

## M.PHIL. NUTRITION AND DIETETICS

SEM	SUB CODE	COURSE	SUBJECT TITLE	HRS / WEEK	CREDIT	CIA Mark	SE MARK	TOTAL MARK
<b>I</b>	20MPND1CC1	Core I	Research Methodology and Statistics in Nutrition and Dietetics	4*	4	25	75	100
	20MPND1CC2	Core II	Current Research trends in Nutrition and Dietetics	4*	4	25	75	100
	20MPND1CC3	Core III	Teaching and Learning Skills (Common Paper)	4*	4	25	75	100
	20MPND1CC4	Core IV	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>	17MPND2PD		Dissertation##	-	8	-	-	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	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPND1CC1	Core – I	RESEARCH METHODOLOGY AND STATISTICS IN NUTRITION AND DIETETICS	4	4	100	25	75

### Course Outcomes:

1. Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.
2. Have basic knowledge on qualitative research techniques
3. Have adequate knowledge on measurement & scaling techniques as well as the quantitative data analysis
4. Have basic awareness of data analysis-and hypothesis testing procedures
5. Draft the research report and to interpret the data obtained from research finding

### UNIT I

12 hours

#### Research - Fundamental concepts:

**Research:** Definition, Need, Importance and Meaning of research, Characteristics of research, Types of Research. **Methods of acquiring knowledge** - Inductive and Deductive Reasoning, scientific method and its applications.

**Research Problem** – Definition, Identification, selection of a problem for Research, survey of literature. **Hypothesis** – Meaning, importance, types .testing of hypothesis.

**Variables** – Meaning, identification in relation to the research problem – independent, dependent, control and interval variables.

### UNIT II

12 hours

#### Research Design and Methods:

**Research Design** – Meaning, Purpose of research design, steps in formulation of a design.

**Types of research design** – Historical, Descriptive, and Experimental – true experimental, quasi experimental and exposit facto designs. Experiments in vivo and invitro, evaluation and action research. Difference between applied and pure research. **Pilot studies**- Meaning, concept, and importance.

**Experimental studies in nutrition** – Pre clinical and clinical studies – human intervention trials. Ethical issues – Regulation and guidelines for research on human subjects- Informed consent process. **Other researches and methods** - Field surveys, diagnostic and evaluation research. #Qualitative and quantitative methods in research#.

### UNIT III

12 hours

#### Sampling techniques and tools:

**Sample, Sampling techniques and sampling errors** – Meaning, Population and sample, requisites of a good sample, Selection of a sample, Probability and non-probability sampling techniques, sampling distribution and sampling errors.

**Tools and techniques of data collection**– Questionnaire, Interview schedule, Observation and Experimentation.

**Projective techniques and rating scales**- Psychological tests, Projective techniques, rating scales, Likert and Thurstone, Guttman type scales. Sociometry, Focus Group discussion and PRA. **Characteristics of tools** - Validity, reliability and feasibility.

## UNIT IV

12 hours

### Analysis of Data and Inferential Statistics:

**Analysis of data** – Categorisation, presentation of data and Frequency distributions. Descriptive statistics – Central measures, Dispersion measures, Skewness and kurtosis.

**Bivariate analysis** - Correlation and regression analysis – Karl Pearson's product moment. Correlation Co-efficient by ranks, Bi-serial Correlation, Regression analysis. Fitting of Regression lines. **Multi variate analysis** – Multiple correlation and Multiple regression - concepts only

**Para metric tests** - Large and small samples (t test, Z test and F test). **Non - Parametric tests** - Important Non-Parametric tests : Chi-square tests , Sign test. Analysis Of Variance (ANOVA) – One-way and Two-way. **Application of Computer in research** – Collection of reviews. Data entry, Mean, Parametric and Non Parametric tests using SPSS.

## UNIT-V

12 hours

### Report writing:

**Research Report** - 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#.

# .....# Self-Study portion

### TEXT BOOKS

1. C.R.Kothari, Research Methodology (2002).
2. P. Shanthi Sophia and Bharathi, Second Edition, Computer Oriented Statistical Methods/Probability and Statistics, Charulatha publication(2000).

UNIT I : Chapter I,IT.B.1  
UNIT II : Text Book I,II  
UNIT III : Text Book I,II  
UNIT IV : Text Book I &II  
UNIT V : Text Book I,II

### REFERENCE BOOK

1. R.S.N.Pillai and V. Bagavathi, Statistics, Chand and Company Limited (2001)
2. S.P. Gupta , Statistical Methods, 31<sup>st</sup>Edition, Sultana Chand and Sons (2002).
3. R.P.Devadas,A Handbook on Methodology of Research, Sri RamakrishnaVidhyalaya, Coimbatore(1989).
4. P. Ramakrishnan, Biostatistics, Saras Publication(2001).H.M.C. Donald,Burney , Research Methods, Fifth edition, Thomson and Wadsworth Publications(2002).

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes :**

Semester	Code	Title of the Paper					Hours	Credits			
I	20MPND1CC1	RESEARCH METHODOLOGY AND STATISTICS IN NUTRITION AND DIETETICS					4	4			
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO2	✓	✓		✓		✓	✓		✓		
CO3		✓	✓	✓			✓	✓	✓		
CO4	✓	✓		✓	✓	✓	✓		✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of Matches= 40, Relationship : HIGH											

**Prepared by:**

1. Dr.A.Sangeetha
2. Dr.V.Kavitha

**Checked by:**  
**Dr.M.Angel**

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPND1CC2	Core – II	CURRENT RESEARCH TRENDS IN NUTRITION AND DIETETICS	4	4	100	25	75

### Course outcomes:

- 1 Describe well about nutrition, bioavailability and the current scenario of deficiency disease
- 2 Acquire knowledge on the current trends in food science
- 3 Able to understand the beneficial effects of functional foods
- 4 Acquire skills in institutional management
- 5 Analyze the life style disorder and acquire skills in imparting diet counselling

### UNIT I

**12hours**

#### Nutrition:

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

### UNIT II

**12hours**

#### Current Trends in Food Science

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, GM Mustard.

Nutrigenomics – Nutrigenetics, Transcriptomics, Metabolomics, Interaction of genes and Nutrition, Role of Nutrigenomics in life style disorders namely diabetes, CVD and cancer.

### UNIT III

**12 hours**

#### Functional Foods:

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, Sea Weed.

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.

### UNIT IV

**12 hours**

#### Institutional Food Management:

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

**Dietetics:**

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 Counseling – #Steps in patient approach and assessment, follow up and computer assisted dietary instructions and patient educations#

# .....# Self-Study portion

**TEXT BOOKS:**

1. Dietary guidelines for Indians,NIN,ICMR,(2010).
2. Potter. N.M.and Birch, G.G., “Food Science”, 5th edition, CBS Publishers and Distributors,New Delhi,(2007).
3. Ower.P.Ward,Fermentation Bio-technology, Principles, Processes and Products.(1989)
- 4.Knoor, Food Bio-technology,marcel dekker inc, NewYork.
- 5.Robert E C Wildman Handbook of Nutraceuticals and Functional Foods ( 2001).
6. Mohini Sethi and Surjeet Malham, Catering Management and integrated approach, John Wiley & Sons Eastern Limited New Delhi(2007).

- UNIT I : Text Book I
- UNIT II : Text Book II
- UNIT III : Text Book V
- UNIT IV : Text Book VI
- UNIT V : Text Book VIII

**REFERENCE BOOK**

1. Robinson C.H Normal and Therapeutic Nutrition, 12<sup>th</sup> edition, Macmillian Publishing Co. Inc, New York (2007)
2. Krause M.V and Mahan L.K Food, Nutrition and Diet therapy, 9<sup>th</sup> edition, W.B. Saunder Co, Philadelphia(2010)

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes :**

Semester	Code	Title of the Paper					Hours	Credits		
I	20MPND1CC2	CURRENT RESEARCH TRENDS IN NUTRITION AND DIETETICS					4	4		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓		✓		✓	✓		✓	
CO3		✓	✓	✓			✓	✓	✓	
CO4	✓	✓		✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 39, Relationship : HIGH										

**Prepared by:**

1. B.Rajalakshmi
2. Dr.A.Sangeetha

**Checked by: Dr.M.Angel**



Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPND1CC3	Core – III	TEACHING AND LEARNING SKILLS	4	4	100	25	75

**Course outcomes:**

1. understand the E-learning
2. acquire knowledge about communication and interaction methods
3. understand the educational psychology
4. identify the teaching and learning techniques
5. achieve to obtain the effective teaching skill

**UNIT - I**

**12 hours**

**Computer application and E-Learning**

**Application of Computer:**

- a) Information and Communication Technology (ICT): Definition, Meaning, Features, Trends.
- b) Integration of ICT in teaching and learning
- c) ICT applications: Using word processors, spread sheets, Power point slides in the classroom
- d) ICT for Research: On-line journals, e-books, Courseware, Tutorials, Technical reports, Theses and Dissertations.

**E-Learning:**

- a) E- learning: scope, trends, attributes, opportunities
- b) Pedagogical design for operation
- c) MOOC- development and operation
- d) E-learning - assessment and feedback mechanism e- portfolio.
- e) Management and implementation of e - learning
- f) Evaluation- impact of e-learning.

**UNIT - II**

**12 hours**

**Communication and Interaction Methods**

**Communication:**

- a) Definitions ,Elements of Communication: Sender, Message, Channel, Receiver, Feedback and Noise
- b) Types of Communication: Spoken and written; Non-verbal communication Intrapersonal, Interpersonal, Group and Mass communication
- c) Skills of communication: Listening, Speaking, Reading and writing
- d) Classroom communication and dynamics
- e) Lecture and lecture demonstration as communication

**Interaction Methods:**

- a) Interaction analysis, observation schedule and records.
- b) Bale’s interaction process categories
- c) Flanders’s system of interaction analysis
- d) Verbal interaction system
- e) Reciprocal category system
- f) Equivalent talk categories.



**UNIT - III****12 hours****Education Psychology and Pedagogy Instructional Technology****Psychology:** definition,Nature 3.2. **Educational****psychology:**

- a) Definition, Nature, Scope.
- b) Teaching and learning: meaning, characteristics, effective teaching, concept of learning, comparison between teaching and learning

**Mental health-Frustration:** concept of adjustment, defence mechanism, mental hygiene.**Pedagogy Instructional Technology:**

- a) Definition, Objectives and Types
- b) Difference between Teaching and Instruction

**UNIT - IV****12 hours****Teaching – Learning Techniques****Lecture Technique:**

- a) Steps, Planning of a Lecture, Delivery of a lecture
- b) Narration in tune with the nature of different disciplines
- c) Lecture with power point presentation
- d) Versatility of lecture technique
- e) Demonstration, Characteristics, Principles, Planning Implementation and Evaluation

**Teaching – Learning Techniques:**

- a) Team Teaching, Group discussion, Seminar, Workshop, Symposium and Panel Discussion
- b) Micro teaching, characteristic of micro teaching.
- c) Models of teaching: CAI, CMI and WBI7

**UNIT - V****12 hours****Teaching Skills:**

- a) Definition, Meaning and Nature
- 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
- c) Integration of Teaching Skills
- d) #Evaluation of Teaching Skills#

**Analysis of Teaching & Instructional Design:**

- a) The observational system for instructional analysis.
- b) The classification of behaviour, summarising behaviour and interpreting the institution.
- c) Training Psychological approach, cybernetic principles of teaching and learning Educational system analysis.

#..... # **Self-Study portion**

**TEXT BOOK:**

1. Bela Rani Sharma (2007), Curriculum Reforms and Teaching Methods, Sarup and sons, New Delhi.
2. Kumar K.I (2008) Educational Technology, New Age International Publishers, New Delhi.
3. Pandey S.K. (2005) Teaching Communication, Commonwealth Publishers, New Delhi.
4. Vedanayagam E.C.(1988) Teaching Technology for College Teachers, Striling Publishers Private Limited.

Unit-I-Text Book-1

Unit-II-Text Book-1,2

Unit-III-Text Book-3

Unit-IV-Text Book-3,4

Unit-V-Text Book-3,4

**REFERENCES:**

1. Don Skinner (2005), Teacher Training, Edinburgh University Press Ltd., Edinburgh
2. Information and Communication Technology in Education: A Curriculum for Schools and programme of Teacher development, Jonathan Anderson and Tom Van Weert, UNESCO, 2002
3. Mangal, S.K. (2002) Essential of Teaching – Learning and Information Technology, Tandon Publications, Ludhiana
4. Michael D. and William (2000), Integrating Technology into Teaching and Learning: Concepts and Applications, Prentice Hall, New York
5. Ram Babu A. and Dandapani S (2006) Microteaching (Vol.1&2) Neelakamal Publications, Hyderabad
6. Singh V.K. and Sudarshan K.N. (1996) Computer Education, Discovery Publishing Company, New York
7. Sharma R. A. (2006) Fundamentals of Educational Technology, Surya Publications, Meerut
8. Vanaja. M. and Rajasekar S. (2006) Computer Education, Neelkamal Publications, Hyderabad.

The students be able to

6. understand the E-learning
7. acquire knowledge about communication and interaction methods
8. understand the educational psychology
9. identify the teaching and learning techniques
10. achieve to obtain the effective teaching skill

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes :**

Semester	Code	Title of the Paper					Hours	Credits		
I	20MPND1CC3	TEACHING AND LEARNING SKILLS					4	4		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓		✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓		✓		✓	✓		✓	
CO3		✓	✓	✓			✓	✓	✓	
CO4	✓	✓		✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 39, Relationship : HIGH										

**Prepared by:**

1. J.Harine Sargunam
2. D.Bhuvaneswari

**Checked by: Dr.M.Angel**

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPND1C4	Core – IV	THERAPEUTIC NUTRITION	4	4	100	25	75

### Course outcomes:

After studying this course the students will be able to

- 1 Acquire Knowledge on incidence of diabetes and related disorder
- 2 Aware about the health related risk factors of heart disease
- 3 Able to understand the effects of cancer and obesity related complications
- 4 Analyze the management of gastro intestinal disorder
- 5 Analyze the current research trends in functional foods and Nutrigenomics

### Objectives

To enables the students to

1. Ability to recognize relevancy of nutritional and health claims
2. Gain knowledge in incidence of disease condition
3. Evaluate an efficiency of the functional actions of foods

### UNIT I

#### Therapeutic nutrition and diet for diabetes mellitus:

**12 hours**

- 1.1 Diabetes Mellitus – Recent prevalence and incidence of diabetes ,Recent Classification, Etiology symptoms and complications.
- 1.2 Treatment of diabetes: Drug therapy-Insulin therapy and oral hypoglycemic agents, Diet therapy – dietary modification, dietary guidelines and food included and avoided. Glycemic index and glycemic load of food.
- 1.3 Other conditions – Gestational diabetes – causes, complications and dietary management .Hypoglycemia – causes, complications and dietary management. Therapeutic life style changes of diet in Diabetes Mellitus. Review on recent research findings in the management of diabetes mellitus.

### UNIT II

#### Therapeutic nutrition and diet for cardiovascular diseases

**12 hours**

- 2.1 Coronary Heart Disease – Incidence and prevalence -Atherosclerosis – role of fat in the Development of atherosclerosis, risk factors and dietary modification. Hypertension – pathophysiology, types, symptoms and dietary modification. Hyperlipidemia - pathophysiology,types, symptoms and dietary modification.
- 2.2 Cardiovascular disease – (i) Acute : Myocardial infraction – pathophysiology, clinical symptoms, and nutritional management (ii) Chronic: congestive heart failure-etiology, clinical symptoms, nutritional management.
- 2.3 Review on recent research findings in the management of heart diseases

### UNIT – III

#### Therapeutic nutrition and diet for cancer, obesity and PCOD

**12 hours**

- 3.1 Cancer – definition, aetiology, pathophysiology, risk factors, types, symptoms, dietary Management. Nutritional effects of cancer therapy – problems related to surgery, Chemotherapy, Radiation therapy. Nutritional requirements. #Role of food in prevention of cancer#.
- 3.2 Obesity – Types, causes, assessment, grades of obesity, complication, and dietary modification, weight reducing and weight maintenance diet. PCOD – pathogenesis , incidence ,etiology,clinical symptoms ,complication and dietary modification
- 3.3 Review on recent research findings in the management of cancer, obesity and PCOD

**UNIT – IV****12 hours****Nutritional support in Gastrointestinal disorder and developmental disorder**

- 4.1 **Gastrointestinal disorder** - Etiology, symptoms, diagnosis, dietary management, diet planning for gastritis and peptic ulcer.
- 4.2 Nutritional care in musculo-skeletal disease – muscular dystrophy, osteoarthritis & Rheumatoid arthritis. Developmental Disorder – Attention deficit hyperactivity disorders – Autism, cerebral palsy, Epilepsy, muscular dystrophy – etiology and dietary needs.
- 4.3 Review on recent research findings in the management of ulcer and developmental disorder.

**UNIT – V****12 hours****Functional foods and Nutrigenomics**

- 5.1 Functional foods- Meaning, Classification and food sources .role of functional foods in degenerative diseases. Current research trends in functional foods and Nutraceuticals.
- 5.2. Prebiotic and Probiotic foods: Definition, sources, effects on human health and Potential applications in risk reduction of diseases, perspective for food applications for the following-Non digestible carbohydrates, # Dietary fibre , Resistant Starch, Gums.Probiotics – Mechanism action and health benefits#.
- 5.3 Nutrigenomics and Disease condition: Modulating the Risk of Cardiovascular Disease through Nutrigenomics-Introduction, Nutrigenetics and Lipid Metabolism, Nutrigenetics and Hypertension. Modulating the Risk of obesity and Diabetes through Nutrigenomics- Introduction, Genetic Determinants of Diabetes, and Potential role of different nutrient.

# .....# **Self-Study portion****TEXT BOOKS**

1. Mary K Schmidl and Theodore P.Labuza, Essential of functional Foods Culinary and Hospitality Industry Publications Services 2000
2. G.Mazza Functonal Foods Biochemical Processing Aspects and Culinary and Hospitality Industry Publications 1998
3. Israel Goldberg Functional Foods Designer Foods Pharma Food,Nutraceuticals Culinary and Hospitality Industry Publications 2001
4. Robert E C Wildman Handbook of Nutraceuticals and functional Foods Culinary and Hospitality Industry Publications 2001
5. David H Watson Performance Functional Foods Culinary and Hospitality Industry Publications 2001
6. R Chatwick et al. Functional Foods Springer 2003

**REFERENCE BOOK**

1. Robinson C.H Normal and Therapeutic Nutrition, 12<sup>th</sup> edition, Macmillian Publishing Co. Inc, New York (2007)
2. Krause M.V and Mahan L.K Food, Nutrition and Diet therapy, 9<sup>th</sup> edition, W.B. Saunder Co, Philadelphia(2010)

**Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes :**

Semester	Code	Title of the Paper					Hours	Credits		
I	20MPND1C4	THERAPEUTIC NUTRITION					4	4		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓		✓		✓	✓		✓	
CO3		✓	✓	✓			✓	✓	✓	
CO4	✓	✓		✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 40, Relationship : HIGH										

Prepared by:

1. Dr.V.Kavitha

Checked by:

Dr.M.Angel