

**VANITA VISHRAM WOMEN'S UNIVERSITY**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**DEPARTMENT OF FOOD AND NUTRITION**  
**MASTERS IN NUTRITION AND DIETETICS**



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

**SEMESTER 4  
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 2021-2022**

## INDEX

<b>Sr. No.</b>	<b>Contents</b>	<b>Page no.</b>
1	Preamble – VVWU	3
2	Introduction of the Program	4
3	Program Specific Objectives	5
4	Program Specific Outcomes	5
5	Structure of the Program – Credit Structure	6
6	Course Structure	7
7	Course Objectives – Course Outcomes – Course Contents	9
8	Teaching Methodology	18

## **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 achieve Women's Empowerment through Quality Education, Skill Development, and by 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 component 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-round development, so as to enable them to become economically independent and socially empowered citizens.

## **2. Introduction of the Program**

The program on Masters 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 as a Nutritionist or a dietitian in preventive and therapeutic aspects of Health care management.
- Develop skills wherein they understand the role of various foods, 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 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 prevention of nutrient deficiencies.
- They will develop competencies that will enable them to focus on various startups, government or non-government organizations.

## 5. Structure of the program

<b>Master in Nutrition &amp; Dietetics</b> <b>STRUCTURE &amp; DISTRIBUTION OF COURSES</b>							
<b>Courses</b>	<b>Theory (Credits)</b>	<b>Practical (Credits)</b>	<b>Courses</b>	<b>Theory (Credits)</b>	<b>Practical (Credits)</b>	<b>Total Theory &amp; Practical Credits</b>	<b>Total yearly Credits</b>
<b>SEM III</b>			<b>SEM IV</b>				
FN21010	5	-	FN21080	5	-		
FN21020	5	-	FN21090	5	-		
FN21030	5	-	FN21100	4	-		
FN21040	-	4	FN21110	-	4		
FN21050	-	4	FN21120	-	12		
FN21060	-	4				<b>31+32</b>	<b>63</b>
FN21070		4					
	<b>15</b>	<b>16</b>		<b>10</b>	<b>20</b>		

## 6. Course Structure

<b>MASTERS IN NUTRITION &amp; DIETETICS (SEMESTERS III &amp; IV)</b>					
<b>Semester</b>	<b>Core Course</b>	<b>Ability Enhancement Course</b>	<b>Skill Enhancement Course</b>	<b>Discipline Specific Elective Course</b>	<b>Generic Elective Course</b>
Semester III	FN21120- Public Health Nutrition	-	-	-	-
	FN21130- Family Meal Management	-	-	-	-
	FN21140- Food Science and Legislation	-	-	-	-
	-	-	-	Department Elective1 FN24010- Alternate Therapies FN24020- Pathology and Pharmacology	-
	-	-	-	Department Elective 2 FN24030- Institutional Food Management FN24040- Food Safety and Toxicology	-
	FN21150- Recent Advances in Nutrition	-	-	-	-
FN21160- Project Work	-	-	-	-	
Semester IV	FN21170 - Research Methodology and Biostatistics	-	-	-	-
	FN21180 -Diet Counseling Techniques	-	-	-	-
	-	-	-	Department Elective 3 FN24050-Nutrigenomics FN24060-Enteral and Parenteral Nutrition	-
	FN21190- Internship	-	-	-	-
	FN - Dissertation	-	-	-	-

**MASTER IN NUTRITION AND DIETETICS**  
**SEMESTER IV**  
**CORE COURSE**

<b>FN21170-Research Methodology and Biostatistics</b>	
<b>Course Objectives</b>	
<ul style="list-style-type: none"> <li>● The course will enable the students to;</li> <li>● To understand the scientific approaches to research</li> <li>● To understand the significance of research methods in food and nutrition</li> <li>● To identify the sources of variability and uncertainty in research.</li> <li>● To appreciate the importance of scientific writing and develop competence in writing skills.</li> <li>● To develop basic understanding about computer softwares used.</li> <li>● To develop data management skills.</li> <li>● To develop research insight.</li> </ul>	
<b>Course Outcome-</b> To enable students to gain knowledge about the interaction between theoretical knowledge of research with the practical application in the field.	
<b>FN21170- Research Methodology and Biostatistics (5 CREDIT)</b>	
<b>S. No.</b>	<b>STRUCTURE</b>
<b>Unit 1</b>	<b>Objectives of research</b> <ul style="list-style-type: none"> <li>● Definition, objectives, types of research, quantitative and qualitative research in food and nutrition</li> </ul>
<b>Unit 2</b>	<b>Basic principles of research design</b> <ul style="list-style-type: none"> <li>● Meaning and need</li> <li>● Types of research designs – exploratory, descriptive, experimental, survey and case study, cross-sectional and longitudinal</li> <li>● Study design issues, sampling methods and sample size</li> </ul>
<b>Unit 3</b>	<b>Instruments of data collection</b> <ul style="list-style-type: none"> <li>● Observation, questionnaire, interview : reliability and validity of measuring instruments</li> <li>● Data management and quality control</li> <li>● Ethical Clearance</li> </ul>
<b>Unit 4</b>	<b>Introduction to computer application software</b> <ul style="list-style-type: none"> <li>● MS Word</li> <li>● MS Excel</li> <li>● SPSS</li> </ul>
<b>Unit 5</b>	<b>Introduction to biostatistics in food and nutrition research</b> <ul style="list-style-type: none"> <li>● Orientation to qualitative and quantitative analysis</li> <li>● Introduction to quantitative procedures</li> <li>● Basic principles and concepts in statistics</li> <li>● Fundamentals of measurement quantity and quality</li> <li>● Scales of measurement: Nominal, ordinal, interval and ratio</li> </ul>

<b>Unit 6</b>	<b>Organization and presentation of data</b> <ul style="list-style-type: none"> <li>● Data reduction strategies</li> <li>● Coding and tabulation</li> <li>● Grouping of data: Frequency distribution</li> <li>● Graphic representation: Graphs, diagrams and charts</li> </ul>
<b>References</b> <ol style="list-style-type: none"> <li>1. C.R. Kothari &amp; Gaurav Garg, Research Methodology (Third Edition), 2010 New Age publishers by September 2019.</li> <li>2. C. William Emory, Richard D. Irwin. Business Research Methods: Tata McGraw Hill New Delhi.</li> <li>3. O. R. Krishnaswami. 2012. Methodology of Research in Social Sciences, Himalaya Publishing House New Delhi.</li> <li>4. Ram Ahuja, 2001 Research Methods.</li> </ol>	
<b>Teaching Methodology</b> <ul style="list-style-type: none"> <li>● Powerpoint presentations</li> <li>● Videos</li> <li>● Chalk and talk method</li> <li>● Guest Lectures</li> <li>● Group discussions</li> <li>● Quiz and Debate</li> </ul>	



**MASTER IN NUTRITION AND DIETETICS  
SEMESTER IV  
CORE COURSE**

<b>FN21180 - Diet Counseling Techniques</b>	
<b>Course Objectives</b>	
This course will enable students to:	
<ol style="list-style-type: none"> <li>1. Understand the principles and procedures of nutrition counseling and the role of the counselor.</li> <li>2. Develop an understanding how: (a) lifestyles influence health and well-being; (b) acute and chronic disease affects the emotional and psychological state and the behavior of the individuals.</li> <li>3. Be familiar with various techniques used in counseling.</li> <li>4. Be able to use various types and techniques of counseling to motivate patients to achieve well-being.</li> </ol>	
<b>Course Outcome-</b> This course will help the students to understand various diseases, their etiology, RDA, symptoms and dietary principles of various diseases.	
<b>FN21180- THEORY COURSE CONTENTS (5 CREDITS)</b>	
<b>S.No.</b>	<b>STRUCTURE</b>
<b>Unit 1</b>	Counseling process: Definition of Nutritional Counseling, theories and therapies, Counselor and client relationship Rapport building and opening techniques, Development of tools and reports
<b>Unit 2</b>	Basics of communication skills- Verbal and non verbal communication, listening skills, responses in the field of counseling.
<b>Unit 3</b>	Body language during the process of nutritional counseling- Gestures, postures
<b>Unit 4</b>	Types of Counseling- Individual, group, online and telephonic counseling Effective public speaking
<b>Unit 5</b>	Follow up Monitoring and Evaluation of outcome
<b>REFERENCES</b>	
<ol style="list-style-type: none"> <li>1. Gable, J. (1997): Counseling Skills for Dietitians, Blackwell Science.</li> <li>2. Linda Snetselaar. Nutrition Counseling Skills for the Nutrition Care Process. IVth Edition, 2009.</li> <li>3. Holli, B.B. and Calabrese, R.J. (1998): Communication and Education Skills for Dietetics Professionals. Lippin Cott Williams &amp; Wilkins, New York.</li> <li>4. Curry, R.K. and Jaffe, A. (1998): Nutrition Counseling and Communication Skills, W.B.Saunders Co. London.</li> <li>5. Hosking, G. and Powell, R. (1985): Chronic Childhood Disorders; Wright, Bristol.</li> <li>6. O'Deughterty, M.M. (1983): Counselling the chronically ill child; The Lewis Publishing Co. Vermont, 1983.</li> <li>7. Shillitee Psychology and Diabetes, Chapman &amp; Hall Ltd., London, 1988.</li> </ol>	

## **TEACHING METHODOLOGY**

- Powerpoint presentations
- Videos
- Chalk and talk method
- Guest Lectures
- Group discussions
- Quiz and Debate

**MASTER IN NUTRITION AND DIETETICS  
SEMESTER IV  
CORE COURSE**

<b>FN24050- Department Elective 3 Nutrigenomics</b>	
<b>Course Objectives:</b>	
On successful completion of this course, students will able to:	
<ol style="list-style-type: none"> <li>1. To learn the importance of nutrition and its effects on gene expression.</li> <li>2. To learn nutrient and gene interactions and their relation with disease prevention and intervention.</li> <li>3. To have knowledge of how diet and underlying genetics interact to increase susceptibility to disease.</li> </ol>	
<b>Course Outcomes:</b> At the end of the course, students get the knowledge on correlation of nutrition, genes, heredity and its overall impact of health and nutritional status.	
<b>FN24050- THEORY COURSE CONTENT(4 CREDIT)</b>	
<b>Sr. No</b>	<b>STRUCTURE</b>
<b>Unit 1</b>	<b>Molecular Biology: Structure and functions of Nucleic Acids</b> The beginning of Molecular Biology: DNA: A carrier of genetic information, chemical structure of DNA and base composition, biologically important nucleotides, Watson Crick Model, structure of different types of nucleic acids.
<b>Unit 2</b>	<b>DNA Replication and Repair:</b> Unit of replication, enzymes involved, DNA damage and repair mechanisms.
<b>Unit 3</b>	<b>RNA synthesis and processing:</b> Structure and functions of different types of RNA, RNA transport, Transcription factors, RNA processing, editing and splicing.
<b>Unit 4</b>	<b>Introduction to Gene-diet interactions: Nutrigenomics:</b> Introduction to nutritional genetics and genomics, The intestinal microbiota - role in nutrigenomics Nutrigenomics approaches to unraveling physiological effects of complex foods.
<b>Unit 5</b>	<b>Modifying disease risk through nutrigenomics:</b> Modulating the risk of following diseases through Nutrigenomics: • Cardiovascular disease • Diabetes • Inflammatory bowel diseases • Obesity • Cancer • Malnutrition
<b>Unit 6</b>	<b>Bringing nutrigenomics to Industry, Health professionals, and the Public:</b> Public health significance of nutrigenomics and nutrigenetics in career perspective.
<b>REFERENCES</b>	
<ol style="list-style-type: none"> <li>1. Journal Nutrients 2012, 4, 1898-1944; Molecular Nutrition Research—The Modern Way of Performing Nutritional Science.</li> <li>2. Journal Nutrients 2013, 5, 32-57; Nutrigenetics and Metabolic Disease: Current Status and Implications for Personalized Nutrition</li> </ol>	

3. Journal Nutrigenetics Nutrigenomics 2011;4:69–89; Nutrigenetics and Nutrigenomics: Viewpoints on the Current Status and Applications in Nutrition Research and Practice.
4. J Am Diet Assoc. 2006;106:569-576; Nutrigenomics: From Molecular Nutrition to Prevention of Disease.

**Teaching Methodology**

- Internship
- PowerPoint presentations
- Videos
- Models and posters

**MASTER IN NUTRITION AND DIETETICS  
SEMESTER IV**

## CORE COURSE

<b>FN24060- Department Elective 3 - Enteral and Parenteral Nutrition</b>	
<b>Course Objectives</b>	
<ol style="list-style-type: none"> <li>1. To recognize the metabolic and physiological effects of foods on the body's healing and immune systems and reduction of inflammation.</li> <li>2. To consider how to supply appropriate, bioavailable nutrients.</li> <li>3. To recognize the assessment of the nutritional status of patients with an illness, diet-related condition, or injury, in order to benefit the patient's own health and reduce health-care costs.</li> <li>4. To recognize the health effects of setting goals for the patient's treatment and developing a specialized nutrition prescription that includes patient education and self-management training.</li> </ol>	
<b>Course Outcomes</b>	
<ol style="list-style-type: none"> <li>1. Identify alternative feeding routes and feeding methods.</li> <li>2. Recommend Enteral Formulas leading to better health outcomes and improved quality of life.</li> <li>3. Identify nutritional support, enteral nutrition, parenteral nutrition, indications for uses &amp; contraindication.</li> <li>4. Identify the advantages of enteral feeding over parenteral feeding.</li> <li>5. Reduce &amp; managing complications of nutritional support, enteral nutrition &amp; parenteral nutrition.</li> </ol>	
<b>FN24060- THEORY COURSE CONTENT (4 CREDIT)</b>	
S.No	STRUCTURE
<b>Unit 1</b>	Nutritional Management in critical care <ul style="list-style-type: none"> <li>● Nutritional screening and nutritional Status assessment of critically ill patients</li> <li>● Nutritional requirement according to the critical condition</li> </ul>
	Nutritional support systems: Enteral and parenteral
<b>Unit 2</b>	Enteral Nutrition <ul style="list-style-type: none"> <li>● Site and Size of the tube</li> <li>● Feed-types</li> <li>● Complications</li> <li>● Feeding routes and feeding methods and nutritional support</li> <li>● Role of enteral formulas leading to better health outcomes</li> </ul>
<b>Unit 3</b>	Parenteral Nutrition <ul style="list-style-type: none"> <li>● Type</li> <li>● Composition</li> <li>● Complications</li> <li>● Feeding routes &amp; feeding methods and nutritional support</li> </ul>

<b>Unit 4</b>	Comparative analysis of various types of feeding methods, their advantages and disadvantages. Case studies of various cases with respect to enteral and parenteral Nutritional Support.
<p><b>REFERENCES</b></p> <ol style="list-style-type: none"> <li>1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Ltd.</li> <li>2. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone</li> <li>3. Helen Guthrie: Introductory Nutrition, Times Mirror Publishing</li> <li>4. M. Swaminathan. Advanced Text book on Food and Nutrition Vol.-I &amp; Vol. – II.</li> <li>5. Mantab S. Bamji, N. Prahlad Rao, Vinodini Reddy Textbook of Human Nutrition.</li> <li>6. Annalynn Skipper (2011). Dietitian's Handbook of Enteral and Parenteral Nutrition. Jones &amp; Bartlett Publishers.</li> </ol>	
<p><b>Teaching Methodology</b></p> <ul style="list-style-type: none"> <li>● Internship</li> <li>● PowerPoint presentations</li> <li>● Videos</li> <li>● Models and posters</li> </ul>	

**MASTER IN NUTRITION AND DIETETICS  
SEMESTER IV  
CORE COURSE**

<b>FN21190- Internship</b>	
<b>Course Objectives-</b>	
<ol style="list-style-type: none"> <li>1. To give students practical experience in the organization /Industry.</li> <li>2. To help students to develop insight for a profession in Industry.</li> <li>3. To help students to explore possible career options to make them self-reliant.</li> </ol>	
<b>Course Outcome-</b> The students will be able to get hands-on training during the course of internship.	
<b>FN21190- Internship (4 CREDIT)</b>	
<b>Sr.No</b>	<b>STRUCTURE</b>
<b>Unit 1</b>	Intensive study of the cases- Their history, diagnosis and solving the 4 case studies.
<b>Unit 2</b>	Internship Report: <ul style="list-style-type: none"> <li>● Title of Internship, location of Internship &amp; Name</li> <li>● About the organization</li> <li>● Internship details</li> <li>● Outcomes &amp; suggestions</li> </ul>
<b>Unit 3</b>	Submission of Internship report and its presentation.
<b>Teaching Methodology</b>	
<ul style="list-style-type: none"> <li>● Internship</li> <li>● PowerPoint presentations</li> <li>● Videos</li> <li>● Models and posters</li> </ul>	

**MASTER IN NUTRITION AND DIETETICS  
SEMESTER IV  
CORE COURSE**

<b>FN21200- Dissertation</b>	
<b>Course Objectives-</b>	
This course will enable students to:	
<ol style="list-style-type: none"> <li>1. To facilitate carrying out extensive research and development projects or technical projects at place of work through problem and gap identification.</li> <li>2. Development of methodology for problem solving, interpretation of findings, presentation of results and discussion of findings in context of national and international research.</li> <li>3. The overall goal of the dissertation is for the student to display the knowledge and capability required for independent work.</li> </ol>	
<b>Course Outcome-</b> The student will be able to gain in-depth knowledge and use adequate methods in the major subject/field of study with respect to research and development.	
<b>FN21200- DISSERTATION COURSE CONTENT (12 CREDIT)</b>	
<b>S.No.</b>	<b>STRUCTURE</b>
<b>Unit 1</b>	<ul style="list-style-type: none"> <li>● Defining the scope of a project and doing research, as well as different ways of communicating the results</li> </ul>
<b>Unit 2</b>	<ul style="list-style-type: none"> <li>● Defining a topic and formulating a problem statement, selecting and reviewing relevant literature, designing an empirical study as well as performing it, including data collection and analysis</li> </ul>
<b>Unit 3</b>	<ul style="list-style-type: none"> <li>● Statistical data analysis</li> </ul>
<b>Unit 4</b>	<ul style="list-style-type: none"> <li>● Thesis writing</li> </ul>
<b>Teaching Methodology</b>	
<ul style="list-style-type: none"> <li>● PowerPoint presentations</li> <li>● Videos</li> <li>● Models and posters</li> </ul>	