

# **FATIMA COLLEGE (AUTONOMOUS)**



**COLLEGE WITH POTENTIAL FOR EXCELLENCE  
74<sup>th</sup> RANKING IN INDIA RANKING 2020(NIRF) BY MHRD  
AFFILIATED TO MADURAI KAMARAJ UNIVERSITY  
MADURAI - 625 018, Tamil Nadu, India**

**NAME OF THE DEPARTMENT: THE RESEARCH CENTRE OF  
HOME SCIENCE**

**NAME OF THE PROGRAMME : Ph.D**

**PROGRAMME CODE :**

**ACADEMIC YEAR : 2021-2022**

## Minutes of the Board of Studies

Name of the Dept: THE RESEARCH CENTRE OF HOME SCIENCE.  
To be implemented from the academic year 2021-22,  
Venue: Virtual

Convened on 12.04.2021.

Convened at 2.00 pm.

Members Present:

1. DR. VASANTHA ESTHER RANI
2. DR. G. SRIDEVI,  
ASST. PROFESSOR,  
DEPT. OF PLANT BIOTECHNOLOGY  
SCHOOL OF BIOTECHNOLOGY,  
MADURAI KAMARAJ UNIVERSITY,  
MADURAI - 21.
3. DR. P. C. JEMINA RANI,  
ASST. PROFESSOR,  
DEPT. OF COSTUME DESIGN &  
FASHION  
CHIKKANA GOVT. ARTS. COLLEGE,  
TIRUPUR.
4. DR. SRIDEVI SIVAKAMI,  
ASSOCIATE PROFESSOR,  
DEPT. OF FOOD SCIENCE,  
MANAGEMENT & DIETETICS.  
AVINASHILINGAM UNIVERSITY,  
COIMBATORE
5. DR. SURESH GOVINMAN,  
RESEARCH HEAD, AVN AYURVEDIC  
FORMULATIONS PVT. LTD.

HEAD OF THE DEPT.

*Vasanth Esther*

UNIVERSITY NOMINEE.

*G. Sridevi*

Dr. G. Sridevi  
Assistant Professor

Department of Plant Biotechnology  
School of Biotechnology  
Madurai Kamaraj University  
Madurai - 21

SUBJECT EXPERT.

*P. Ch*  
12/4/2021

SUBJECT EXPERT.

*P. Ch*  
12/4/2021

INDUSTRIALIST.

*L. V*  
12/4/21



- |     |                                                                                                       |                                   |
|-----|-------------------------------------------------------------------------------------------------------|-----------------------------------|
| 6.  | MS. SUSHEELA KATHIRAVAN,<br>AVP. CORPORATE PARTNERSHIPS,<br>CALCIDUS SOCIAL ENTREPRISES,<br>BANGALORE | ALUMNA.<br>K. Suseela<br>12.04.21 |
| 7.  | DR. N. MALATHI,<br>ASSOCIATE PROFESSOR,<br>DEPT. OF ZOOLOGY                                           | DEAN OF ACADEMIC AFFAIRS          |
| 8.  | DR. R. LATHA.<br>ASSOCIATE PROFESSOR                                                                  | STAFF MEMBER                      |
| 9.  | DR. K. KARTHIGA.<br>ASST. PROFESSOR.                                                                  | STAFF MEMBER.                     |
| 10. | MRS. P. MAGDALENE VIRJINI<br>ASST. PROFESSOR                                                          | STAFF MEMBER                      |
| 11. | MRS. C. HELEN<br>ASST. PROFESSOR                                                                      | STAFF MEMBER.                     |
| 12. | MRS. D. MOUNA.<br>ASST. PROFESSOR.                                                                    | STAFF MEMBER                      |
| 13. | DR. C. PRIYALATHA.<br>ASST. PROFESSOR.                                                                | STAFF MEMBER.                     |
| 14. | MS. BAREERA<br>ASST. PROFESSOR.                                                                       | STAFF MEMBER.                     |
| 15. | MS. A. MABEL ESTHER PARIPURNA                                                                         | FDGC - STAFF MEMBER               |
| 16. | MRS. C. BHUVANESWARI                                                                                  | FDGC - STAFF MEMBER               |



# Minutes of the Board of Studies for M.Sc. H Nutrition & Nutraceuticals.

Venue: Virtual.

Convened on 12.04.2021. Convened at 2pm.

## ACTION TAKEN REPORT.

S.No. COMMON SUGGESTIONS OFFERED  
IN THE PREVIOUS BOARD.

ACTION TAKEN FOR THE  
ACADEMIC YEAR 2020.

1. The Board members appreciated the framework of syllabi for PG courses.
2. The industrial internship at the Food industry for PG students was much appreciated by the Board.

## NEW COURSES INTRODUCED.

S.No	COURSE CODE	COURSE TITLE	RELEVANCE SCORE FOR						NEED FOR INTRODUCTION
			L	R	N	G	EMP	ENTR	
1.	PG4NEA	NUTRITION IN CRITICAL CARE & DISASTERS.					G	EMP	STUDENTS CAN FIND A SPECIAL DIETETIAN JOB IN MULTISPECIAL HOSPITALS.



## REVISED COURSES.

S.No	COURSE CODE	COURSE TITLE	No. & TITLE OF UNITS REVISED	% OF REVISION	NEED FOR REVISION	RELEVANCE	SCORE FOR.
1.	PG3N11	FUNCTIONAL FOODS & NUTRACEUTICALS IN PREVENTIVE DIETETICS.	PHYSIOLOGICAL ASPECTS OF UNIT I, II & V WERE DELETED, AS A PAPER EXCLUSIVELY ON APPLIED PHYSIOLOGY HAS BEEN INTRODUCED IN SEM I. IN UNIT V, REPRODUCTIVE HEALTH IS INCLUDED.	25%	A PART OF THE SYLLABUS HAS BEEN DELETED AND INCLUDED IN THE PAPER APPLIED PHYSIOLOGY IN SEM. I.	L	EMP.
2.	19PG3N14	ANALYTICAL INSTRUMENTATION	ICP - INDUCTIVE COUPLED PLASMA SPECTROPHOTOMETRY WAS INCLUDED IN UNIT IV	5%	RECENT SPECTROSCOPIC METHOD WAS INCLUDED.	G	EMP.
3.	19PG3N16	TECHNIQUES IN EXPERIMENTAL NUTRITION.	ESTIMATION OF ACID VALUE IN FRUITS & VEGETABLES HAS BEEN INCLUDED.	5%	ONE OF THE ESSENTIAL ANALYSIS FOR FRUITS & VEGETABLES.	G	EMP
4.	19PG4N16	FOOD MICROBIOLOGY	UNIT II WAS RENAMED AS FOOD BORNE INFECTIONS.				



UNIT II WAS 5% TITLES OF  
 RENAMED AS UNITS ARE G  
 CONTAMINATION, RENAMED.  
 SPOILAGE  $\frac{1}{3}$   
 PREVENTION.  
 UNIT IV WAS  
 RENAMED AS  
 FOOD BORNE  
 INTOXICATIONS.

### UPDATION OF OPEN EDUCATIONAL RESOURCES

S.No	COURSE CODE	COURSE TITLE	DETAILS OF UPDATION
1.	19PG1N1	ADVANCED HUMAN NUTRITION	<a href="https://en.wikibooks/Fundamentals human nutrition">https://en.wikibooks/Fundamentals human nutrition</a>
2.	19PG1N2	ADVANCED DIETETICS	<a href="https://library.open.org">https://library.open.org</a>
3.	19PG1N3	APPLIED PHYSIOLOGY	<a href="http://www.livescience.com">www.livescience.com</a>
4.	19PG2N6	CLINICAL NUTRITION & DIET THERAPY	<a href="https://Clinical-nutrition.imc">https://Clinical-nutrition.imc</a>
5.	19PG2N7	FUNCTIONAL FOODS & NUTRACEUTICALS	<a href="https://www.wisegeek.com">https://www.wisegeek.com</a>
6.	19PG2N8	RESEARCH METHODOLOGY	<a href="https://library.shu.edu/open-research-methods">https://library.shu.edu/open-research methods</a>
7.	19PG3N12	COMMUNITY NUTRITION	<a href="https://www.nin.res.in/">https://www.nin.res.in/</a>
8.	19PG3N11	FUNCTIONAL FOODS & NUTRACEUTICALS IN PREVENTIVE DIETETICS	<a href="http://www.medicalnewstoday.com">www.medicalnewstoday.com</a>



9. 19PG3N13 ANALYTICAL INSTRUMENTATION <https://microbenotes.com/Types of chromatography/>.
10. 19PG3NE1. FOOD PRODUCT DEVELOPMENT & SENSORY EVALUATION <https://open.lib.umn.edu/principlesmarketing/>.
11. 19PG3NE2 INSTITUTIONAL MANAGEMENT <https://open.umn.edu/opentextbooks/>
12. 19PG4N16 FOOD MICRO BIOLOGY <https://www.biocaster.org/>.
13. 19PG4N17. NUTRITIONAL BIOCHEMISTRY <https://www.chem.purdue.edu/>.
14. 19PG4N18. ADVANCED FOOD SCIENCE & PROCESSING TECHNIQUES <https://www.britanica.com/technology/meat-processing>.
15. 19PG4NE3 FOOD SAFETY & QUALITY CONTROL. <https://www.ag.ndsu.edu/>
16. 19PG4NE4 NUTRITION IN CRITICAL CARE & DISASTERS [www.scm.org/getattachments/Diaster/Nutrition-Therapy](http://www.scm.org/getattachments/Diaster/Nutrition-Therapy).



## REVISION OF COURSES

S. No.	COURSE CODE	COURSE TITLE	UNITS REVISED	%	NEED FOR REVISION	RELEVANCE
1.	19PG1N3.	APPLIED PHYSIOLOGY	INCLUDE TRANS GENDER. SPECIFY SECONDARY SEXUAL CHARACTERIS OF MALE/FEMALE	10%	INCLUSION OF SUBHEADINGS GIVES MORE INPUTS.	G
2.	19PG2N10. (22PG2N10)	FFN LAB.	QUANTITATIVE ESTIMATION OF CURCUMIN, PHENOLS & LIGNANS WERE DELETED. INSTEAD QUALITATIVE ANALYSIS OF PHENOLS, TANNINS, SAPONINS, FLAVONOIDS, ANTHOCYANINS & PHYTOSTEROLS ARE INCLUDED	40%	IDENTIFYING THE PRESENCE OF BIOACTIVE COMPONENTS WOULD ENHANCE KNOWLEDGE ABOUT THE MULTIPLE NUTRACEUTICALS PRESENT INFOOS THROUGH QUALITATIVE ANALYSIS.	G

## NEW COURSES INTRODUCED.

S. No.	COURSE CODE	COURSE TITLE	RELEVANCE	SCOPE	NEED FOR INTRODUCTION
1.	21PG1SLNI	INTELLECTUAL PROPERTY RIGHTS.	G.	SD.	RECENT TREND IN APPLYING PATENT FOR THE INNOVATIVE FORMULATIONS OF VALUE ADDED FOOD PRODUCTS



2.	21PG2NSL2	GERIATRIC SCIENCES.	G.	ENTR.	KNOWLEDGE OF DIET COUNSELING FOR ELDERLY.
3.	21PG3NSL3	NUTRITION GENOMICS.	G.	SD.	NUTRIGENOMICS IS THE RECENT TREND IN NUTRITIONAL SCIENCES.
4.	21PG4NSL4	SPORTS NUTRITION.	G.	EMP.	NEED FOR DIET COUNSELING FOR SPORTS PERSONS.

INTRODUCTION OF PURELY SKILL - EMBEDDED CERTIFICATE/DIPLOMA.

NIL.

APPROVAL OF PH.D COURSE WORK SYLLABUS.

Ph.D Course Work syllabus for 3 Ph.D Full time scholars was approved by the Board.

RUBERICS FOR INTERNSHIP / THESIS.

C1 - 20 marks.

C2 - 20 marks.

TOTAL C.I.A - 40 marks.

External

Thesis - 30 marks.

VIVA VOCE - 30 marks.

TOTAL - 60 marks.

The Ruberics for internship & Thesis was approved by the Board.

1. HEAD OF THE DEPT.

Masontya E. Panji

2. UNIVERSITY NOMINEE.

G. Sudi

3. SUBJECT EXPERT

P. Adhi Sleni



4. SUBJECT EXPERT. *g.c. me*
5. INDUSTRIALIST. *hr*
6. ALUMNA. *K. Suseela*

7. DEAN OF ACADEMIC AFFAIRS.

8. STAFF MEMBERS.

- 1) *Mason E. Ram*
- 2) *R. Latha*
- 3) *D. Minu*
- 4) *P. Eyalu Vignini*
- 5) *Ch*
- 6) *K. Kalliga*
- 7) *C. Priyathar*
- 8) *Banerjee*
- 9) *Mahesh*
- 10) *A. Mabel Esther Paripurna*
- 11) *E. Bhuvaneswari*

*12/09/2021*



## VISION OF THE DEPARTMENT

Empowering Women with life copying skills and enhancing entrepreneurial skills and promoting economic independency.

## MISSION OF THE DEPARTMENT

- To inculcate in women managerial and organizational skills both at home and work places
- To equip them with professional skills to face the challenges and hurdles
- To enhance their communication skills by conducting various programmes
- To kindle their academic excellence
- To instill in them aesthetic values

## FULL TIME DOCTOR OF PHILOSOPHY

### HOMESCIENCE

COURSE CODE	COURSE TITLE	CATEGORY	CREDITS
20PHDCWP01	RESEARCH METHODOLOGY	Course - I	4

### COURSE DESCRIPTION

This is a cross-curricular subject, which may be of interest for those students who are considering undertake a research career, especially in the fields of Nutrition and dietetics

### COURSE OBJECTIVES

This paper highlights the various postulates of research problems, research design, writing a thesis and modern statistical methods. This helps to carry out research problem individually in a perfect scientific method.



## **Unit –I RESEARCH COMPONENTS AND TYPES**

Meaning of research – Objectives of research – Motivation in research – Research approaches – Significance of research and scientific methods – Qualities of good research – Problems encountered by researchers in India – Identifying a research – Necessary condition for the formulation of the research problem – Criteria for good research project.

## **Unit –II METHODS OF DATA COLLECTION AND SAMPLING TECHNIQUES**

Primary Data: Observation, Experimentation, Simulation interviewing, Questionnaire, Projective technique. Secondary Data: Published and Unpublished sources.

Characteristics of good sample, advantages and disadvantages of sample.

Sampling Techniques: Probability or random sampling, non-probability or non-random. Sampling and non-sampling errors.

## **Unit –III FORMULATION OF HYPOTHESIS, PROCESSING OF DATA, REPORT WRITING AND PLAGIARISM**

Hypothesis: Definition, Role and Types –Criteria for useful hypothesis – Formulation – Tabulation – Editing – Coding – Analysis and Interpretation of data. Procedure for testing hypothesis.

Components or layout of a thesis: Introduction, Review of literature, Methodology, Results and Discussion, Summary and Conclusion, Bibliography, Foot Notes and Appendix.

Significance of Report Writing: Types of Report, Oral presentation, Mechanics of writing and Precaution of writing research report, Scientific writing.



## **Unit – IV: TESTING OF HYPOTHESIS**

Measures of Central Tendency: Mean, Median, Mode and Standard Deviation. Procedure for Testing Hypothesis: Students 's' 't' test and 'f' test.

## **Unit –V STASTICAL ANALYSIS**

Chi Squared test, Co – efficient of Correlation, Regression, ANNOVA, Data result interpretation.

### **REFERENCE BOOKS:**

1. Donald.H.Mc. Burney, "Research methods" Thomson Wordsworth, 5<sup>th</sup> Edition, 2003.
2. Ghosh B.N., "Scientific Method and Social Research", Sterling Publishers Pvt.Ltd... New Delhi, 4<sup>th</sup> Edition, 1987.
3. Goode and Hatt, "Methods and Social Research", MCGraw Hill International Book Company, 23<sup>rd</sup> printing, 1983.
4. GopalLal Jain," research Methodology, Methods, Tools and Techniques", Mangal Deep Publications, Jaipur, 1998.
5. Kothari.C.R.," Research methodology", New Age International Publishers, New Delhi 3<sup>rd</sup> reprint Edition, 2004.
6. O.R.Krishnaswamy and M.Ranganathan, "Methodology of Research in Social Sciences", Himalaya Publishing House, New Delhi, 2006.
7. Sadhu and Singh, "Research Methodology in Social Sciences", Himalaya Publishing House, Mumbai, 2<sup>nd</sup> Edition,1983.
8. Santhosh Gupta, "Research Methodology and Statistical Techniques", Deep and Deep Publications, New Delhi, 2001.
9. Sonachalam K.S., "Research Methodology of Social Science", Emerald Publishers, Madras, 1988.



10. Yogesh Kumar Singh and Ruchikanth, “Research Methodology”, A.P.H, Publishing Corporation, New Delhi, 2005.

11. Gupta S.P.,” Statistics”, S.Chand& Company Ltd, New Delhi, 2001.

12. Pillai and Bagavathi R.S.N., “Statistics”, S.Chand& Company Ltd, New Delhi, 2001.

## **COURSE OUTCOMES**

On the successful completion of the course, students will be able to

<b>NO.</b>	<b>COURSE OUTCOMES</b>	<b>KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM’S TAXONOMY)</b>	<b>PSOs ADDRESSED</b>
<b>CO 1</b>	Understand the basics of research and its objectives	K1, K2	PSO1, PSO2
<b>CO 2</b>	Gain knowledge about the theoretical research involved	K1, K2	PSO1, PSO2
<b>CO 3</b>	Get exposure to planning of experiments and the various methodologies involved	K1, K2, K3	PSO2, PSO3
<b>CO 4</b>	Apply the use software and other computational techniques for data presentation	K1, K2, K3& K4	PSO4, PSO5
<b>CO 5</b>	Understand and analyse the techniques of interpretation involved in written and oral presentations	K1, K2, K3 & K4	PSO4, PSO5

**COURSE DESIGNER: Dr.Vasantha Esther Rani**

**Forwarded By  
Dr.Vasantha Esther Rani  
HoD’S Signature & Name**



**FULL TIME DOCTOR OF PHILOSOPHY****HOMESCIENCE**

<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>CREDITS</b>
<b>20PHDCWP02</b>	<b>CLINICAL NUTRITION</b>	<b>Course - II</b>	<b>4</b>

**COURSE DESCRIPTION**

This will provide you detailed scientific understanding about nutritional screening and assessment methods and strategies for improving patient care. You will learn how to perform nutritional assessments in various disease conditions. It will also enable you with knowledge on the best practices of managing nutrition support therapy in different patient conditions

**COURSE OBJECTIVES**

- Explain the role of nutrition in health
- Understand physiological, anthropometric and biochemical assessment of the nutritional status.
- Guide to plan a therapeutic diet according to the individual or patients requirement in disease conditions.
- Monitor and evaluate nutrition therapy
- Educate the patients and family regarding nutritional care to be followed
- Logistics of enteral and parenteral nutrition.
- Therapeutic diet counselling of patients in the outpatient department
- Explain basic concepts of nutraceuticals and their applications



## **UNIT-I**

Assessment of nutritional status of the hospitalized patients, Diet counseling. Role of Dietitian in assessing patients' needs Based on Clinical, Bio clinical, Biophysical and personal data. Current trends in nutritional support: Parenteral and enteral nutrition- Feeding of premature and LBW babies- pre and post operative diets Incorporation of Novel Therapeutic foods in the exchange lists followed in Hospitals, Periodical nutritional screening of patients

## **UNIT II**

Gastro intestinal tract disorders-ulcer, constipation, diarrhoea, dumping syndrome, ulcerative colitis, Malabsorption Syndrome. Liver, gallbladder and pancreatic disorders, Stress & trauma. Nutrition and management in- Musculo skeletal disorders, immuno deficiency & AIDS.

## **UNIT III**

Etiopathophysiology, metabolic and clinical aberrations, diagnostic features, complications, prevention and recent advances in the nutritional management of Renal disorders, Cancer, Neurological disorders, Infection & febrile conditions and Respiratory problems

## **UNIT IV**

Etiopathophysiology, metabolic and clinical aberrations, diagnostic features, complications, prevention and recent advances in the nutritional management of- Weight imbalances, diabetes Mellitus , other metabolic disorders and Cardio-vascular diseases.

## **UNIT V**

Herbs and medicinal plants – medicinal uses Functional foods: Types & medicinal uses Antioxidants- types, role & mechanism of action in scavenging



free radicals, role in health & disease Phytochemicals- Occurrence, types & role in health & diseases Probiotic & Prebiotic foods for health benefits.

**REFERENCE BOOKS:**

1. Bakhru. H.K(2001) Indian Spices & Condiments As Natural Healers, Jaico Publishing, Mumbai
2. Syed A.A. Sharma S.C (2000) Herbal Cure For Common & Chronic Diseases, PushtakMahal , New Delhi
3. Gala, R, Gala,D, Gala.S.(1999), NATURE Cure For Common Diseases, Navneet Publications (India) Ltd., Chennai. M. Phil./Ph.D. Food and Nutrition (2018-19 onwards) Page 11 of 11
4. ManoharMurali. C. H, (2000), Ayurveda for All, PustrakMahal. New Delhi.Pp133- 136
5. Nutrition Principals and Applications In Health Promotion By Suitir& Crowley.
6. Food, Nutrition & Dietetics y Krause & Mahan, WB Saunders Co., Philadelphia, 1979.
7. Normal & Therapeutic Nutrition by Corinne H Robinson. Merlyn. R. Lawley. Mac Million Publishers & Co.
8. Maurice Shils, James Olson &Noshe, (1994), Modern Nutrition in Health & Disease 8 th Edition, Vol I & II, Lea &Febiger Co, USA.
9. Human Nutrition and Dietetics By Davidson And Passmore. English Language Book Society,1985.
10. Garrow, J.S., James W.P.T., And Rajph,A,(2000), Human Nutrition And Dietetics, 10th Edition, Churchill Livingstone.

**JOURNALS:**

1. Nutrition Update Series.
2. World Review of Nutrition and Dietetics.
3. Journal of The American Dietetic Association
4. American Journal of Clinical Nutrition
5. Nutrition Review.



## COURSE OUTCOMES

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the basics of nutritional assessment and diet counselling	K1, K2	PSO1, PSO2
CO 2	Gain knowledge about the Modern Nutrition in Health & Disease	K1, K2	PSO1, PSO2
CO 3	Get exposure to planning of experiments and the various methodologies involved	K1, K2, K3	PSO2, PSO3
CO 4	Apply the use software and other computational techniques for data presentation	K1, K2, K3& K4	PSO4, PSO5
CO 5	Understand and analyse the techniques of interpretation involved in written and oral presentations	K1, K2, K3 & K4	PSO4, PSO5

**COURSE DESIGNER: Dr.Vasantha Esther Rani**

**Forwarded By  
Dr.Vasantha Esther Rani  
HoD'S Signature & Name**



**FULL TIME DOCTOR OF PHILOSOPHY****HOME SCIENCE*****For those who joined in 2019 onwards***

<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>CREDITS</b>
<b>20PHDCWP03</b>	<b>Role of Whey Protein Functional Yogurt to Combat Obesity and Type II Diabetes – Mice Study</b>	<b>Course - III</b>	<b>4</b>

**COURSE DESCRIPTION**

This course emphasises the basic concepts of type II diabetes, obesity and its prevention

**COURSE OBJECTIVES**

This course provides detailed information about the management of type II diabetes and obesity to prevent its complications.

**UNIT I - TYPE II DIABETES**

Natural history of type 2 diabetes, Epidemiology and risk factors for type II diabetes mellitus,  $\beta$ -Cell Function, Pathogenesis of  $\beta$ -cell failure, Insulin Resistance, Acute Diabetic Complications, Hypoglycemia in diabetes, Acute metabolic complications of diabetes, Microvascular Complications in Diabetes, Macrovascular Complications in Diabetes, Normal Physiology - Mechanisms of insulin signal transduction, Glucose, Protein, Lipid and

Lipoprotein metabolism – normal physiology, Pathophysiology - Genetics of Diabetes, Immunology of Diabetes, Pathology of Pancreas in Diabetes Mellitus, Metabolic Disturbances in Diabetes, Management of Diabetes - Relation between Diet and Type II DM, Relation between Dietary Practices and Diabetes Complications, Recent Technologies for Combating Diabetes.

## **UNIT II - OBESITY**

Obesity as a global problem, The epidemiology of obesity, Body Weight, Diagnosis - Anthropometric Indices of Obesity and Regional Distribution of Fat Depots, Body Composition and Longevity, Appetite regulation and obesity regulation, Fat in the Diet and Obesity, Energy Expenditure at Rest and During Exercise. Pathogenesis and types of obesity - The Specificity of Adipose Depots, visceral obesity and metabolic syndrome, interrelationship between Obesity and Type II Diabetes Mellitus.

## **UNIT III - WHEY PROTEIN**

Composition, History, Chemical constituents, Production, Major forms of whey protein, Amino acids in Whey protein, Nutritional properties, biological activities, role of bioactive compounds from whey protein, Functional properties, industrial preparation, processing and applications, quality aspects including flavour and effects of storage, role and application.

## **UNIT IV - RICE BRAN**

Introduction, basic composition, Processing and utilization, Preparation and functional properties, Extraction, isolation and identification of the active components in rice bran, Role of bioactive components in rice bran, Rice bran as functional bran, rice bran protein properties, extraction methods and food uses.

## **UNIT V - YOGURT**

Manufacture of yogurt - Fruits and flavouring materials, Milk and Milk-based dairy ingredients, Ingredients for Yogurt manufacture, microorganism starter culture strains for yogurt production, principles of yogurt processing, Types of Yogurts, Yoghurt and its peptides, Sensory Analysis of Yogurt.

## **REFERENCE BOOKS:**



1. A Handbook on Diabetes Mellitus 8th Edition 2021 Paperback, January 2021 by V.Seshiah
2. Textbook of Diabetes, 5th Edition SBN: 978-1-118-91202-7 March 2017 Wiley-Blackwell 1104 Pages
3. Organization WH. Obesity: Preventing and Managing the Global Epidemic. Geneva, Switzerland: World Health Organization; 2000
4. International Textbook of Obesity. Edited by Per Bjorntorp. Copyright © 2001 John Wiley & Sons Ltd Print ISBNs: 0-471-988707 (Hardback); 0-470-846739 (Electronic)
5. Whey Proteins from Milk to Medicine 1st Edition, September 1, 2018 Editors: Hilton CDeeth, Nidhi Bansal Paperback ISBN: 9780128121245 eBook ISBN: 9780128121252.
6. Whey Protein Production, Chemistry, Functionality, and Applications Mingruo Guo John Wiley & Sons, 15-Apr-2019 - Technology & Engineering - 280 pages.
7. Rice Bran and Rice Bran Oil Chemistry, Processing and Utilization, Ling-Zhi Cheong, Xuebing Xu
8. Yogurt ancient food in the 21<sup>st</sup> century.

#### Journals Reference:

1. Bioactive Compounds of Rice as Health Promoters Author(s): Charu Lata Mahanta and Sangeeta Saikia, Pp: 221-234(14), Doi: 10.2174/9781681082431116010012.
2. Food Research International (2020), doi: <https://doi.org/10.1016/j.foodres.2020.109504>

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
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CO 1	understand the basic mechanism of type II diabetes and its complications	K1, K2	PSO1, PSO2
CO 2	understand the basics and complication of obesity	K1, K2, K3	PSO3, PSO4
CO 3	understand the properties of whey protein and its applications in diet	K1, K2	PSO1, PSO3
CO 4	Understand the properties of rice bran and its applications in diet	K2, K2, K3& K4	PSO4, PSO5
CO 5	Gain information about the processing and development of yogurt	K1, K2, K3 & k4	PSO3, PSO4& PSO5

**COURSE DESIGNER: Dr.Vasantha Esther Rani**

**Forwarded By  
Dr.Vasantha Esther Rani**

**HoD'S Signature & Name**

**FULL TIME DOCTOR OF PHILOSOPHY**

**HOMESCIENCE**

Academic Council 28.3.2019



<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATEGORY</b>	<b>CREDITS</b>
<b>20PHDRPE04</b>	<b>RESEARCH AND PUBLICATION ETHICS</b>	<b>Course - IV</b>	<b>2</b>

### **COURSE DESCRIPTION**

This course emphasises the basic concepts of philosophy of science and ethics.

### **COURSE OBJECTIVES**

This course provides detailed information about research integrity and publication ethics.

### **UNIT I: PHILOSOPHY AND ETHICS**

Introduction to philosophy: definition, nature and scope, concept, branches. Ethics: definition, moral philosophy, nature of moral judgments and reactions.

### **UNIT II: SCIENTIFIC CONDUCT**

Ethics with respect to science and research. Intellectual honesty and research integrity. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP). Redundant publications: duplicate and overlapping publications, salami slicing. Selective reporting and misrepresentation of data

### **UNIT III: PUBLICATION ETHICS**

Publication ethics: definition, introduction and importance Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. Conflicts of interest. Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types. Violation of publication ethics, authorship and contributor ship. Identification of publication misconduct, complaints and appeals. Predatory publishers and journals practice.

## **UNIT IV: PUBLICATION MISCONDUCT**

Group Discussions: Subject specific ethical issues, FFP, authorship. Conflicts of interest. Complaints and appeals: examples and fraud from India and abroad.

Software tools: Use of plagiarism software like Turnitin, Urkund and other open-source software tools

## **UNIT V: DATABASES AND RESEARCH METRICS**

Databases: Indexing databases. Citation databases: Web of Science, Scopus, etc.

Research Metrics: Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score. Metrics: h-index, g index, i10 index, altimetric.

### **REFERENCE BOOKS:**

1. The Ethics of Teaching and Scientific Research by Miro Todorovich; Paul Kurtz; Sidney Hook.
2. Research Ethics: A Psychological Approach By Barbara H. Stanley; Joan E. Sieber; Gary B. Melton.
3. Research Methods in Applied Settings: An Integrated Approach to Design and Analysis by Jeffrey A. Gliner; George A. Morgan Lawrence Erlbaum Associates, 2000.
4. Ethics and Values in Industrial-Organizational Psychology by Joel Lefkowitz Lawrence Erlbaum Associates, 2003.

## **COURSE OUTCOMES**

On the successful completion of the course, students will be able to



<b>NO.</b>	<b>COURSE OUTCOMES</b>	<b>KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)</b>	<b>PSOs ADDRESSED</b>
<b>CO 1</b>	understand the basics of philosophy and ethics of research	K1, K2	PSO1, PSO2
<b>CO 2</b>	Understand the scientific misconducts like falsification, fabrication and plagiarism	K1, K2	PSO1, PSO2
<b>CO 3</b>	Gain knowledge about the publication misconducts related will authorship and contributor ship	K1, K2, K3	PSO2, PSO3
<b>CO 4</b>	Understanding of the publication misconducts	K1, K2, K3 & K4	PSO4, PSO5
<b>CO 5</b>	Information about databases and research metrics	K1, K2, K3 & K4	PSO4, PSO5

**COURSE DESIGNER: Dr.Vasantha Esther Rani**

**Forwarded By  
Dr.Vasantha Esther Rani  
HoD'S Signature & Name**

**PART TIME DOCTOR OF PHILOSOPHY**

**HOME SCIENCE - SEMESTER - I**

***For those who joined in 2020 onwards***

<b>PROGRA MME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CATE GORY</b>	<b>HRS/WE E K</b>	<b>CREDITS</b>
	<b>19PHDCWN01</b>	<b>Extraction of Alginates from Brown and Red Seaweed and its Impact of Supplementation on Obese Rats</b>	<b>Cour se</b>	<b>-</b>	<b>4</b>

**COURSE DESCRIPTION**

This course emphasises the knowledge of causes, risk factors and complications of obesity and pathophysiology and management of obesity by dietary and lifestyle modifications, seaweeds alginate and its pharmaceuticals and medicinal uses.

**COURSE OBJECTIVES**

This course provides detailed information about obesity and seaweeds alginate contribution in treating obesity.

**UNITS**

**UNIT: 1**

**INTRODUCTION TO OBESITY**

Definition, Types of obesity, Assessment of obesity. Causes – Risk factors – family inheritance and influences, Lifestyle choices – unhealthy diet, inactivity, certain



diseases and medications, social and economic issues, age, Other factors – pregnancy, lack of sleep, stress. Complications of obesity – metabolic disorder, physical disability, heart diseases, strokes, type 2 diabetes, cancers, digestion problem, sleep apnea, osteoarthritis.

## **UNIT: 2**

### **PATHOPHYSIOLOGY OF OBESITY:**

Theories of obesity – Set point theory, Lay theory, Fat cell theory. Dysregulation of lipid and glucose metabolism, lipotoxicity and insulin resistance in obesity. The specific role of adipocyte inflammatory secretagogues including effects of hypertension, macrophage and immune function. Relationship between hormones and obesity. Management of obesity-Dietary and Lifestyle modifications, other treatments.

## **UNIT: 3**

### **INTRODUCTION TO SEAWEED**

History and origin of seaweeds, Distribution of seaweeds, Seaweed production, types of seaweed - Chlorophyta-green seaweed, Phaeophyta-brown seaweed, Rhodophyta-red seaweed, bioactive components of seaweeds – Polysaccharides, Dietary fibres-Alginates Carrageenans, Agar, Fucoidan, Mannitol, Ulvan, porphyran and xylans, Proteins, peptides and amino acids, Lipids, Health benefits of seaweeds

## **UNIT: 4**

### **PHAEOPHYTA-BROWN SEAWEED**

Overview of the brown seaweed, Distribution, Habitat, Cultivation, Properties, Allergies, Toxicity, Dosage, Industrial Applications, Nutritional and Pharmacological effects

## **RHODOPHYTA-RED SEAWEED**

Overview of the red seaweed, Distribution, Habitat, Cultivation, Properties, Allergies , Toxicity, Dosage , Industrial Applications, Nutritional and Pharmacological effects

### **UNIT: 5**

#### **EXTRACTION OF ALGINATE FROM SEAWEEDS**

Seaweed polysaccharides, Alginate structure and characteristics, Alginate extraction methods, Alginate uses, Pharmaceutical and Medical uses, Alginates in treating obesity

**Impact of seaweeds in various diseases-** Cardiovascular diseases and related risk factors, Metabolic syndrome, Weight management, Type 2 diabetes, Digestive tract health, Bone Health and Cancer

### **UNIT: 6**

#### **RESEARCH METHODOLOGY**

Introduction to Research Methodology, Research Methods, Data Analysis and Interpretation, Report Writing, IPR and Plagiarism, Research Ethics.

#### **TEXT BOOKS:**

1. Mudambi SR and Rajagopal MV. Fundamentals of Foods, Nutrition and Diet Therapy, New Age International Publishers, New Delhi. 2007.
2. Robinson CH. Normal and Therapeutic Nutrition, The Oxford and IBH Publishing Co.1982.
3. Davidson And Passmore, Essentials of Food and Nutrition Human Nutrition And Dietetics By. English Language Book Society,1985.
4. Garrow, J.S., James W.P.T., And Rajph,A, Human Nutrition And Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone.2000.



5. Swaminathan M., Vols. I and II, Ganesh and Co., Madras. 2007.
6. Dennis,J., Hugh M.C, A guide to the seaweed industry, FAO Fisheries Technical Paper, School of Chemistry, University of New South Wales and Australia, Defence Force Academy, Australia.2009
7. Suresh Kumar, K, Seaweeds: Distribution, Production and uses, Research Gate.2018.
8. Copper,J.W.,Bay of Bengal Programme Post – Harvest Fisheries – Agar and Alginate production from Seaweed in India, Food and Agriculture organization of the United Nation, Bay of Bengal Programme,India,1999.
9. Jayachandran Venkatesan,Sukumaran Anil, Sekwonkin, Introduction to Seaweed Polysaccharides, Pukyong National University, Busan, South Korea,2017.
10. Kothari C R. Research methodology: Methods & Techniques (Rev. Ed.), New Age International. New Delhi. 2006.
11. Roig M. Avoiding plagiarism, self-plagiarism, and other questionable writing Practices: A guide to ethical writing, 2006.
12. Emma M Brown, Philip J Allsopp, Seaweed and human health, Nutrition Reviews, Vol. 72(3):205–216,2018.

## **COURSE OUTCOMES**

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	understand the obesity with basic knowledge and information about causes of obesity	K1, K2	PSO1,PSO2
CO 2	Understand knowledge related to pathophysiology and management of obesity.	K1, K2, K3	PSO3,PSO4
CO 3	understand the types of seaweeds and its medicinal uses	K1, K2	PSO1,PSO3
CO 4	understanding of the uses and effects of alginates in obesity	K2, K2, K3 & K4	PSO4, PSO5
CO 5	understand the basics of research and its objectives	K1, K2, K3 & k4	PSO3,PSO4& PSO5

**COURSE DESIGNER: Dr. K. Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani**

**HoD'S Signature & Name**

## **PART TIME DOCTOR OF PHILOSOPHY**

### **HOME SCIENCE - SEMESTER - I**

<b>PROGR AMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CAT EGO RY</b>	<b>HRS/WE E K</b>	<b>CREDIT S</b>
	<b>19PHDRMP03</b>	<b>CLINICAL NUTRITION</b>	<b>Ph.D Core</b>	<b>-</b>	<b>4</b>

#### **COURSE DESCRIPTION**

This will provide you detailed scientific understanding about nutritional screening and assessment methods and strategies for improving patient care. You will learn how to perform nutritional assessments in various disease conditions. It will also enable you with knowledge on the best practices of managing nutrition support therapy in different patient conditions

#### **COURSE OBJECTIVES**

1. Explain the role of nutrition in health
2. Physiological, anthropometric and biochemical assessment of the nutritional status.
3. To plan a therapeutic diet according to the individual or patients requirement in disease conditions.
4. Monitor and evaluate nutrition therapy
5. Educate the patients and family regarding nutritional care to be followed
6. Logistics of enteral and parenteral nutrition.
7. Therapeutic diet counseling of patients in the outpatient department
8. Basic concepts of nutraceuticals and their applications.



## **UNITS**

### **UNIT-I**

Assessment of nutritional status of the hospitalized patients, Diet counseling.  
Role of Dietitian in assessing patients' needs Based on Clinical, Bio clinical, Biophysical and personal data.

Current trends in nutritional support: Parenteral and enteral nutrition- Feeding of premature and LBW babies- pre and post-operative diets

Incorporation of Novel Therapeutic foods in the exchange lists followed in Hospitals, Periodical nutritional screening of patients

### **UNIT II**

Gastro intestinal tract disorders-ulcer,constipation,diarrhea,dumping syndrome,irritablebowelsyndrome,ulcerativecolitis,HitausHernia,RegionalEnteritis,Diverticulosis,Malabsorpt ion Syndrome.

Liver, gallbladder and pancreatic disorders, Stress & trauma.

Nutrition and management in- Musculo skeletal disorders, Immuno deficiency & AIDS.

### **UNIT III**

Etiopathophysiology, metabolic and clinical aberrations, diagnostic features, complications, prevention and recent advances in the nutritional management of Renal disorders, Cancer, Neurological disorders, Infection & febrile conditions and Respiratory problems.

### **UNIT IV**

Etiopathophysiology, metabolic and clinical aberrations, diagnostic features, complications, prevention and recent advances in the nutritional management of- Weight imbalances, diabetes Mellitus, other metabolic disorders and Cardio-vascular diseases.

## **UNIT V**

Herbs and medicinal plants – medicinal uses Functional foods: Types & medicinal uses

Antioxidants- types, role & mechanism of action in scavenging free radicals, role in health & disease

Phytochemicals- Occurrence, types & role in health & diseases

Probiotic & Prebiotic foods for health benefits.

### **BOOKS FOR REFERENCE**

1. Bakhru. H.K.(2001) Indian Spices & Condiments As Natural Healers, Jaico Publishing, Mumbai
2. Syed A.A. Sharma S.C (2000) Herbal Cure For Common & Chronic Diseases, Pushtak Mahal , New Delhi
3. Gala, R, Gala,D, Gala.S.(1999), NATURE Cure For Common Diseases, Navneet Publications (India) Ltd., Chennai.
4. Manohar Murali. C. H, (2000), Ayurveda For All, Pustrak Mahal. New Delhi.Pp133- 136
5. Nutrition Principals And Applications In Health Promotion By Suitir & Crowley.
6. Food, Nutrition & Dietetics By Krause & Mahan, WB Saunders Co., Philadelphia, 1979.
7. Normal & Therapeutic Nutrition By Corinne H Robinson. Merlyn. R. Lawley. Mac Million Publishers & Co.
8. Maurice Shils, James Olson & Noshe, (1994), Modern Nutrition In Health & Disease 8<sup>th</sup> Edition, Vol I & II, Lea & Febiger Co, USA.
9. Human Nutrition And Dietetics By Davidson And Passmore. English Language Book Society,1985.
10. Garrow, J.S., James W.P.T., And Rajph,A,(2000), Human Nutrition And Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone.

## COURSE OUTCOMES

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Gain knowledge about aetiology, risk factors, clinical features and dietary management of cancer, HTN, CVD, genetic and mental disorders.	K1,K2	PSO1,PSO2
CO 2	Designing and carrying out health status assessment protocols, and identifying risk factors.	K1, K2	PSO1,PSO2
CO 3	Interpreting a nutritional diagnosis, evaluating nutritional aspects of a clinical record and implementing a dietary treatment plan.	K1 , K2, K3	PSO2, PSO3
CO 4	Evaluate the normal and therapeutic nutrition needs of patients and design appropriate dietary plans based on individual and group needs.	K1, K2, K3 & K4	PSO4,PSO5

**COURSE DESIGNER Dr. K. Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani  
HoD'S Signature & Name**



## **PART TIME DOCTOR OF PHILOSOPHY**

### **HOME SCIENCE - SEMESTER - I**

<b>PROGR AMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CAT EGO RY</b>	<b>HRS/WEE K</b>	<b>CREDIT S</b>
	<b>19PHDREP04</b>	<b>RESEARCH AND PUBLICATION ETHICS</b>	<b>Ph.D Core</b>	<b>-</b>	<b>4</b>

#### **COURSE DESCRIPTION**

This course emphasise the basic concepts of philosophy of science and ethics.

#### **COURSE OBJECTIVES**

This course provides detailed information about research integrity and publication ethics.

#### **UNITS**

##### **UNIT I: PHILOSOPHY AND ETHICS**

Introduction to philosophy: definition, nature and scope, concept, branches.  
Ethics: definition, moral philosophy, nature of moral judgments and reactions.

##### **UNIT 2: SCIENTIFIC CONDUCT**

Ethics with respect to science and research. Intellectual honesty and research integrity. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP). Redundant publications: duplicate and overlapping publications, salami slicing. Selective reporting and misrepresentation of data

##### **UNIT 3: PUBLICATION ETHICS**

Publication ethics: definition, introduction and importance Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. Conflicts of interest. Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types. Violation of publication ethics,

authorship and contributor ship. Identification of publication misconduct, complaints and appeals. Predatory publishers and journals practice.

#### **UNIT 4: PUBLICATION MISCONDUCT**

Group Discussions: Subject specific ethical issues, FFP, authorship. Conflicts of interest. Complaints and appeals: examples and fraud from India and abroad.

Software tools: Use of plagiarism software like Turnitin, Urkund and other open source software tools

#### **UNIT 5: DATABASES AND RESEARCH METRICS**

Databases: Indexing databases. Citation databases: Web of Science, Scopus, etc.

Research Metrics: Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score. Metrics: h-index, g index, i10 index, altmetrics.

#### **BOOKS FOR REFERENCE**

1. The Ethics of Teaching and Scientific Research By Miro Todorovich; Paul Kurtz; Sidney Hook.
2. Research Ethics: A Psychological Approach By Barbara H. Stanley; Joan E. Sieber; Gary B. Melton.
3. Research Methods in Applied Settings: An Integrated Approach to Design and Analysis By Jeffrey A. Gliner; George A. Morgan Lawrence Erlbaum Associates, 2000.
4. Ethics and Values in Industrial-Organizational Psychology By Joel Lefkowitz Lawrence Erlbaum Associates, 2003.

## **COURSE OUTCOMES**

On the successful completion of the course, students will be able to

<b>NO.</b>	<b>COURSE OUTCOMES</b>	<b>KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)</b>	<b>PSOs ADDRESSED</b>
<b>CO 1</b>	understand the basics of philosophy and ethics of research	K1,K2	PSO1,PSO2
<b>CO 2</b>	Understand the scientific misconducts like falsification, fabrication and plagiarism	K1, K2	PSO1,PSO2
<b>CO 3</b>	gain knowledge about the publication misconducts related with authorship and contributorship	K1 , K2, K3	PSO2, PSO3
<b>CO 4</b>	Understanding of the publication misconducts	K1, K2, K3 & K4	PSO4,PSO5
<b>CO 5</b>	Information about databases and research metrics	K1, K2 , K3 & K4	PSO4,PSO5

**COURSE DESIGNER Dr. K. Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani  
HoD'S Signature & Name**



# Course Work Syllabus

**STUDY TITLE: A Comparative Study on Supplementation of Purslane Leaves and Brahmi Leaves on the Nutritional and Cognitive Profile of the Selected Mentally Challenged Adolescent Children**

**NAME OF THE STUDENT:** J.Manjula      **COURSE:** Ph.D. Food & Nutrition

**COURSE CODE:** 19PHDCWN01

## **UNIT: 1    INTRODUCTION TO INTELLECTUAL DISABILITY**

Definitions – Mental retardation or Intellectual disability, Intelligent Quotient, Degree of Retardation, Facts on Intellectual disability; Biological Causes of intellectual disability - Genetic conditions, Prenatal Causes, Perinatal Causes, Postnatal causes, Metabolic disorders, Cranial anomalies and other factors; Characteristics of intellectual disability - Mild , Moderate, Severe and Profound Intellectual Disability; Diagnosis and prevention of Intellectual disability, Common mental retardation syndromes.

## **UNIT: 2**

### **NUTRITIONAL SCREENING AND ASSESSMENTS IN THE FIELD OF INTELLECTUAL DISABILITY:**

Definition of assessment, Purpose of assessment, Different stages of cognitive abilities, motor affordance on cognitive, motor, socio-emotional abilities ,socio economic status and the quality of the home environment.

Nutritional assessment – Anthropometric parameters, Bio-chemical data, Clinical history and Dietary assessments.

Measure of intelligence – Purpose of assessment, Different stages of evaluating cognitive abilities, Neurocognitive functioning assessment - General cognitive/intellectual ability, Language and communication, Memory acquisition, Attention and distractibility, Processing speed, and Executive functioning, Domain effect , Intelligence scale methods.

## **UNIT: 3**

### **OMEGA 3 RICH HERBAL PLANTS AND ITS HEALTH BENEFITS**

History and uses of herbal plants, Imbalance of Omega-3 Fatty Acid Ratio in Modern Diets, Importance of Omega-3 PUFAs for Human Health, Present Sources of Omega-3 PUFAs, Need of Alternative Source for the Production of Omega-3 PUFAs.

#### **UNIT: 4**

##### **BRAHMI LEAVES (*Bacopa monnieri*)**

Overview of the plant, Classification, Distribution, Habitat, Cultivation, Properties, Allergies , Toxicity, Dosage , Industrial Applications, Nutritional and Pharmacological effects, Effect of Brahmi leaves on cognitive development.

##### **PURSLANE LEAVES (*Portulaca oleracea*)**

Overview of the plant, Classification, Distribution, Habitat, Cultivation, Properties, Allergies , Toxicity, Dosage , Industrial Applications, Nutritional and Pharmacological effects, Effect of Purslane leaves on cognitive development.

#### **UNIT: 5**

##### **IMPACT OF OMEGA 3 FATTY ACIDS ON INTELLECTUAL DISABILITIES:**

Interacting process for the effect of omega 3 deficiency on intellectual disabilities, cognitive, motor, and socio-emotional development, Mechanisms of inadequate omega 3 fatty acids on brain development, mental and Cognitive development.

#### **UNIT: 6**

##### **RESEARCH METHODOLOGY**

Introduction to Research Methodology, Research Methods, Data Analysis and Interpretation, Report Writing, IPR and Plagiarism, Research Ethics.

## REFERENCE:

1. Nutrition for children with special health care needs, A handbook for Parents, Teachers, care givers and Food service providers, Nancy S. Wellman, Ph.D., R.D., F.A.D.A. , Sheah Rarback, M.S., R.D.1998,Florida Department of Education, Food and Nutrition Management, Florida International University, Florida.
2. Children at Risk, Challenging Boundaries- A Study on Mentally Challenged Children, Ajitha. R.Manjeshwar, Dr. Abhishrk Lakhtakia, Amol I.Jadhav, Ramesh R.Pawar, Sudhir S.Salgar, Vinayak m. Sakhare, 2008, CHILD LINE India Foundation Mumbai.
3. Introduction to Psychology, Glifford T.Morgan , Richard A.King , John R.Weisz, John Schopcler, Tata McGraw – Hill, 1999, New Delhi.
4. Handbook of Evidence based practices in Intellectual and Developmental Abilities, Nirbhay N.Singh, Springer, 2017, USA.
5. Psychological Testing in the service of Disability Determination, Institute of Medicine, The National Academic Press, 2015,US.
6. Intellectual Disability: A Guide for Families and Professionals, James C. Harris, M.D., Oxford University Press, 2010, New York.
7. Omega 3 fatty acids in Brain and Neurological Health, Ronald Ross Watson, Fabien De Meester, Elsevier, 2014.
8. Omega-3 Fatty Acids: Chemistry, Dietary Sources and Health Effects, Wasim Khan, Nova Science Publishers, 2014, UK.
9. The lost book of Herbal Remedies, Nicole Apelian & Claud Davis, Capital Printing Co; 3rd edition, 2018, Austin.
10. Handbook of Indian Medicinal Plants, M.C.Joshi, Scientific Publishers, 2019, India.
11. KOTHARI (C R). Research methodology: Methods & Techniques (Rev. Ed.), (2006) New Age International. New Delhi.
12. ROIG (M). Avoiding plagiarism, self-plagiarism, and other questionable writing Practices: A guide to ethical writing, (2006)

## VISION OF THE DEPARTMENT

Empowering Women with life copying skills and enhancing entrepreneurial skills and promoting economic independency.

## MISSION OF THE DEPARTMENT

- To inculcate in women managerial and organizational skills both at home and work places
- To equip them with professional skills to face the challenges and hurdles
- To enhance their communication skills by conducting various programmes
- To kindle their academic excellence
- To instill in them aesthetic values

### FULL TIME DOCTOR OF PHILOSOPHY

#### HOMESCIENCE - SEMESTER - I

*For those who joined in 2019 onwards*

PROGR AMME CODE	COURSE CODE	COURSE TITLE	CATE GORY	HRS/WEE K	CREDITS
	19PHDCWP03	A COMPARATIVE STUDY ON SUPPLEMENTATI ON EFFECT OF GUAR GUM & PRAGMATIC LIFESTYLE INTERVENTIONS ON PREDIABETES	Core	-	4



**COURSE DESCRIPTION**

This course emphasise the basic concepts of prediabetes and its prevention

**COURSE OBJECTIVES**

This course provides detailed information about the management of prediabetes to prevent complications.

**UNITS****UNIT-I IMPAIRED GLUCOSE TOLERANCE AND IMPAIRED FASTING BLOOD GLUCOSE :**

Introduction, Definition to Prediabetes –Impaired Fasting Glucose, Impaired Glucose Tolerance, according to World Health Organization, American Diabetic Association guidelines, Aetiology ,Pathophysiology of pre-diabetes., Prediabetes and insulin resistance, how insulin resistance works, Insulin secretion in Prediabetes, Insulin level for diagnosis of Prediabetes. Prevalence of Impaired Glucose Tolerance, Instability of Impaired Glucose Tolerance, Etiology and Pathogenesis of Impaired Glucose Tolerance, Clinical implications of Impaired Glucose Tolerance, Risk factors for deterioration to Diabetes, Association with Cardiovascular Disease Mortality, Impaired Fasting Glucose versus Impaired Glucose Tolerance.

**UNIT-II SCREENING TOOLS & DIAGNOSTIC CRITERIA FOR PREDIABETES**

Screening tools –Risk Score Test-Centre for Diabetes Disease Control and Prevention and American Diabetic Association, United States Preventive Task Force, Indian Diabetic Risk Score Test, Risk factors for Prediabetes according to American Diabetic Association –Age, B.M.I, Physical Inactivity, family history of Diabetes Mellitus, Race, Gestational Diabetes Mellitus, Hypertension, High Density Lipoprotein, Polycystic ovarian Disease, Obesity, Acanthosis, History of Cardiovascular Disease, Diagnosis test for Prediabetes-Fasting Plasma Glucose, 2hrs PostPrandial, Glycated A1c.,Oral Glucose Tolerance Test, The Research Society For The study of Diabetes In India Recommendations for Screening/Early Detection of Diabetes and Prediabetes.

**UNIT-III MANAGEMENT OF PREDIABETES**

Controversies in Prediabetes : Beliefs and Attitudes of Doctors and patients, ways to bring changes in attitudes, behaviour ,and beliefs, Awareness of Diabetes, Clinical Risk of not treating Prediabetes :Progression, Modifiable Risk Factors-Lifestyle Factors,-Dietary Factors, Physical Activity, Prevention Of Diabetes-Primary Prevention, Secondary Prevention, Tertiary Prevention, , Medication and supplements-fibre rich, pharmacotherapy, Diabetes prevention programme.

#### **UNIT –IV GUAR GUM AND ITS APPLICATIONS**

Production and trade, Guar gum Structure, Properties –Chemical composition, Solubility and viscosity, Thickening, Ice crystals growth, grading, Manufacturing Process, Industrial Applications, food applications, Nutritional and medicinal effects-Allergies, Dioxin contamination. ,Effect of guar gum on glycaemic control

#### **UNIT-V INTERVENTION STUDIES IN PREDIABETES**

Characteristics of studies included in the systematic review, Implication for practices, Future Direction.

#### **REFERENCE :**

1. SV Madhu ,RSSDI Diabetes Update 2016, Jaypee Digital Explore Health Science, New Delhi 110002,India
2. V.Mohan,BB Tripathy,HB Chandalia,AK Das,PV Rao, SV Madhu,-RSSDI Textbook of Diabetes Mellitus, Jaypee Digital Explore Health Science,New Delhi 110002,India
3. Viswanathan Mohan, Hemraj BChandalia, Gumpeny Ramachandra Sridhar, Ashok Kumar Das, Sri Venkata Madhu Paturi, Vishnupriya Rao- RSSDI Textbook of Diabetes Mellitus,-2014, Jaypee Digital Explore Health Science,New Delhi 110002,India
4. Gundu HR Rao,V Mohan-Type 2 Diabetes in South Asian : Epidemiology,Risk Factors and Prevention , Jaypee Digital Explore Health Science,New Delhi 110002,India

5. Rajeev Chawla (2014)-Manual of Diabetes Care, Jaypee Digital Explore Health Science, New Delhi 110002, India, Jaypee Digital Explore Health Science, New Delhi 110002, India
6. Sarita Bajaj, Manoj K. Srivastava-RSSDI Update-2015, Jaypee Digital Explore Health Science, New Delhi 110002, India
7. Nathan D. Wong, Shaista Malik-Diabetes and Cardiovascular Disease : Evaluation, Prevention & Management., Jaypee Digital Explore Health Science, New Delhi 110002, India
8. Rajeev Chawla, Aastha Chawla-FAQs in Diabetes, Jaypee Digital Explore Health Science, New Delhi 110002, India
9. C. Ronald Kahn, Gordon C. Weir, International Edition-Joslin's Diabetes mellitus Thirteenth Edition, 1994. Lea & Febiger-A Waverly Company, U.S.A
10. John R. Turtle, Toshio Kaneko And Shuichi Osato, Diabetes in the New Millennium 1999. The Endocrinology and Diabetes Research Foundation of the University of Sydney, Sydney, NSW 2006, Australia.
11. Richard I.G. Holt, Clive S. Cockram, Allan Flyvbjerg, Barry J. Goldstein Textbooks Of Diabetes Fourth Edition 2010. Wiley India Pvt Ltd.
12. Jill Weisenberger, Prediabetes A complete Guide.
13. Kumar G. S. & Jayaveera K. N (2014) – A Textbook of Pharmacognosy and Phytochemistry, S. Chand Publishing,
14. [www.diabetes.org/risk-test](http://www.diabetes.org/risk-test)
15. <http://mdiabetes.nhp.gov.in/display.php/PreventionOfDiabetes>

## COURSE OUTCOMES

On the successful completion of the course, students will be able to:

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
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CO 1	understand the basics of prediabetes	K1, K2	PSO1,PSO2
CO 2	understand the screening tools for prediabetes	K1, K2, K3	PSO3,PSO4
CO 3	understand the management of prediabetes through life style modification	K1, K2	PSO1,PSO3
CO 4	Understand the properties of guar gum and its applications in diet	K2, K2, K3 & K4	PSO4, PSO5
CO 5	gain information about some of the literatures and intervention studies about diabetes prevention for future research	K1, K2, K3 & k4	PSO3,PSO4& PSO5

**COURSE DESIGNER: Dr. K.Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani**

**HoD'S Signature & Name**

## **FULL TIME DOCTOR OF PHILOSOPHY**

### **HOMESCIENCE - SEMESTER - I**

<b>PROGR AMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CAT EGO RY</b>	<b>HRS/WE E K</b>	<b>CREDIT S</b>
	<b>19PHDCWP01</b>	<b>RESEARCH METHODOLOGY</b>	<b>Ph. D Cor e</b>	<b>-</b>	<b>4</b>

### **COURSE DESCRIPTION**



This is a cross-curricular subject, which may be of interest for those students who are considering undertake a research career, especially in the fields of Nutrition and dietetics

### **COURSE OBJECTIVES**

This paper highlights the various postulates of research problems, research design, writing a thesis and modern statistical methods. This helps to carry out research problem individually in a perfect scientific method.

### **UNITS**

#### **Unit –I RESEARCH COMPONENTS AND TYPES**

Meaning of research – Objectives of research – Motivation in research – Research approaches – Significance of research and scientific methods – Qualities of good research – Problems encountered by researchers in India – Identifying a research – Necessary condition for the formulation of the research problem – Criteria for good research project .

#### **Unit –II METHODS OF DATA COLLECTION AND SAMPLING TECHNIQUES**

Primary Data: Observation, Experimentation, Simulation interviewing, Questionnaire, Projective technique. Secondary Data: Published and Unpublished sources.

Characteristics of good sample, advantages and disadvantages of sample.

Sampling Techniques: Probability or random sampling, Non-probability or non-random. Sampling and non-sampling errors.

#### **Unit –III FORMULATION OF HYPOTHESIS, PROCESSING OF DATA, REPORT WRITING AND PLAGIARISM**

Hypothesis: Definition, Role and Types – Criteria for useful hypothesis – Formulation – Tabulation – Editing – Coding – Analysis and Interpretation of data. Procedure for testing hypothesis.

Components or layout of a thesis: Introduction, Review of literature, Methodology, Results and Discussion, Summary and Conclusion, Bibliography, Foot Notes and Appendix.

Significance of Report Writing: Types of Report, Oral presentation, Mechanics of writing and Precaution of writing research report, Scientific writing.

### **Unit – IV: TESTING OF HYPOTHESIS**

Measures of Central Tendency: Mean, Median, Mode and Standard Deviation. Procedure for Testing Hypothesis: Students 's' 't' test and 'f' test.

### **Unit –V STASTICAL ANALYSIS**

Chi Squared test, Co – efficient of Correlation, Regression, ANNOVA, Data result interpretation.

### **BOOKS FOR REFERENCE**

1. Donald.H.Mc. Burney, “ Research methods” Thomson Wordsworth, 5<sup>th</sup> Edition, 2003.
2. Ghosh B.N., “Scientific Method and Social Research”, Sterling Publishers Pvt.Ltd... New Delhi, 4<sup>th</sup> Edition, 1987.
3. Goode and Hatt, “Methods and Social Research”, MCGraw Hill International Book Company, 23<sup>rd</sup> printing, 1983.
4. Gopal Lal Jain,” research Methodology, Methods, Tools and Techniques”, Mangal Deep Publications, Jaipur, 1998.
5. Kothari.C.R.,” Research methodology”, New Age International Publishers, New Delhi 3<sup>rd</sup> reprint Edition, 2004.

6. O.R.Krishnaswamy and M.Ranganathan, "Methodology of Research in Social Sciences", Himalaya Publishing House, New Delhi, 2006.
7. Sadhu and Singh, " Research Methodology in Social Sciences", Himalaya Publishing House, Mumbai, 2<sup>nd</sup> Edition,1983.
8. Santhosh Gupta, " Research Methodology and Statistical Techniques", Deep and Deep Publications, New Delhi, 2001.
9. Sonachalam K.S., "Research Methodology of Social Science", Emerald Publishers, Madras, 1988.
10. Yogesh Kumar Singh and Ruchikanth, "Research Methodology", A.P.H, Publishing Corporation, New Delhi, 2005.
11. Gupta S.P.," Statistics", S.Chand & Company Ltd, New Delhi, 2001.
12. Pillai and Bagavathi R.S.N., "Statistics", S.Chand & Company Ltd, New Delhi, 2001.

## COURSE OUTCOMES

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	understand the basics of research and its objectives	K1,K2	PSO1,PSO2
CO 2	gain knowledge about the theoretical research involved	K1, K2	PSO1,PSO2

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 3	get exposure to planning of experiments and the various methodologies involved	K1 , K2, K3	PSO2, PSO3
CO 4	apply the use software and other computational techniques for data presentation	K1, K2, K3 & K4	PSO4,PSO5
CO 5	understand and analyse the techniques of interpretation involved in written and oral presentations	K1, K2 , K3 & K4	PSO4,PSO5

**COURSE DESIGNER Dr.K.Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani  
HoD'S Signature & Name**

**FULL TIME DOCTOR OF PHILOSOPHY**  
**HOMESCIENCE - SEMESTER - I**



PROGR AMME CODE	COURSE CODE	COURSE TITLE	CAT EGO RY	HRS/WEE K	CREDIT S
	19PHDCWP02	CLINICAL NUTRITION	Ph. D Cor e	-	4

### **COURSE DESCRIPTION**

This will provide you detailed scientific understanding about nutritional screening and assessment methods and strategies for improving patient care. You will learn how to perform nutritional assessments in various disease conditions. It will also enable you with knowledge on the best practices of managing nutrition support therapy in different patient conditions

### **COURSE OBJECTIVES**

1. Explain the role of nutrition in health
2. Physiological, anthropometric and biochemical assessment of the nutritional status.
3. To plan a therapeutic diet according to the individual or patients requirement in disease conditions.
4. Monitor and evaluate nutrition therapy
5. Educate the patients and family regarding nutritional care to be followed
6. Logistics of enteral and parenteral nutrition.
7. Therapeutic diet counseling of patients in the outpatient department
8. Basic concepts of nutraceuticals and their applications

### **UNITS**

#### **UNIT-I**

Assessment of nutritional status of the hospitalized patients, Diet counseling. Role of Dietitian in assessing patients needs Based on Clinical,

Bio clinical, Biophysical and personal data. Current trends in nutritional support: Parenteral and enteral nutrition- Feeding of premature and LBW babies- pre and post operative diets Incorporation of Novel Therapeutic foods in the exchange lists followed in Hospitals, Periodical nutritional screening of patients

## **UNIT II**

Gastro intestinal tract disorders-ulcer,constipation,diarrhea,dumping syndrome,irritablebowelsyndrome,ulcerativecolitis, Malabsorption Syndrome. Liver, gallbladder and pancreatic disorders, Stress & trauma. Nutrition and management in- Musculo skeletal disorders, Immuno deficiency & AIDS.

## **UNIT III**

Etiopathophysiology, metabolic and clinical aberrations, diagnostic features, complications, prevention and recent advances in the nutritional management of Renal disorders, Cancer, Neurological disorders, Infection & febrile conditions and Respiratory problems

## **UNIT IV**

Etiopathophysiology, metabolic and clinical aberrations, diagnostic features, complications, prevention and recent advances in the nutritional management of- Weight imbalances, diabetes Mellitus , other metabolic disorders and Cardio-vascular diseases.

## **UNIT V**

Herbs and medicinal plants – medicinal uses Functional foods: Types & medicinal uses Antioxidants- types, role & mechanism of action in scavenging free radicals, role in health & disease Phytochemicals- Occurrence, types & role in health & diseases Probiotic & Prebiotic foods for health benefits.

References

1. Bakhru. H.K.(2001) Indian Spices & Condiments As Natural Healers, Jaico Publishing, Mumbai
2. Syed A.A. Sharma S.C (2000) Herbal Cure For Common & Chronic Diseases, Pushtak Mahal , New Delhi
3. Gala, R, Gala,D, Gala.S.(1999), NATURE Cure For Common Diseases, Navneet Publications (India) Ltd., Chennai. M. Phil./Ph.D. Food and Nutrition (2018-19 onwards) Page 11 of 11
4. Manohar Murali. C. H, (2000), Ayurveda For All, Pustrak Mahal. New Delhi.Pp133- 136
5. Nutrition Principals And Applications In Health Promotion By Suitir & Crowley.
6. Food, Nutrition & Dietetics By Krause & Mahan, WB Saunders Co., Philadelphia, 1979.
7. Normal & Therapeutic Nutrition By Corinne H Robinson. Merlyn. R. Lawley. Mac Million Publishers & Co.
8. Maurice Shils, James Olson & Noshe, (1994), Modern Nutrition In Health & Disease 8 th Edition, Vol I & II, Lea & Febiger Co, USA.
9. Human Nutrition And Dietetics By Davidson And Passmore. English Language Book Society,1985.
10. Garrow, J.S., James W.P.T., And Rajph,A,(2000), Human Nutrition And Dietetics, 10th Edition, Churchill Livingstone.

#### Journals

1. Nutrition Update Series.
2. World Review Of Nutrition And Dietetics.
3. Journal Of The American Dietetic Association
4. American Journal Of Clinical Nutrition
5. Nutrition Review.

## COURSE OUTCOMES

On the successful completion of the course, students will be able to

<b>NO.</b>	<b>COURSE OUTCOMES</b>	<b>KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)</b>	<b>PSOs ADDRESSED</b>
<b>CO 1</b>	understand the basics of nutritional assessment and diet counselling	K1,K2	PSO1,PSO2
<b>CO 2</b>	gain knowledge about the Modern Nutrition In Health & Disease	K1, K2	PSO1,PSO2
<b>CO 3</b>	get exposure to planning of experiments and the various methodologies involved	K1 , K2, K3	PSO2, PSO3
<b>CO 4</b>	apply the use software and other computational techniques for data presentation	K1, K2, K3 & K4	PSO4,PSO5
<b>CO 5</b>	understand and analyse the techniques of interpretation involved in written and oral presentations	K1, K2 , K3 & K4	PSO4,PSO5

**COURSE DESIGNER Dr. K.Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani  
HoD'S Signature & Name**



**FULL TIME DOCTOR OF PHILOSOPHY****HOMESCIENCE - SEMESTER - I**

<b>PROGR AMME CODE</b>	<b>COURSE CODE</b>	<b>COURSE TITLE</b>	<b>CAT EGO RY</b>	<b>HRS/WEE K</b>	<b>CREDIT S</b>
	<b>20PHDREP04</b>	<b>RESEARCH AND PUBLICATION ETHICS</b>	<b>Ph. D Cor e</b>	<b>-</b>	<b>2</b>

**COURSE DESCRIPTION**

This course emphasise the basic concepts of philosophy of science and ethics.

**COURSE OBJECTIVES**

This course provides detailed information about research integrity and publication ethics.

**UNITS****UNIT I: PHILOSOPHY AND ETHICS**

Introduction to philosophy: definition, nature and scope, concept, branches.  
Ethics: definition, moral philosophy, nature of moral judgments and reactions.

**UNIT 2: SCIENTIFIC CONDUCT**

Ethics with respect to science and research. Intellectual honesty and research integrity. Scientific misconducts: Falsification, Fabrication, and Plagiarism (FFP). Redundant publications: duplicate and overlapping publications, salami slicing. Selective reporting and misrepresentation of data

**UNIT 3: PUBLICATION ETHICS**

Publication ethics: definition, introduction and importance Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. Conflicts of interest. Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types. Violation of publication ethics, authorship and contributor ship. Identification of publication misconduct, complaints and appeals. Predatory publishers and journals practice.

**UNIT 4: PUBLICATION MISCONDUCT**

Group Discussions: Subject specific ethical issues, FFP, authorship. Conflicts of interest. Complaints and appeals: examples and fraud from India and abroad.

Software tools: Use of plagiarism software like Turnitin, Urkund and other open source software tools

**UNIT 5: DATABASES AND RESEARCH METRICS**

Databases: Indexing databases. Citation databases: Web of Science, Scopus, etc.

Research Metrics: Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score. Metrics: h-index, g index, i10 index, altmetrics.

**BOOKS FOR REFERENCE**

1. The Ethics of Teaching and Scientific Research By Miro Todorovich; Paul Kurtz; Sidney Hook.

2. Research Ethics: A Psychological Approach By Barbara H. Stanley; Joan E. Sieber; Gary B. Melton.
3. Research Methods in Applied Settings: An Integrated Approach to Design and Analysis By Jeffrey A. Gliner; George A. Morgan Lawrence Erlbaum Associates, 2000.
4. Ethics and Values in Industrial-Organizational Psychology By Joel Lefkowitz Lawrence Erlbaum Associates, 2003.

## COURSE OUTCOMES

On the successful completion of the course, students will be able to

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	understand the basics of philosophy and ethics of research	K1,K2	PSO1,PSO2
CO 2	Understand the scientific misconducts like falsification, fabrication and plagiarism	K1, K2	PSO1,PSO2
CO 3	gain knowledge about the publication misconducts related will authorship and contributorship	K1 , K2, K3	PSO2, PSO3
CO 4	Understanding of the publication misconducts	K1, K2, K3 & K4	PSO4,PSO5
CO 5	Information about databases and research metrics	K1, K2 , K3 & K4	PSO4,PSO5

**COURSE DESIGNER Dr.K.Karthiga**

**Forwarded By  
Dr. Vasantha Esther Rani  
HoD'S Signature & Name**