

# DEPARTMENT OF NUTRITION AND DIETETICS

**COURSE STRUCTURE & SYLLABI**  
(For the students admitted from year 2023-2024 onwards)

**Programme : M.Phil. Nutrition and Dietetics**



**JAMAL MOHAMED COLLEGE (AUTONOMOUS)**  
Accredited with A++ Grade by NAAC (4<sup>th</sup> Cycle) with CGPA 3.69 out of 4.0  
(Affiliated to Bharathidasan University)  
**TIRUCHIRAPPALLI – 620 020**

## M.Phil. NUTRITION AND DIETETICS

Sem	Course Code	Course Category	Course Title	Hrs / Week	Credit	Mark		Total Mark
						CIA	ESE	
<b>I</b>	23MPND1CC1	Core - I	Research Methodology and Statistics	4*	4	25	75	100
	23MPND1CC2	Core - II	Current Research Trends in Nutrition and Dietetics	4*	4	25	75	100
	23MPND1CC3	Core - III	Teaching and Learning Skills (Common Paper)	4*	4	25	75	100
	23MPND1CC4	Core – IV (Elective)	Paper on topic of Research (The syllabus will be prepared by the guide and Examination will be conducted by the COE)	4*	4	25	75	100
	*One hour library for each course							
<b>Total</b>				16*	16	100	300	400
<b>II</b>	23MPND2PD		Dissertation#	-	8	-	200	200
<b>Grand Total</b>				-	<b>24</b>	-	-	<b>600</b>

# Evaluation of the Dissertation and Viva Voce shall be made jointly by the Research Supervisor and the External Examiner.

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23MPND1CC1	CORE- I	4	4	25	75	100
Course Title		RESEARCH METHODOLOGY AND STATISTICS					

SYLLABUS		
Unit	Contents	Hours
I	<p><b>Research - Fundamental concepts:</b>  <b>Research:</b> Definition, Need, Importance and Meaning of research, Characteristics of research, Types of Research.  <b>Methods of acquiring knowledge</b> - Inductive and Deductive Reasoning, scientific method and its applications.  <b>Research Problem</b> – Definition, Identification, selection of a problem for Research, *survey of literature*.  <b>Hypothesis</b> – Meaning, importance, types. testing of hypothesis.  <b>Variables</b> – Meaning, identification in relation to the research problem – independent, dependent, control and interval variables.</p>	12
II	<p><b>Research Design and Methods:</b>  <b>Research Design</b> – Meaning, Purpose of research design, *steps in formulation of a design*.  <b>Types of research design</b> – Historical, Descriptive, and Experimental – true experimental, quasi experimental and exposit facto designs. Experiments <i>in vivo</i> and <i>invitro</i>, evaluation and action research. Difference between applied and pure research.  <b>Pilot studies</b>- Meaning, concept, and importance.  <b>Experimental studies in nutrition</b> – Pre clinical and clinical studies – human intervention trials. Ethical issues – Regulation and guidelines for research on human subjects- Informed consent process.  <b>Other researches and methods</b> - Field surveys, diagnostic and evaluation research. Qualitative and quantitative methods in research.</p>	12
III	<p><b>Sampling techniques and tools:</b>  <b>Sample, Sampling techniques and sampling errors</b> – Meaning, Population and sample, requisites of a good sample, Selection of a sample, Probability and non-probability sampling techniques, sampling distribution and sampling errors.  <b>Tools and techniques of data collection</b>– *Questionnaire*, Interview schedule, Observation and Experimentation.  <b>Projective techniques and rating scales</b>- Psychological tests, Projective techniques, ratingscales, Likert and Thurstone, Guttman type scales. Sociometry, Focus Group discussion and PRA.  <b>Characteristics of tools</b> - Validity, reliability and feasibility.</p>	12
IV	<p><b>Analysis of Data and Inferential Statistics:</b>  <b>Analysis of data</b> – Categorisation, presentation of data and *Frequency distributions*. Descriptive statistics – Central measures, Dispersion measures, Skewness and kurtosis.  <b>Bivariate analysis</b> - Correlation and regression analysis – Karl Pearson’s product moment. Correlation Co-efficient by ranks, Bi-serial Correlation, Regression analysis. Fitting of Regression lines.  <b>Multi variate analysis</b> – Multiple correlation and Multiple regression - concept only  <b>Para metric tests</b> - Large and small samples (t test, Z test and F test).  <b>Non - Parametric tests</b> - Important Non-Parametric tests: Chi-square tests, Sign test. Analysis of Variance (ANOVA) – One-way and Two-way.  <b>Application of Computer in research</b> – Collection of reviews. Data entry, Mean, Parametric and Non Parametric tests using SPSS.</p>	12

<b>V</b>	<b>Report writing:</b> <b>Research Report</b> - Structure and qualities of a Research Report, types of research report, presentation, tables, interpretation of research findings, *Discussion*, footnotes and Bibliography. Evaluation of a Research Report.	<b>12</b>
<b>VI</b>	<b>Current Trends (For CIA only) :</b> Plagiarism in Nutrition related research	

\*.....\* Self Study

<b>Text Book(s):</b>		
<ol style="list-style-type: none"> <li>1. C.R. Kothari, Research Methodology, New age International publishers, Second Revised Edition, 2002.</li> <li>2. P. Shanthi Sophia and Bharathi, Computer Oriented Statistical and Statistics, Charulathapublication, Second Edition 2000.</li> <li>3. R.S.N.PillaiandV.Bagavathi,Statistics, S ChandandCompanyLimited, Second Edition, 2001.</li> </ol>		
<b>Reference Book(s):</b>		
<ol style="list-style-type: none"> <li>1. S.P.Gupta,StatisticalMethods, SultanaChandandSons, 31<sup>st</sup> Edition, 2002.</li> <li>2. R.P. Devadas, A Handbook on Methodology of Research, Sri Ramakrishna Vidhyalaya, Coimbatore, 1989.</li> <li>3. P. Ramakrishna, Biostatistics, Saras Publication, 2001.</li> <li>4. . H.M.C.Donald, Burney, Research Methods, Thomson and WadsworthPublications, Fifth edition ,2002.</li> </ol>		
<b>Web Resource(s):</b>		
<ol style="list-style-type: none"> <li>1. <a href="https://edutechwiki.unige.ch/en/Research_methodology_resources">https://edutechwiki.unige.ch/en/Research_methodology_resources</a></li> <li>2. <a href="https://www.researchgate.net/publication/282507225_Online_Resources_and_Web_Research">https://www.researchgate.net/publication/282507225_Online_Resources_and_Web_Research</a></li> <li>3. <a href="https://en.wikipedia.org/wiki/Online_research_methods">https://en.wikipedia.org/wiki/Online_research_methods</a></li> </ol>		

<b>Course Outcomes</b>		
Upon successful completion of this course, the student will be able to:		
<b>CO No.</b>	<b>CO Statement</b>	<b>Cognitive Level (K-Level)</b>
CO1	Discuss about various kinds of research, objectives of doing research, research process, research designs and sampling.	<b>K2</b>
CO2	Apply a basic knowledge on qualitative research techniques	<b>K3</b>
CO3	Appraise adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis	<b>K4</b>
CO4	Evaluate basic awareness of data analysis-and hypothesis testing procedures	<b>K5</b>
CO5	Develop the research report and to interpret the data obtained from research finding	<b>K6</b>

**Relationship Matrix:**

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	3	2	3	3	2	3	2	3	2	2.5
CO2	3	3	2	2	3	2	2	2	2	3	2.4
CO3	2	3	3	3	2	3	3	2	2	2	2.5
CO4	3	3	2	3	3	2	2	2	2	2	2.4
CO5	2	3	3	2	3	3	2	2	2	2	2.4
<b>Mean Overall Score</b>											<b>2.44</b>
<b>Correlation</b>											<b>Medium</b>

Mean Overall Score	Correlation
< 1.5	Low
$\geq 1.5$ and < 2.5	Medium
$\geq 2.5$	High

**Course Coordinator:** Dr A. Sangeetha

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23MPND1CC2	CORE- II	4	4	25	75	100
Course Title		CURRENT RESEARCH TRENDS IN NUTRITION AND DIETETICS					

SYLLABUS		
Unit	Contents	Hours
I	<p><b>Nutrition:</b>            General Principles for deriving human nutrient requirements – Dietary intakes, growth, nutrient balance, Obligatory loss of nutrients. Factorial approach, Nutrient turn over, Depletion and Repletion studies            RDA – Adequate intake, Tolerate upper Intake level(UL), Estimated average Requirement (EAR), Individual variability, Bio-availability of Nutrition            Critical Reviews and current research findings in following nutritional problems in India – Low birth weight, PEM, *Anaemia*, Iodine Deficiency Disorders</p>	12
II	<p><b>Current Trends in Food Science</b>            Food Processing - Microwave heating, Hurdle Technology, Pulse Electric Field (PEF), High Pressure Processing (HPP) and Ohmic Heating, Image Processing, Regulatory Issues concerning Food Processing and Food Safety            Food Biotechnology – Transgenic Plants – *GM Foods* examples Golden Rice, Flavr savr tomato, GMMustard.            Nutrigenomics – Nutrigenetics, Transcriptomics, Metabolomics, Interaction of genes and Nutrition, Role of Nutrigenomics in life style disorders namely diabetes, CVD and cancer.</p>	12
III	<p><b>Functional Foods:</b>            Nutraceuticals present in cereals, Pulses, vegetables, Fruits, Milk and Milk Products, Nuts and Oil Seeds, Fats and Oils, Spices and Herbs used in Indian Cookery. Miscellaneous – Green tea, SeaWeed.            Role of Functional foods in degenerative disorders: Obesity, Heart Disease, Cancer- Colon cancer, Lung cancer, Prostrate cancer, Ovarian and Breast, Diabetes Mellitus, Muscular degeneration and *cataract*.</p>	12
IV	<p><b>Institutional Food Management:</b>            Food Service Institutions – Commercial and Non-Commercial Organization. Current approaches in Human Resource Management – Total Quality Management.            Catering Operations – a) Procurement –Purchasing, receiving and storage b) Production – Planning quantity production and Service in different institutions – Hotel, Hostel and Hospital.            Recent Innovations in Food Service Equipment. *Food Safety*, Hygiene and Sanitation</p>	12
V	<p><b>Dietetics:</b>            Dietitian – Registered Dietitian, Registered dietitian Nutritionist            Dietetic Association – Indian Dietetic Association, British Dietetics Association, American Dietetic Association, International federation of dietetics            Critical Reviews, recent research findings in the field of dietary management with special reference to: Diabetes Mellitus – IDDM, NIDDM, GDM, Cardiovascular diseases, Renal Diseases, Liver diseases, GI Disorders- Peptic Ulcer, *IBW*            Diet Counselling – Steps in patient approach and assessment, follow up and computer assisted dietary instructions and patient educations.</p>	12
VI	<b>Current Trends (For CIA only) :Functionality flourishing</b>	

\*.....\* Self Study

<b>Text Book(s):</b>
<ol style="list-style-type: none"> <li>1. Dietary guidelines for Indians, NIN, ICMR, (2010).</li> <li>2. Potter. N.M. and Birch, G.G., "Food Science", 5th edition, CBS Publishers and Distributors, New Delhi, (2007).</li> <li>3. Ower.P. Ward, Fermentation Bio-technology, Principles, Processes and Products. (1989).</li> <li>4. Knorr, Food Bio-technology, marcel dekker inc, New York.</li> <li>5. Robert E C Wildman Handbook of Nutraceuticals and Functional Foods (2001).</li> <li>6. Mohini Sethi and Surjeet Malham, Catering Management and integrated approach, John Wiley &amp; Sons Eastern Limited New Delhi, Second Edition, (2007).</li> </ol>
<b>Reference Book(s):</b>
<ol style="list-style-type: none"> <li>1. Robinson C.H Normal and Therapeutic Nutrition, 12<sup>th</sup> edition, Macmillan Publishing Co. Inc, New York (2007)</li> <li>2. Krause M.V and Mahan L.K Food, Nutrition and Diet therapy, 9<sup>th</sup> edition, W.B. Saunder Co, Philadelphia (2010)</li> </ol>
<b>Web Resource(s):</b>
<ol style="list-style-type: none"> <li>1. <a href="https://libguides.reading.ac.uk/food/websites">https://libguides.reading.ac.uk/food/websites</a></li> <li>2. <a href="https://ift.onlinelibrary.wiley.com/journal/17503841">https://ift.onlinelibrary.wiley.com/journal/17503841</a></li> <li>3. <a href="https://www.cabi.org/publishing-products/nutrition-and-food-sciences-database/">https://www.cabi.org/publishing-products/nutrition-and-food-sciences-database/</a></li> </ol>

<b>Course Outcomes</b>		
Upon successful completion of this course, the student will be able to:		
<b>CO No.</b>	<b>CO Statement</b>	<b>Cognitive Level (K-Level)</b>
CO1	Understand the nutrient content and functional properties of Food ingredients	<b>K2</b>
CO2	Apply expertise in optimization and utilization of food ingredient systems in processing and packaging techniques to successfully manufacture food products	<b>K3</b>
CO3	Explain the different processing techniques for different food ingredients	<b>K4</b>
CO4	Evaluate the functions and types of packaging and packaging materials, labeling	<b>K5</b>
CO5	Write the legal and practical steps needed to ensure that intellectual property rights remain valid and enforceable	<b>K6</b>

**Relationship Matrix:**

<b>Course Outcomes (COs)</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	3	2	2	2	3	3	3	2	3	2	<b>2.5</b>
<b>CO2</b>	2	3	2	3	3	2	3	3	3	2	<b>2.4</b>
<b>CO3</b>	2	3	3	3	2	3	3	2	2	2	<b>2.5</b>
<b>CO4</b>	3	3	2	2	2	2	3	2	3	3	<b>2.5</b>
<b>CO5</b>	3	2	2	2	2	3	3	3	2	2	<b>2.4</b>
<b>Mean Overall Score</b>											<b>2.46</b>
<b>Correlation</b>											<b>Medium</b>

<b>Mean Overall Score</b>	<b>Correlation</b>
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

**Course Coordinator: Dr V. Kavitha**

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23MPND1CC3	CORE- III	4	4	25	75	100
Course Title		TEACHING AND LEARNING SKILLS					

SYLLABUS		
Unit	Contents	Hours
I	<p><b>Computer application and E-Learning</b>  <b>Application of Computer:</b></p> <ol style="list-style-type: none"> <li>Information and Communication Technology (ICT): Definition, Meaning, Features, Trends.</li> <li>Integration of ICT in teaching and learning</li> <li>ICT applications: Using word processors, spread sheets, Power point slides in the classroom</li> <li>ICT for Research: On-line journals, e-books, Courseware, Tutorials, Technical reports, Theses and Dissertations.</li> </ol> <p><b>E-Learning:</b></p> <ol style="list-style-type: none"> <li>E- learning: scope, trends, attributes, opportunities</li> <li>Pedagogical design for operation</li> <li>*MOOC- development and operation*</li> <li>E-learning - assessment and feedback mechanism e-portfolio.</li> <li>Management and implementation of e - learning</li> <li>Evaluation- impact of e-learning.</li> </ol>	12
II	<p><b>Communication and Interaction Methods</b>  <b>Communication:</b></p> <ol style="list-style-type: none"> <li>Definitions, *Elements of Communication: Sender, Message, Channel, Receiver* Feedback and Noise</li> <li>Types of Communication: Spoken and written; Non-verbal communication Intrapersonal, Interpersonal, Group and Mass communication</li> <li>Skills of communication: Listening, Speaking, Reading and writing</li> <li>Classroom communication and dynamics</li> <li>Lecture and lecture demonstration as communication</li> </ol> <p><b>Interaction Methods:</b></p> <ol style="list-style-type: none"> <li>Interaction analysis, observation schedule and records.</li> <li>Bale's interaction process categories</li> <li>Flanders's system of interaction analysis</li> <li>Verbal interaction system</li> <li>Reciprocal category system</li> <li>Equivalent talk categories.</li> </ol>	12
III	<p><b>Education Psychology and Pedagogy Instructional Technology</b>  <b>Psychology:</b> Definition, Nature  <b>Educational psychology:</b></p> <ol style="list-style-type: none"> <li>Definition, Nature, Scope.</li> <li>Teaching and learning: meaning, characteristics, effective teaching, concept of learning, comparison between teaching and learning</li> </ol> <p><b>Mental Health-Frustration:</b> concept of adjustment, defence mechanism, mental hygiene.</p> <p><b>Pedagogy Instructional Technology:</b></p> <ol style="list-style-type: none"> <li>Definition, Objectives and *Types*</li> <li>Difference between Teaching and Instruction</li> </ol>	12



<b>IV</b>	<p><b>Teaching – Learning Techniques</b>  <b>LectureTechnique:</b></p> <ol style="list-style-type: none"> <li>a) Steps, Planning of a Lecture, Delivery of a lecture</li> <li>b) Narration in tune with the nature of different disciplines</li> <li>c) Lecture with power point presentation</li> <li>d) Versatility of lecture technique</li> <li>e) *Demonstration*, Characteristics, Principles, Planning Implementation and Evaluation</li> </ol> <p><b>Teaching – Learning Techniques:</b></p> <ol style="list-style-type: none"> <li>f) Team Teaching, Group discussion, Seminar, Workshop, Symposium and Panel Discussion</li> <li>g) Micro teaching, characteristic of microteaching.</li> <li>h) Models of teaching: CAI, CMI and WBI7</li> </ol>	<b>12</b>
<b>V</b>	<p><b>TeachingSkills:</b></p> <ol style="list-style-type: none"> <li>a) Definition, Meaning and Nature</li> <li>b) Types of Teaching skills: Skill of Set Induction, Skill of Stimulus Variation, Skill of Explaining, Skill of Probing Questions, Skill of Black Board writing and Skill of Closure</li> <li>c) Integration of Teaching Skills</li> <li>d) *Evaluation of Teaching Skills*</li> </ol> <p><b>Analysis of Teaching &amp; Instructional Design:</b></p> <ol style="list-style-type: none"> <li>e) The observational system for instructional analysis.</li> <li>f) The classification of behaviour, summarising behaviour and interpreting the institution.</li> <li>g) Training Psychological approach, cybernetic principles of teaching and learning Educational system analysis.</li> </ol>	<b>12</b>
<b>VI</b>	<b>Current Trends (For CIA only):</b> Trends in teaching and learning: gamification, block chain, AI	

\*.....\* Self Study

<b>Text Book(s):</b>	
<ol style="list-style-type: none"> <li>1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi.</li> <li>2. Kumar K.I (2008) Educational Technology, New Age International Publishers, New Delhi.</li> <li>3. Pandey S.K. (2005) Teaching Communication, Commonwealth Publishers, New Delhi.</li> <li>4. Vedanayagam E.C. (1988) Teaching Technology for College Teachers, Striling Publishers Private Limited.</li> </ol>	
<b>Reference Book(s):</b>	
<ol style="list-style-type: none"> <li>1. Don Skinner Teacher Training, Edinburgh University Press Ltd., Edinburgh, 2005.</li> <li>2. Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Tom Van Weert, UNESCO, 2002</li> <li>3. Mangal, S.K., Essential of Teaching – Learning and Information Technology, Tandon Publications, Ludhiana, 2002.</li> <li>4. Michael D. and William, Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, New York, 2000.</li> <li>5. Ram Babu A. and Dandapani S Microteaching (Vol.1&amp;2) Neelakamal Publications, Hyderabad, 2006.</li> <li>6. Singh V.K. and Sudarshan K.N., Computer Education, Discovery Publishing Company, New York, 1996.</li> <li>7. Sharma R. A. , Fundamentals of Educational Technology, Surya Publications, Meerut</li> <li>8. Vanaja. M. and Rajasekar S., Computer Education, Neel Kamal Publications, Hyderabad. 2006.</li> </ol>	

<b>Web Resource(s):</b>
1. <a href="https://pressbooks.pub/edd7032017f2/back-matter/references/">https://pressbooks.pub/edd7032017f2/back-matter/references/</a>
2. <a href="https://www.emerald.com/insight/content/doi/10.1108/eb049015/full/html">https://www.emerald.com/insight/content/doi/10.1108/eb049015/full/html</a>
3. <a href="https://www.researchgate.net/publication/349395128">https://www.researchgate.net/publication/349395128</a> Web Tools for Teaching-Learning

<b>Course Outcomes</b>		
Upon successful completion of this course, the student will be able to:		
<b>CO No.</b>	<b>CO Statement</b>	<b>Cognitive Level (K-Level)</b>
CO1	Apply and use appropriate current information technologies to locate and apply evidence-based guidelines and protocols.	<b>K3</b>
CO2	Appraise effective and professional oral and written communication and documentation.	<b>K4</b>
CO3	Evaluate and Demonstrate counselling and education methods to facilitate behaviour change for and enhance wellness for diverse individuals and groups.	<b>K5</b>
CO4	Evaluate an educational session or program/educational strategy for a target population.	<b>K5</b>
CO5	Creating critical thinking skills	<b>K6</b>

**Relationship Matrix:**

<b>Course Outcomes (COs)</b>	<b>Programme Outcomes (POs)</b>					<b>Programme Specific Outcomes (PSOs)</b>					<b>Mean Score of COs</b>
	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PSO1</b>	<b>PSO2</b>	<b>PSO3</b>	<b>PSO4</b>	<b>PSO5</b>	
<b>CO1</b>	2	2	2	2	2	2	3	3	2	3	<b>2.3</b>
<b>CO2</b>	2	2	3	2	2	3	3	2	3	2	<b>2.4</b>
<b>CO3</b>	2	2	3	3	2	2	2	2	2	2	<b>2.2</b>
<b>CO4</b>	1	3	2	2	3	2	3	2	3	2	<b>2.3</b>
<b>CO5</b>	3	2	2	2	2	3	2	3	2	2	<b>2.3</b>
<b>Mean Overall Score</b>											<b>2.3</b>
<b>Correlation</b>											<b>Medium</b>

<b>Mean Overall Score</b>	<b>Correlation</b>
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

**Course Coordinator: Dr V. Kavitha**