

**FACULTY OF FAMILY AND COMMUNITY SCIENCES
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA
VADODARA**

**FIRST YEAR – REGULAR PROGRAMME
COURSE OUTLINES (Nutrition and Dietetics)
2026-2027**

Program Specific Outcome (PSO): Level 4.5

The learning objectives of a Bachelor of Nutrition and Dietetics (Honors) degree program include:

1. **Practical skills:** students will develop the ability to acquire practical skills for monitoring food and nutrition-related clinical problems.
2. **Analytical skills:** students will develop analytical and practical skills.
3. **Knowledge:** students gain knowledge of nutrition, food, and how to stay healthy to the population.
4. **Career opportunities:** students will develop skills and abilities that open up new career opportunities.
5. **Communication:** students will learn to communicate effectively with patients, individuals, and multi-disciplinary healthcare team health professionals.
6. **Health status assessment:** students will learn to design and carry out health and nutritional status assessment protocols.
7. **Nutritional risk factors:** students will learn to identify nutritional risk factors and application of tools for nutrition screening.
8. **Nutrition and dietetic care:** students will learn to provide nutrition and dietetic care for individuals, groups, and populations at risk of developing long-term health conditions.
9. **Therapeutic diets:** students will learn to plan and provide therapeutic diets to manage and treat medical conditions.
10. **Higher education:** students will be able to pursue higher education and research in clinical nutrition, dietetics, and food science.
11. **Nutritional assessment:** students will learn the methods and application of validated tools of assessing human nutritional requirements and diet planning for the individual and community.

- **Bloom's Taxonomy (BT) Levels:** 1.Remember 2.Understand 3.Application 4.Analysis 5.Evaluation 6. Creation Programme
- **Elements of** Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)
- **Relevance to** Local (L)/ National (N)/ Regional(R)/Global (G)
- **Relation to** Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

NEP STRUCTURE FOR UNDERGRADUATE COURSE

SEMESTER	COURSE NAME	CREDIT	COURSE TYPE
I	Fundamentals of Nutrition	4 (3+1)	MAJOR
	Human Anatomy and Physiology	4 (3+1)	MAJOR
	Basics of Food Science	4 (3+1)	MAJOR
	Environmental Science	4 (3+1)	MDC
	Indian Knowledge System on Foods	2 (2+0)	IKS - I
	Computer Literacy	2 (0+2)	SEC
	English for Communication	2 (2+0)	AEC
		22	

SEMESTER -I

		NAAC Accredited "A+ "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27		
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 101 Fundamentals of Nutrition (Major)			Credits /Hours per week		(3+1) / 3 hrs/week Theory: 45 Hrs		
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lecture and Audio Visual Aids							
Course outcome (CO)									
CO1 To introduce different food groups, their nutritional value, and their significance in daily diet.									
CO2 To recognize the roles of food and the role of different nutrients, their requirements, and their impact on deficiency and excess.									
CO3 To acquaint students with diverse methods of cooking and their advantages and disadvantages.									
CO4 Understand various food groups and RDA									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/R/G	Relation to G/ES/HV/PE
I	Concept of Food and Nutrition: Introduction to nutrition- definition of food, nutrition, nutrients, and health, functions of food, food groups- classification, Indian Food Pyramid, My Plate and Dietary Guidelines For Indians, Recommended Dietary Allowances (RDA and EAR) given by NIN, Hyderabad, Balanced diet (ICMR-NIN), Food Security, Food and Nutrient Supplements.	9h	5%	1,2	CO1, CO4	PSO1	SD	L/N/R/G	ES/HV/PE

II	Composition, Classification, Functions, RDA and EAR, dietary sources, and clinical manifestations of deficiency/ excess of the following nutrients/non nutrients: Carbohydrates, lipids, protein, water (function and water balance), fiber (crude and dietary)	9h	10%	1,2	CO1, CO2, CO4	PSO1	SD	L/N/R/G	ES/HV/PE
III	Classification, Functions, RDA and EAR, dietary sources, and clinical manifestations of deficiency/ excess of the following nutrients: Fat soluble vitamins A, D, E, K and Water soluble vitamins – B Complex Vitamin C	9h	10%	1,2	CO1, CO2, CO4	PSO1	SD	L/N/R/G	ES/HV/PE
IV	Classification, Functions, RDA and EAR, dietary sources, and clinical manifestations of deficiency/ excess of the following nutrients Macro minerals- calcium, potassium, phosphorous, chlorine, sulfur, magnesium, Micro Minerals – iron, zinc, selenium, copper, manganese	9h	10%	1,2	CO1, CO2, CO4	PSO1	SD	L/N/R/G	ES/HV/PE
V	Introduction to different culinary terms and cooking methods Introduction to culinary terms, Moist and dry heat methods: Boiling, Simmering, Poaching, Steaming, Pressure cooking Grilling, broiling, roasting, Baking, Sautéing, Shallow fat frying, Deep fat	9h	15%	1,2	CO3, CO4	PSO1	SD	L/N/R/G	ES/HV/PE

	frying, Combined (Moist and dry) Methods: Braising, Stewing, Germination, Fermentation, Braising, Microwave cooking, Solar cooking. Advantages and disadvantages (Nutrient losses) of nutrients on cooking and methods to prevent these losses.								
References									
1.	Srilakshmi B. 9th Edition (2023). Dietetics. New Age Publishers. ISBN 13: 9789395161848								
2.	Dietary Guidelines for Indians A Manual, Revised Edition 2024. ICMR NIN, Hyderabad								
3.	Mudambi, S. R. (2007). Fundamentals of foods, nutrition and diet therapy. New Age International Pvt. Ltd. ISBN-10 : 9788122433494								
4.	Bamji, M. S., Krishnaswamy, K., & Brahmam, G. N. V. (Eds.). (2016). <i>Textbook of human nutrition</i> . Oxford & IBH. ISBN 13: 9788120417908.								
5.	Chowdhury SR, Tamber Aeri B () Textbook of Food Science and Nutrition. Kindle Edition.								
6.	Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers. ISBN 13: 978-9395161091.								
7.	G Subbulakshmi, Udipi SA, Ghurge PA (2021). Food Processing and Preservation. ISBN: 978-8122472332.								
8.	https://www.coursera.org/learn/food-and-health								
9.	https://www.nutrition.gov								
10.	https://www.who.int/health-topics/nutrition								

 सत्यं विदितं सुन्दरम् Estd. 1949 Accredited Grade "A+" by NAAC		NAAC Accredited "A+" Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27		
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 101 Fundamentals of Nutrition (Major)			Credits /Hours per week		(3+1) / 2 hrs/week Practical: 30 Hrs		
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lectures, Demonstration, Audio - visual aids, Hands on experience,							
Course outcome (CO) Students will be able CO1 To introduce different food groups, their nutritional value, and their significance in daily diet. CO2 To recognize the roles of food and the role of different nutrients, their requirements, and their impact on deficiency and excess. CO3 To acquaint students with diverse methods of cooking and their advantages and disadvantages. CO4 Understand various food groups and RDA									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/R/G	Relation to G/ES/HV/PE
I	Market survey of locally available food items viz. cereals, pulses, fruits and vegetables, milk and milk products, fats and oils, nuts and oilseeds, sugar and jaggery, meat, fish, and poultry and miscellaneous food items like biscuits, jams, jellies, ketchup etc. and their cost.	5h	5%	1,2	CO1	PSO1	SD	L/N/R	ES/HV/PE
II	Classify foods on the basis of nutrients: Protein, Iron, Calcium, Vitamin A,	5h	5%	1,2	CO1, CO2,	PSO1, PSO2,	SD		ES/HV/PE

	Vitamin C (list of 10 foods with highest and lowest amount of these nutrients- Plant and animals courses). Calculate the cost of food required for providing a given amount of nutrient (based on IFCT database) for an adult man/woman as per RDA/EAR for each food group: cereals, pulses, fruits and vegetables, milk and milk products, fats and oils, nuts and oilseeds, sugar and jaggery, meat, fish, and poultry				CO4	PSO3		L/N/R	
III	Overview of Controlling techniques and Food exchange system Controlling techniques: Weights and measures - standard and household measures for raw and cooked foods (metric). Food exchange system and its applications.	5h	10%	1,2	CO1, CO2, CO4	PSO1	SD	L/N/R	ES/HV/PE
IV	Standardization of Basic Food Preparations Beverages: Tea, coffee, cocoa, fruit juice, milk shakes and smoothies Cereal and flour mixtures: Basic preparations - boiled rice & rice, pulao; chapati, puri, paratha, sandwiches, pastas Pulses and legumes: Using whole, split (with and without skin) and sprouted	7h	15%	1,2,3	CO1, CO2, CO3, CO4	PSO1, PSO2, PSO3	SD	L/N/R	ES/HV/PE

V	Standardization of basic food preparations Nuts and oilseeds: Chikki, laddoo Vegetables: Simple salad, dry and gravy vegetable Fruits: Fruit preparations using fresh fruits – fruit juices and fruit salad Milk and products: Milk porridge – dalia, curd, paneer and their commonly made preparations- butter milk, lassi, shrikhand; milk based simple desserts and puddings - custards, kheer, ice-cream Egg: Hard and soft boiled, poached, scrambled, fried, omelette, eggnog Soups: clear and cream soups Snacks: Pakoras, Upma, poha, dhokla.	8h	15%	1,2,3	CO1, CO2, CO3, CO4	PSO1, PSO2, PSO3	SD	L/N/R	ES/HV/PE
References									
1.	Srilakshmi B. 9th Edition (2023). Dietetics. New Age Publishers. ISBN 13: 9789395161848								
2.	Dietary Guidelines for Indians A Manual, Revised Edition 2024. ICMR NIN, Hyderabad								
3.	Mudambi, S. R. (2007). Fundamentals of foods, nutrition and diet therapy. New Age International Pvt. Ltd. ISBN-10 : 9788122433494								
4.	Bamji, M. S., Krishnaswamy, K., & Brahmam, G. N. V. (Eds.). (2016). <i>Textbook of human nutrition</i> . Oxford & IBH. ISBN 13: 9788120417908.								
5.	Chowdhury SR, Tamber Aeri B () Textbook of Food Science and Nutrition. Kindle Edition.								
6.	Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers. ISBN 13: 978-9395161091.								

7.	G Subbulakshmi, Udipi SA, Ghurge PA (2021). Food Processing and Preservation. ISBN: 978-8122472332.
8.	https://www.coursera.org/learn/food-and-health
9.	https://www.nutrition.gov
10.	https://www.who.int/health-topics/nutrition

 MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA सत्यं विदुषं सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC	NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 102 Human Anatomy and Physiology (Major)			Credits /Hours per week		(3+1) / 5 hrs/week Theory: 45 Hrs		
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lecture, powerpoint presentations etc.							
Course outcome (CO) Students will be able									
CO1 To understand the anatomy of the various organs and organ systems of the human body									
CO2 To understand the functioning of the various systems of the human body									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Definition of Human anatomy and physiology Relevance of Human anatomy and physiology for Dietitians and Nutritionists Basic concepts –Anatomical positioning of various organs in the human body, Homeostasis -definition and relevance	4h	5%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES
II	Cell structure and functions- Cell organelles -Structure and functions of nucleus, cytoplasm, lysosomes, endoplasmic	4h	5%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES

	reticulum, Golgi apparatus, mitochondria, and cell membrane. Movement of particles across cell membrane -active transport and passive transport, body fluids and their compartments and functions Cellular growth, Mitosis, and meiosis. Tissues – Classification, structure, and functions Body fat and water percentage across the life cycle and relevance for health								
III	Musculoskeletal system: structure and functions of bone, cartilage and connective tissue and muscle fibres. Types of muscles, structure and function. Bone health- Changes in bone mass during aging: osteoporosis	2h	2.5%	1,2,3,4	CO1, 02	PSO1, PSO2	Emp	G	ES
IV	Respiratory System: Structure and functions of organs of respiration, mechanism of respiration, Pulmonary ventilation, external & internal respiration. Role of hemoglobin. Regulation of respiration: nervous and chemical. Respiratory function tests, Lung volume & Capacities	3h	4%	1,2,3,4	CO1, 02	PSO1, PSO2	Emp	G	ES
V	Digestive System: Structure and function of organs of gastro- intestinal tract- Oral cavity, oesophagus, stomach, small intestine, large intestine, colon, pancreas, liver and gall bladder. Role of liver, gall bladder and pancreas in	6h	8%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES

	digestion. Enzymes and hormones of the GIT. Role of gut microbiota. Digestion and absorption process. Gut brain connection								
VI	Excretory System, : Anatomy and physiology of kidneys, ureter, urinary bladder. Structure and function of nephron. Glomerular filtration rate. Urine formation. Normal and abnormal constituents of urine.	3h	4%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES
VII	Circulatory System: Structure and function of the heart and blood vessels. Capillary exchange. Regulation of cardiac output, cardiac cycle, blood-pressure and factors affecting it. Systemic, hepatic portal and pulmonary circulation. Interstitial fluid and lymph. Blood constituents- Erythrocytes, leucocytes, thrombocytes, plasma. Blood coagulation. Blood groups	5h	7%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES
VIII	Endocrine system; Structure, Mode of Action and Physiological functions of Pituitary, Thyroid, Parathyroid, Adrenal and Reproductive Hormones. Pancreatic Hormones	3h	4%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES
IX	Immunology: Basic principles of Immunology- concept of immunity and types. Immunoglobulin- Types, general structure & function. T-Cells,	3h	4%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES

	B-Cells structure & function. Humoral and Cell-mediated Immunity. Role of nutrition in immunity								
X	Regulation of body temperature: Thermo genesis, thermolysis, pyrexia, hypothermia, role of skin in maintaining body temperature. Homeostasis -definition and relevance	2h	2.5%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES
XI	Reproduction System: Male reproductive system -anatomy and physiology, Female reproductive system- anatomy and physiology, Organs including hormones- structure and function, Menarche, Menstruation and ovarian cycles, Pregnancy-conception, three trimesters, Parturition, Lactation, Menopause	6h	8%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	G,ES
XII	Nervous system: neuron structure and function, brain major division and sensory motor neurons. Central nervous system, Autonomic nervous system. Parasympathetic nervous system: Role of adrenaline, glucagon and insulin.	4h	5%	1,2,3	CO1, 02	PSO1, PSO2	Emp	G	ES

References

1.	Tortora, G.J. and Derrickson, B.H. (2017). Principles of Anatomy and Physiology. 15 th Edition. John Wiley and Sons. ISBN 1119400066
2.	Waugh, A and Grant, A. (2022). Ross & Wilson Anatomy and Physiology in Health and Illness. 14 th Edition. Elsevier Health Sciences. ISBN 0323834612

3.	Standring, S. Gray's Anatomy. (2020). The Anatomical Basis of Clinical Practice. 42 nd Edition. Elsevier ISBN 0702077054
4.	Hall, J. E., & Hall, M. E. Guyton and Hall Textbook of Medical Physiology. 14 th Edition, 2021 Elsevier ISBN 9780323672801
Webliography	
1.	Carbrey, J. and Jakoi, E. 2024. Introductory Human Physiology. Duke University. Available on Coursera. https://www.coursera.org/learn/physiology?action=enroll

For Practical

		NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5										
Year	I	BND 102 Human Anatomy and Physiology (Major)			Credits /Hours per week		(3+1) / 5 hrs/week Practical: 30 Hrs			
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O			
Mode of Transaction		Lecture, powerpoint presentations etc.								
Course outcome (CO) Students will be able CO1 To understand the anatomy of the various organs and organ systems of the human body CO2 To understand the functioning of the various systems of the human body										
Unit No.			Contact Hours	Weight ge (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I.	Respiratory System: Spirometry, Breath holding test Use of Respirometer to estimate respiratory quotient. Pulse oximeter.		5h	7%	1,2,3,4,5	CO1,CO2	PSO1, PSO2	Emp	G	ES
II.	Cardiovascular System: Measurement of blood pressure and pulse rate, Effect of		5h	7%	1,2,3,4,5	CO1,CO2	PSO1, PSO2	Emp	G	ES

	exercise on blood pressure and pulse rate								
III.	Blood test: Demonstration: Microscope, Haemocytometer, Blood, RBC count, Hb, WBC count, Differential Count Red cell morphology Blood group identification	6h	8%	1,2,3,4,5,6	CO1,CO2	PSO1, PSO2	Emp	G	ES
IV.	Body Composition Analysis using Bioelectric impedance (BIA). Measurement of Grip strength Use of pedometer.	4h	5%	1,2,3,4,5	CO1,CO2	PSO1, PSO2	Emp	G	ES
V.	Digestion: Test salivary digestion	2h	3%	1,2,3,4,5	CO1,CO2	PSO1, PSO2	Emp	G	ES
VI.	Excretion: Examination of Urine, Specific gravity, Albumin, Sugar, Microscopic examination for cells and cysts First aid medical skills like CPR	8h	11%	1,2,3,4,5	CO1,CO2	PSO1, PSO2	Emp	G	ES

 सत्यं शिरो सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC	NAAC Accredited “A ”Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year	2026-27				
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 103 Basics of Food Science (Major)			Credits /Hours per week		(3+1) / 4 hrs/week Theory: 60 Hrs		
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lecture							
Course outcome (CO) Students will be able CO1 To understand the concepts and principles of Food Science. CO2 To gain knowledge of different plant and animal derived foods and their nutritive values and properties. CO3 To gain both theoretical as well as practical knowledge in handling foods and applying processing principles.									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Function of Foods and classification of Food groups; Cooking Techniques –Dry heat and Moisture heat techniques, Combination techniques, Techniques using fat as cooking medium.	9h	10%	1,2	CO1	PSO3, PSO4, PSO10	Emp	L/N/G	ES

	Fruit & Vegetable Preservation – Pickling, Preservation with high concentration of sugar – jam, jelly, candied fruit, Dehydration of fruits and vegetables, Concentration – Tomato sauce, Canning of acid and non-acid foods, Freezing, Chemical Preservation Moisture in Foods: Structure of water and ice; Concept of free water, entrapped water & bound; water and their implications; Water activity, Relative humidity; Determination of moisture and water activity in foods - Perishable, semi-perishable and nonperishable foods.								
II	Cereals: Structure and Composition of Rice, Wheat, and Millets. Effect of cooking on starch- Dextrinization, gelatinization, Modified starch, Resistant starches, Inversions, browning reactions in food (Enzymatic and non – enzymatic), factors affecting Gel	9h	10%	1,2	CO1,CO4	PSO3, PSO4, PSO10	Emp/Ent/SD	L/N/G	ES

	strength and Retrogradation; Primary processing of cereals and Millets – Drying and Milling of cereals and millets, Byproducts; Value-added products like pasta, noodles, multigrain flours, and RTE mixes. Pectic substances and changes on cooking and processing. Pulses: structure Composition of Pulses and Nutritive value of various pulses; Cooking study of pulses with different cooking media; Germination process and factors affecting germination; processing of fermented products from pulses like soybean. Functionality of proteins- hydration and solubility, denaturation, dough texturization [gluten formation] flavor binding)								
III	Milk– Milk composition and nutritive value; Homogenization, Pasteurization of milk, types of pasteurization and effect on nutritive value, UHT; Milk Products – Flavored milk, Ice cream, Cheese and Milk powders; Preparation of Indigenous	9h	10%	1,2	CO5	PSO3, PSO4, PSO10	Emp/Ent/SD	L/N/G	ES

	milk products - channa, paneer, Sandesh, Rasogolla and Khoa								
IV	Eggs and Poultry: Structure of an egg; Composition and Nutritive value of eggs; functional properties of egg and cooking of eggs – green ring formation; preparation of egg powders; Nutritive value of poultry meat; Dressing of a poultry bird and cuts of poultry Meat – Structure of muscle, Composition and nutritive value of meat, Classes of meat, Slaughter and steps in slaughtering of animals, Postmortem changes of meat, factors affecting cooking quality of meat – Juiciness, marbling, flavor and tenderness; Meat cooking techniques; Meat emulsion and value-added meat products	9h	5%	1,2	CO1,CO3	PSO3, PSO4, PSO10	Emp/Ent/SD	L/N/G	ES
V	Spices and Condiments: Roles of spices and condiments in cooking; health benefits and types of spices & herbs; Essential oils, fixed oil and	9h	5%	1,2,3	CO2	PSO3, PSO4, PSO10	Emp/Ent/SD	L/N/G	ES

	oleoresins; Primary processing of spices – Sterilization of spices; milling of spices and cryogenic grinding of spices; Curry Powders Oils and Fats: Types of fats and oils; Smoking oils, Physical and chemical properties of oils- FFA, Iodine value, saponification, Rechiert Miessl value, fat emulsification and emulsifiers; Factors affecting absorption of oils; Processing of oils- Oil extraction, Refining of oils and Fractionation of oils; hydrogenated fats, Mayonnaise and specialty fats. Rancidity and its prevention. Sensory Evaluation of Foods: Types of sensory organs, Perception of sensory response, Basic tastes, Preparation of sensory card using various methods								
References									
1.	Swaminathan. M.S(1987) <i>Food science, Chemistry and Experimental Foods</i> (2 nd edition) Bappco Publishers								
2.	Norman. N. Potter (2007) <i>Food Science</i> (5 th edition) CBS								

3.	Griswold R.M (1962, Digitized in 2008) <i>Experimental study of Foods</i> (digitized edition 2008) Houghton Mifflin Publishers
4.	Thangam Philip (1965 digitized in 2006). Modern Cookery for Teaching and Trade, volume I&II (Digitized edition 2006), Orient Longmans Ltd. ISBN 8125025189, 9788125025184
5.	MacWilliams (2013). <i>Food Fundamentals</i> (10 th edition) Pearson Education. ISBN 1292054409, 978129205407.
6.	Shakunthala Manay & Shadakhraswamy. (2008) <i>Food Facts & Principles</i> (2008 Reprint) New Age International. ISBN 8122422152
7.	Srilakshmi. B. (2018) <i>Food Science</i> (7 th edition). New Age International (P) Ltd, ISBN 9789386418890

Practical

 सत्यं शिवं सुन्दरम् Estd. 1949 Accredited Grade 'A' by NAAC				Academic Year		2026-27					
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5											
Year		I	BND 103 Basics of Food Science (Major)			Credits /Hours per week		(3+1) / 4 hrs/week Theory: 60 Hrs			
Semester		I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O			
Mode of Transaction			Practical								
Course outcome (CO) Students will be able CO1 To understand the concepts and principles of Food Science. CO2 To gain knowledge of different plant and animal derived foods and their nutritive values and properties. CO3 To gain both theoretical as well as practical knowledge in handling foods and applying processing principles.											
Unit No.				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I		Cooking methods Moist heat methods – (i) boiling, simmering, steaming & Pressure cooking		2h	5%	1,2	CO1	PSO1, PSO2, PS10	Emp	L/N/G	ES
II		Dry heat methods – baking. Fat as a		2h	5%	1,2	CO1,CO4	PSO1, PSO2,	Emp/Ent/SD	L/N/G	ES

	medium for Cooking - shallow and deep fat frying.					PS10			
III	Studying Temperature of gelatinization in different cereal and millet starches and gel Strength. Determination of gluten content and water absorption property of various flours. Non enzymatic browning (dextrinization, caramelization, Maillard reaction)	2h	5%	1,2	CO5	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
IV	Cooking of soaked and unsoaked pulses Common preparations with pulses – Composite mixes and malts	2h	5%	1,2	CO1, CO3	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
V	Processing of vegetables- Fermentation and Pickling Prevention of darkening in fruits & vegetables. Measurement of titratable acidity of fruits and vegetable juices. Enzymatic browning and factors affecting it.	2h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
VI	Preservation of fruits - Jam, Jelly and Candied fruit	5h	5%	1,2,3	CO1, CO3	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES

VII	Preservation of fruits – Dehydration of fruits and vegetables	2h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
VIII	Processing of Milk & milk products – Paneer and Cheese.	5h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
IX	Processing of Milk & milk products - Common preparation indigenous milk sweets like Channa based Rasogolla and Sandesh	3h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
X	Processing of Flesh foods: meat & poultry- preparations like pickling and value-added products – nugget, meat loaf and meat balls Processing of Flesh foods: Fish and shrimp – preparations like battered shrimp, Pickled fish & shrimp; fish wafers and fingers	2h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
XI	Egg Experimental cookery- boiled egg, poached egg. Common preparations with eggs.	2h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES
XII	Sensory Evaluation and preparation of score card.	1h	5%	1,2,3	CO2	PSO1, PSO2, PS10	Emp/Ent/SD	L/N/G	ES

		NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda		Academic Year		2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 104 Environment Science (MDC)			Credits /Hours per week		4(3+1) / 5 hrs/week Theory: 45 Hrs		
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lecture							
Course outcome (CO) Students will be able CO1 To appreciate historical context of human interactions with the environment. CO2 To gain insights into the international efforts to safeguard the Earth’s environment and resources. CO3 To understand the concept of natural resources; identify types of natural resources, their distribution and use with special reference to India. CO4 To develop a critical understanding of the environmental issues of concern. CO5 To understand the concepts of ecosystems, biodiversity and conservation. CO6 To learn about pollution, types and sources of different kinds of pollution.									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Multidisciplinary nature of environmental studies- Definition, scope and importance. Natural resources- Renewable and non-	6h	15%	1,2	CO1,CO2	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	renewable resources and their associated problems. Forest resources- Use and over-exploitation, deforestation, timber extraction, mining, dams and their effects on forest and tribal people. Water resources- Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. Mineral resources- Use and exploitation, environmental effects of extracting and using mineral resources. Food resources- World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.								
II	Energy resources- Growing energy needs, renewable and non- renewable	5h	15%	1,2,3	CO3	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	energy sources, use of alternate energy sources. Land resources- Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles. Ecosystems- Concept, structure and function of an ecosystem. Producers, consumers and decomposers, energy flow in the ecosystem, ecological succession. Food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of forest, grassland, desert and aquatic ecosystems.								
III	Biodiversity and its conservation- Introduction, definition, genetic, species, ecosystem diversity and	6h	15%	1,2,3	CO4	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	biogeographical classification of India. Value of biodiversity- Consumptive use, productive use, social, ethical, aesthetic and option values. Biodiversity at global, national and local levels, India as a mega-diversity nation. Hot-spots of biodiversity. Threats to biodiversity- Habitat loss, poaching of wildlife, man-wildlife conflicts, endangered and endemic species of India. In-situ and Ex-situ conservation of biodiversity. Environmental pollution- Definition, cause, effects and control measures of air, water, soil, marine, noise and thermal pollution and nuclear pollution/ hazards. Solid waste management- Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of								
--	---	--	--	--	--	--	--	--	--

	pollution.								
IV	Social issues and the environment- Unsustainable to sustainable development, urban problems related to energy. Water conservation, rain water harvesting, watershed management. Environmental ethics- Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Environment protection acts- Air (Prevention and control of pollution) act, water (Prevention and control of pollution) act, wildlife protection act, forest conservation act, Issues involved in enforcement of environmental legislation, public awareness. Human population and the environment- Population growth, variation among	7h	15%	1,2,3	CO5	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	nations, population explosion. Role of Information Technology in environment and human health.								
V	Natural disasters- Meaning and nature, types (floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, heat and cold waves, global warming, sea level rise, ozone depletion) and effects. Man-made disasters- Nuclear, chemical, and biological disasters, building fires, coal fires, forest fires, oil fires, road accidents, rail accidents, air accidents, and sea accidents. Disaster management- International strategy for disaster reduction at national and global levels; National disaster management framework- Financial arrangements, role of NGOs, community-based	6h	15%	1,2,3	CO6,	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	organizations and media, central, state, district and local administration, armed forces in disaster response, police and other organizations. Feeding the people struck by the disaster, managing house and dress need during disaster								
--	---	--	--	--	--	--	--	--	--

References

1.	Fisher, Michael H. (2018). <i>An Environmental History of India: From Earliest Times to the Twenty-First Century</i> . Cambridge University Press.
2.	Headrick, Daniel R. (2020). <i>Humans versus Nature: A Global Environmental History</i> . Oxford University Press.
3.	Hira, D. D. & Reganold, J. P. (2010). <i>Natural Resource Conservation: Management for a Sustainable Future</i> (10th ed.). Pearson.
4.	Masters, Gilbert M. & Ela, Wendell P. (2008). <i>An Introduction to Environmental Engineering and Science</i> . Pearson.
5.	Harper, Charles L. (2017). <i>Environment and Society: Human Perspectives on Environmental Issues</i> (6th ed.). Routledge.
6.	Harris, Frances (2012). <i>Global Environmental Issues</i> (2nd ed.). Wiley-Blackwell.
7.	Bawa, K. S., Oomen, M. A., & Primack, R. (2011). <i>Conservation Biology: A Primer for South Asia</i> . Universities Press.
8.	Sinha, N. (2020). <i>Wild and Wilful</i> . HarperCollins India.
9.	Jackson, A. R. W. & Jackson, J. M. (2000). <i>Environmental Science: The Natural Environment and Human Impact</i> . Pearson Education.
10.	Masters, G. M. & Ela, W. P. (2008). <i>Introduction to Environmental Engineering and Science</i> . Prentice Hall.
11.	Denle, A., Azadi, H., & Arbiol, J. (2015). Global assessment of technological innovation for climate change adaptation and mitigation in the developing world. <i>Journal of Environmental Management</i> , 161, 261–275.
12.	Barnett, J. & O'Neill, S. (2010). Maladaptation. <i>Global Environmental Change</i> , 20, 211–213.
13.	Jørgensen, Sven Erik, Marques, João Carlos & Nielsen, Søren Nors (2016). <i>Integrated Environmental Management: A Transdisciplinary Approach</i> . CRC Press.
14.	Theodore, M. K. & Theodore, Louis (2021). <i>Introduction to Environmental Management</i> (2nd ed.). CRC Press.
15.	UNEP (2007). <i>Multilateral Environmental Agreement Negotiator's Handbook</i> . University of Joensuu.
16.	Ministry of Environment, Forest and Climate Change (2019). <i>A Handbook on International Environment Conventions & Programmes</i> .

Practical

 माता साहस्रभुदी विश्वविद्यालय सत्यं शिवं सुन्दरम् Est. 1949 Accredited Grade "A" by NAAC				Academic Year		2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 104 Environment Science (MDC)		Credits /Hours per week		4(3+1) / 5 hrs/week Practical: 30 Hrs			
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26		Maximum Marks/Grade		100/O			
Mode of Transaction		Practical							
Course outcome (CO) Students will be able CO1 To appreciate historical context of human interactions with the environment. CO2 To gain insights into the international efforts to safeguard the Earth’s environment and resources. CO3 To understand the concept of natural resources; identify types of natural resources, their distribution and use with special reference to India. CO4 To develop a critical understanding of the environmental issues of concern. CO5 To understand the concepts of ecosystems, biodiversity and conservation. CO6 To learn about pollution, types and sources of different kinds of pollution.									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Water, soil and air quality analysis - Determination of pH and water samples - Measurement of turbidity - Biological Oxygen Demand and Chemical Oxygen Demand analysis - Total dissolved solids measurement	15h	15%	1,2,3	CO6,	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	• Soil texture, moisture, pH and organic carbon estimation • Measurement of particulate matter (PM) • Indoor air quality assessment								
II	Biodiversity and ecosystem • Identification of local flora and fauna • Preparation of Poshan Vatika (Nutri-garden) • Compost preparation • Vermicompost demonstration • Ecosystem observation visit/Sewage treatment plant visit/Water treatment plant visit/ Biodiversity park	15h	10%	1,2,3	CO6,	PSO2, PSO4	EMP, ENT	L,N,R,G	ES,HV

	The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition		Academic Year				2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5										
Year	I	BND 105 Indian Knowledge System on Foods	Credits / Hours per Week				2 (2 + 0)/ 2 hours/ Week Theory: 30 Hrs			
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26	Maximum Marks/Grade				50/O			
Mode of Transaction		Lectures								
Course Outcome (CO) Students will be able CO 1. To explore and understand the Indian Knowledge system in the context of the diverse Indian food culture. CO 2. To understand the concept of Food Anthropology and its importance- regional cuisines, culinary traditions historical, cultural, and social factors that have shaped Indian food practices and traditions over time. CO 3. To analyze the Dietary Patterns and Investigate the local, Indigenous ingredients used in traditional Indian culinary practices across different parts of India- Central, Northern, Western, and Eastern India. CO 4. To understand the traditions of the food-related customs, rituals, and daily practices in Indian households across various regions. CO 5. To promote the rich culinary heritage of India and explore ways to preserve and promote traditional food practices by documenting and recording traditional recipes, cooking methods, and food stories from different regions. CO 6. To support the Eat Right Movement and Integrate knowledge of regional food cultures into the Eat Right Movement, promoting healthy eating habits and sustainable food practices.										
Unit No.	Topic		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent /SD	Relevance to L/N/RG	Relation to G/ES/H V/PE

I	Introduction to Indian Knowledge Systems and its importance as per NEP 2020. Traditional diets and food culture (Food anthropology) and Regional diets of North India (Jammu, Kashmir, Ladakh, Punjab, Haryana, Uttarakhand) and South India (Tamil Nadu, Kerala, Andhra Pradesh, Telangana, Puducherry, Karnataka), the Food Preferences and Taboos in the diets of these cultures and Role of the Traditional Foods in Health and Disease in these regions/cultures.	06	20%	1,2,3	CO1	PSO2, PSO3 PSO4	EMP,EN T,SD	N	G, HV
II	Traditional diets and food culture (Food anthropology) and Regional diets of Central India (Uttar Pradesh, Madhya Pradesh) and Western India (Gujarat, Maharashtra, Rajasthan, Goa), the Food Preferences and Taboos in the diets of these cultures and Role of the Traditional Foods in Health and Disease in these regions/cultures.	06	20%	1,2,3	CO2	PSO2, PSO3 PSO4	EMP, ENT	L,N,R	G, ES, HV
III	Traditional diets and food culture (Food anthropology) and Regional diets of anthropology Regional diets of East India (West Bengal, Bihar, Odisha) and the Food Preferences and Taboos in the diets of these cultures and Role of the Traditional Foods in Health and Disease in these regions/cultures.	06	20%	1,2,3	CO3	PSO2, PSO3 PSO4	EMP,EN T	L,N,R	HV
IV	Traditional diets and food culture (Food anthropology) and Regional diets of North east India (Assam, Mizoram, Manipur, Meghalaya, Sikkim, Nagaland, Tripura, Arunachal Pradesh), the Food Preferences and Taboos in the diets of these cultures and Role of the Traditional Foods in Health and Disease in these regions/cultures.	06	20%	1,2,3	CO4	PSO2, PSO3 PSO4	EMP,EN T	L,N,R	HV
V	Traditional diets and food culture (Food anthropology) of specific religions of India (Muslims, Parsi, Buddhist, Sikhs and any other local communities), the Food Preferences and Taboos in the diets of these cultures and Role of the Traditional Foods in Health and Disease in these regions/cultures.	06	20%	1,2	CO5	PSO2, PSO3 PSO4	EMP,EN T	L,N,R	G, ES, HV

	Reference Books:
1.	Nambiar, V. (Ed.). (2021). Indian Food Anthropology and the Eat Right Movement- Volume 1. Selective & Scientific Books. ISBN: 978-81-951492-2-3.
2.	Nambiar, V. (Ed.). (2021). Indian Food Anthropology and the Eat Right Movement- Volume 2. Selective & Scientific Books. ISBN: 978-81-951492-4-7.
3.	Achaya, K. T. (1994). Indian food: a historical companion. Oxford University Press. ISBN-13978-0195634488
4.	Sen, C. T. (2014). Feasts and fasts: A history of food in India. Reaktion Books. ISBN-13978-1780233529.
5.	Indian Knowledge Systems :: (iksindia.org)
6.	Centre for Indian Knowledge Systems (ciks.org)

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition			Academic Year				2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5												
Year	I	BND 106 Computer Literacy			Credits / Hours per Week				2 (0 + 2)/ 4 hours/ Week Practical: 60 Hrs			
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade				50/O			
Mode of Transaction		Lectures, Tutorial and Presentations										
Course Outcome (CO) Students will be able CO 1.To know about the various parts of a computer and to understand how it's working. CO 2. To learn about word processing, spreadsheets and making presentations.												
Unit No.	Topic				Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Introduction and Basic Applications of Computer - Components of Computer System - Central Processing Unit - Keyboard, mouse and VDU, Other Input devices - Computer Memory Concept of Hardware and Software - Application Software, Systems software				06	10%	1,2,3	CO1	PSO4	SD	L,N,R,G	PE

	• Concept of computing, data, and information Applications of IECT Bringing computer to life-Connecting keyboard, mouse, monitor and printer to CPU, Checking power supply								
	Operating Computer using a GUI-based operating system: • What is an Operating System; Basics of Popular Operating Systems • The User Interface • Using Mouse; Using right Button of the Mouse and Moving Icons on the screen, • Use of Common Icons, Status Bar, Using Menu and Selection, Running an Application, Viewing of File	06	10%	1,2,3	CO1	PSO4	SD	L,N,R, G	PE
	Folders and Directories • Creating and Renaming of files and folders • Opening and closing of different Windows; • Using help; Creating Short cuts, Basics of O.S Setup; Common utilities.	08	13.3%	1,2,3	CO2	PSO4	SD	L,N,R, G	PE
	Understanding Word Processing • Word Processing Basics; Opening and Closing of documents; • Text creation and Manipulation; Formatting of text; Table handling; Spell check, language setting and thesaurus; • Printing of word document.	06	10%	1,2,3,6	CO2	PSO4	Emp/E nt/SD	L,N,R, G	PE

	Using Spread Sheet Basics of Spreadsheet; Manipulation of cells; Formulas and Functions; Editing of Spread Sheet, printing of Spread Sheet.	04	6.7%	1,2,3,6	CO2	PSO4	Emp/E nt/SD	L,N,R, G	PE
II	Basic of Computer networks - LAN, WAN - Concept of Internet; Understanding the World Wide Web, Web Browsers, Browsing the internet using a Search Engine - connectivity related troubleshooting, - World Wide Web; Web Browsing softwares, Search Engines; Understanding URL; Domain name; IP Address; Using e-governance website.	06	10%	1,2,3	CO1	PSO4	Emp/E nt/SD	L,N,R, G	PE
	Input Devices - Keyboard, Pointing Devices, Scanning Devices, - Optical Recognition Devices, Digital Camera, Voice Recognition System - Data Acquisition Sensors, Media Input Devices.	06	10%	1,2,3	CO1	PSO4	Emp/E nt/SD	L,N,R, G	PE
	Output Devices - Display Monitors - Printers - Voice Output Systems - Projectors, Terminals	04	6.7%	1,2,3	CO1	PSO4	Emp/E nt/SD	L,N,R, G	PE
	Communications and collaboration - Basics of electronic mail; Getting an email account; Sending and receiving emails; - Accessing sent emails; Using Emails; Document collaboration; Instant Messaging; Netiquettes.	06	10%	1,2,3,4,6	CO2	PSO4, PSO5	Emp/E nt/SD	L,N,R, G	PE

	Making Presentation - Basics of presentation software; - Creating Presentation; Preparation and Presentation of Slides; Slide Show; - Taking printouts of presentation/handouts	08	13.3%	1,2,3,6	CO2	PSO4	Emp/Ent/SD	L,N,R,G	PE
	References:								
1.	Balagurusamy E., Fundamentals of Computers (2009). Tata McGraw Hill Education Private Limited NEW DELHI ISBN 9780070141605								
2.	E-Learning Material Computer Application of 1st/2nd semester of all Engineering Branches of Diploma courses of SCTE&VT, Odisha. Ajay Ku. Panda, D. Susmita, Ajit Ku. Behera, Kalpana Panigrahi, Swetalina Das, Published by SCTE&VT, Odisha, Bhubaneswar-12 https://sctevtodisha.nic.in/en/secretarysctevt@gmail.com,material.sctevt@gmail.com								
3.	Basic Applications of Computers http://egyankosh.ac.in/handle/123456789/50864								
4.	Computer Basics (Video) http://hdl.handle.net/123456789/35766								

 सत्यं विदुषं सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC	NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda				Academic Year		2026-27		
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 107 English for Communication (AEC Course)			Credits /Hours per week		(2+0) / 2 hrs/week Theory: 30 Hrs		
Semester	I	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		50/O		
Mode of Transaction		Lectures and Presentations							
Course Outcome (CO) Students will be able to CO1 Understand the significance of communication, the process and different types of communication CO2 Read fluently and comprehend the prescribed texts and write independently required for professional written communication CO3 Converse confidently in English and participate in discussions conducted in English									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/R/G	Relation to G/ES/HV/PE
I	Introduction to Communication a) Explain the significance of communication b) Discuss the process of communication c) Identify different types of communication	5h	15%	1,2	CO1	PSO5	Emp	G	HV, PE
II	Reading prescribed texts, narratives and articles a) Read fluently and comprehend prescribed texts	10h	35%	1,2,3,4	CO2	PSO5	Emp/SD	G	

	b) Read the text / poems with understanding and enjoyment c) Summarize the given text								
III	Writing, Public Speaking a) Letter and Report Writing – Write business letters effectively; Prepare a report of an event / visit with correct usage of grammar and tense b) Public Speaking - Draft various kinds of speeches and Vote of Thanks; Interact and communicate confidently at professional level c) Demonstrate listening skills (with the language lab software); Practice enhanced listening skills d) Demonstrate the correct pronunciation with proper stress, intonation and pacing	15h	50%	1,2,3,4	CO2 CO3	PSO5	Emp/Ent/SD	G	HV, PE

References

1.	The above said skills would be developed with the integration of Language Lab software in the English tutorials and with the help of selected texts from the book <i>_Reflections II – An Anthology of Prose, Poetry and Fiction_</i> by Nandini Nayar (Foundation Books)
2.	Punishment in kindergarten – A poem by Kamala Das
3.	People who never took a 'No' – Case study of Akio Morita and Henry Ford
4.	The Wonders of new millennium – by Michael David

NEP STRUCTURE FOR UNDERGRADUATE COURSE

SEMESTER	COURSE NAME	CREDIT	COURSE TYPE
II	Food Microbiology	4 (3+1)	MAJOR
	Fundamentals of Biochemistry	4 (3+1)	MAJOR
	Nutrition through Life cycle	4 (2+2)	MAJOR
	Psychology and Sociology Applied to Health Care	4 (4+0)	MDC
	Techniques of Nutritional Assessment	2 (0+2)	VAC
	Soft Skills and Communication	2 (2+0)	AEC
	Computer Literacy for Nutrition	2 (0+2)	SEC
		22	

SEMESTER -II

		NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27		
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 201 Food Microbiology (Major Course)			Credits /Hours per week		(3+1) / 3 hrs/week Theory: 45 Hrs		
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lecture							
Course outcome (CO) Students will be able to CO1 Obtain knowledge on morphology of microorganisms and types of microscopy CO2 Understand the factors influencing the growth of microorganisms CO3 Apply the preservation principles and methods to preserve the foods from microbial contamination CO4 Explore the beneficial effects of microorganisms in the development of fermented foods									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/R/G	Relation to G/ES/HV/PE
I	Introduction to Microbiology Importance of microbiology for Dieticians - recent examples Morphology and Growth factors of Microorganisms; Definition and History Microscopy, Light and electron Microscopy, Listing other Types. General Morphology of Microorganisms	09	20	1, 2, 5	CO1, CO2	PSO3, PSO4	Emp, Ent, SD	L, N, R, G	G, ES, PE

	Bacteria, Fungi, Algae, Yeast and Virus Bacteriophage Microbial Biomass, Growth Curve, Definition of Batch and Continuous culture, Factors Affecting Growth Intrinsic Factors, Nutrient Content, pH, Redox Potential, Antimicrobial Barrier and Water Activity. Extrinsic Factors: Relative Humidity, Temperature and Gaseous Atmosphere								
II	Microbiology of Plant and animal-based foods Outline of Contamination, Spoilage and Preservation of Vegetables and Fruits, Cereals and Cereal Products, Pulses, Nuts and oil seeds, Sugar and Sugar Products Outline of Contamination, Spoilage and Preservation of Milk and Milk Products, Canned Foods, Meat and Meat Products, Egg and Poultry	09	20	1, 2, 5	CO3	PSO3, PSO4	Emp, Ent, SD	L, N, R, G	G, ES, PE
III	Significance of Microbes in food quality, food safety and standards: Applications of HACCP in Nutrition and Dietetics Beneficial and Harmful Effects of Microorganisms: Fermented Foods–Curd, Cheese, Sauerkraut, Meat, Soy	09	20	1, 2, 5	CO4	PSO3, PSO4	Emp, Ent, SD	L, N, R, G	G, ES, PE

	Based Foods, Alcoholic Beverages and Vinegar								
IV	Introduction to Food Toxicology a. Importance of Food toxicology b. Determining Toxicity Biological Toxins and chemical toxin a. Naturally occurring toxins in foods b. Toxins from processed foods c. Seafood toxins d. Chemicals used for pest management during farming, storage and transportation (Pesticides) – Organo Chlorines, Organophosphates, carbamates heavy metals – Cd, Pb, Ni, Hg, Tin	09	20	1, 2, 5	CO3	PSO3, PSO4	Emp, Ent, SD	L, N, R, G	G, ES, PE
V	Disease microbiology a. Types of Food Borne Disease b. Food Borne Intoxications c. Food Borne Infections d. Food Borne Toxic Infections	09	20	1, 2, 5	CO3	PSO3, PSO4	Emp, Ent, SD	L, N, R, G	G, ES, PE

References

1.	Frazier C (2024) Food Microbiology, (6th Revised Edition), Science Technology.
2.	Narang. S. P (2014), Food Microbiology, APH Publishing Corporation, New Delhi. 9788176487405
3.	Foster WM (2016), Food Microbiology, CBS Publishers and Distributors Pvt. Ltd., New Delhi. 9788123929125
4.	Adams, M. R. & Moss, M. O. (2015). Food microbiology. New Age International (P) Ltd., New Delhi. ISBN-13: 978-8122439756
5.	Cappuccino, J. G., & Sherman, N. (2008). Microbiology: A laboratory manual (8th ed.). Pearson Education. ISBN-13: 978-0321648785
6.	Jay, J. M. (2015). Modern food microbiology (4th ed.). CBS Publishers & Distributors. ISBN-13: 978-8123912044

For practical

 MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA सत्यं शिवं सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC		NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda				Academic Year		2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5											
Year	I	BND 201 Food Microbiology (Major Course)			Credits /Hours per week			(3+1) / 3 hrs/week Pactical : 30 Hrs			
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade			100/O			
Unit No.				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Basic lab techniques for food microbiology			2	06	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
II	Bright field light microscopy (Simple and Compound Microscope)			2	07	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
III	Hanging Drop Method–Motility of Bacteria			2	07	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
IV	Staining of Bacteria–Simple Staining, Gram Staining			4	12	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
V	Sterilization techniques			2	07	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
VI	Preparation of common laboratory media, broth and slant			2	07	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
VII	Serial dilution and plating techniques–pour plate, streak plate			4	12	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE

VIII	Enumeration of cell counts– colony forming units.	4	12	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
IX	Most probable number test	2	06	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
X	Microbial analysis of water	2	06	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
XI	Microbial analysis of liquid foods –Milk and Fruit juice	2	08	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE
XII	Microbial analysis of solid foods	2	10	3, 4, 5	CO3, CO4	PSO1, PSO2	Emp, Ent, SD	L, N, R, G	G, ES, PE

	NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year	2026-27				
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 202 Fundamentals of Biochemistry (Major Course)	Credits /Hours per week			(3+1) / 5 hrs/week Theory: 45 Hrs, Practical: 30Hrs			
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26	Maximum Marks/Grade			100/O			
Mode of Transaction		Lectures, readings, class discussions, videos							
Course outcome (CO) Students will be able to CO1 Understand the principles of biochemistry CO2 Gain knowledge and understanding of the delivery and function of cellular nutrients and metabolism in human body CO3 Apply the knowledge of biochemistry to human nutrition and dietetics									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Biological membranes and Biological Oxidation a) Biological membranes i. Membrane structure and functions ii.Transport of metabolites across membranes b) Biological Oxidation i. Enzymes and Coenzymes involved in oxidation and reduction	5h	15%	1,2,5	1,2,3	PSO3, PSO7, PSO10	Emp	L, N, R, G	G

	ii. High energy phosphates iii. Importance of biological oxidation iv. Components of electron transport chain/respiratory chain v. Oxidative phosphorylation and ATP generation								
II	Carbohydrates a) Introduction b) Classification c) Structure and Properties of monosaccharides (hexoses and pentoses) d) Reactions of monosaccharides—oxidation, reduction, and reaction with hydrogen cyanide, hydroxylamine, and phenylhydrazine e) Oligosaccharides – Sucrose, maltose	10h	15%	1,2,5	1,2,3	PSO3, PSO7, PSO10	Emp	L, N, R, G	G
III	Lipids a) Classification b) Triglycerides (Fats) c) Phospholipids and other non-phosphorylated lipids—cerebrosides, gangliosides, sulfolipids d) Characterization of fats e) Rancidity of fats f) Chemistry of Essential fatty acids	10h	15%	1,2,5	1,2,3	PSO3, PSO7, PSO10	Emp	L, N, R, G	G
IV	Amino acids, Peptides and Proteins a) Structure and classification of standard amino acids	10h	15%	1,2,5	1,2,3	PSO3, PSO7, PSO10	Emp	L, N, R, G	G

	b) Rare amino acids and non-protein amino acids c) Physical and electrochemical properties d) Reactions of amino acids- due to amino groups, carboxyl groups, and R groups, color reactions of amino acids e) Peptides- Peptide bond, structure f) Biological importance of glutathione and valinomycin.								
V	Nucleic acids and Enzymes a) Nucleic acids i. Composition and function ii. Structure and properties of DNA and RNA (t-RNA, m-RNA, and r- RNA), minor RNA types b) Enzymes i. Classification of enzymes-IUB classification ii. Enzyme kinetics– Michaelis Menten equation iii. Factors affecting enzyme activity (pH, temperature, substrate concentration and enzyme concentration)	10h	15%	1,2,5	1,2,3	PSO3, PSO7, PSO10	Emp	L, N, R, G	G
References									
1.	Satyanarayana, U., & Chakrapani, U. (2021). <i>Biochemistry</i> (Revised reprint) (6th ed).Elsevier. ISBN-13:978-8131264355								
2.	Nelson, D. L., & Cox, M. M. (2021). <i>Lehninger principles of biochemistry</i> (8th ed.). W.H. Freeman and Company NewYork.ISBN-13: 978-1319381493								
3.	Dickson, J. K. (2020). <i>Food biochemistry</i> . CBS Publishers & Distributors. ISBN-13: 978-9389396355								

4.	Appling, D. R., Cahill, S. J. A., & Mathews, C. K. (2018). <i>Biochemistry: Concepts and connections</i> (2nd ed). Pearson Education Limited. ISBN-13: 978-0134641621
5.	Kennelly, P., Botham, K., McGuinness, O., Rodwell, V., & Weil, P. A. (2022). <i>Harper's illustrated biochemistry</i> (32nd ed.). McGraw Hill. ISBN-13: 9781260469943
Webliography	
1.	Biochemical Society. (n.d.). Biochemical Society. https://www.biochemistry.org .
2.	E-learning.AOAC India. https://aoac-india.org/e-learning/

For Practical

 सत्यं विदुषं सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC	NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda		Academic Year		2026-27				
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 202 Fundamentals of Biochemistry (Major Course)		Credits /Hours per week		(3+1) / 5 hrs/week Theory: 45 Hrs, Practical: 30 Hrs			
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26		Maximum Marks/Grade		100/O			
Mode of Transaction		Lab, Demonstrations							
Course outcome (CO) Students will be able to CO1 Acquire basic skills in laboratory techniques CO2 Understand the interpretation of qualitative biochemical tests									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Good Laboratory Practices a) Safety measures in Laboratory b) Preparation of Molar and Normal solutions c) Safety Hazards and Disposal of wastes d) Calibration of volumetric glassware- burette, pipette, and measuring cylinder	5h	4%	1,2,3,4	1	PSO1, PSO2, PSO4	Emp, Ent, SD	L, N, R, G	G, ES, PE
II	Reactions of Monosaccharides, Disaccharides and Polysaccharides a) Pentose, Glucose, Fructose, Galactose	5h	7%	1,2,3,4	1,2	PSO1, PSO2, PSO4	Emp, Ent, SD	L, N, R, G	G, PE

	and Mannose, Sucrose, Maltose, Lactose, Starch, Dextrin and Glycogen								
III	Qualitative analysis of Proteins a) Precipitation reactions of proteins b) Color reactions of amino acids c) Color reactions of proteins- Biuret, Xanthoproteic, Millon's	10h	7%	1,2,3,4	1,2	PSO1, PSO2, PSO4	Emp, Ent, SD	L, N, R, G	G, PE
IV	Qualitative analysis of Lipids a) Solubility b) Acrolein test c) Salkowski test d) Lieberman- Burchard test e) Demonstration- Characterization of fats- acid number, iodine number, saponification number, and RM number	10h	7%	1,2,3,4	1,2	PSO1, PSO2, PSO4	Emp, Ent, SD	L, N, R, G	G, PE

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition			Academic Year			ACADEMIC YEAR 2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5											
Year	I	BND 203 Nutrition Through Life Cycle (Major)		Credits / Hours per Week			4 (2 + 2)/ 6 hours/ Week Theory: 30 Hrs; Practical: 60 Hrs				
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26		Maximum Marks/Grade			100/O				
Mode of Transaction		Lectures, Tutorials and Presentations									
Course Outcome (CO) Students will be able CO1. To understand the concept of meal planning and dietary guidelines. CO2. To learn about the dietary management during various stages of life CO3. To learn about the nutritional concerns and its management during various stages of life. CO4. To understand the concept and use of food exchange list and to learn planning and preparation of meals for various stages of life											
Unit No.	Topic			Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements Emp/ Ent/ SD	Relevance to L/ N/ R/ G	Relation to G/ES/HV/PE
I	Basic concepts of meal planning: • EAR and RDA, Concept of Dietary Reference Intakes, Dietary Gui • delines for Indians. • Exchanges of various food groups and their basis, standard weights and measures. • Meal planning: objectives and principles, Factors affecting meal planning - Nutritional, socio-cultural,			06	7	1,2	CO1	PSO1, PSO2, PSO3	SD	L,N,R,G	ES

	religious, geographic, economic, availability of time, energy and resources. - Indian meal patterns - vegetarian & non-vegetarian. - Food faddism, unhealthy food habits. - Types of menus and food services.								
II	Nutrition during adulthood: - References for women and man - Nutritional requirements, recommendations, nutrition-related problems and concerns, and - Meal planning with emphasis on healthy diet and lifestyle to prevent chronic diseases.	03	3	1,2	CO2, CO3	PSO1, PSO2, PSO3, PSO4, PSO8	SD	N,G	G, PE
III	Nutrition in Pregnancy and Lactation - Physiological stages of pregnancy and lactation. - Nutritional requirements, recommendations, nutrition-related problems. - Meal planning with emphasis on maternal and child health. - Complications during pregnancy. - Food taboos & myths.	05	6	1,2	CO2, CO3	PSO1, PSO2, PSO3, PSO4, PSO8	SD	L,N,R,G	G, PE
IV	Nutrition for Infancy - Importance of breastfeeding, exclusive breastfeeding, early initiation, colostrum. - Nutritional requirements, recommendations, nutrition-related problems, and concerns. - Complementary Feeding – timely introduction of appropriate foods, adequacy, consistency, frequency, utilization and safety. - Meal planning with emphasis on exclusive breastfeeding. - Feeding in difficult situations.	04	4	1,2	CO2, CO3	PSO1, PSO2, PSO3, PSO4, PSO8	SD	L,N,R,G	G, PE

V	Nutrition during growing years: - Nutritional requirements, nutritional guidelines and healthy food choices: Preschool children, School children. - Adolescents, Meal planning with emphasis on growth and development and establishment of healthy food habits and physical activity. - Nutrition concern – Undernutrition, Overnutrition, and Micronutrient Deficiencies.	06	7	1,2	CO2, CO3	PSO1, PSO2, PSO3, PSO4, PSO8	SD	N,G	G, PE
VI	General Diets for Athletes	03	3	1,2	CO5	PSO1, PSO2, PSO3, PSO4, PSO8	SD	N, G	G, PE
VII	Geriatric Nutrition - Physiological changes during old age, Nutritional requirements, nutritional guidelines, nutritional concerns, and healthy food choices. - Meal planning with emphasis on maintenance of good health. - Factors affecting longevity and health.	03	3	1,2	CO2, CO3	PSO1, PSO2, PSO3, PSO4, PSO8	SD	N, G	G, PE
	Reference Books:								
1.	Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S (2013). Textbook of Nutrition and Dietetics. Phoenix Publishing House Pvt. Ltd. ISBN 8188901539								
2.	Wardlaw GM, Hampi JS, DiSilvestro RA (2004). Perspectives in Nutrition, 6th edition. McGraw Hill. ISBN 0072921633, 9780072921632								
3.	Chadha R and Mathur P eds. Nutrition: A Lifecycle Approach. Orient Blackswan, New Delhi. 2015.ISBN 9788125059301								
4.	Bamji MS, Krishnaswamy K, Brahmam GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. ISBN 9788120417427								
5.	Srilakshmi B. 9th Edition (2023). Dietetics. New Age Publishers.ISBN 9395161841								

6.	Seth V and Singh K (2006). Diet Planning through the Life Cycle: Part 1 Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd. New Delhi. ISBN 8193599624
7.	Indian Food Composition Tables (2023),NIN, Hyderabad ISBN 9352676777
8.	Dietary Guidelines for Indians: A Manual, Revised Edition 2024. ICMR NIN, Hyderabad
9.	Revised Short Summary Report 2024. ICMR – NIN Expert Group on Nutrient Requirements for Indians, Recommended Dietary Allowance (RDA) and Estimated Average Requirements (EAR) 2020

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition				Academic Year				ACADEMIC YEAR 2026-27		
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5												
Year		I	BND 203 Nutrition Through Life Cycle (Major)			Credits / Hours per Week				4 (2 + 2)/ 6 hours/ Week Theory: 30 Hrs; Practical: 60 Hrs		
Semester		II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade				100/O		
Mode of Transaction			Lab Work, Hands on Training, Presentations, Use of Relevant Softwares									
Unit No.	Topic				Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements Emp/ Ent/ SD	Relevance to L/ N/ R/ G	Relation to G/ES/HV/PE
I	Introduction to meal planning - Use of food exchange list. - Recipe standardization. - Ranking of food groups based on nutrients eg. Foods rich in protein, carbohydrates, fiber, iron calcium, Vitamin. C, Vitamin. A.				06	7	1,2,3	CO1	PSO1, PSO2, PSO3	SD	L, R, N, G	ES
II	Meal Planning (as per nutritional requirements) and preparation of healthy diets and dishes for adult man and woman and geriatrics.				06	7	3,4,5,6	CO3, CO4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES
III	Meal Planning (as per nutritional requirements) and preparation of healthy diets and dishes for pregnant woman				06	7	3,4,5,6	CO3, CO4	PSO1, PSO2, PSO3,	Emp, Ent, SD	L, R, N, G	ES

						PSO4, PSO8			
IV	Meal Planning (as per nutritional requirements) and preparation of healthy diets and dishes for lactating woman.	06	7	3,4,5,6	CO3, CO4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES
V	Meal Planning (as per nutritional requirements) and preparation of healthy diet and dishes for infants. Planning homemade premixes.	06	7	3,4,5,6	CO3, CO4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES
VI	Meal Planning (as per nutritional requirements) and preparation of healthy diet and lunch box dishes for Preschool child	06	7	3,4,5,6	CO3, CO4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES
VII	Meal Planning (as per nutritional requirements) and preparation of healthy diet and lunch box for School-age child	06	7	3,4,5,6	CO3, CO4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES
VIII	Meal Planning (as per nutritional requirements) and preparation of healthy diet and lunch box for adolescents.	06	7	3,4,5,6	CO3, CO 4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES
IX	Planning healthy snacks and beverages for all age groups	12	13	3,4,5,6	CO4	PSO1, PSO2, PSO3, PSO4, PSO8	Emp, Ent, SD	L, R, N, G	ES

 सत्यं शिवं सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC		NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27		
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5									
Year	I	BND 204 Psychology and Sociology Applied to Health Care (MDC)			Credits /Hours per week		(4+0) / 4 hrs/week Theory: 60 Hrs		
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		100/O		
Mode of Transaction		Lecture							
Course outcome (CO) Students will be able to CO1 Explain and discuss the relationship between Society and Health; CO2 Explain concepts of health and illness from the sociological point of view; CO3 Enumerate the different systems of medical Care and their relation to health- seeking behaviour with reference to India; and CO4 Explain the pattern of utilization of the health system.									
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Introduction to psychology and sociology - Foundational psychological theories and findings in psychology. - psycho-social interventions approach: Relationship between Psychology and Sociology, - Concept of Health, Concept of Illness, Illness: Sociological View,	18h	30%	1,2	CO1	PSO1, PSO2	Emp	G	G,HV

	psychotherapeutic approaches for the treatment and care of persons with acute and chronic physical illness. • Role of interdisciplinary approaches in health care								
II	Social determinants of Health • Cultural, systemic, and environmental factors that affect human development. • psychological factors influencing health behaviors and health care utilization	15h	25%	1,2	CO1,CO4	PSO1, PSO2, PSO5	Emp	G	G,HV
III	Chronic Illness and Management • Psychological impact of chronic illness on patients and families. Sociological perspectives on chronic illness management. • Case studies: Long-term care and patient support systems	15h	25%	1,2,3	CO2,CO3	PSO1, PSO2, PSO4	Emp/Ent/SD	G	G,HV
IV	Application of Psycho-Social science theories • Social Science theories- Psychoanalytic, Developmental, Interpersonal, Humanistic and Behavioral theories. • Behavioral Aspects of Health and Medical Care, Policies to Improve Health Care	12h	20%	1,2	CO1,CO3	PSO1, PSO2, PSO5	Emp/Ent/SD	G	G,HV
References									
1.	Pryce-Jones, J. (2010). Happiness at work: Maximizing your psychological capital for success. John Wiley & Sons. ISBN-13:978-								

	0470749463
2.	Levy, P. (2016). Industrial/organizational psychology: Understanding the workplace. (5th edit). Worth Publishers.ISBN-13 : 978-1319014261
3.	Warr, P. B. (2002). Psychology at work. Penguin Books Ltd. ISBN-13 : 978- 0141000107
4.	N. (2016). The happiness equation: Want nothing + do anything = have everything. G.P. Putnam's Sons. ISBN-13 : 978-0425277980
5.	Rubin, G. (2009). The happiness project: Or, why I spent a year trying to sing in the morning, clean my closets, fight right, read Aristotle, and generally have more fun. HarperCollins.ISBN-13 : 978-0061583254
6.	Breuning, L. G. (2016). Habits of a happy brain: Retrain your brain to boost serotonin, dopamine, oxytocin, and endorphin levels.Adams Media. ISBN-13 : 978-144059050
7.	Prakash, P. (2024). Textbook of applied sociology and psychology for BSc (2nd ed.). CBS Publishers & Distributors.
8.	Tyagi, S. S. (2025). Applied sociology and psychology for health professionals. Jaypee Brothers Medical Publishers.

 सत्यं शिवं सुन्दरम् Estd. 1949 Accredited Grade "A" by NAAC		NAAC Accredited "A "Grade Faculty of Family and Community Sciences The Maharaja Sayajirao University of Baroda			Academic Year		2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5										
Year	I	BND 205 Techniques of Nutritional Assessment (VAC)			Credits /Hours per week		(0+2) / 4 hrs/week Practicals: 60 Hrs			
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade		50/O			
Mode of Transaction		Lecture, Demonstration, practical								
Course outcome (CO) Students will be able CO1 To learn the principles and methods of nutritional assessment CO2 To monitor nutritional status and trends in population groups CO3 To identify at-risk individuals & groups CO4 To investigate diet and disease relationships										
Unit No.		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE	
I	Overview of Nutritional Status assessment- Direct and Indirect methods Assessment to be done in atleast 5 individuals: - Dietary Assessment - Methods of assessing food intake (Qualitative and Quantitative Methods) - Using Food and Nutrient Databases	30h	50%	1,2,3,4,5	CO1	PSO1, PSO6, PSO7, PSO11	Emp, SD	L/R/N/G	G	

	- Accuracy, Precision and Validity of Dietary Assessment - Assessing the Intakes of Individuals using Recommended Dietary Allowances Assessment to be done in atleast 5 individuals - Anthropometric Assessment– Anthropometric assessment of children (WHO growth standards and WHO growth reference) - Anthropometric assessment of adults (WHO and Asia Pacific Classification) - Anthropometric assessment of Elderly - Body composition measurements								
II	Assessment to be done in at least 5 individuals - Clinical assessment - Screening in Clinical Assessment - (MUST Tool, SGA, MNA) - Medical History and Physical Examination (Clinical Signs and Symptoms) - Assessment of Energy Expenditure and Energy Requirements	15h	25%	1,2	1,2,3,4,5	PSO1, PSO6, PSO7, PSO11	Emp, SD	N,G	G

III	- Indicators and classification for biochemical parameters of nutrient deficiencies and NCDs - Biochemical Assessment - Assessment of Protein Status - Biochemical Assessment for Anaemia - Target group selection from local hospitals suffering from nutritional deficiencies, tabulation, interpretation and report writing of their tested biomarkers	9h	15%	1,2	1,2,3,4,5	PSO1, PSO6, PSO7, PSO11	Emp, SD	N,G	G
-----	--	----	-----	-----	-----------	-------------------------	---------	-----	---

References

1.	Sehgal S. and Raghuvanshi RS (2007) Textbook of community nutrition. Directorate of Information and Publications of Agriculture, Indian Council of Agricultural Research, New Delhi.
2.	Latham M.C. (1997) Human nutrition in the developing world. Food and Agricultural Organization of United Nations.
3.	Dahiya, S., Boora, P. and Rani, V. (2013). A manual on community nutrition, Department of Foods and Nutrition, published under ICAR Assistance scheme.
4.	Bamji MS, Krishnaswamy K, Brahman GNV (2009). Textbook of Human Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt. Ltd. ISBN 9788120417427
5.	Flamino Fidanza .1991. Nutritional Status Assessment, Springer Science Business Media.
6.	Beghan I Cap M Dajardan B (1988) A guide to Nutritional Status Assessment WHO Geneva.

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition			Academic Year			2026-27			
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5											
Year	I	BND 206 Soft skills and communication (AEC)			Credits / Hours per Week			2 (2 + 0)/ 2 hours/ Week Theory: 30 Hrs			
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade			50/O			
Mode of Transaction		Lectures and Presentations									
Course Outcome (CO) Students will be able CO 1.To understand the structure and processes of effective communication. CO 2.To identify various soft skills and relate them with effective communication. CO 3.To prepare an action plan to improve the effectiveness of the communication.											
Unit No.				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE

I	Communication skills: Need and importance of communication in the present context; Types of communication skills - verbal, non-verbal, and written communication; Types of workplace communication skills - oral presentations, group discussions, public speaking, interviews, extempore presentations, e-mail, memos, business letters, blogs, interoffice memorandums, report writing. Using language for effective communication, techniques of dyadic communication- message pacing and message chunking, self disclosure, mirroring, expressing conversational intent, paraphrasing, vocabulary building- word roots, prefixes, Greek and Latin roots	08	26.67%	1,2,3	CO1	PSO2, PSO4, PSO5	SD	L,N,R,G	ES, PE
II	Soft skills : Introduction to soft skills and hard skills. Personality- meaning and definition of personality, theoretical perspectives on personality, behavioural trait and humanistic personality patterns, molding the personality patterns. Personality development - self- perception, self-concept, self-esteem and gender stereotyping, persistence, and changes in personality determinants (physical, intellectual, emotional, social, educational and family), aspirations, achievements and fulfilment. Cosmopolitan culture- presentational etiquettes, formal dressing, formal greetings. stress and conflict management- goal setting, decision making, career planning, resume building, interview skills.	08	26.67%	1,2,3	CO2	PSO2, PSO4, PSO5	SD,EMP P	L,N,R,G	ES, PE
III	Public speaking : Types of speeches - persuasive, informative, and motivational or inspirational speech; Structuring the speech - introduction, body content and conclusion; Effective delivery – voice; modulation, appearance during speeches and delivery; Platform performance - posture, gesture, eye contact, emphasis, pause, voice pitch, overcoming fear and anxiety of public speaking; Visuals in presentation - type of visuals for public speaking,	07	23.33%	1,2,3	CO3	PSO2, PSO4, PSO5	SD, EMP, E NT	L,N,R,G	ES, PE

	tips for effective use, computer aided visual presentation, body language								
IV	Importance of Listening : Listening styles - active & passive and direct & indirect listening, thinking & listening, adjusting listening style to that of speaker, social situations & listening; Listening improvement techniques; listening to audio-video conversations oral presentations for evaluation of body language and communication skills based on group discussions and interviews, role plays and pronunciation exercises	07	23.33%	1,2,3	CO3	PSO2, PSO4, PSO5	SD, EMP	L,N,R,G	ES, PE
Reference Books:									
1.	Lamerton J (2001) Everything you need to know public speaking. Harper Collins Glasgow.								
2.	Ernest S and Sharon AR (1985) Effective Group Communication- How to get action by working in groups. National Textbook Company, Lincolnwood.								
3.	Vanni F (2014) The Role of Collective Action. Agriculture and Public Goods, 21. DOI 10.1007/978-94-007-7457-5_2, © Springer Science +Business Media Dordrecht.								
4.	Mary S (2010) Book of conflict resolution games quick, effective activities to improve communication, trust, and collaboration. ISBN: 978-0-07-174366-2.								
5.	Future Research Directions. Group Facilitation.								

		The Maharaja Sayajirao University of Baroda Faculty of Family and Community Sciences Department of Foods and Nutrition			Academic Year			2026-27				
B.Sc. F.C.Sc. (Nutrition and Dietetics) Honors - First Year – Level 4.5												
Year	I	BND 207 Computer Literacy for Nutrition (SEC)			Credits / Hours per Week			2 (0 + 2)/ 4 hours/ Week Practical: 60 Hrs				
Semester	II	Year of Introduction: 2026-27 Year of Syllabus Revision: 2025-26			Maximum Marks/Grade			50/O				
Mode of Transaction		Lectures, Tutorial and Presentations										
Course Outcome (CO) Students will be able CO 1. To know about internet security and the use of Artificial Intelligence (AI) in nutrition. CO 2. To learn about the nutritional concerns and their management during various stages of life. CO 3. To understand the concept and use of a food exchange list and to learn planning and preparation of meals for various stages of life.												
Unit No.					Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements Emp/Ent/SD	Relevance to L/N/RG	Relation to G/ES/HV/PE
I	Internet Security - Privacy, - Ethical Issues & Cyber Law				06	10%	1,2	CO1	PSO4	SD	L,N,R,G	PE
	AI Use of Artificial Intelligence (AI for nutritionists and dietitians				06	10%	1,2,3	CO1	PSO4,	SD	L,N,R,G	PE

						PS O1			
	Introduction to Web design - Types of Web Pages, Web design Pyramid, - Building websites, Web development process model	06	10%	1,2,3	CO1	PS O4	S D	L,N,R,G	PE
II	Data Analysis Use of computers for data analysis	04	6.7%	1,2,3,6	CO1	PS O4	Emp /Ent/ SD	L,N,R,G	PE
	Apps for Nutritionists Mobile based apps for diet counseling and diet planning	13	21.7%	1,2,3,6	CO1	PS O4	Emp /Ent/ SD	L,N,R,G	PE
	Integrated Nutrition & Diet Management System - Meal Planning, Exercise Tracking & Analysis, - Patient record management, - Menu planning modules, meal or menu plan creation/analysis, - Diet analysis spreadsheets and reports, - recipe analysis and management, - Food intake/diary analysis Indian and international nutrient databases	20	33.3%	1,2,3,4,6	CO1, CO2, CO3	PS O1, PS O2, PS O3, PS O4, PS O6, PS O8	Emp /Ent/ SD	L,N,R,G	G,PE
	Interactive Multimedia Nutrition Education Use of multimedia tools (text, audio, video, animation) to deliver nutrition education	5	8.3%	1,2,3	CO1, CO2	PS O4, PS O5	Emp /Ent/ SD	L,N,R,G	G,PE
	References:								

1.	Computer Applications in Nutrition & Dietetics An Annotated Bibliography. John Orta, eBook Published 7 December 2018. Routledge, New York DOI https://doi.org/10.4324/9781315057538 eBook ISBN 9781315057538
2.	Thareja Reena Fundamentals of Computers. (2019) Oxford University Press; Second edition ISBN 0199499276
3.	Basic Applications of Computers http://egyankosh.ac.in/handle/123456789/50864
4.	AI nutritionist: Intelligent software as the next generation pioneer of precision nutrition - ScienceDirect
5.	The application and impact of computer-generated personalized nutrition education: A review of the literature - ScienceDirect