

**DEPARTMENT OF FOODS AND
NUTRITION**

M.Sc. (NEP) – REGULAR

(DIETETICS)

NEP STRUCTURE FOR FOODS AND NUTRITION POSTGRADUATE COURSE

(MAJOR: DIETETICS - GRANT IN AID PROGRAMME)

Semester I		
COURSE TYPE	Dietetics	Credit
MAJOR	Essentials of Human Nutrition	4 (4+0)
MAJOR	Advances in Food Science	4 (3+1)
MAJOR	Advanced Nutritional Biochemistry	4 (4+0)
MAJOR (BKS)	Food System and Sustainability	4 (4+0)
MDC	Advanced Physiology	4 (4+0)
SEC	Integrated Management of Acute Illness	2 (2+0)
	TOTAL	22
Semester II		
MAJOR	Research Methods in Dietetics	4 (3+1)
MAJOR	National Nutrition Programs	4 (4+0)
MAJOR	Advances in Therapeutic Nutrition	4 (3+1)
MAJOR (Vocational)	Applied Dietetics	4 (1+3)
MDC	Health Promotion and Advocacy	4 (3+1)
SEC	Gut, Microbiome and Health	2 (2+0)
	TOTAL	22

SEMESTER – I (DIETETICS)

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
YEAR	I	Course Type: Major Course Number: Course Title: Essentials of Human Nutrition	Credit	4 (4+0)	
Semester	I		Hours	60	
OBJECTIVES	1. To acquire insights into recent advancements on the influence of nutrients on growth, development and health. 2. To gather latest information on the biological functions of macro and micronutrients and how they affect food and nutrition guidelines. 3. To understand the function of nutrients as defined by their chemistry, interrelations among nutrient functions, and mechanistic approaches in the analysis of nutrient disease relationships, and recent advances in the basic sciences related to nutrient function. 4. To gain proficiency with health and nutrition evaluation indicators and comprehend their significance and interpretations. 5. To develop analytical skills by understanding the newer insights available in published, peer reviewed literature, case studies, Position Statements and public policy documents.				
COURSE CONTENT / SYLLABUS					
UNIT-I	Energy				08 hrs.
	a) Central control of energy: CNS regions involved in the regulation of food intake, neurotransmitters and cells involved in appetite regulation b) Non Homeostatic control of energy intake: difference between homeostatic and non homeostatic CNS signals, Neurotransmitters involved c) Energy expenditure: Components of energy expenditure (BMR , TEF & Physical activity) d) Physical Activity guidelines, tools for data collection – calculations of Energy Expenditure e) Under nutrition & Overweight/ Obesity: Definition, clinical and Biochemical changes in metabolism and adaptations f) Recent advances for estimating RDA for energy intake based on ICMR-NIN guidelines for Indians.				
UNIT-II	Macronutrients – Carbohydrates				10 hrs.
	a) Carbohydrates i. Review of Structure, classification and food sources of carbohydrates, sugar alcohols, Digestion, absorption transport mechanisms and cellular uptake ii. Assessment of glucose homeostasis iii. Fructose metabolism and health effects iv. Glycemic Index, Glycemic Load v. RDA for Sugars & Carbohydrates b) Fibre i. Definition and Classification of different types of fibre including resistant starch ii. Physiological effects of dietary fibre on energy metabolism,				

	iii. CVD, insulin response, Colon Cancer c) Insulin Resistance (IR) and Diabetes Mellitus (DM) i. Definition of IR & type 2 DM ii. Action of insulin iii. Understanding the demands of energy by the cell via AMP activated protein kinase and silent information regulator iv. Diagnostic tests to evaluate IR & DM v. Metabolic syndrome & DM vi. Low birth weight and NCD's (Altered programming pathways and their consequences)	
UNIT-III	Lipids an Overview a) Review of Digestion, absorption, transport of lipids and delivery to cells b) Different classes of lipids and lipid and apolipoprotein composition of different lipoproteins c) Role of gut in lipid homeostasis d) Endogenous pathway of lipid metabolism e) Pathogenesis of CVD & role of dietary fat on serum lipoproteins f) Diabetic dyslipidemia g) Lipids & Regulation of gene expression h) Essential fatty acids, Eicosanoids, functions, biological significance especially in inflammation i) trans fatty acid & its health implications, transfat free India j) Human requirements, assessment indicators and guidelines for heart health k) Discussion on Review/meta analysis of the papers on omega 3 fatty acids, trans fatty acids, DHA l) Recent advances for estimating RDA for visible fat intake based on ICMR-NIN guidelines for Indians.	10 hrs.
UNIT-IV	Proteins a) Review of Basic concepts, digestion, absorption, transport of proteins, Structure of proteins & classification of amino acids b) Fate of absorbed amino acids, synthesis and degradation process c) Calorie restriction, protein metabolism and BCAA d) Protein requirements and quality of proteins: Methods used to determine human protein requirements e) Non protein compounds: their biological importance f) Recent advances for estimating RDA for protein based on ICMR-NIN guidelines for Indians.	10 hrs.
UNIT-V	Fat Soluble Vitamins a) Vitamin A i. Vitamers and International Units ii. Metabolism and storage of vitamin A and pro vitamin A carotenoids iii. Factors affecting carotenoids bioavailability and role of carotene dioxygenase iv. Plasma retinol binding protein v. Metabolic functions of Vitamin A & Carotenoids vi. The antioxidant function of carotenoids vii. Newer insights in Vitamin A fortification and supplementation viii. Vitamin A, Growth, Infection, morbidity and Immunity ix. Deficiency, Assessment, Indicators & RDA x. Toxicity of Vitamin A & teratogenicity xi. Interactions of vitamin A with drugs and other nutrients b) Vitamin D i. Vitamers and International Units	08 hrs.

	ii. Absorption and Metabolism iii. Synthesis of Vitamin D in the skin iv. Metabolism to Calcitriol v. Regulation of Vitamin D metabolism & biological functions vi. Vitamin D deficiency: Rickets and Osteomalacia vii. Strategies to combat Vitamin D deficiency viii. Newer perspectives of Vitamin D in Human Nutrition ix. Interaction with drugs and other nutrients x. Deficiency, assessment, indicators for Vitamin D status xi. Toxicity of Vitamin D xii. Osteoporosis: Causes, consequences & guidelines for management xiii. Discussion: Role of Vitamin D beyond bone health, observations emerging from review and meta analysis c) Vitamin E i. Vitamers and units of activity ii. Absorption and metabolism iii. Metabolic functions of vitamin E iv. Vitamin E deficiency, requirements and assessment indicators v. Toxicity vi. Interaction with other nutrients d) Vitamin K i. Vitamers ii. Dietary sources, bacterial synthesis and metabolism iii. Metabolic functions of vitamin K iv. Other vitamin K dependent proteins v. Vitamin K deficiency and requirements vi. Vitamin K and neonates vii. Toxicity and drug interactions	
UNIT-VI	Water Soluble Vitamins: Ascorbic Acid & B Complex vitamins (B1, B2, B3, B6, B12, Folic acid, Biotin, Pantothenic acid) a) Historical perspective /Landmarks b) Metabolism: digestion, absorption, transport, utilization, excretion c) Metabolic functions d) Fortification and Supplementation e) Deficiency & requirements f) Toxicity & drug interactions g) Assessment indicators	06 hrs.
UNIT-VII	Minerals a) Minerals (Calcium, Phosphorous, Iron, Iodine, Copper, Zinc and Fluoride) i. Sources, digestion, absorption, transport and utilization ii. Factors influencing bioavailability iii. Homeostasis iv. Metabolic functions v. Deficiency & Requirements vi. Toxicity & drug interactions vii. Assessment indicators & RDA viii. Micronutrient interactions ix. Success stories of fortification: Vehicles, form, dose, etc x. Iron, Physical work capacity and cognition	08 hrs.

	xi. Iodine, growth & cognition xii. Zinc, growth & diarrhoea xiii. Deficiency, Assessment, Indicators xiv. Toxicity levels xv. Supplementation, fortification and dietary approaches to combat IDA & IDD xvi. Discussion: Observations emerging from Review papers/Meta-analysis, technical report on Micronutrient malnutrition	
	b) Minerals (Sodium and Potassium) i. Role of Sodium and Potassium in electrolyte balance ii. Role of Sodium in hypertension iii. Deficiency, assessment , indicators iv. WHO guidelines on Sodium & Potassium v. Discussion: WHO shake the salt habit vi. Antioxidants: Vitamins, Minerals, Enzyme – mechanism and clinical implications	

REFERENCES

1.	Introduction to Human Nutrition, second edition. Edited by Michael J Gibney, Susan A Lanham-New, Aedin Cassidy, Hester H Vorster, Wiley Blackwell, USA, ISBN 978-1-4051-6807-6, 2009
2.	Nutrition in Public Health. Principles, policies and practice. 2 nd edition. Arlene Spark, Lauren M Dinour, Janel Obenchain. CRC press, Taylor & Francis group, USA ISBN 13:978-4987-6661-6, 2015.
3.	Human Energy requirements (2004). Report of a joint FAO/WHO/UNU Expert consultation, Rome,
4.	WHO report on Global action plan for the reduction of non communicable diseases, 2013, Geneva
5.	Susan A. Lanham-New, Ian A. MacDonald and Helen M. Roche, Nutrition and Metabolism (The Nutrition Society Textbook), Second Edition- 2011. Wiley-Blackwell.
6.	Martha H. Stipanuk and Marie A. Caudill, Biochemical, Physiological, and Molecular Aspects of Human Nutrition, Third Edition- 2013. Elsevier
7.	Nutrient Requirements & Recommended Dietary Allowances for Indians (1990, Reprinted 2008) 2nd Edition - 2010) By B.S. Narasinga Rao, B. Sivakumar)
8.	WHO (2016) SHAKE the Salt habit The SHAKE TECHNICAL PACKAGE for Salt Reduction.
9.	2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease. A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines
10.	Diabetes and Hypertension: A Position Statement by the American Diabetes Association; 2017
11.	Noncommunicable Diseases Progress Monitor 2017. World Health Organization; 2017
12.	Treatment of Diabetes in Older Adults: An Endocrine Society Clinical Practice Guideline; 2019
13.	http://www.framinghamheartstudy.org/
14.	The North Karelia Project: Cardiovascular disease prevention in Finland. Glob Cardiol Sci Pract. 2018(2):13
15.	Global Action Plan for the Prevention and Control of Noncommunicable diseases 2013-2020. World Health Organization; 2013
16.	https://fssai.gov.in/cms/eat-right-india.php
17.	Healthy diets for all: A key to meeting the SDGs. Global Panel on Agriculture and Food Systems for Nutrition. Policy Brief No.10; 2017
18.	Large Scale Food Fortification in India- The Journey So Far and Road Ahead. FSSAI 2017
19.	Cross M and MacDonald B. Nutrition in Institutions. John Wiley & Sons; 2009
20.	Hill N, Fallowfield J, Price S and Wilson D. Military nutrition: maintaining health and rebuilding injured tissue. Philos Trans R Soc Lond B Biol Sci. 2011, 366(1562):231-240
21.	Heer M, Titze J, Smith SM and Baecker N. Nutrition, Physiology and Metabolism in Spaceflight and Analog Studies. Springer; 2015
22.	Space Food and Nutrition. An Educator's Guide with Activities in Science and Mathematics. NASA; 1999
23.	Bhide G and Mandlik S. (2018), Nutritional Guidelines for sportspersons Jaypee Brothers Medical

	Pub;ishers Pvt. Ltd, New Delhi, India
24.	Dan Benardot. Advanced Sports Nutrition 2 nd Edition; 2018
25.	Nutrition for Athletes, A practical guide to eating for health and performance, Prepared by the Nutrition Working Group of the International Olympic Committee based on an International Consensus Conference held at the IOC in Lausanne in October 2010 Revised and Updated in April 2012
26.	https://www.unicef.org/nutrition/index_emergencies.html
27.	The management of nutrition in major emergencies. WHO, UNHCR, IFRC, WFP; 2000
28.	Guideline on Sodium intake for adults and children. WHO; 2012
29.	Guideline on Potassium intake for adults and children. WHO; 2012
	Journals
	1. American Journal of Clinical Nutrition 2. British Journal of Nutrition 3. Human Nutrition & Dietetics 4. Journal of Nutrition 5. European Journal of Clinical Nutrition 6. Indian Journal of Medical Research 7. Circulation

Syllabus of Courses

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M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)						
Year	I	Course Type: MAJOR			Credit	4 (3+1)
Semester	I	Course Number: Course Title: Advances in Food Science			Hours	45
OBJECTIVES:		1. Discuss advanced processing techniques and product development approaches in plant-based foods (cereals, millets, pulses, fruits and vegetables). 2. Explain processing technologies, quality evaluation and functional applications of animal-based foods (milk, meat, poultry, fish and eggs). 3. Examine the nutritional, functional and technological roles of oils, nuts and superseeds in food systems. 4. Evaluate processing, quality and regulatory aspects of alcoholic, non-alcoholic and specialty beverages (tea, coffee, cocoa/chocolate). 5. Critically appraise emerging trends, sustainability issues and future innovations in food science and technology.				
COURSE CONTENT / SYLLABUS						
UNIT-I		Advanced Processing of Plant-Based Foods a) Cereals & Millets: Parboiling, malting; low GI, gluten-free and multigrain formulations; nutritional significance and global perspective b) Pulses & Legumes: Milling, germination, fermentation; functionality (protein isolates, concentrates, hydrolysates); applications in plant-based foods and meat analogues. c) Fruits & Vegetables: Post-harvest physiology; advanced preservation (HPP, irradiation, MAP); nutrient retention; by-product and waste utilization.				09 hrs
UNIT-II		Milk and Dairy Innovations a) Structure and composition of milk. b) Processing: pasteurization, homogenization, UHT, membrane processing. c) Innovations: probiotic yogurts, functional dairy beverages, lactose-free products, whey-based foods. d) Casein, whey proteins and bioactive peptides in health promotion.				07 hrs
UNIT-III		Meat, Poultry, Fish and Eggs a) Meat & Poultry: Composition; post-mortem changes; processing (chilling, freezing, curing, smoking, canning, irradiation); value-added products (RTE meats, sausages); microbial safety & HACCP. b) Fish: Freshness characteristics; spoilage (microbiological, physiological, biochemical); preservation and processing; functional products (omega-3 enriched oils); cooking methods. c) Eggs: Quality evaluation & grading; deterioration and storage; processing (freezing, drying); effect of heat on proteins; foaming properties (beating, stability, influencing factors).				10 hrs
UNIT-IV		Oils, Nuts and Seeds a) Extraction, refining and processing of edible oils. b) Superseeds: Chia, flax, hemp, sunflower, pumpkin, watermelon seeds and basil– composition, bioactive compounds (omega-3 fatty acids, lignans, polyphenols, plant proteins), health benefits and applications in bakery, beverages and nutraceutical products. c) Oleogels: preparation, properties and applications in fat replacement.				06 hrs

UNIT-V	Beverages	08 hrs
	a) Alcoholic Beverages: fermentation (beer, wine, spirits), maturation, innovations and health concerns. b) Non-Alcoholic Beverages: fortified, probiotic, sports and energy drinks and plant-based alternatives. c) Processing of Specialty Beverages: i. Tea – types (green, black, oolong, herbal), withering, rolling, fermentation, drying and quality evaluation. ii. Coffee – harvesting, fermentation, roasting, grinding, brewing methods and flavour chemistry. iii. Cocoa & Chocolate – fermentation, drying, roasting, conching, tempering and applications in functional foods. d) Nutraceutical and functional beverage trends. e) Quality, safety and regulatory aspects of beverages.	
UNIT- VI	Emerging Trends and Future of Food Science	06 hrs
	a) Climate-resilient crops and novel food sources (e.g. insects, algae, lab-grown meat). b) Sustainability and circular economy in food systems. c) Future innovations: 3D food printing, smart/intelligent packaging, AI in food systems. d) Global perspectives on functional foods and nutraceuticals.	
REFERENCES		
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4.	Fellows, P. (2017). Food processing technology: Principles and practice (4th ed.). Woodhead Publishing.	
5.	Fennema, O. R. (2010). Fennema’s food chemistry (4th ed.). CRC Press.	
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19.	WHO & FAO. (2019). Sustainable healthy diets: Guiding principles. World Health Organization.	
20.	Yadav, B. S., & Yadav, R. B. (2018). Pulses: Processing and product development. New India Publishing Agency.	
Journals		
1.	Food Chemistry (<i>Elsevier</i>)	
2.	Journal of Food Science and Technology (<i>Springer / AFSTI, India</i>)	
3.	Comprehensive Reviews in Food Science and Food Safety (<i>Wiley, Institute of Food Technologists</i>)	

4.	Critical Reviews in Food Science and Nutrition (<i>Taylor & Francis</i>)
5.	Journal of Functional Foods (<i>Elsevier</i>)
6.	Meat Science (<i>Elsevier</i>)
7.	LWT – Food Science and Technology (<i>Elsevier</i>)
8.	Trends in Food Science & Technology (<i>Elsevier</i>)
9.	Journal of Dairy Science (<i>Elsevier</i>)
10.	Food Chemistry (<i>Elsevier</i>)
11.	Journal of Food Science and Technology (<i>Springer / AFSTI, India</i>)
12.	Comprehensive Reviews in Food Science and Food Safety (<i>Wiley, Institute of Food Technologists</i>)
13.	Critical Reviews in Food Science and Nutrition (<i>Taylor & Francis</i>)

For Practical

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002			ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)						
Year	I	Course Type: Major Course Number: Course Title: Advances in Food Science			Credit	4 (3+1)
Semester	I				Hours	30
COURSE CONTENT / SYLLABUS						
UNIT-I	Fermentation of Foods					04 hrs
	a) Preparation of fermented products from different food groups (e.g., idli/dosa batter, curd/yogurt, sauerkraut/pickled vegetables, milk).					
UNIT-II	Milk and Milk Products					
	a) Effect of heat on milk b) Effect of heat and acid on the proteins of milk c) Effect of added substance on the stability of milk					
UNIT-III	Egg Quality Evaluation, Egg Foam and Culinary Applications					12 hrs
	a) Candling and measurement of yolk index and Haugh unit b) Stages of egg foam formation. c) Preparation of soufflé, meringue, sponge cake, or fluffy omelette. d) Study of factors influencing foam stability (sugar, acid, fat).					
UNIT-IV	Texturized Foods / Meat Alternatives					04 hrs
	a) Preparation and sensory evaluation of a dish using texturized vegetable proteins (soy chunks, soy nuggets, meat analogue).					
UNIT-V	Fruits & Vegetables					04 hrs
	a) Minimal processing and preparation of a functional product (e.g., fruit leather, dehydrated vegetable chips, candied fruits)					

Syllabus of Courses

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M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
YEAR	I	Course Type: Major Course Number: Course Title: Advanced Nutritional Biochemistry		CREDIT	4 (4+0)
Semester	I			HOURS	THEORY -60
OBJECTIVES:		1. To understand the delivery and function of cellular nutrients and metabolism in human body. 2. To understand the major metabolic pathways of various nutrients, their regulatory mechanisms in normal, sub clinical and clinical conditions. 3. To apply the knowledge of biochemistry and clinical biochemistry to human nutrition and dietetics. 4. To develop the ability and skills to understand metabolic aberrations in various diseases and communicate scientifically in the form of oral presentation using ICT			
COURSE CONTENT / SYLLABUS					
UNIT-I		Enzymes (Kinetics and Control), Oxidative Phosphorylation and Molecular Endocrinology a) Enzymes i. Classification of enzymes ii. Kinetics: role of various modulators iii. Enzyme specificity: the active site and mechanism of catalysis iv. Coenzymes: structure and function v. Inhibition of enzymes & Clinical significance vi. Allosteric control and regulation of enzyme activity vii. Clinical applications of enzymes b) Oxidative Phosphorylation i. Electron transfer reactions in mitochondria ii. ATP synthesis iii. Regulation of oxidative phosphorylation c) Molecular Endocrinology i. Hormonal cascade system ii. Biosynthesis, inactivation and degradation of hormones iii. Hormonal action at the cellular level iv. Signalling Pathways, Signal transduction, Protein Kinase systems, Secondary Messengers v. Neurotransmitters			9 hrs.
UNIT-II		Carbohydrate Metabolism a) Structure and properties of carbohydrates b) Digestion, absorption and intestinal transport of carbohydrates c) Transport of glucose across various cells d) Carbohydrate Metabolism: major metabolic pathways and their regulation at various levels (Enzyme, Hormone, Organ) i. Glycolysis ii. TCA Cycle iii. Gluconeogenesis (coordinated regulation of glycolysis and gluconeogenesis) iv. Glycogenesis v. Glycogenolysis (coordinated regulation of glycogen synthesis and breakdown)			15 hrs.

	vi. HMP Shunt vii. Uronic acid pathway viii. Glycoconjugates: Glycoproteins, Proteoglycans and Glycolipids ix. Clinical Correlations i) Glycogen storage diseases ii) Lactose intolerance iii) Galactosemia iv) Diabetes mellitus v) Lactoacidosis vi) Pyruvate kinase deficiency and hemolytic anemia vii) Hypoglycemia and alcohol intoxication viii) Essential fructosuria and fructose intolerance ix) Glucuronic acid: significance of glucuronide formation x) Glucose 6 phosphate dehydrogenase and erythrocytes	
UNIT-III	Lipid metabolism a) Structure and properties of lipids b) Digestion, mobilization and transport of lipids (Lipoprotein metabolism) c) Lipid metabolism: i. Utilization of fatty acids for energy production ii. Synthesis of fats iii. Storage of fatty acids as triacylglycerols iv. Cholesterol metabolism v. Prostaglandins and thromboxanes vi. Phospholipids vii. Sphingolipids viii. Clinical correlations ix. Leptin and obesity x. Genetic deficiencies in carnitine palmitoyl transferase xi. Genetic deficiencies in the acyl CoA dehydrogenases xii. Diabetic ketoacidosis xiii. Lipoproteinemias xiv. Fatty liver xv. Atherosclerosis	15 hrs.
UNIT-IV	Amino acid oxidation and production of urea; Nucleotides and Nucleic Acids a) Amino acid oxidation and production of urea i. Structure and properties of amino acids ii. Metabolic fates of amino groups iii. Nitrogen excretion and the urea cycle iv. Pathways of amino acid degradation v. Clinical correlations i) Deficiencies of urea cycle enzymes ii) Phenylketonuria iii) Disorders of tyrosine metabolism iv) Hyperhomocysteinemia and atherogenesis v) Inborn errors of metabolism b) Liver Biochemistry i. Primary function ii. Integrating Carbohydrate Metabolism, Protein Metabolism & Lipid Metabolism iii. Biotransformations c) Nucleotides and Nucleic Acids i. Biosynthesis and degradation of purine and pyrimidine nucleotides ii. DNA metabolism: replication, mutation, repair and recombination iii. RNA metabolism iv. Clinical correlations	15 hrs.

	i) Lesch–Nyhan syndrome ii) Gout iii) Hereditary Orotic Aciduria iv) Mutations of mitochondrial DNA: aging and degenerative diseases v) Mutations and the etiology of cancer	
UNIT-V	Protein Metabolism	6 hrs.
	a) Structure and properties of proteins b) The process of protein biosynthesis : Gene expression, c) Transcription, Translation, Post-translational modification. d) Inhibitors of protein biosynthesis e) Clinical correlations i. Thalassemia ii. Cystic fibrosis iii. Haemoglobin & Bile	
REFERENCES		
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3.	Rodwell VW, Bender D, Botham KM, Kennley PJ, Weil PA. Harper’s Biochemistry Illustrated Biochemistry. 31st Edition, 2018. Published by McGraw Hill Education.	
4.	Champe PC & Harvey RA. Lippincott’s Illustrated Reviews on Biochemistry. 6th edition, 2013. Published by Lippincott Williams & Wilkins, Philadelphia, USA	
5.	Jain J L, Jain Sunjay, Nitin Jain. Fundamentals of Biochemistry, 2012. Published by S. Chand & company, New Delhi	
6.	Moran, L, Horton R, Scrimgeour G, Perry M. Principles of Biochemistry, 5th Edition, 2012. Person Publication, US	
7.	Kuchel PW and Ralston GB. Schaum’s outlines of Biochemistry. 3rd edition, 2011. Published by Tat McGraw Hill, New Delhi.	
8.	Denise R. Ferrier, Biochemistry (Lippincott’s Illustrated Reviews Series) Seventh Edition 2017	
9.	Jeremy M. Berg, Lubert Stryer, John L. Tymoczko and Gregory J. Gatto, Biochemistry- Ninth Edition 2019	
10.	Stryer L, Berg J, John LT. Biochemistry, 8th Edition, 2015. Published by WH Freeman and Co.	
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Syllabus of Courses

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M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)						
YEAR	I	Course Type: Major (BKS) Course Number: Course Title: Food Systems and Sustainability		CREDIT	4 (4+0)	
Semester	I			HOURS	60	
OBJECTIVES:						
1. To familiarize students with the structure and functioning of food systems at global, national, and local levels. 2. To build conceptual clarity on evolving paradigms of food security, nutrition security, food sovereignty, and food systems transformation. 3. To equip students with skills to measure and interpret dietary diversity using standard tools. 4. To promote critical understanding of sustainability dimensions within food systems. 5. To provide an overview of policy and governance frameworks in India and intersectoral coordination in advancing food and nutrition security. 6. To develop systems thinking and analytical skills for mapping food system pathways. 7. To encourage evaluation of innovative and transformative approaches for sustainable and planet healthy food system.						
COURSE CONTENT / SYLLABUS						
UNIT-I		Introduction to Sustainable Food Systems a) Conceptual Foundations i. Definition of Food Systems – Scope and importance. ii. Core Components – Production, processing, distribution, consumption, and waste. iii. Drivers and Outcomes – Biophysical, socioeconomic, cultural, and policy drivers shaping outcomes. iv. The Food System Wheel – Integrative framework for understanding interactions. b) Governance and Policy Dimensions Role and Engagement of Key Ministries in India – Ensuring availability, access, affordability, diversity, sustainability, and resilience of food systems: i. Ministry of Agriculture & Farmers Welfare (MoAFW) – Production, crop diversification, sustainability. Ministry of Consumer Affairs, Food & Public Distribution A. Fundamental concepts and the role of sanitation in food quality and public health. i. (MoCAF&PD) – PDS, procurement, affordability. ii. Ministry of Health & Family Welfare (MoHFW) – Nutrition programs, food safety (FSSAI). iii. Ministry of Women & Child Development (MoWCD) – ICDS, POSHAN Abhiyaan, women and child nutrition. iv. Ministry of Food Processing Industries (MoFPI) – Food transformation, fortification, value addition. v. Ministry of Rural Development (MoRD) – Livelihoods, SHGs, wage support for food access. vi. Ministry of Education (MoE) – Mid-Day Meals (PM-POSHAN), nutrition education. vii. Ministry of Environment, Forest & Climate Change (MoEFCC) – Climate, biodiversity, sustainability of production systems. viii. NITI Aayog – Convergence, monitoring, policy think-tank role.			15 hrs.	

	Perspectives, Frameworks, and Transformation of Food Systems a) Perspectives on Food Systems i. Global and National Food Systems – Structures, policies, governance, and trade. ii. Industrial Food Systems – Characteristics, opportunities (efficiency, reach), risks (ultra-processed foods, health, environmental costs). iii. Local Food Systems & Nutrition Anthropology – Cultural traditions, indigenous foods, seasonal diets, community-driven solutions. iv. Tailoring Food System Investments – Context-specific approaches for resilience and sustainability.	
UNIT-II	Food Systems Transformation and Sustainability a) Evolution of Concepts – Food Security → Nutrition Security → Food Sovereignty → Food Systems Transformation. b) Healthy Diets for All – Foundation of well-being and sustainable societies. c) Measurement Tools – HDDS, WDDS, MAD for assessing diet quality and adequacy. d) Sustainability Challenges – e) Environmental: Climate change, biodiversity, land, water, GHG emissions (food miles) f) Economic: Livelihoods, fair pricing, circular economy, value chains g) Social & Equity: Gender, indigenous knowledge, tribal food systems h) Nutrition: Safe diets, Dietary diversity, sustainable diets, food loss and waste i) Value added Sustainable Food system Development j) Global Relevance to SDGs Indian Examples a) National level: NFSA (2013), POSHAN Abhiyaan, Mid-Day Meal Scheme. b) Industrial: Rise of processed snack foods and FoPNL regulation by FSSAI. c) Local: Tribal diets in Gujarat and Assam; millet revival in Karnataka and Odisha. d) Transformation initiatives: International Year of Millets (2023), Eat Right India movement. Pathways for Transformation a) Climate-smart agriculture, sustainable intensification b) Urban agriculture, school gardens, food forests c) Investment in R&D for climate-resilient crops and systems - Flood- & drought-tolerant rice, Dual-stress rice with efficiency gains, Heat-tolerant, disease-resistant wheat, d) Education and behavior change among consumers – food purchasing and consumption behaviour, Sustainability-Oriented Choices, food waste reduction e) Integration of food systems in climate and health policies	20 hrs.
UNIT-III	Key Theories and Frameworks 1. 1. FAO's Framework for Sustainable Food Systems 2. HLPE Food Systems Framework 3. Doughnut Economics (Kate Raworth) 4. Food Systems Thinking, Agroecological approach 5. One Health, Planetary Health Diet (EAT–Lancet)	05 hrs.

UNIT-IV	Developing Sustainable Food Systems	15 hrs.
	a) Measuring Food System Sustainability i. Indicators: Environmental footprint, dietary carbon footprint, land use, water use – Indian food system, regional food system, global food system ii. Food Systems Dashboard iii. Life Cycle Assessment (LCA) methods b) System Mapping i. What is food mapping? Mapping food production → processing → distribution → consumption → waste. Example: The journey of rice/wheat through FCI, PDS, and retail. ii. Stakeholders in Food Systems - Farmers, cooperatives, processors, traders, consumers, NGOs, policymakers. Example: How stakeholders work together in India's Mid-Day Meal Scheme. c) Policies and Food System Reform i. How subsidies, procurement, and government schemes shape the system. Example: Subsidy shift from rice/wheat to millets under National Food Security Mission. d) Technology and Innovation i. Digital tools for farmers (Kisan apps, e-NAM). ii. Climate-smart farming, natural farming (Zero Budget Natural Farming). e) Capacity Building a. Why farmer training and extension services matter. i. Role of SHGs, Krishi Vigyan Kendras, and local innovations.	
UNIT-V	Future Scenarios and Policy Action	05 hrs.
	a) Futures thinking: foresight, scenario building, planetary boundaries b) The Food Systems Countdown Initiative (FSCI) c) Role of youth, women, communities d) Building resilience: circular food systems, regenerative agriculture e) Case Study – Indian Context i. India's policy momentum - initiatives like International Year of Millets 2023 ii. National Mission on Sustainable Agriculture (NMSA), iii. Zero Budget Natural Farming (ZBNF) and iv. Eat Right India. v. Local and regional supply chains, millet-based diets and state-led procurement reforms	
REFERENCES		
1.	Fanzo, J., Haddad, L., McLaren, R., Marshall, Q., Davis, C., Herforth, A., Jones, A. D., Beal, T., & Tschirley, D. (2021). Viewpoint: The role of food systems in achieving the SDGs. <i>Global Food Security</i> , 28, 100519.	
2.	Food and Agriculture Organization of the United Nations, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme, & World Health Organization. (2024). <i>The state of food security and nutrition in the world 2024</i> (SOFI report). FAO. https://www.fao.org/publications/sofi	
3.	Global Nutrition Report. (n.d.). <i>Global Nutrition Report</i> . Development Initiatives. https://globalnutritionreport.org	
4.	Global Panel on Agriculture and Food Systems for Nutrition. (2016). <i>Foresight report: Food systems and diets</i> . Global Panel on Agriculture and Food Systems for Nutrition. https://www.glopan.org/resources/foresight-report/	
5.	High Level Panel of Experts on Food Security and Nutrition. (2014). <i>Food losses and waste in the context of sustainable food systems</i> (HLPE Report No. 8). Committee on World Food Security.	

6.	High Level Panel of Experts on Food Security and Nutrition. (2017). <i>Nutrition and food systems</i> (HLPE Report No. 12). Committee on World Food Security. https://www.fao.org/3/i7846e/i7846e.pdf
7.	International Crops Research Institute for the Semi-Arid Tropics. (n.d.). <i>ICRISAT vision 2030+</i> . ICRISAT. https://www.icrisat.org/vision-2030/
8.	Meadows, D. H. (2009). <i>Thinking in systems: A primer</i> . Chelsea Green Publishing.
9.	Ministry of Agriculture & Farmers Welfare. (n.d.). <i>Schemes and policy notes</i> . Government of India.
10.	NITI Aayog. (2021). <i>Sustainable development of food systems in India</i> . Government of India. https://www.niti.gov.in/sites/default/files/2021-12/Sustainable-Development-of-Food-Systems-in-India.pdf
11.	United Nations. (2021). <i>UN Food Systems Summit 2021 outcome documents</i> . https://www.un.org/en/food-systems-summit
12.	United Nations Environment Programme. (2016). <i>Food systems and natural resources</i> . UNEP. A Report of the Working Group on Food Systems of the International Resource Panel. Nairobi, Kenya.
13.	World Health Organization. (n.d.). <i>Healthy diet: Fact sheet</i> . WHO. https://www.who.int/news-room/fact-sheets/detail/healthy-diet

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
YEAR	I	Course Type: Major Course Number: Course Title: Advanced Physiology		CREDIT	4 (4+0)
Semester	I			HOURS	60
Objectives		1. To provide students with an in-depth understanding of cellular signaling mechanisms, and the advanced kinetics of nutrient transport across plasma membranes. 2. To detail the molecular mechanisms of hormone secretion (such as insulin) and the role of various organs and tissues 3. To explore the physiological adaptations occurring during pregnancy, lactation, and aging, as well as the body’s cardiovascular, renal, and metabolic responses to exercise and acute stress			
COURSE CONTENT / SYLLABUS					
UNIT-I		Cellular & Molecular Physiology a) Cell Signaling & Nutrient Sensing: Mechanism of G-protein coupled receptors (GPCRs) and intracellular signaling (mTOR pathway, AMPK) in response to amino acids and glucose. b) Transport Mechanisms: Advanced kinetics of nutrient transport across the plasma membrane (SGLT, GLUT, and PEPT transporters). c) The Gut Microbiome-Physiology Axis: Interaction between gut microbiota, the mucosal immune system, and systemic metabolic health. d) Bioenergetics: Mitochondrial function, oxidative phosphorylation, and the physiological consequences of mitochondrial dysfunction			10 hrs.
UNIT-II		Advanced Gastrointestinal & Absorptive Physiology a) Neuro-hormonal Control of Digestion: Integrated action of Gastrin, CCK, Secretin, and Ghrelin; the Enteric Nervous System (ENS). b) The Exocrine Pancreas & Biliary System: Advanced regulation of enzyme secretion and bile acid enterohepatic circulation. c) Intestinal Permeability: The physiology of "Tight Junctions" and the impact of fiber- derived SCFAs. d) Absorption Pathophysiology: Physiological basis of malabsorption syndromes (Celiac, Short Bowel Syndrome etc.) e) Gut-Brain Axis: The physiological signaling of hunger and satiety via the Vagus nerve and gut peptides (PYY, GLP-1). f)Biliary Physiology: Advanced enterohepatic circulation of bile salts and its role in cholesterol homeostasis.			10 hrs.
UNIT-III		Endocrine & Metabolic Integration a) Pancreatic Endocrine Function: Molecular mechanism of insulin secretion and glucose-stimulated insulin release (GSIS). b) Adipose Tissue as an Endocrine Organ: Physiology of Leptin, Adiponectin, and pro-inflammatory cytokines in obesity. c) Energy Homeostasis: Hypothalamic regulation of appetite (the POMC/AgRP circuit). d) Calcium & Bone Metabolism: Integrated role of PTH, Vitamin D, and			10 hrs.

	Calcitonin in bone remodeling and renal handling of minerals.	
UNIT- IV	Cardiovascular, Hematological, Renal, and Respiratory Physiology	18 hrs.
	a) Cardiovascular Hemodynamics: Nutrient-induced changes in blood flow; the physiology of endothelial function and nitric oxide. Cardiac Electrophysiology & Output b) Advanced Hematology: Erythropoiesis and iron metabolism; the physiology of hemostasis and the impact of Vitamin K and Omega-3 fatty acids on coagulation cascades. Role of lymphatic system in lipid transport (chylomicrons) and immune surveillance c) Renal Handling of Nutrients: Advanced glomerular filtration and tubular reabsorption of electrolytes and glucose; the Renin-Angiotensin-Aldosterone System (RAAS). d) Acid-Base Balance: The physiological role of the lungs and kidneys in maintaining blood pH through bicarbonate and phosphate buffers. e) Physiology of Exercise: Metabolic shifts between carbohydrate and lipid oxidation during varied intensities.	
UNIT V	Clinical Physiology & Life Cycle Transitions	12 hrs.
	a) Pregnancy & Lactation: Physiological adaptations in maternal metabolism and the mechanics of milk synthesis/ejection. b) Aging & Sarcopenia: Physiological changes in muscle protein synthesis and digestive efficiency in the elderly. c) Metabolic Response to Stress: Systemic Inflammatory Response Syndrome (SIRS) and the "hypermetabolic" state in trauma/burns. d) Neurophysiology of appetite, Taste and Reward: The dopaminergic system and its role in food addiction and hedonic eating.	
REFERENCES		
1.	Hall, J. E., & Hall, M. E. Guyton and Hall Textbook of Medical Physiology. (The "Gold Standard" for advanced systems physiology).	
2.	Gropper, S. S., & Smith, J. L. Advanced Nutrition and Human Metabolism. (Crucial for bridging physiology and nutrition).	
3.	Barrett, K. E. Ganong's Review of Medical Physiology. (Excellent for neuro-endocrine and GI sections).	
4.	Blaustein, M. P., et al. (2019) Cellular Physiology and Neurophysiology.	
5.	Melmed, S., et al. (2020). Williams Textbook of Endocrinology. (The definitive resource for endocrine physiology).	
6.	Holt, E., et al. (2021). Basic Endocrinology for Students and Practitioners.	
7.	Tortora GJ, Derickson B, Grabowski SR (2007). Principles of Anatomy and Physiology (11thed.)	
8.	GanongsWF(1985). Review of Medical physiology	
9.	Campbell EJ, Dickinson CJ, Slater JD (1984). Clinical and Applied physiology	
10.	MountcastleVB(1979), (2008). Overview of Medical Physiology	
11.	Guyton AC (1985). Functions of Human body	
12.	Guyton AC & Hall JB (1996). Text book of Med. Physiology.	
13.	Wilson KJW & Waugh A (1996). Ross and Wilson. Anatomy and Physiology in Health and illness	
14.	Mc Ardle WD, Katch FI, Katch VL (1996). Exercise physiology- Nutrition & Human performance	
15.	Mc Ardle WD, Katch FI, Katch VL Essentials of Exercise Physiology-3rd Edition-Google books	
16.	Nutritional Genomics: The Impact of Dietary Regulation of Gene Function on Human Disease 1st Edition- by Wayne R. Bidlack , Raymond L. Rodriguez	

17.	Jain AK (1999). Text book of Physiology Vol 1& 2
18.	Bijlani RL (1997). Understanding Medical Physiology
19.	Harrisons-On line- Text book of Physiology. Medical Review of Physiology
20.	Schmidt & Nelson. Physiology of mammals.
21.	Kronenberg H, Melmed S, Polonsky KS, Larsen P Reed. (2010).
22.	Williams Textbook of Endocrinology (11thed.).
23.	Williams Pathophysiology (2007) Saunders
24.	Gross L (2007). New Human genome-Individualised Genomics.
25.	Collins FS (2003). New goals for human genome
	Reference Journals
26.	Journal of Biological Chemistry (For molecular signaling pathways).
27.	Frontiers in Endocrinology (Nutritional Endocrinology section).
28.	Journal of Clinical Investigation: Selected reviews on the "Endothelial function and Diet."
29.	Annual Review of Physiology: "The Gut-Brain Axis in Energy Homeostasis."
30.	American Journal of Physiology (Endocrinology and Metabolism)
31.	The Journal of Nutrition.
32.	Nature Reviews Endocrinology.
33.	Endocrine Reviews (Society for Endocrinology).

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002			ACADEMIC YEAR 2026-2027			
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)								
YEAR	I	Course Type: SEC Course Number: Course Title: Integrated Management of Acute Malnutrition			Credit	2 (2+0)		
Semester	I				Hours	30		
OBJECTIVES:		1. To enable students to understand the physiological and biochemical alterations in acute malnutrition. 2. To enable students to identify and classify acute malnutrition and identify 3. To enable students to learn community-based and facility-based treatment protocols of severe acute malnutrition						
COURSE CONTENT / SYLLABUS								
UNIT-I		Understanding Acute Malnutrition: Etiology, Identification, and Pathophysiology of Acute Malnutrition			10 hrs.			
		a) Immediate, Underlying and Basic Etiological Factors of Acute Malnutrition b) Role of functional and growth nutrients c) Identification of Acute Malnutrition: Screening and Nutritional Assessment d) Pathogenesis and Adaptations in Undernutrition						
UNIT-II		Community and Facility-Based Management of Acute Malnutrition					16 hrs.	
		a) Management of children with SAM at the community level i. Assessment and Referral: Anthropometric assessment, Medical assessment (IMNCI and identification of danger signs), Appetite assessment, Referral: To CMAM or FSAM ii. Outpatient Care and treatment for acute malnutrition, Nutritional treatment, Medicines, and health education iii. Monitoring, follow-up and discharge: Follow-up while in CMAM, Discharge criteria, Follow-up after discharge b) Facility-Based Management of Children with SAM i. Stabilization Phase: Treat/Prevent Hypoglycemia, Treat/Prevent Hypothermia, Treat/Prevent Dehydration, Treat/Prevent Septic Shock, Correct Electrolyte Imbalance, Treat/Prevent Infection, Correct Micronutrient Deficiencies. ii. Rehabilitation Phase: Start Cautious Feeding, Achieve Catch-up Growth, Provide Sensory Stimulation, Prepare for Follow-up iii. Discharge Criteria and Follow-up iv. Criteria for readmission for FSAM						
UNIT-III		Management of SAM in Infants Less than 6 Months of Age			4 hrs.			
		a) Management of SAM in Infants Less than 6 Months of Age i. Initial assessment and treatment, ii. Feeding and Re-lactation through Supplementary Suckling Technique (SST)						
REFERENCES								
1.		Guidelines for the inpatient treatment of severely malnourished children, World Health Organization, 2003. https://apps.who.int/iris/handle/10665/42760						

2.	Standard Treatment Guidelines 2022, Severe Acute Malnutrition, Indian Academy of Paediatrics, Severe Acute Malnutrition, Indian Academy of Paediatrics, 2022.
3.	Facility-based care of severe acute malnutrition: Participant manual, Ministry of Health and Family Welfare, Government of India.
4.	Nutrition & Child Development, KE Elizabeth. ISBN: 9788181915719, Paras Medical Publisher, 7 th Edition, 2025.
5.	Protocol for Management of Malnutrition in Children, Ministry of Health and Family Welfare and Ministry of Women and Child Development, Government of India, 2023.

M.Sc. (NEP) – REGULAR

SEMESTER – II (DIETETICS)

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
YEAR	I	Course Type: Major Course Number: Course Title: Research Methods in Dietetics		CREDIT	4 (3+1)
Semester	I			HOURS	THEORY -45
OBJECTIVES:		1. To understand various methodologies employed in nutrition research 2. To gain full understanding of the use of statistics and epidemiology in nutrition research 3. To learn to critique some recent research studies from the perspectives of – research methodologies, interdisciplinary approaches 4. To develop skills related to use of software for data analysis, interpretation, report writing and presentation			
COURSE CONTENT / SYLLABUS					
UNIT-I	Developing the Research Question				5 hrs.
	a) Selection of research topics – need, relevance, feasibility b) Research ethics-ethical issues, research with human participants, ethics and animal research, ethical committees, informed consent, plagiarism c) Statement of the problem, formulation of the research hypothesis, stating objectives d) Literature search – referencing, abstracting, computer searches, bibliography e) Mono-disciplinary Research f) Multi-disciplinary Research g) Trans-disciplinary Research h) Inter-disciplinary Research				
UNIT-II	Research Designs and Sampling Designs				20 hrs.
	a) True Experimental Designs and Quasi Experimental Designs b) Hierarchy of study designs c) Internal & External Validity d) Threats to validity e) Scales and indices f) Epidemiological studies i. Observations and experiments ii. Observational epidemiology – Descriptive studies, ecological studies, cross-sectional studies, case-control studies, Cohort studies –Prospective and retrospective study design, Nested case control studies iii. Experimental epidemiology – field trials, community trials, randomized controlled trials, single and double blind studies, Factorial designs and Cross over studies, Secondary research: systematic reviews and Meta-analysis iv. Potential errors in epidemiological studies – Random error, sampling error, systematic error, selection bias, measurement bias, confounding and control of confounding v. Discussion on various classical studies with respect to research methodology g) Probability and non-probability sampling designs h) Determination of sample size				
UNIT-III	Qualitative Research Methodology				10 hrs.

	a) Qualitative research tools and methods - Ethnography - Case Study - Phenomenology - Grounded Theory b) Data collection methods-Focus group discussions, key informant interviews, Observation method, community mapping, body mapping, free listing, pile sorting and Venn diagrams c) Analyzing qualitative data - Transcribing and summarizing data - Categorizing and Coding (using descriptive codes) - Arranging and organizing data with the help of computers (Microsoft Excel) - Deciding emerging common themes, patterns and concepts d) Integrating qualitative and quantitative methods e) Critique of recent research studies	
UNIT-IV	Biostatistics for data analysis and Scientific writing a) Parametric and Non Parametric Statistics - Mean, Median & Mode - Standard Deviation and Standard Errors - Confidence Interval - Coefficient of variation - Chi square tests (X²) - t – tests for independent samples - t – tests for paired samples - Analysis of variance - Correlation coefficients - Odds ratio - Relative risk - Regression analysis b) Scientific writing - Different forms of scientific writing - Articles in journals, reports, review articles, abstracts, dissertations - Use of outlines as a starting device- Reasons for preparing outlines, types of outlines (Topic outlines, Conceptual outlines, theme outline), how to formulate outlines - Components of scientific writing – Introduction, Review of literature, Methodology, Results and discussion, summary and conclusions, limitations, in-text citation, bibliography and appendices - Tables and illustrations as means of presenting data v. Writing a research proposal for grants –rationale and importance of the question being addressed, presenting pilot study/data, time frame, clarity, methods, outcome of the study and its implications, budgeting, available infrastructure and resources, executive summary etc.	10 hrs.
REFERENCES		
1.	Hedrik TE, Bickman L and Rog DJ (1993). Applied research design – A practical guide. Sage Publications Inc., California	
2.	Kirk J and Miller ML (2011). Reliability and validity in qualitative research. Sage Publications Inc.	
3.	Miles MB and Huberman AM (1994). Qualitative data analysis – An expanded sourcebook (2 nd ed.). Sage Publications Inc., California	
4.	Snecdecor GW and Cochran WG (1991). Statistical methods (8 th ed.). Wiley	
5.	Beaglehole R, Bonita R and Kjellstrom T (2006). Basic epidemiology (2 nd ed.). World Health Organization, Geneva	
6.	Sathe PV and Doke PP (2025) Epidemiology and management for health Care (7 th ed.). Vora	

	Medical Publications, Mumbai
7.	Willett W (2013). Nutritional epidemiology (3 rd ed.). Oxford University Press, New York
8.	Bernard HR, Wutich A, and Ryan GW (2016) Analyzing qualitative data: Systematic approaches (2 nd ed.). SAGE Publications, Inc., California
9.	Ramamurthy GC (2011). Research methodology. Dreamtech Press
10.	Tan W (2022). Research methods: A practical guide for students and researchers (2 nd ed.). World Scientific
11.	Dawson C (2019). Introduction to research methods: A practical guide for anyone undertaking a research project (5 th ed.). Hachette, UK
12.	O'Leary Z (2024). The essential guide to doing your research project (2 nd ed.). SAGE, South Asia
13.	Mohanty B and Misra S (2025). Statistics for behavioural and social sciences. Atlantic Publishers & Distributors (P) Ltd

For Practical

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002			ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)						
YEAR	I	Course Type: Major Course Number: Course Title: Research Methods in Dietetics			CREDIT	4 (3 + 1)
Semester	I				HOURS	30
COURSE CONTENT / SYLLABUS						
UNIT-I	Research Process					14 hrs.
	a) Review of Literature, Citing Bibliography and Plagiarism check i. Using search engines on the internet for literature search ii. Using referencing software iii. iii Plagiarism Check b) Responsible use of Artificial Intelligence- for literature search, graphical representation, making presentations c) Computer Applications in Research i. Steps in data analysis: Cleaning and Verifying data, Coding data, Data entry, tabulating data, Data Analysis ii. Practice in calculation of Sample size for various study design by use of relevant formulas iii. Spreadsheet tool (Microsoft Excel): Introduction to features and functions, using formulae, data storing, statistical data analysis, generating charts/graphs iv. Presentation tool (Microsoft Power point): Introduction to features and functions, creating presentations v. Epi Info for statistical analysis (Chi Square, Odds Ratio, Relative Risk) vi. Use of Epicollect software as tool for data collection vii. vii Use of Anthroplus software for calculating Z scores					
UNIT-II	Hands on Experience: Independent Project work					16 hrs
	a) Data analysis of given data sets b) Interpretation & Report writing c) Presentation					

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
YEAR	I	Course Type: Major Course Number: Course Title: National Nutrition Programs		CREDIT	4 (4+0)
Semester	II			HOURS	60
OBJECTIVES:		1. To learn and understand the policies concerning health and nutrition. 2. To gain knowledge regarding the ongoing schemes and programs for combating nutrition and health problems in the country and the developing world.			
COURSE CONTENT / SYLLABUS					
UNIT-I		Developmental Programs and Policies of the Government Concerned with Nutrition and Health			12 hrs.
		a) Current policies in India focused on improving nutrition and health status: Health, Agriculture, Education, Water and Sanitation, Livelihood, Early Childhood Care and Education, Women Empowerment, and Gender policy b) Role of various nodal sectors in delivering nutrition specific and nutrition sensitive interventions; Role of inter-sectoral linkages in improving nutrition outcomes of target population c) Role of NITI Aayog, aspirational districts program and indicators, aspirational districts of Gujarat d) National Nutrition Policy, National Nutrition Mission (NNM) - Poshan Abhiyan, National Nutrition Strategy: Goals, objectives and indicators for monitoring e) National Guidelines on Infant and Young Child Feeding f) National Rural Livelihood Mission (NRLM), Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Antyodaya Anna Yojana			
UNIT-II		National Health Mission, Health Schemes			09 hrs.
		a) National Health Mission (NHM): Goals and Objectives b) Objectives / Role: Village Health Sanitation and Nutrition Committee (VHSNC), Gram Sanjeevani Samiti, Swachh Bharat Mission c) Role of grass root functionaries: ASHA, ANM, MAS (urban), in delivering essential nutrition actions d) Ayushman Bharat Scheme: Pradhan Mantri Jan Arogya Yojana (PM JAY), Health and Wellness Centres (HWCs)			
UNIT-III		National Nutrition Programs			15 hrs
		a) Undernutrition i. Integrated Child Development Services (ICDS) scheme (Anganwadi Services – Saksham Anganwadi, Poshan 2.0): Goals, objectives and services ii. Hierarchy and role of functionaries iii. ICDS Mission Mode, ICDS mission in different states iv. Guidelines for Home Based Newborn Care v. Mid-Day Meal (MDM) Scheme (PM-POSHAN): Goals, objectives and services vi. MDM scheme in districts with centralized kitchen v/s decentralized kitchens vii. Food Fortification in India: Foods fortified and supplied in Government programs – ICDS, PDS, MDM			

	b) Overnutrition - Rising Burden of Non-Communicable Diseases (NCDs) - Public health strategies to control NCDs (Best buy interventions of WHO) - National Program for Prevention and Control of Non-Communicable Diseases (NP-NCD), formerly known as National Program for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS): Operational strategies, objectives and services	
UNIT-IV	National Nutrition Programs for Micronutrient Malnutrition Goals / Objectives / Strategies / Guidelines: - National Nutritional Anemia Control Program, Nutritional Program for Control of Anemia among Adolescent Girls, National Iron Plus Initiative (NIPI), Intensified NIPI (I-NIPI), Anemia Mukh Bharat (AMB) strategy - National Prophylaxis Program against Nutritional Blindness (NPPNB) due to Vitamin A Deficiency (VAD) - National Iodine Deficiency Disorders Control Program (NIDDCP), Universal Salt Iodization (USI), Double Fortified Salt (DFS) - Diarrhea Control Program: Role of Zinc, ORS - National Deworming Campaign - National Program for Prevention and Control of Fluorosis (NPPCF)	15 hrs.
UNIT-V	Other Programs / Schemes / Initiatives Aims and Objectives: - Reproductive Maternal Newborn Child Adolescent Health Plus Nutrition (RMNCAH+M) - Janani Suraksha Yojana (JSY) - Janani Shishu Suraksha Karyakaram (JSSK) - Pradhan Mantri Matritva Vandana Yojna (PMMVY) - Pradhan Mantri Surakshit Matritva Yojna (PMSMY) - Rashtriya Bal Swasthya Karyakram (RBSK), Rashtriya Kishor Swasthya Karyakram (RKSK) - Mission Indradhanush - Namo Lakshmi Yojana - Any new initiative / scheme	09 hrs.
REFERENCES		
1.	K. Park (2011). Text Book of Preventive and Social Medicine, 25 th Edition. Banarsidas Bhanot Publishers. Jabalpur. ISBN13: 9788190607995	
2.	Vir Sheila (2011). Public Health Nutrition in Developing Countries published by Woodhead Publishing India. ISBN-13: 9780857090041, ISBN-10: 0857090046	
3.	National Health Mission. Ministry of Health and Family Welfare. Government of India. nhm.gov.in	
4.	National Nutrition Mission – ICDS. icds-wcd.nic.in	
5.	Ministry of Women & Child development. GOI, www.wcd.nic.in/icds	
6.	Ministry of Health & Family Welfare, www.mohfw.nic.in	
7.	National Rural Livelihood Mission – nrlm.gov.in	
8.	John E hiri (2009). Maternal and Child Health - Global Challenges, Programs, and Policies	
9.	http://swachhbharatmission.gov.in/SBMCMS	
10.	www.wcd.gujarat.gov.in (Directorate of ICDS, policies & newer initiatives)	
11.	Policies: Nutrition Resource platform: Akshay Poshan, www.wcd.nic.in	
12.	World Health Organization, Regional Office for South-East Asia. Non-communicable Diseases in the South-East Asia Region: Situation and response 2011	
13.	World Health Organization. Non-communicable Diseases Country Profile 2011	
14.	WHO "Best Buys" www.who.int/nmh/publications/who_bestbuys_to_prevent_ncds.pdf	

15.	Deworming: End the neglect. www.endtheneglect.org
16.	Vitamin A supplementation for infants & children 6-59 months. www.who.int/nutrition/publications/micronutrients/guidelines/vas.../en/
17.	Mother and child Nutrition, Nutrition resources for India. http://motherchildnutrition.org/india/vitamin-a-ifasupplementation.html
18.	National Guidelines on Infant and Young Child Feeding. wcd.nic.in

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002			ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)						
Year	I	Course Type: Major Course Number: Course Title: Advances in Therapeutic Nutrition			Credit	4 (3 + 1)
Semester	II				Hours	45
OBJECTIVES:		1. To Understand the latest concepts and research in therapeutic nutrition, including nutrient gene interactions, functional foods, nutraceuticals, and precision nutrition. 2. To Apply evidence-based nutritional strategies for prevention and management of chronic diseases such as diabetes, cardiovascular disorders, obesity, cancer, gastrointestinal disorders, and renal/liver diseases. 3. To Analyze and implement novel nutritional interventions in clinical and community settings, including enteral and parenteral nutrition innovations, nutrigenomics-based diet planning, and use of bioactive compounds. 4. To Demonstrate competence in designing individualized nutrition care plans, considering ethical, cultural, and socio-economic factors in the application of advanced therapeutic nutrition strategies. 5. To Critically evaluate emerging research in therapeutic nutrition and translate findings into practical dietetic interventions and patient counseling				
COURSE CONTENT / SYLLABUS						
UNIT-I		Nutrition in Critical Care				15 hrs
		a) Basis of Critical care i. Definition of critical illness ii. Examples: Sepsis, trauma, burns, multi-organ dysfunction, post-surgery, severe pancreatitis iii. Role of nutrition in critical care: "Nutrition as therapy" iv. Metabolic Alterations in Critical Illness (<i>Ebb phase</i> (first 24–48 hrs) – hypometabolic, reduced cardiac output, oxygen consumption, <i>Flow phase</i> – hypermetabolic, increased catabolism, nitrogen loss v. Consequences of Malnutrition b) Nutritional Assessment in ICU Patients i. Challenges in assessment (fluid shifts, sedation, inability to communicate) ii. Methods:Anthropometry (limited use), Biochemical markers (albumin, prealbumin, CRP, nitrogen balance), Clinical parameters (hemodynamic stability, organ function), Indirect calorimetry (gold standard for energy expenditure), Predictive equations (Harris-Benedict, Mifflin, Penn State equation for ventilated patients) c) Goals of Nutritional Support d) Routes of Nutrition Support Enteral Nutrition i. Types of formulas: ii. Standard polymeric iii. Semi-elemental/elemental iv. Disease-specific (renal, hepatic, cancer) v. Complications: aspiration, diarrhea, tube blockage Parenteral Nutrition (PN) vi. Indications: Non-functioning gut, severe ileus, bowel obstruction				

	vii. Components: glucose, amino acids, lipids, electrolytes, vitamins, trace elements viii. Complications: catheter infection, hyperglycemia, electrolyte imbalance, kidney and liver dysfunction	
UNIT-II	Nutrigenomics and Nutrigenetics a) Definition & Concepts b) Nutrigenetic and examples like lactose intolerance, folate metabolism, caffeine metabolism, obesity and clock gene test c) Nutrigenomics and Mechanisms by which nutrient influence gene expression d) Applications of Nutrigenetics and Nutrigenomics e) Future of nutrigenetics and nutrigenomics (ethical, legal and social issues)	05 hrs
UNIT-III	Nutrient Drug Interactions a) Key terms: Bioavailability, half life, side effects, mixed function oxygenase, pharmacokinetics, pharmacodynamics, pharmacogenomics b) Benefits of minimizing food drug interactions c) Effect of drugs on Nutrient absorption, digestion and excretion d) Clinically important nutrient drug interactions (e.g. Metformin and Vitamin B12, Statins and grape fruit juice, Warfarin and Vitamin K, etc.) e) Effect of malnutrition on drug absorption f) Side effects of medicines g) Drugs that may increase /decrease appetite h) Drugs that may affect oral cavity, taste, smell, and GI tract, i) Drugs that may lower or increase the glucose	15 hrs
UNIT IV	Neutraceuticals, Functional foods in Health & disease a) Definitions b) Difference between neutraceuticals, functional foods and supplements c) Bioactive components and their importance d) Plant based functional foods e) Fortified/enriched foods f) Prebiotics, probiotics and synbiotics g) Evidence based research findings h) Role of functional foods in mental health and disease prevention i) Special foods for inborn errors of metabolism Genetically modified foods a) Definitions b) Techniques c) Examples of genetically modified foods d) Advantages and disadvantages e) Safety & Nutrition concerns f) Labelling, regulations, future developments	10 hrs
REFERENCES		
1.	Singer, P., Reintam Blaser, A., Berger, M. M., et al. (2023). <i>ESPEN guideline on clinical nutrition in the intensive care unit</i> . Clinical Nutrition, 42(6), 507–549.	
2.	McClave, S. A., et al. (2021). <i>Guidelines for nutrition therapy in the adult critically ill patient</i> . Critical Care Medicine, 49(3), 1–75.	
3.	Ferguson, L. R. (2021). <i>Nutrigenomics and nutrigenetics in functional foods and personalized nutrition</i> . Nutrients, 13(9), 3149.	
4.	Milagro, F., Mansego, M. L., De Miguel, C., & Martínez, J. A. (2021). <i>Dietary factors, epigenetics, and obesity-related metabolic diseases</i> . International Journal of Molecular Sciences, 22(10), 5400.	
5.	Kahlon, T., & Munir, K. M. (2022). <i>Food–drug interactions: A review of mechanisms and clinical implications</i> . Frontiers in Nutrition, 9, 875665.	
6.	American Society of Health-System Pharmacists (ASHP). (2022). <i>Handbook on drug interactions</i> .	
7.	Thomas, D. T., Erdman, K. A., & Burke, L. M. (2022). <i>Position of the Academy of Nutrition and</i>	

	<i>Dietetics: Nutrition and athletic performance</i> . Journal of the Academy of Nutrition and Dietetics, 122(2), 520–538.
8.	WHO. (2023). <i>Guideline for the management of severe acute malnutrition in infants and children</i> .
9.	FAO/WHO. (2022). <i>Safety assessment of genetically modified foods: Recent framework updates</i> .
10.	Apollo Clinical Nutrition Handbook (Anita Jatana et al.)
11.	Jaypee Brothers Medical Publishers, 1st ed., 2022; ISBN 9789354650895
12.	Mahan, L. K., Raymond, J. L., & Escott-Stump, S. (Eds.). (2024). <i>Krause's Food & the Nutrition Care Process</i> (16th ed.). Elsevier.

For Practical

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002			ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)						
YEAR	I	Course Type: Major Course Number: Course Title: Advances in Therapeutic Nutrition			Credit	4 (3 + 1)
Semester	II				Hours	30
COURSE CONTENT / SYLLABUS						
UNIT-I						15 hrs
	Enteral and parenteral nutrition a) Development of Kitchen formulations, Calculation of Osmolality, Nutritive Value, Cost b) Market Survey: Commercial feeds available in the market, nutritive value, cost c) Planning and preparation of Ryles Tube Feeding for various clinical conditions viz. renal, hepatic, Kitchen formulations ,Commercial feeds					
UNIT-II	Formulation Of Functional Food Incorporated Therapeutic Products a) Identification of functional food sources in local markets. b) Product development for therapeutic use c) Sensory evaluation and product testing					15 hrs

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
Year	I	Course Type: Major (Vocational) Course Number: Course Title: Applied Dietetics		Credit	4 (1 + 3)
Semester	II			Hours	15
OBJECTIVES:		1) To Execute the complete Nutrition Care Process (NCP), including screening, diagnosis, intervention, and follow-up, to provide expert nutritional management for diverse disease states. 2) To Apply advanced counseling techniques and behavior change theories to effectively manage and educate patients in the Outpatient Department (OPD).. 3) To Manage clinical cases independently by designing personalized nutrition care plans and ensuring precise clinical documentation. 4) To Demonstrate proficiency in record keeping, material organization, and the professional presentation of clinical case studies. 5) To Administer food service operations, including procurement, large-scale production, quality control, patient tray service, and cafeteria management.			
COURSE CONTENT / SYLLABUS					
UNIT-I		Case studies: Free living population			20hrs.
		a) Development of tools for data collection for a clinical condition , understanding medical terms and terminologies used in medical field, biochemical parameters and diagnosis for various health conditions b) Validation-pilot testing with clinical subjects c) Modification & Finalization of tools d) Data collection e) Repot writing f) Presentation and feedback			
REFERENCES					
1.	Singer, P., Reintam Blaser, A., Berger, M. M., et al. (2023). <i>ESPEN guideline on clinical nutrition in the intensive care unit</i> . Clinical Nutrition, 42(6), 507–549.				
2.	Academy of Nutrition and Dietetics (AND). (2024). <i>eNCPT: Electronic Nutrition Care Process Terminology</i> . (Essential for standardized language in PES statements).				
3.	Academy of Nutrition and Dietetics. (2025). <i>Pocket Guide to Nutrition Assessment, 4th Edition</i>				
4.	American Society for Parenteral and Enteral Nutrition (ASPEN). (2024). <i>The ASPEN Adult Nutrition Support Core Curriculum, 4th Edition</i> . (The "gold standard" for ICU and clinical rotations).				
5.	Mahan, L. K., & Raymond, J. L. (2023). <i>Krause and Mahan’s Food & the Nutrition Care Process, 16th Edition</i>				
6.	Kidney Disease: Improving Global Outcomes (KDIGO). (2024). <i>Clinical Practice Guideline for the Management of Chronic Kidney Disease</i> . (Essential for Renal rotations).				
7.	Gropper, S. S., Smith, J. L., & Carr, T. P. (2025). <i>Advanced Nutrition and Human Metabolism, 9th Edition</i> . (Crucial for understanding biochemistry behind disease).				
8.	Pronsky, Z. M., & Crowe, J. P. (2024). <i>Food-Medication Interactions, 20th Edition</i> . (Used daily to check for drug-nutrient interactions).				
9.	Academy of Nutrition and Dietetics (AND). (2024). <i>eNCPT: Electronic Nutrition Care Process Terminology</i> . (Essential for standardized language in PES statements).				
10.	Apollo Clinical Nutrition Handbook (Anita Jatana et al.)				

	Jaypee Brothers Medical Publishers, 1st ed., 2022; ISBN 9789354650895
11.	Mahan, L. K., Raymond, J. L., & Escott-Stump, S. (Eds.). (2024). <i>Krause's Food & the Nutrition Care Process</i> (16th ed.). Elsevier.

For Practical

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
Year	I	Course Type: Major (Vocational) Course Number: Course Title: Applied Dietetics	Credit	4 (1 + 3)	
Semester	II		Hours	90	
COURSE CONTENT / SYLLABUS					
UNIT-I	Placements in hospital setting/Diet clinic: Metabolic, Cardiac, Renal and Gastro-Intestinal			30hrs.	
	a) Placement in the hospital/Diet clinic to observe: i. Number of admitted cases on a day ii. Types of diseases encountered iii. To select 2 patients per student and record the observations through case papers iv. To take detailed clinical and dietary history of the selected patients v. Study the consumption and acceptability of the diet and record patients' suggestions and comments vi. Report writing & Case Study Presentation				
UNIT-II	Health Promotion activity in educational/corporate sector			20hrs	
	a) Identifying a theme for health promotion activity b) Prepare a wellness program using technology c) Implementing the program d) Feedback & report writing				
UNIT III	Patient counseling at campus: A community service			20hrs	
	a) Individual patient counselling at Nutrition counselling center of the department b) Assessment of nutritional status c) Nutritional counseling & follow up d) Report Writing				
UNIT IV	Development of IEC for counseling			20hrs	
	a) Development of IEC b) Display of IEC c) Evaluation				

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002		ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)					
YEAR	I	Course Type: MDC (Multi-Disciplinary Course) Course Number: Course Title: Health Promotion and Advocacy	CREDIT	4 (3+1)	
Semester	II		HOURS	45	
Objectives		1. To gain understanding about traditional Communication, health education and health promotion and its transition 2. To develop communication strategies that address social inclusion, ensuring that nutrition programs are gender-sensitive and accessible to hard-to-reach or marginalized groups (including those excluded by caste). 3. To develop the ability to write clear policy briefs and presentations that persuade local leaders and policymakers to fund or support nutrition programs			
COURSE CONTENT / SYLLABUS					
UNIT-I		Foundations of Health Promotion a) Concepts and definitions- Evolution from health education to health promotion b) Social Determinants of Health (SDOH)-Understanding how environment, economy, and education dictate health outcomes. c) The Bio-Psycho-Social Model: Moving beyond the biomedical view of health. d) Overview of theories and models of change- Health Belief Model (HBM) and Transtheoretical Model (Stages of Change), Social cognitive theory, PROCEED PRECEDE framework etc.		10 hrs.	
UNIT-II		Health Advocacy and Policy a) Defining Advocacy: Differences between lobbying, activism, and education. b) Policy Analysis: How health policies are drafted, debated, and passed. c) Media Advocacy: Utilizing traditional and digital media to shift public opinion. d) Legislative Advocacy: Building relationships with stakeholders and policymakers.		10 hrs.	
UNIT-III		Strategic Health Advocacy a) The Advocacy Cycle: Identifying the issue, gathering evidence, setting goals, and monitoring progress. b) Coalition Building: Strategies for identifying partners, managing diverse stakeholders, and "power mapping" to find key influencers. c) Message Development: The art of "framing" health issues to appeal to different political and social ideologies. d) Lobbying vs. Advocacy: Navigating the legal and ethical boundaries of direct lobbying versus public education. e) Understanding strategic advocacy plans of various Global		15 hrs.	

	platforms:- FAO, WHO, Save the Children, UNICEF, UNDP, USAID, SUN, SPHERE, IFPRI, CARE, Save the children, FANTA Project, NNM & recent examples	
UNIT-IV	Contemporary Issues and Ethics	10 hrs.
	a) Digital Health Promotion: Social media interventions and mHealth (mobile health). b) Global Health Advocacy: Addressing infectious diseases and climate-related health risks. c) Ethics in Promotion: Navigating paternalism vs. autonomy; avoiding "victim-blaming" in health messaging.	
REFERENCES		
1.	Sallis JF, Owen N, Fisher EB. Ecological models of health behavior. In: Glanz K, Rimer BK, Viswanath K (eds). Health Behavior and Health Education: Theory, Research, and Practice. 4th edition. San Francisco, CA: Jossey-Bass. 2008. pp 465-485.	
2.	Fertman, C. I., & Allensworth, D. D. (2022). Health Promotion Programs: From Theory to Practice. Jossey-Bass.	
3.	Sharma, M. (2021). Theoretical Foundations of Health Education and Health Promotion. Jones & Bartlett Learning.	
4.	Hubley, J., & Copeman, J. (2013). Practical Health Promotion. Polity Press. (Excellent for applied skills).	
5.	Carlyon, P. C. (2023). Health Advocacy: A Guide for Practitioners. (Updated for modern digital landscapes)	
6.	Wright, M. S. (2020). Health Advocacy: A Practitioner's Guide. Springer Publishing	
7.	Spahn JM, Reeves RS, Keim KS, Laquatra I, Kellogg M, Jortberg B, Clark NA. State of the evidence regarding behavior change theories and strategies in nutrition counseling to facilitate health and food behavior change. J Am Diet Assoc. 2010;110(6):879-91.	
8.	Boynton PM and Greenhalgh T, Hands-on guide to questionnaire research, Selecting, designing, and developing your questionnaire, BMJ, 328, 2004,1312- 1315.	
9.	Lytle LA, Perry CL. Applying research and theory in program planning: An example from a nutrition education intervention. Health Promotion Practice.2001;2(1):68-80.	
10.	Healthy workplaces: a model for action For employers, workers, policy-makers and practitioner, WHO, 2010	
11.	Simons-Morton BG, Greene WH, Gottlieb NH. (Chpt 8) Evaluation. In: Introduction to Health Education and Health Promotion, 2nd Ed. Prospect Heights, IL: Waveland Press. 1995:218-241.	
12.	Field guide to designing communication strategy, WHO publication-2007.	
13.	James F McKenzie, Brad L Neiger Rosemary Thackeray. Planning, implementing and evaluating health promotion programs, 7 th Ed, Hoboken USA, 2017	
14.	Health education: theoretical concepts, effective strategies and core competencies: a foundation document to guide capacity development of health educators/World Health Organization. Regional Office for the Eastern Mediterranean, 2012	
15.	Communication for Development (C4D) Capability Development Framework, UNICEF and 3D Change, 2009	
16.	Implementation guidance: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services – the revised Baby-friendly Hospital Initiative. Geneva: World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.	
17.	Manual for Country-Level Nutrition Advocacy Using PROFILES and Nutrition Costing, Food and Nutrition Technical Assistance III Project (FANTA) FHI 360 1825 Connecticut Avenue, NW Washington, DC 20009-5721	
18.	Advocacy Tool Kit, A Guide to Influencing Decisions to Improve Children’s Lives, United Nations Children’s Fund (UNICEF), New York, 2010	
19.	Nutrition Cluster Advocacy Toolkit, ACF International Advocacy Toolkit. ACF International, 2013	

For Practical

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition		ACADEMIC YEAR 2026-27
M.Sc. F.C.Sc (Dietetics) – First year (NEP – GIA)				
YEAR	I	Course Type: MDC (Multi-Disciplinary Course) Course Number: Course Title: Health Promotion and Advocacy	CREDIT	4 (3+1)
Seme ster	II		HOURS	30
Objectives		1) To gain understanding about traditional Communication, health education and health promotion and its transition 2) To develop communication strategies that address social inclusion, ensuring that nutrition programs are gender-sensitive and accessible to hard-to-reach or marginalized groups (including those excluded by caste). 3) To develop the ability to write clear policy briefs and presentations that persuade local leaders and policymakers to fund or support nutrition programs		
COURSE CONTENT / SYLLABUS				
UNIT-I		Health Promotion a) Students conduct a systematic observation of a specific neighborhood to identify "Social Determinants of Health" b) Students build a full logic model for a health promotion intervention, detailing specific inputs, activities, and measurable short-term/long-term outcomes. c) Using softwares to translate health data into compelling infographics d) Developing a 10-item survey instrument or a Focus Group Discussion (FGD) guide to evaluate the impact of their health promotion program.		14 hrs.
UNIT II		Advocacy & Communication a) Media Advocacy Lab: Drafting a "Press Kit." This includes writing a professional press release, a Letter to the Editor (LTE), and a series of high-impact social media posts for a mock campaign. b) Prepare a 3-minute "Elevator Pitch" for a local government official for resolving any of the current issues under any 1 ongoing national programs. i. Identify gaps ii. Budget considerations iii. Return on investment iv. Stakeholders c) Power Mapping Simulation: A group exercise where students map influential stakeholders for a specific legislative goal.		16 hrs.

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition Fatehgunj, Vadodara 390002			ACADEMIC YEAR 2026-2027	
M.Sc. F.C.Sc. (Dietetics) - First Year – Level 6.0						
Year	I	Course Type: SEC Course Number: Course Title: Gut, Microbiome and Health			Credit	2 (2 + 0)
Semester	II				Hours	30
OBJECTIVE:		1. To familiarize students with the fundamentals of human microbiome and gut friendly microbes. 2. To understand the importance of prebiotic, probiotic, postbiotic and synbiotic foods. 3. To understand the roles of microbiomes in specific health conditions. 4. To gain evidence-based knowledge on gut microbes and its application in dietetics practice.				
COURSE CONTENT / SYLLABUS						
UNIT-I		Human Microbiome - Fundamentals a) Definitions and importance of human microbiome b) Gut microbiome across lifespan c) Taxonomy and host – microbe interaction d) Healthy Gut and Dysbiosis				6 hrs
UNIT-II		Introduction to Prebiotics, Probiotics, Postbiotics and Synbiotics a) Definitions and history b) Foods and supplemental Sources c) Types and classification d) Mechanism of action				6 hrs
UNIT-III		Role of Diet, Microbiome and Health Outcomes a) Obesity, type 2 diabetes and hypertension. b) Irritable Bowel Syndrome (IBS) and functional gut disorders. c) Oral health d) Mental health				12 hrs
UNIT-IV		Improving Gut Microbes through Food Choices a) Evidence-based strategies to modulate the microbiome b) Microbiome-friendly diets (Mediterranean-style, plant-based, traditional and regional diets) c) Clinical applications (case studies, supplements)				6 hrs
REFERENCES						
1.	Sunita G & Aparna SV. (2012) Consumer guide on Probiotics for Health Applications. Probiotic Association of India (PAI)					
2.	www.probioticindia.com					
3.	www.chr-hansen.com					
4.	The gut microbiome connects nutrition and human health - https://www.nature.com/articles/s41575-025-01077-5					
5.	Doctoraland master’s thesis and Research Publications on prebiotics, probiotics and synbiotics. Prof. Tara Gopal Das Library. Department of Foods and Nutrition.					

