

**VANITA VISHRAM WOMEN'S UNIVERSITY
SCHOOL OF SCIENCE AND TECHNOLOGY
FACULTY OF SCIENCE
DEPARTMENT OF FOOD AND NUTRITION**

MASTERS IN NUTRITION AND DIETETICS



**VANITA VISHRAM
WOMEN'S UNIVERSITY**
SURAT

**Under Learning Outcomes-based Curriculum Framework
(LOCF) for Post Graduate (PG) Education**

**SEMESTER 1
Core Courses (CC)**

*Syllabus applicable to the students seeking admission in the
following program*

**MASTERS IN NUTRITION AND DIETETICS under LOCF
w.e.f. the Academic Year 2024-2025**

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1. PREAMBLE – VVWU

Vanita Vishram Women's University (VVWU) is the First-ever Women's University of Gujarat approved by the Government of Gujarat under the provisions of the Gujarat Private Universities Act, 2009. It is a University committed to achieving Women's Empowerment through Quality Education, Skill Development, and providing employment opportunities to its girl students through its model curriculum, integration of technology in pedagogy, and best-in-class infrastructure. The focus is on prioritizing practical components and experiential learning supported through academia-industry linkages, functional MoUs, skill development training, internships, etc. It aims at providing opportunities to the girl students for holistic development and self-reliance.

VISION

Empowerment of women through quality education and skill development, so as to make them strong pillars of stability in the society.

MISSION

To provide Education & Professional Training to all women for their all-around development, so as to enable them to become economically independent and socially empowered citizens.

2. Introduction to the Program

The program for Master's in Nutrition and Dietetics focuses on facilitating students to understand the concepts of Diet and Nutrition to further contribute as nutritionists. They need to apply knowledge drawn from relevant sciences to promote an understanding of the effects of nutrition on growth, development, and well-being. It is further strengthened with project work and internships in the food industry, hospitals & public nutrition area. A component of Research is the feature that makes the student think in an innovative manner and thus apply the skills in active research.

3. Program Specific Objectives (PSOs)

- Introduce the students to the advanced aspects of Nutrition Science and Dietetics.
- Make them understand the role of a nutritionist or a dietitian in preventive and therapeutic aspects of Health care management.
- Develop skills wherein they understand the role of various foods and nutrients they provide and imply innovative methods in food product development.
- Create awareness among them about the current and future trends in the industry and help to determine food safety and entrepreneurship.
- Create awareness about the need for Nutrition in the Community emphasizing the role of Public Health Nutrition.

4. Programme Specific Outcomes (PSOs)

- Students will be equipped with the advanced skills and knowledge that are essential for functioning in the field of Nutrition and Dietetics.
- They will develop professional behavior and competencies in handling hospital setups, counseling, and food handling.
- They will also develop a scientific outlook towards the research in this field and do active research.
- Students will be able to guide and counsel the people in the community, thereby helping in the prevention of nutrient deficiencies.
- They will develop competencies that will enable them to focus on various startups, and government or non-government organizations.

5. Credit Structure of the program

Masters in Nutrition and Dietetics - Structure & Distribution of Courses													
Courses	Theory (Credits)	Practical (Credits)	Courses	Theory (Credits)	Practical (Credits)	Courses	Theory (Credits)	Practical (Credits)	Courses	Theory (Credits)	Practical (Credits)	Total Theory & Practical Credits	Total yearly Credits
SEM I			SEM II			SEM III			SEM IV				
FN21210 Human Physiology	4	-	FN21270 Micronutrients	4	-	FN21330- Research Methodology and Biostatistics	4	-	FN21380- Public Health Nutrition	4	-	56 + 40	96
FN21220 Nutritional Biochemistry	4	-	FN21280 Food Safety and Toxicology	4	-	FN21340- Family Meal Management	4	-	FN24050- Nutrigenomics FN24060- Enteral and Parenteral Nutrition	4	-		
FN21230 Therapeutic Nutrition I	4	-	FN21290 Sports Nutrition	4	-	FN21350- Food Microbiology	4	-	FN21390- Recent Advances	-	4		
FN21240 Macronutrients	4	-	FN21300 Therapeutic Nutrition II	4	-	FN24010- Alternate Therapies/ FN24020- Pathology and Pharmacology	4	-	FN21400- Dissertation	-	12		
FN21250 Therapeutic Nutrition I (Pr)	-	4	FN21310 Therapeutic Nutrition II (Pr)	-	4	FN21360- Food Analysis	-	4					
FN21260 Innovations in Food Product Development (Pr)	-	4	FN21320 Dietetic Techniques and Internship (Pr)	-	4	FN21370- Project Work	-	4					
	16	08		16	08		16	08		08	16		

6. Course Structure

Semester	Course Category	Course Code	Subject Name	Credit	Total Credit
I	CC	FN21210	Human Physiology (Th)	4	24
	CC	FN21220	Nutritional Biochemistry (Th)	4	
	CC	FN21230	Therapeutic Nutrition I (Th)	4	
	CC	FN21240	Macronutrients (Th)	4	
	CC	FN21250	Therapeutic Nutrition I (Pr)	4	
	CC	FN21260	Innovations in Food Product Development (Pr)	4	
II	CC	FN21270	Micronutrients (Th)	4	24
	CC	FN21280	Food Safety and Toxicology (Th)	4	
	CC	FN21290	Sports Nutrition (Th)	4	
	CC	FN21300	Therapeutic Nutrition II (Th)	4	
	CC	FN21310	Therapeutic Nutrition II (Pr)	4	
	CC	FN21320	Dietetic Techniques and Internship (Pr)	4	
III	CC	FN21330	Research Methodology and Biostatistics (Th)	4	24
	CC	FN21340	Family Meal Management (Th)	4	
	CC	FN21350	Food Microbiology (Th)	4	
	DSE 1	FN24010	Alternate Therapies (Th)	4	
		FN24020	Pathology and Pharmacology (Th)		
	CC	FN21360	Food Analysis (Pr)	4	
CC	FN21370	Project Work (Pr)	4		
IV	CC	FN21380	Public Health Nutrition (Th)	4	24
	DSE 2	FN24050	Nutrigenomics (Th)	4	
		FN24060	Enteral and parenteral Nutrition (Th)		
	CC	FN21390	Recent Advances in Nutrition (Pr)	4	
CC	FN21400	Dissertation (Pr)	12		

MASTERS IN NUTRITION AND DIETETICS
SEMESTER I
CORE COURSE

FN21210 - HUMAN PHYSIOLOGY	
Course Objectives	
This course will enable students to	
<ol style="list-style-type: none"> 1. Advance their understanding of some of the relevant issues and topics of human physiology. 2. Understand the integrated functions of all systems and the grounding of nutritional science in Physiology. 3. Understand alterations of structure and function in various organs and systems in disease conditions. 	
Course Outcome: This course will help the students to know about various systems and their functioning.	
FN21210 - HUMAN PHYSIOLOGY - COURSE CONTENTS (4 CREDIT)	
Sr.No	STRUCTURE
Unit 1	Cell and Tissues
	<ul style="list-style-type: none"> ● Cell- The Basic Unit of Life ● Structure of Cell ● Tissues and their classification ● Skeleton ● Muscular system- types and characteristics
Unit 2	Blood and Cardiovascular system
	<ul style="list-style-type: none"> ● Blood Composition and Blood groups ● Serum and Plasma ● Structure of Cardiovascular system ● Heart ● Cardiac cycle and cardiac output ● Blood Pressure ● ECG and other cardiac function tests ● Lymphatic system
Unit 3	Gastrointestinal system
	<ul style="list-style-type: none"> ● Structure of Gastrointestinal Tract ● Mouth, Pharynx, Esophagus, Stomach, Small and Large Intestine ● Accessory organs of GI Tract- Liver, Gallbladder, Pancreas ● Secretions of GI System ● Gastric Function Tests, Liver Function test
Unit 4	Respiratory system
	<ul style="list-style-type: none"> ● Structure of Respiratory System ● Organs of the Respiratory system ● Mechanism of Respiration ● Interchange of gasses within lungs
Unit 5	Renal system
	<ul style="list-style-type: none"> ● Structure of Urinary System ● Kidney- structure, and functions

	<ul style="list-style-type: none"> ● Structure of nephron ● Urine formation ● Renal function tests
Unit 6	Nervous system
	<ul style="list-style-type: none"> ● Structure of Neuron ● Structure of Brain ● Synapse ● EEG
Unit 7	Reproductive system
	<ul style="list-style-type: none"> ● Structure of Male reproductive system ● Structure of Female reproductive system ● Menstrual cycle
Unit 8	Endocrine Glands
	<ul style="list-style-type: none"> ● Pituitary, Thyroid, Parathyroid, Pancreas, Adrenal glands and their hormones
REFERENCES	
<ol style="list-style-type: none"> 1. Applied Physiology- Indira Gandhi National Open University for MFN 2. Anatomy and Physiology for Nurses- Evelyn Pearce 3. K. Sembulingam, Prema Sembulingam, Essentials Of Medical Physiology 4. Human Anatomy and Physiology for the First year- Raje V.N. 5. West, J.B.: Best and Taylor's Physiological Basis of Medical Practice, 11th Edition. 6. Chatterjee, C.C.(2002): Human Physiology: Medical Allied Agency, Calcutta. 7. Guyton and Hall (2003): Test Book of Medical Physiology, 9th Edition, Prism Books Pvt. Ltd., W.B. Sanders Company, USA. 8. Tortora (2003) Principles of Anatomy and Physiology, John Wiley and sons. 9. Keel and Neil: Samson and Wright's Applied Physiology (12th edition), Oxford University Press. London. 10. Ross and Wilson: Anatomy and physiology in Health and Illness, 8th Edition, Church Hill Livingstone, N.Y. 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Chalk and talk method ● Powerpoint presentations ● Videos ● Models and posters ● Quiz ● Celebration of various days based on organs and systems 	

MASTERS IN NUTRITION AND DIETETICS
SEMESTER I
CORE COURSE

FN21220- NUTRITIONAL BIOCHEMISTRY	
Course Objectives	
This course will enable students to	
<ol style="list-style-type: none"> 1. To lay the foundation of biological chemistry. 2. To give insights into the chemical reactions that occur in biological systems. 3. Get an insight into interrelationships between various metabolic pathways 4. Understand the integration of cellular level metabolic events to nutritional disorders and imbalances. 5. Apply the knowledge for medical nutrition management in various disease conditions 	
Course Outcome: This course will help to determine the knowledge about the structures of the principal components present in living beings.	
FN21220-NUTRITIONAL BIOCHEMISTRY - THEORY COURSE CONTENTS (4 CREDIT)	
Sr.No	STRUCTURE
Unit 1	Cell Membrane
	Membrane structure, composition, and Transport of metabolites across membranes
Unit 2	Enzymes
	Enzymes – Definition, Classification, Specificity of enzymes, Mechanism of Action, Enzyme kinetics, Enzyme inhibition, Factors affecting enzyme activity, Enzymes in clinical diagnosis.
Unit 3	Metabolism of Carbohydrates
	<ul style="list-style-type: none"> ● Classification of Carbohydrates ● Glycolysis- Aerobic & Anaerobic, ● Tricarboxylic acid cycle and its Significance ● Gluconeogenesis, ● Metabolism of glycogen- Glycogenesis, Glycogenolysis, Hexose monophosphate shunt
Unit 4	Biological Oxidation, Electron Transport Chain, Oxidative Phosphorylation.
Unit 5	Metabolism of Lipids
	<ul style="list-style-type: none"> ● Classification of Lipids ● Oxidation of fatty acids ● Lipogenesis- Biosynthesis of fatty acids ● Biosynthesis of cholesterol and regulation, Bile acids and their metabolism, ● Metabolism of ketone bodies, ● Metabolism of Plasma lipoproteins and their Biochemical profile
Unit 6	Metabolism of Protein

	<ul style="list-style-type: none"> ● Function and Classification of Proteins ● Binding proteins and their functions – nutritional implications, Classification of amino acids ● Amino acid metabolism ● Transamination ● Deamination ● Urea Cycle ● Metabolism of the carbon skeleton of amino acids ● Biosynthesis of non-essential amino acids ● Synthesis of specialized products from amino acids (myoglobin, hemoglobin, Creatinine, and Creatine)
Unit 7	Metabolism of Nucleic Acids
	<ul style="list-style-type: none"> ● Composition, Functions, Classification, and Structure of DNA and RNA, ● Metabolism of purine and pyrimidine nucleotides. ● Replication, transcription, translation
Unit 8	Inborn errors of metabolism
	<ul style="list-style-type: none"> ● Disorders of Carbohydrate metabolism ● Disorders of Protein metabolism ● Disorders of Lipid metabolism
REFERENCES	
<ol style="list-style-type: none"> 1. U. Satyanarayan and U. Chakrapani (2017) Biochemistry 5th Edition, Book & Allied 2. IGNOU, MFN-002- Nutritional Biochemistry 3. Murray, R.K., Granner, D.K., Mayes, P.A., and Rodwell, V.W. (2000): 25th Ed. Harpers Biochemistry. Macmillan Worth Publishers. 4. Nelson, D.L. and Cox, M.M. (2000): 3rd Ed. Lehninger's Principles of Biochemistry, Macmillan Worth Publishers. 5. Berg and Stryer, L. (1998): 4th Ed. Biochemistry, WH Freeman and Co. 6. Conn, E.E., Stumpf, P.K., Bruening, G. and Doi, R.H. (2001): 5th Ed. Outlines of Biochemistry, John Wiley and Sons. 7. Voet, D. Voet, J.G. and Pratt, C.W. (1999). Fundamentals of Biochemistry. 8. Plummer, D.T. (1987). 3rd ed. An Introduction to Practical Biochemistry. McGraw-Hill Book Co. 9. C.B Power and J.R Chatwal, 5th Edition, Biochemistry, Himalaya 10. A. C. Deb, 9th Edition, Fundamentals of Biochemistry, Fundamentals of Biochemistry 11. Devlin, T.M. (1997): 4th Ed. Textbook of Biochemistry with Clinical Correlations, Wiley Liss Inc 12. Lanham -New et al. (2010) Nutrition & Metabolism. 2nd Edition. The Nutrition Society Textbook Series. Wiley- Blackwell 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Group discussion ● Quiz 	

MASTERS IN NUTRITION AND DIETETICS
SEMESTER I
CORE COURSE

FN21230- THERAPEUTIC NUTRITION I	
Course Objectives	
This course will enable students to	
<ol style="list-style-type: none"> 1. Understand the basic principles of diet therapy 2. Understand the etiology, Physiologic and Metabolic Anomalies of acute and chronic diseases and patient needs. 3. Know the effect of the various diseases on nutritional status and nutritional and dietary requirements. 4. Be able to recommend and provide appropriate nutritional care for the prevention and treatment of various diseases. 	
Course Outcome: This course will help the students to understand various diseases, their etiology, RDA, symptoms, and dietary principles of various diseases.	
FN21230-THERAPEUTIC NUTRITION I- THEORY COURSE CONTENTS	
(4 CREDIT)	
S.No	STRUCTURE
Unit 1	Nutrition Care Process
	<ul style="list-style-type: none"> ● Nutritional screening ● Assessment of the nutritional status of hospitalized and outdoor patients.
Unit 2	Standard Hospital Diets
	<ul style="list-style-type: none"> ● Nutritional Intervention – Diet Modifications ● Modification of normal diet as a basis for therapeutic diets
Unit 3	Weight Management
	<ul style="list-style-type: none"> ● Obesity- <ul style="list-style-type: none"> ○ Etiology, types, dietary principles, and management, ○ Behavior modification ○ Non-dietary management- Pharmacological, Surgical, Physical activity, and exercise ● Underweight <ul style="list-style-type: none"> ○ Etiology, dietary principles, and management ● Eating disorders – Anorexia Nervosa and Bulimia and FAD Diets
Unit 4	Diabetes Mellitus
	<ul style="list-style-type: none"> ● Classification ● Pathophysiology ● Diagnosis, ● Nutritional Management ● Acute complications- Hypoglycemia, Ketoacidosis, Somogyi effect. Dawn phenomenon ● Chronic complication- Macrovascular and Microvascular ● Artificial sweeteners/sugar substitutes ● Blood glucose-lowering agents. <ul style="list-style-type: none"> ○ Insulin ● Oral hypoglycemic agents
Unit 5	Cardiovascular Disorders

	<ul style="list-style-type: none"> ● Hypertension- <ul style="list-style-type: none"> ○ Definition, Classification, pathophysiology, nutritional management, and Prevention ● Atherosclerosis <ul style="list-style-type: none"> ○ Pathophysiology, Risk Factors, and dietary management ● Hyperlipidemia <ul style="list-style-type: none"> ○ Prevention of coronary heart disease
Unit 6	Musculoskeletal Disorders
	<ul style="list-style-type: none"> ● Sarcopenia ● Gout ● Rheumatoid Arthritis ● Osteoarthritis
Unit 7	Disorders of Hormonal Imbalance
	<ul style="list-style-type: none"> ● Functions of the gland, hormones, imbalance of hormones, clinical diagnosis, symptoms, and dietary care
REFERENCES	
<ol style="list-style-type: none"> 1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd. 2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins. 3. Escott-Stump, S. (1998): Nutrition and Diagnosis-Related Care, 4th Edition, Williams and Wilkins. 4. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone. 5. Williams, S.R. (1993): Nutrition and Diet Therapy, 7th Edition, Times Mirror/Mosby College Publishing. 6. Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co. 7. Walker, W.A., and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co. 8. Guyton, A.C., and Hall, J.E. (1999): Textbook of Medical Physiology, 9th Edition, W.B. Saunders Co. 9. World Cancer Research Fund (1997). Food, Nutrition and the Prevention of Cancer- A Global perspective, Washington E.D. WCRF. 	
Teaching Methodology	
<ul style="list-style-type: none"> ● Powerpoint presentations ● Videos ● Chalk and talk method ● Guest Lectures ● Group discussions ● Quiz and Debate 	

MASTERS IN NUTRITION AND DIETETICS
SEMESTER I
CORE COURSE

FN21240- MACRONUTRIENTS	
Course Objectives	
This course will enable students to	
<ol style="list-style-type: none"> 1. To understand the fundamentals of the science of nutrition. 2. To understand the underlying biological, chemical, & regulatory mechanism. 3. To understand contemporary issues in the context of current scientific knowledge. 4. To understand the interrelationship between Nutrients. 5. To understand the latest developments in Human Nutrition. 	
Course Outcome: This course will help to get in-depth knowledge about various macronutrients, their functions, sources, deficiency, and the effect of excess.	
FN21240-MACRONUTRIENTS- THEORY COURSE CONTENT (4 CREDIT)	
Sr.No	STRUCTURE
Unit 1	Body Composition and RDA
	<ul style="list-style-type: none"> ● Significance of body composition and changes through the life cycle. ● Human Nutritional Requirements, methods determining human nutrient needs.
Unit 2	Energy
	<ul style="list-style-type: none"> ● Components of energy requirements: BMR, RMR, thermic effect of feeding, physical activity. ● Factors affecting energy requirements, methods of measuring energy expenditure. ● Regulation of energy metabolism and body weight
Unit 3	Carbohydrates and Dietary Fiber
	<ul style="list-style-type: none"> ● Introduction of Carbohydrates, Functions, RDA, Sources, and deficiency ● Dietary fiber Types, sources, role, and mechanism of action. ● Resistant starch
Unit 4	Proteins
	<ul style="list-style-type: none"> ● Introduction of Protein, Functions, RDA, Sources, and deficiency ● Amino acid and its physiological significance. ● Protein Quality and supplementary protein
Unit 5	Fats
	<ul style="list-style-type: none"> ● Introduction of Fats, Functions, RDA, Sources, and deficiency ● Nutritional significance of fatty acids – SFA, MUFA, PUFA ● Role of n-3 and n-6 fatty acids and Prostaglandins. ● Trans Fatty Acids ● Visible and invisible fats in diets.
Unit 6	Water
	<ul style="list-style-type: none"> ● Sources, functions, distribution of body water. ● Mechanism of loss, regulation of water balance, disturbances in water balance, dehydration, water intoxication.
Unit 7	Interrelationship
	<ul style="list-style-type: none"> ● Interrelation between carbohydrate, fat, and protein in energy metabolism. ● Starvation

REFERENCES

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
3. Escott-Stump, S. (1998): Nutrition and Diagnosis-Related Care, 4th Edition, Williams and Wilkins.
4. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.
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6. Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co. Walker, W.A., and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.
7. Robinson. Passmore M.A. Eastwood, Human Nutrition & Dietary -. ELBS English language book society.
8. Helen Guthrie: Introductory Nutrition, Times Mirror Publishing
9. M. Swaminathan: Advanced Textbook on Food and Nutrition Vol.-I & Vol. – II
10. Mantab S. Bamji, N. Prahlad Rao, Vinodini Reddy Textbook of Human Nutrition

Teaching Methodology

- Chalk and talk method
- Powerpoint presentations
- Videos
- Posters
- Quiz and Debates

MASTERS IN NUTRITION AND DIETETICS
SEMESTER I
CORE COURSE

FN21250- THERAPEUTIC NUTRITION I (Pr)	
Course Objectives	
This course will enable students to:	
<ol style="list-style-type: none"> 1. To train students to do market surveys of foods available. 2. To standardize various recipes and know various portion sizes. 3. To understand the basic principles of Diet planning. 4. To plan various diets according to the requirements and disease conditions. 	
Course Outcome: This course will help to determine the knowledge about the methods of dietary management in various degenerative diseases that can be prevented.	
FN21250- THERAPEUTIC NUTRITION I PRACTICAL COURSE CONTENTS (3 CREDIT)	
Sr. No.	STRUCTURE
Practical 1	Standardization of portion sizes for different food preparations. Assessment of Nutritional status
Practical 2	Exchange list as a tool for planning diets
Practical 3	RDA
Practical 4	Process of Diet planning
Practical 5	A market survey of food items with Cost
Practical 6	Preparation of Hospitals diets <ul style="list-style-type: none"> ● Different types of liquid diets ● Bland Diets ● High fiber diets ● Low Fiber Diets ● Low Residue diets
Practical 7	Energy Modifications: <ul style="list-style-type: none"> ● Low-Calorie Diets ● High-Calorie diets
Practical 8	Diet for Diabetics: <ul style="list-style-type: none"> ● Hyperglycemic condition ● Hypoglycemic condition
Practical 9	Diet during Cardio-vascular Diseases: <ul style="list-style-type: none"> ● Fat modification for Atherosclerosis ● Low sodium Diet in Hypertension
Practical 10	Diets for Specific metabolic disorders: Gout
Practical 11	Diet for Hormonal disorders: Hyperthyroidism, PCOS
REFERENCES	
<ol style="list-style-type: none"> 1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd. 2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins. 3. Escott-Stump, S. (1998): Nutrition and Diagnosis-Related Care, 4th Edition, Williams and Wilkins. 	

4. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.
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10. World Cancer Research Fund (1997). Food, Nutrition and the Prevention of Cancer- A Global perspective, Washington E.D. WCRF.

Teaching Methodology

- Chalk and talk method
- Powerpoint presentations
- Videos
- Posters
- Quiz and Debates

MASTERS IN NUTRITION AND DIETETICS
SEMESTER I
CORE COURSE

FN21260- INNOVATIONS IN FOOD PRODUCT DEVELOPMENT	
Course Objectives	
<ol style="list-style-type: none"> 1. This course will enable students to 2. Understand and know various aspects of food product development including food science & technology, marketing, and consumer research, finance, and communication. 3. To comprehend the role of different ingredients used in food preparation 4. Develop products that meet consumer needs, and are nutritionally and commercially viable. 5. Recognize the potential for entrepreneurship through marketing. 	
Course Outcome: This course will help students to develop new foods and determine their acceptance of these foods.	
FN21260- INNOVATIONS IN FOOD PRODUCT DEVELOPMENT PRACTICAL COURSE CONTENTS (3 CREDIT)	
S.No	STRUCTURE
Practical 1	Introduction
Practical 2	<ul style="list-style-type: none"> ● The need for developing new product ● Steps to follow for developing new products ● Various aspects to be taken care of while developing a new product ● Selection of packaging materials ● Labeling ● Study of shelf life of the product ● Estimating cost of the product developed Marketing and sale.
Practical 3	Selection of recipes to be developed with justification.
Practical 4	<ul style="list-style-type: none"> ● Standardization of recipe ● Finalizing at least two recipes. ● To get feedback from the customers- Sensory Evaluation
Practical 5	Packaging of the product <ul style="list-style-type: none"> ● Costing and labeling ● Packaging ● Marketing and sale
Practical 6	To study the shelf life of the product developed
Practical 7	Visit the food processing industry / Bakery
Teaching Methodology-	
<ul style="list-style-type: none"> ● Chalk and talk method ● Powerpoint presentations ● Videos ● Posters ● Quiz and Debates 	