • Concept on public distribution system. 			
50	<ol style="list-style-type: none"> 5. Immunization Programme: <ul style="list-style-type: none"> • Preliminary concept of immunity-innate, acquired, active and passive immunity. • Immunization: National Immunization schedule for children and adults, Immunization for foreign travelers. 			

51	DC 8: Nutritional Assessment Programme	PAPER 16	<p>1. Anthropometric measurement of Weight for age, height for age, weight for height and its comparison with reference value.</p> <p>2. Determination of BMI and comments on results.</p> <p>3. Measurement of circumference of chest, upper arm, waist - hip ratio.</p> <p>4. Measurements of fat using skin fold thickness.</p>
52	DC 9: Epidemiology and Community Nutrition	PAPER 17	<p>1. Concept of population and Community:</p> <ul style="list-style-type: none"> • Definition and characteristic features of population • Concept of community and community health, types of community. • Factors affecting health of community – environmental, social, political, cultural and economical.
53			<p>2. Community water and waste management:</p> <ul style="list-style-type: none"> • Source of water, safe drinking water, etiology and effects of toxic agents. • Microbial examination of water, Water-Potability test (MPN Test). • Sewage disposal and treatment.
54			<p>3. Nutritional problems in community:</p> <ul style="list-style-type: none"> • Etiology, Clinical signs and management- Kwashiorkor, Marasmus, Goiter and Nutritional anemia.
55			<p>4. Concept of Disease:</p> <ul style="list-style-type: none"> • Endemic, Epidemic, Pandemic, Acute and Chronic, Incubation period and Quarantine period. • Communicable and Non-communicable diseases, Zoonosis, Epizootic and Enzootic
56			<p>5. Principles of Epidemiology:</p> <ul style="list-style-type: none"> • Epidemiological study-Descriptive and Analytical. • Factors that Influence the Epidemiology of Disease. • Rate of Disease in a Population-Attack rate, Mortality and Morbidity rate, Prevalence and Incidence of a disease.
57			PAPER 18: Practical
58	DC 10: Therapeutic Diet – II	PAPER 19:	<p>Etiology, clinical features and dietary management:</p> <ul style="list-style-type: none"> • Weight Imbalances: Underweight, Overweight and Obesity.
59			<p>2. Eating disorder:</p> <ul style="list-style-type: none"> • Concept of Anorexia nervosa and bulimia.
60			<p>3. Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management:</p> <ul style="list-style-type: none"> • Diabetes mellitus, Diabetes insipidus and Cancer
61			<p>4. Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management:</p> <ul style="list-style-type: none"> • Hypertension. • Renal diseases (Nephritis, Glomerulonephritis, Uremia, Kidney failure, Nephrosis).
62			<p>5. Diseases of the cardio vascular system:</p> <ul style="list-style-type: none"> • Brief review of lipoproteins (TC, TG, LDL, HDL, VLDL) • Atherosclerosis–etiology and risk factor. • Dietary care: Ischemic heart disease, arteriosclerosis and hyperlipidemia.

63		PAPER 20: Practical	<ol style="list-style-type: none"> 1. Therapeutic diet chart preparation for Diabetes mellitus (Case specific). 2. Therapeutic diet chart preparation for Hypertension (Case specific). 3. Therapeutic diet chart preparation for Atherosclerosis (Case specific). 4. Therapeutic diet chart preparation for Obesity (Case specific). 5. Therapeutic diet chart preparation for Renal diseases (Case specific). 	
64	DC 11. Food Microbiology	PAPER 21	1. History of Microbiology: <ul style="list-style-type: none"> • Microorganisms involved in food fermentation and their role. 	
65			2. Food contamination: <ul style="list-style-type: none"> Primary sources of food contamination 	
66			3. Control of microorganisms: <ul style="list-style-type: none"> • Physical and chemical methods used in sterilization and disinfection. • Uses of high and low temperature, dehydration, freezing, freeze drying, irradiation and use of preservatives. 	
67			4. Nutrition and culture of microorganisms: <ul style="list-style-type: none"> • Microbial nutrition-Types of culture media, Methods of pure culture and sub culture. • Bacterial growth-Extrinsic and intrinsic factors affecting growth. 	
68			5. Food infections: <ul style="list-style-type: none"> • Bacterial food infections-Salmonellosis, Shigellosis and Listeriosis. • Food poisoning (Staphylococcal and Botulism) - Symptoms, mode of transmission and methods of prevention, Concept of aflatoxin intoxication. 	
69			PAPER 22: Practical	<ol style="list-style-type: none"> 1. Preparation of liquid (broth) and solid media Slant and Stab. 2. Microbiological techniques: Pure culture technique-Spread plate, Pour plate and Streak plate; Staining-Simple stain, Differential stain (Gram stain). 3. Biochemical tests for characterization: (catalase, nitrate-reduction, indole production, methyl red and voges-Proskauer test), Sugar fermentation test, IMViC reaction. 4. Microbiological examination of milk (Methylene blue reduction test).
70	DC 12: Medical Microbiology	PAPER 23	1. Normal microflora of the human body and host pathogen interaction: <ul style="list-style-type: none"> • Predominant normal microbial flora of human body: Skin, Respiratory Tract, gastrointestinal Tract, Urinogenital Tract. • Host pathogen interaction: Definitions - Infection, Invasion, Pathogen, Pathogenicity, Virulence, Toxigenicity, Carriers and their types, Opportunistic infections, Nosocomial infections. Transmission of infection. 	
71			2. Bacteria and Bacterial diseases: <ul style="list-style-type: none"> • Bacterial structure: Cell walls of Gram positive and Gram negative, Bacteria capsule, Flagella-composition, structure and types, Cell membrane-structure, composition and Properties, Bacterial endospore. • Bacterial Diseases: Name of pathogen, symptoms, pathogenesis, mode of action & preventive measures of following diseases: Typhoid, Cholera and Tuberculosis, Tetanus, and Ulcer by Helicobacter pylori. 	
72			3. Viruses, viroids, prions: <ul style="list-style-type: none"> • General characteristics of viruses, structure, isolation, cultivation and identification of viruses, viral multiplication, lytic and lysogenic phages (lambda phage), • Concept of viroids and prions. • Viral Diseases: Name of pathogen, symptoms, pathogenesis, mode of action & preventive measures of following diseases: Polio, Herpes, Hepatitis, Rabies and AIDS. 	

73			4. Antibiotic and chemotherapeutic agents: Sulfur drugs, Antibiotics and their classification, Mode of action, antibiotic assay and sensitivity test	
74		PAPER 24: Practical	1. Preparation of medically important culture media: EMB Agar, McConkey agar, Mannitol salt agar, Triple Sugar Iron agar. 2. Study of bacterial flora of skin by swab method. 3. Isolation and enumeration of bacteria from rotten food- bread and carrot. 4. Antibiotic Sensitivity Test by disc-diffusion method. 5. Detection and enumeration of indicator and index microorganisms for water borne pathogens (total enterobacteria, total coliform).	
75	DC 13: Nutraceutical and Functional Food	PAPER 25	1. Nutraceutical and Health: ● Concept, classification, sources and importance of nutraceutical. ● Role of nutraceutical on diabetes, obesity and cardiovascular diseases.	
76			2. Oxidative stress and Nutraceutical: ● Concept of oxidant, antioxidant, oxidative stress and nutraceutical on oxidative stress.	
77			3. Dietary fibre, Prebiotics and Probiotics: ● Classification and nutritional significance of dietary fibre. ● Prebiotics-Concept, important features, role on health. ● Probiotics in fermented milk product and non milk products.	
78			4. Enhancing the nutritional quality of foods: ● Fundamentals of Germination and Fermentation.	
79			5. Genetically modified food and Food fortification: ● Concept, available genetically modified (GM) foods in India, techniques for GM food preparation, steps adopted for acceptability of GM food. ● Concept, importance and application of food fortification.	
80		PAPER 26: Practical	Submission of Short Review / Term paper on topic under broad area of Nutraceutical / Prebiotics / Probiotics / Genetically modified food / Food fortification / Any topic on Nutrition and Public Health (Points to be focused-Introduction, Objective, Review of Literature, Summary and conclusion, References).	
81	DC 14: Food Safety and Standards	PAPER 27	1. Food additive and food safety: ● Concept of food safety, factors affecting food safety. ● Food safety measures: basic concept of HACCP, Safe food handling practices and storing food safely. ● Food additives-various types and their effects on health.	
82			2. Food security: ● Concept of food security, factors affecting food security.	
83			3. Food adjuncts and preserved products: ● Spices (Chilies, Turmeric, Garlic and Ginger), use and nutritional aspect. ● Jams, Jellies, Pickles, Syrup, Squashes–uses and nutritional aspects.	
84			4. Food adulterants: ● PFA definition of food adulteration, adulterants in commonly consumed food items. ● Common adulterants in food and their effects on health. ● Common household methods to detect adulterants in food,	

85			<p>5. Food laws and regulatory authority:</p> <ul style="list-style-type: none"> ● 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 	
86		: PAPER 28	<ol style="list-style-type: none"> 1. Detection of vanaspati in Ghee. 2. Detection of vanaspati in Butter. 3. Detection of Khesari flour in Besan. 4. Detection of Argemone oil in Edible oil. 5. Detection of Metanil yellow in Turmeric. 	