

Sri Meenakshi Government Arts College for Women

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-Accredited with 'B++' Grade by NAAC (4th Cycle)

Madurai - 625 002.



M.Sc. Home Science

CHOICE-BASED CREDIT SYSTEM

OUTCOME-BASED EDUCATION

SYLLABUS

(For those who joined in 2023 - 2024)

**SRI MEENAKSHI GOVERNMENT ARTS COLLEGE FOR WOMEN (A),
MADURAI**

SYLLABUS FOR M.Sc. HOME SCIENCE

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SRI MEENAKSHI GOVERNMENT ARTS COLLEGE FOR WOMEN (A), MADURAI
DEPARTMENT OF HOME SCIENCE

SCOPE OF HOME SCIENCE:

The study of Home Science helps the pupil to lead a more satisfying personal, family and community life because of the knowledge, understanding, skills and appreciation of cultural and spiritual values a pupil acquires through Home Science education. Unlike other subjects, Home Science is a practical science that applies to everyday life. As a skill-oriented subject, it offers maximum opportunities to express one's ability to achieve one's potential in diverse fields, as an individual and a team player and develop leadership qualities.

Home Science education develops qualities needed for responsible citizenship. Home Science helps pupils to recognize the importance of food in healthy living, teaches how to prepare food by retaining its nutrients and the importance of a balanced diet. It also enables one to achieve healthy family relationships and manage household resources. Home Science education lays the foundation for entrepreneurship, a sustainable path towards today's youth empowerment. The student becomes efficient to nurture and take care of the young, to foster their healthy growth and development. Moreover one gains technical knowledge and information from various branches of Home Science for both personal and professional capabilities.

YEAR OF ESTABLISHMENT OF THE DEPARTMENT: 1979-1980

COURSES OFFERED: CBCS Course Structure; Outcome-Based Education (OBE)

- UG COURSE offered since 2000-2001:

B.Sc. Home Science (Nutrition, Food Service Management & Dietetics)

- PG COURSE offered since 2018-2019: **M.Sc. Home Science**

VISION: *To uplift the socially backward and economically poor young women of the society through value-based education in health & nutrition*

MISSION

- **Equip students to become messengers of nutrition to the community at large**
- **Impart skills and techniques to find placement in the food & health sector**
- **Revise syllabus constantly for social relevance & employability**
- **Provide flexibility & academic freedom through Choice Based Credit System Identify strengths & eliminate weaknesses**
- **Provide accountability & accreditation**

PROGRAMME: M.Sc. HOME SCIENCE**ELIGIBILITY FOR ADMISSION: As per DCE norms (Pass in B.Sc. Home Science or equivalent)**

TANSICHE REGULATIONS ON LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORK FOR POSTGRADUATE EDUCATION	
Programme	M.Sc. Home Science
Programme Code	PHSE1
Duration	2 years for PG (Four Semesters)
Programme Outcomes (Pos)	
PO1	Problem Solving Skill Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.
PO2	Decision Making Skill Foster analytical and critical thinking abilities for data-based decision-making.
PO3	Ethical Value Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.
PO4	Communication Skill Ability to develop communication, managerial and interpersonal skills.
PO5	Individual and Team Leadership Skill Capability to lead themselves and the team to achieve organizational goals.
PO6	Employability Skill Inculcate contemporary business practices to enhance employability skills in the competitive environment.
PO7	Entrepreneurial Skill Equip with skills and competencies to become an entrepreneur.
PO8	Contribution to Society Succeed in career endeavors and contribute significantly to society.
PO9	Multicultural competence Possess knowledge of the values and beliefs of multiple cultures and a global perspective.
PO10	Moral and ethical awareness/reasoning Ability to embrace moral/ethical values in conducting one's life.

Programme Specific Outcomes (PSOs)	
PSO1	Placement To prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.
PSO2	Entrepreneur To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.
PSO3	Research and Development Design and implement HR systems and practices grounded in research that complies with employment laws, leading the organization towards growth and development.
PSO4	Contribution to Business World To produce employable, ethical and innovative professionals to sustain in the dynamic business world.
PSO5	Contribution to the Society To contribute to the development of the society by collaborating with stakeholders for mutual benefit.

Mapping of COs with POs and PSOs

Mapping	1-20%	21-40%	41-60%	61-80%	81-100%
Scale	1	2	3	4	5
Relation	0.0-1.0	1.1-2.0	2.1-3.0	3.1-4.0	4.1-5.0
Quality	Very Poor	Poor	Moderate	High	Very High
Mean Score of COs = $\frac{\text{Total Value}}{\text{Total No. of POs \& PSOs}}$			Mean Overall Score of COs = $\frac{\text{Total of Mean Score}}{\text{Total No. of Cos}}$		

CO: COURSE OUTCOME

PO: PROGRAMME OUTCOME

PSO: PROGRAMME SPECIFIC OUTCOME

SCHEME FOR INTERNAL ASSESSMENT**Theory:** Internal: 25 marks**Practical:** Internal: 25 marks

The pattern of internal assessment will be as follows:

Test average of two tests	10 marks
Model Exam	10 marks
Assignments	5 marks
Total	25 marks

SCHEME FOR EXTERNAL ASSESSMENT**Theory:** External Exam: Maximum 75 marks**Practical:** External Exam: Maximum 75 marks**PASSING MINIMUM**

Assessment	Internal	External	Aggregate
Theory	No minimum	(34/75) 45% of 75	50/100
Practical	No minimum	(34/75) 45% of 75	50/100

QUESTION PAPER PATTERN

Title of the paper		
Course Code:	Duration : 3 Hours	Max Marks: 75
Section - A (5 x 5 = 25) marks Question No. 1 to 5 (Two questions from each unit) Answer ALL Questions (Internal Choice) Answers not exceeding two pages		
Section – B (5 x 10 = 50) marks Question No. 6 to 10 (Two question from each unit) Answer ALL Questions (Internal Choice) Answers not exceeding four pages		

BLUEPRINT

UNIT	SECTION		TOTAL No. of Questions
	A 5 MARKS EACH 5 questions INTERNAL CHOICE	B 10 MARKS EACH 5 questions INTERNAL CHOICE	
I	2	2	4
II	2	2	4
III	2	2	4
IV	2	2	4
V	2	2	4
Total Marks	25	50	20
			75

Levels of Mapping for Post Graduate Programme

Bloom's classification system that is used to define and distinguish different levels of student's cognition has been incorporated into the evaluation process. It is based on the following:

K1 - Remembering/Recalling

Keywords: Define, Identify, Mention, List out, Find, Select, Quote, State, Choose, Trace, etc.

K2 - Understanding/Comprehension

Keywords: Classify, Explain, Demonstrate, Translate, Infer, Show, Differentiate, Distinguish, Illustrate, Draw, Examine, etc.

K3 - Application and Analysis

Keywords: Apply, Derive, Justify, Explain, Solve, Analyze, Describe, Sketch, Draw, Evaluate, Discuss, Explore, Compare and contrast, Appreciate, Elucidate, Review, etc.

K4 - Synthesis and Evaluation

Keywords: Evaluate, Solve, Discuss, Describe, Elucidate, Design, Develop, Formulate, Criticise, Explain, Justify, Compare, Comment, etc.

Year	K1	K2	K3	K4
I	20%	20%	30%	30%
II	20%	20%	30%	30%

Question Pattern

Year	K1	K2	K3	K4
I & II	Part-A (1 question)	Part-A (1 question)	Part-A (1 question)	Part-A (2 questions)
	Part-B (1 question)	Part-B (1 question)	Part-B (1 question)	Part-B (2 questions)

ABSTRACT OF PROGRAMME STRUCTURE FOR M.Sc. HOME SCIENCE				
COURSES	TOTAL NO. OF COURSES	HOURS	CREDITS	MARKS
Core Courses	12	71	57	1200
Core Project with Viva voce	1	10	7	100
Discipline Specific Elective Courses	6	32	18	600
Skill Enhancement Courses	3	7	6	300
Internship/Industrial Activity	1	--	2	100
Extension Activity	1	--	1	100
Total	24	120	91	2400

SRI MEENAKSHI GOVT. ARTS COLLEGE FOR WOMEN (AUTONOMOUS), MADURAI-2

Programme Code: PHSE 1

M.Sc. HOME SCIENCE

Course Type	Course Code	Title of the Course	Hrs/Week	Credits	Exam Hrs	Exam		
						Int	Ext	Total
SEMESTER –I								
CC1	P23CN1	APPLIED HUMAN PHYSIOLOGY	6	6	3	25	75	100
CC 2	P23CN2	ADVANCED FOOD SCIENCE	6	6	3	25	75	100
CC 3 (P)	P23CN3P	FOOD SCIENCE AND QUALITY CONTROL PRACTICAL	6	4	3	25	75	100
DSEC 1 A	P23DN01	FOOD PROCESSING AND TECHNOLOGY	6	3	3	25	75	100
DSEC 1 B	P23DN02	FOOD SAFETY AND QUALITY CONTROL						
DSEC 2 A	P23DN03	FAMILY RESOURCE MANAGEMENT CONCEPTS AND CONTEXTS	6	3	3	25	75	100
DSEC 2 B	P23DN04	PERSPECTIVES OF HOME SCIENCE						
Total			30	22				500
SEMESTER –II								
CC4	P23CN4	PRINCIPLES OF NUTRITION	6	5	3	25	75	100
CC5	P23CN5	DIET IN METABOLIC DISEASES	6	5	3	25	75	100
CC6 (P)	P23CN6P	TECHNIQUES IN FOOD ANALYSIS	6	4	3	25	75	100
GEC/ DSEC3 A	P23DN05	FUNCTIONAL FOODS AND HEALTH	5	3	3	25	75	100
DSEC3 B	P23DN06	NUTRITIONAL BIOCHEMISTRY						
GEC /DSEC4 A	P23DN07	TRENDS AND ISSUES IN HUMAN DEVELOPMENT	5	3	3	25	75	100
DSEC4 B	P23DN08	DEVELOPMENTAL DISABILITIES						
SEC1	P23SEN1	EARLY CHILDHOOD CARE AND EDUCATION	2	2	3	25	75	100
Total			30	22				600

SUMMER INTERNSHIP / INDUSTRIAL TRAINING

SEMESTER –III								
CC7	P23CN7	RESEARCH METHODS IN NUTRITION	6	5	3	25	75	100
CC8	P23CN8	CLINICAL NUTRITION AND DIETETICS	6	5	3	25	75	100
CC9(P)	P23CN9P	CLINICAL NUTRITION AND DIETETICS PRACTICAL	6	4	3	25	75	100
CC10	P23CN10	PERFORMANCE NUTRITION	5	3	3	25	75	100
GEC/ DSEC5 A	P23DN09	HOME SCIENCE EXTENSION EDUCATION AND COMMUNICATION	5	3	3	25	75	100
DSEC5 B	P23DN10	PUBLIC HEALTH NUTRITION						
SEC2	P23SEN2	DIET AND NUTRITION COUNSELLING	2	2	3	25	75	100
	P23SIN1	INTERNSHIP/INDUSTRIAL ACTIVITY	-	2	3	25	75	100
Total			30	24				700
SEMESTER –IV								
CC11	P23CN11	INSTITUTIONAL FOOD ADMINISTRATION	6	5	3	25	75	100
CC12	P23CN12	FOOD PRODUCT DEVELOPMENT	6	5	3	25	75	100
CC13	P23NPW	PROJECT WITH VIVA VOCE	10	7	3	25	75	100
DSEC 6 A	P23DN11	TEXTILES AND CLOTHING	5	3	3	25	75	100
DSEC 6 B	P23DN12	TECHNICAL TEXTILES						
SEC3 Professional Competency	P23SEN3	HOME SCIENCE FOR COMPETITIVE EXAMINATIONS	3	2	3	25	75	100
	P23EAN	EXTENSION ACTIVITY	-	1	3	25	75	100
Total			30	23				600
TOTAL			120	91				2400

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: I	Core Course 1			COURSE CODE: P23CN1	
TITLE OF THE COURSE: APPLIED HUMAN PHYSIOLOGY					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 6	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented		Addresses Professional Ethics	✓
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	✓
Relevant to Regional need	✓	Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need	✓		Addresses Human Values	✓	
LEARNING OBJECTIVES: To enable the students to :					
1. Gain basic understanding of human anatomy and physiology.					
2. Understand the integrated functioning of cells, tissues, organs and systems to maintain life.					
3. Describe the structure of major human organs and explain their role in maintenance of health.					
UNIT	CONTENT				HOURS
I	Physiology of Cell, Cell Membrane, Nerve and Muscle a. The Internal Environment- The Concept of Homeostasis, Cellular Level of Organization- Review of Structure and functions of cell and its organelles. Cell Division, Control of cell growth and reproduction; cell differentiation; b. Membrane Physiology - Transport of Substances- Diffusion, Facilitated Diffusion, Active Transport. Membrane Potential and Action Potential-Resting Membrane Potential c. Excitation of Skeletal Muscle- Neuromuscular Junction; Neuromuscular Transmission, Excitation and Contraction Coupling				18
II	Digestive system a. Review of structure and function - Secretory, Digestive and Absorptive functions - Role of liver, pancreas and gall bladder. b. Motility and hormones of GIT. Regulation of food intake – role of hunger and satiety centres, effect of nutrients.				18
III	Circulatory, Cardio-Vascular and Respiratory system a. Blood - composition, functions, clotting and homeostasis. Normal levels and functions of plasma proteins, RBC's, WBC's and platelets; Erythropoiesis; Blood groups and histocompatibility. b. Structure and function of heart and blood vessels - Regulation of cardiac output and blood pressure; heart failure; hypertension. c. Respiratory system: Review of structure and function. Role of lungs in the exchange of gases. Transport of oxygen and Co ₂ . Exchange of gases at the lungs and tissues. Regulation of Respiration.				18

IV	<p>Excretory and Nervous system</p> <p>a. Structure and function of nephron - Urine formation; Excretion of a concentrated and dilute urine; Role of kidney in maintaining pH of blood, Water, electrolyte and acid base balance – diuretics</p> <p>b. Organization of Central and Peripheral nervous system. – Structure and functions of the brain, spinal cord; ANS</p>	18
V	<p>Immune, Endocrine and Reproductive system</p> <p>a. Cell-mediated and humoral Immunity - Activation of WBC and production of antibodies. Role in inflammation and defense.</p> <p>b. Endocrine glands (Pituitary gland, Thyroid, parathyroid, Islets of Langerhans, Adrenals, Ovary and Testis, Thymus, Pineal gland – structure, function, role of hormones, regulation of hormonal secretion</p> <p>c. Reproductive System- Review of male and female reproductive system; spermatogenesis, ovulation, menstruation, pregnancy and lactation; menopause</p>	18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:		
CO1	Develop insight of normal functioning of all the organ systems of the body and their interaction. Understand the current state of knowledge about the functional organization of Human Cell And Histology.	
CO2	Understand the structural and functional organization of Blood and Cardiac system.	
CO3	Understand the structural and functional organization of Respiration, Immunity and Endocrine GIT and Urinary System.	
CO4	Comprehend the structural and functional organization Digestive System and Reproductive System.	
CO5	Understand the structural and functional organization of Skin, Nervous and Excretory System.	
TEXTBOOK:		
<ol style="list-style-type: none"> 1. Sembulingam, K. & Sembulingam, P. (2012) 6th Edition, Essentials of Medical Physiology, Jaypee Brothers Medical Publishers Pvt. Ltd., New Delhi. 2. Ratan, V. (2004) Handbook of Human Physiology (Seventh Edition), Jaypee Brothers Medical Publishers, New Delhi. 3. Chatterjee, C.C. (2016) 11th Edition, Human Physiology Volume I, CBS Publishers and Distributors Pvt. Ltd., Mumbai. 		
REFERENCES:		
<ol style="list-style-type: none"> 1. Ganong, W.F. (1986): Review of Medical Physiology, 12th Edition, Lange Medical Publication. 2. Guyton, A.G. and Hall, J.B. (1996): Text Book of Medical Physiology, 9th Edition, W.B. Sanders Company, Prism Books (Pvt.) Ltd., Bangalore. 3. Wilson, K.J.W and Waugh, A. (1996): Ross and Wilson Anatomy and Physiology in Health and Illness 8th Edition, Churchill Livingstone. 4. McArdle, W.D., Katch, F.I. and Katch V.L. (1996): Exercise Physiology. Energy, Nutrition and Human Performance, 4th Edition, Williams and Wilkins, Baltimore. 5. Datta, Chandrani Sanyal (2006): Essentials of human physiology: AITBS. 6. Marieb, Elaine N. (2004): Pearson Human anatomy & physiology, 6th ed. 7. Donnersberger, Anne B. Jones & Bartlett, (2005): 8th ed. Laboratory textbook of anatomy and physiology. 		
E-LEARNING RESOURCES		
➤ https://youtu.be/uFf0zxQ3rBU		
➤ http://epgp.inflibnet.ac.in/Home/Download		

MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	M	M	M	M	S	S	M	S	S
CO4	M	M	S	S	S	M	S	M	S	S
CO5	M	S	S	S	M	S	S	M	M	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	3	2	2	2	3					
CO4	2	2	3	3	2					
CO5	2	3	3	3	2					
Weightage	13	13	13	14	13					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: I	Core Course 2			COURSE CODE: P23CN2	
TITLE OF THE COURSE: ADVANCED FOOD SCIENCE					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 6	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Gain knowledge on the source and properties of food					
2. Familiarize students with changes occurring in various foodstuffs as a result of processing and cooking.					
3. Enable students to use theoretical knowledge in various applications and food preparations.					
UNIT	CONTENT				HOURS
I	<p>Properties of food- Food nutrients, solids, solutions and colloids, Solutions- Physical properties of solutions, classification of foods based on viscosity characteristics. Solutes-chemical properties, Food dispersion: Colloids- Types of colloid and properties of colloids and rheology of food dispersions; Structure, formation and stability of gels, sols, emulsion and foams.</p> <p>Starch - Sources, Structure and composition of starch; Properties and characteristics of food starches; Modified food starches-Structure and composition, Effect of heat on food starch properties, gluten formation in wheat flour, influencing factors [gluten], gelatinization, gelation and retrogradation, dextrinization and factors affecting gelatinization.</p>				18
II	<p>Proteins-Structure and composition, Classification and properties of proteins; Effect of heat on physio-chemical properties of proteins; Role of proteins in food products; Texturized vegetable protein, protein concentrates.</p> <p>Enzymes: Classification and its nature; Mechanism of action; Factors influencing enzyme activity; Role of enzymes in food products; Immobilized enzymes and its application in food industries.</p>				18
III	<p>Fats and oil -Structure, composition and properties of fats and oil; storage of fat, characteristics [shortening, plasticity, flavor, retention of moisture, melting point, optical activity, color, specific gravity], Hydrogenation, winterization, flavor reversion, smoking point, Rancidity- Types, Mechanism and prevention; Role of fat/oil in food products; Fat substitutes.</p> <p>Sugar and sugar products-Types of sugar, Types of granulated sugar, Physical and chemical properties, Sugar products -Types of honey, Jaggery, corn syrup, various forms of sugar used in cookery and Crystallization of sugar.</p>				18
IV	<p>Milk components- water, carbohydrate, milk fat, milk protein, minerals and other components in milk, Physiochemical properties of milk, Effect of physical and chemical factors on milk components [Effect of heat, protein, factors affecting coagulation, casein coagulation, minerals, Non-enzymatic browning], [Effects of acid], Effects of enzymes-renin, fermented and non-fermented milk products.</p> <p>Egg-proteins in Egg, microscopic structure of egg, characteristics [color, size], Nutritional</p>				18

	qualities, quality check, functional properties- foaming, factors affecting foam formation.	
V	Food additives- Definition, different food additives and Need for food additives. Flavour compounds in vegetables, fruits and spices; Effect of processing on food flavours; Role of colours and flavours in food products. Sweeteners- Properties, Artificial and Natural sweeteners and role of sweeteners in food industry.	18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:

CO1	Overview the relationship between the chemical structure and the properties of the main components in food like starch, protein and lipids.
CO2	Understand the Composition and characteristics of various food commodities.
CO3	Explain the cooking quality of foods and apply food science knowledge in food industries
CO4	Identify and understand the nutrients and functions of foods in maintaining health
CO5	Analyze the proper use of food colors and food additives in safe food preparation.

TEXTBOOK:

1. Srilakshmi B. (2015). Food Science. New Age International (P) Ltd. Publishers.
2. S.M. Reddy (2015). Basic Food science and technology. New Age International publishers.
3. Avantina Sharma (2017). Text book of food science and Technology. CBS Publisheres and distributes ltd. 3rd Edition.
4. Swaminathan A.(2018) . Handbook of Food and Nutrition, Bangalore press.
5. Serpil Sahin and Servet Gulum Sumnu.(2006).Physical properties of Foods.Springer publications

REFERENCES:

1. Gerard L. Hasenhuettl, Richard w. Hartel. . (2019).Food Emulsifiers and Their Applications. Springer publications. 3rd edition.
2. Vickie.A. Vacivik. (2021). Essentials of Food science. Springer publications. 5th edition.
3. Dr.M.Swaminathan.(2015). Advanced text book of Food and Nutrition. volume-2. Bapco publications.
4. Eskein.(2012). Biochemistry of Food. Elsevier publications.
5. Lyn O brienNabors.(2001).Alternative Sweetners. Taylor and Francis publications.
6. Janet D. Ward and Larry Ward.(2006). Principles of Food Science. Stem Publishers. 4th Edition.

E-LEARNING RESOURCES

- www.fao.orgwww.fp.org
- www.foodrisk.org
- <http://www.fsis.usda.gov/>
- <https://www.fda.gov/food>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	L	S	M	M	S	S	M	L
CO2	S	M	L	S	M	M	S	S	M	L
CO3	S	M	L	S	M	M	S	S	M	L
CO4	S	M	L	S	M	S	S	S	M	L
CO5	S	M	L	S	M	S	S	S	M	L

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAME SPECIFIC OUTCOMES					
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: I	Core Course 3 (P)			COURSE CODE: P23CN3P	
TITLE OF THE COURSE: FOOD SCIENCE AND QUALITY CONTROL PRACTICAL					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 4	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
UNIT	CONTENT				HOURS
I	Determination of adulterants in different food products. a. Food grains and its products b. Sugars and confectionery c. Salt, spices and condiments d. Fruits and vegetables e. Beverages				18
II	Quality evaluation of milk samples – determination of the physical characteristics and presence of any additives, fat content, solid non-fat, protein content.				18
III	Tests for fats & oils – determination of melting point of fat, Acid value, Iodine value, microscopic examination of fat crystals, presence of adulterants.				18
IV	Test for stability of food colloids – egg white, mayonnaise, gluten content of wheat.				18
V	Sensory Evaluation of foods - Subjective evaluation; Difference tests: paired comparison test, duo-trio, triangle test; Rating tests: ranking, two-sample difference test, multiple sample difference, hedonic rating, numerical scoring. Sensitivity test - threshold, dilution.				18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	Perform the tests for identifying food adulterants				
CO2	Evaluate quality of milk, fats and oils based on its physical components				
CO3	Determine the quality check for edible oils and fats				
CO4	Apply the study of egg white stability in preparations of food emulsions				
CO5	Perform the sensory evaluation tests for different foods				
CO6	Integrate the evaluation techniques in food quality assessment				

TEXTBOOK:

1. Srilakshmi (2010) Food Science Laboratory Manual New Age Publications, New Delhi.
2. FSSAI(2022): Detect Adulteration with Rapid Test, Food Safety and Standards Authority of India, Ministry of Health and Family Welfare Government of India

REFERENCES:

1. Charley. H (1982): Food Science (2nd Edition), John Wiley & Sons, New York.
2. Potter, N. and Hotchkiss, J.H. (1996); Food Science, Fifth Edition, CBS Publishers and Distributors, New Delhi.
3. Belitz, H.D. and Grosch, W. (1999); Food Chemistry (2nd Edition), Springer, New York.
4. Bowers, J. (1992); Food Theory and Applications, (2nd Edition), MacMillan.
5. Peckham, G and Freeland — Graves, G.H. (1979); Foundations of Food Preparation.
6. Usha Chandrasekaran (2002). Food Science and its Application to Indian Cookery, New Delhi Phoenix Publishing.
7. Raghuramulu, N. Nair, K.M. & Kalyanasundaram, S.A. (1983) Manual of Laboratory Techniques, National Institute of Nutrition, ICMR, Hyderabad.

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	M	S	S	S	M	M
CO2	S	S	M	S	M	S	S	S	M	M
CO3	S	S	M	S	M	S	S	S	M	L
CO4	S	S	M	S	M	S	S	S	M	L
CO5	S	S	M	S	M	S	S	S	M	M

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	2	3
CO2	3	3	3	2	3
CO3	3	3	3	2	3
CO4	3	3	3	2	3
CO5	3	3	3	2	3
Weightage	15	15	15	10	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	2	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: II	Core Course 4			COURSE CODE: P23CN4	
TITLE OF THE COURSE: PRINCIPLES OF NUTRITION					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 5	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Ethics	Professional
Relevant to National need		Entrepreneurship Oriented		Addresses Sensitization	Gender
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Gain in-depth knowledge of the physiological and metabolic role of macronutrients, fat soluble vitamins and electrolytes and their importance in human nutrition.					
2. Enable the understanding of the basis of human nutritional requirements and Recommendations through the life cycle and translate the knowledge into practical guidelines for dietary needs.					
3. Familiarize with the recent advances in nutrition and apply this knowledge in planning for public health programmes.					
UNIT	CONTENT				HOURS
I	Human Nutritional Requirements – Basic concepts of human nutrition – health, nutrition, balanced diet; Nutrition states – optimum nutrition, malnutrition, under nutrition, over nutrition. Nutrient Guidelines – Recommended Dietary Allowances. Food Guides and Recommendations – Food Pyramid, Food Groups, ICMR Guidelines for Dietary Requirements of all nutrients. Energy -Measurement of Food energy – Units of food energy. Physiological fuel value. Energy balance. Components of energy requirements – BMR/REE. Calculating BMR – Harris Benedict, Mifflin – St.Jeor Equations for men & women, Physical activity levels. Factors influencing BMR. Total Energy Requirement – BMR, Physical activity, Thermic effect of food. Determination of energy requirements. ICMR Guidelines for energy intake.				18
II	Carbohydrates: Composition, classification, food sources, functions, digestion – mechanical and chemical –mouth, stomach, small intestine; intestinal absorption, metabolic utilization – energy for fuel and storage. ICMR Recommendations for Dietary Carbohydrate. Dietary fibre: Types, food sources, mechanism of action and physiological significance. Resistant starch, fructo-oligosaccharides. Glycemic Index and Glycemic load. Factors affecting GI of foods; Role of GI in chronic diseases.				18
III	Proteins: Composition, classification, food sources, functions, digestion, absorption, amino acid pool, metabolic utilization, ICMR Guidelines for dietary protein requirements. Nitrogen Balance - Dietary protein deficiency or excess. Evaluation of protein quality – Digestibility Coefficient, Net Protein Utilization, Protein Efficiency Ratio, Biological Value, Amino acid score, PDCAAS. Lipids: Composition, classification, food sources. Dietary fatty acids – SFA, MUFA, n-3, n-6, PUFA, EFA, Trans fats; Triglycerides, Phospholipids- lecithin, eicosanoids; Sterols- Cholesterol. Food fats – Visible and invisible, animal and plant fats. Digestion and Absorption – Composition of chylomicron, Transport – Lipoprotein types – LDL, VLDL, HDL. Requirements and ICMR Dietary guidelines.				18

IV	<p>Minerals: Macro minerals: Calcium, Phosphorous, Sodium, Potassium; Micro minerals: Iron, Zinc, Selenium, Iodine and Fluorine. Trace elements – Selenium, Cobalt, Chromium, Vanadium, Silicon, Boron and Nickel. Review of Food sources, Metabolism (digestion, absorption, transport, storage and elimination); Bioavailability and factors affecting bioavailability; Biochemical and Physiological functions; Interaction with other nutrients;</p> <p>Vitamins: Fat soluble vitamins: A, D, E and K; Water soluble vitamins: B1, B2, B5, B6, B12 and Vitamin C. Review of food sources, metabolism (digestion, absorption, transport, storage and elimination), factors affecting bioavailability, Biochemical and physiological functions, deficiency conditions and treatment. Inter-relationship between vitamin and mineral metabolism.</p>	18
V	<p>National Nutrition Policies and Programmes. National Nutrition Policy. Health, Nutrition and Family Welfare. AYUSH. National Rural Health Mission. National Health Outcome Goals. Intervention programmes to combat malnutrition - ICDS, PDS, Mid-day meal scheme; Role of National and International Organisations – Objectives and functions– ICMR, NIN, ICDS, FNB, CFTRI, NNMB, WHO, FAO, UNICEF.</p> <p>Food and Nutrition Security: causes of food and nutrition insecurity – availability, accessibility and affordability of food; Policies to control food costs and intervention to food production to meet nutrient needs.</p>	18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:

CO1	Interpret RDA to meet nutritional requirements for Indians and determine energy requirements for all age groups based on BMR and activity levels
CO2	Distinguish carbohydrates and dietary fibre; identify their role in promoting health
CO3	Evaluate protein quality and protein deficiency
CO4	Compare dietary fatty acids based on composition transport and absorption
CO5	Analyze factors affecting bioavailability of minerals and vitamins in foods
CO6	Assess the role of nutrition policies and programmes

TEXTBOOK:

1. Shubhangini Joshi (2010) Nutrition and Dietetics with Indian Case Studies, 3rd edition, McGrawHill Higher Education, New Delhi.
2. Sheila John & Jennifer DJ (2008) Essentials of Nutrition and Dietetics for Nursing, B.I. Publishing Pvt Ltd., Chennai.

REFERENCES:

1. Michael J. Gibney, Hester V Vorster and Frans J Kok (2003) Introduction to Human Nutrition Blackwell publishing Oxford, U.K.
2. Kathleen Mahan and Sylvia Escort- Stump (2000): Food, Nutrition and Diet Therapy 11th Edition, W.B. Saunders Company London.
3. Susan G. Dudek (2007) Nutrition Essentials for Nursing Practice, Lippincot Williams D Wilkins, Philadelphia.
4. Staci Nix Williams (2009) Basic Nutrition and Diet Therapy, 13th edition, CV Mosby Inc., New Delhi.
5. Z.S.C. Okoye: Biochemical Aspects of Nutrition, Prentice-Hall of India Pvt. Ltd., New Delhi.

E-LEARNING RESOURCES

- Macronutrients- <https://epgp.inflibnet.ac.in/ahl.php?csrno=444>
- Micronutrients- <https://epgp.inflibnet.ac.in/ahl.php?csrno=444>
- Nutrition policies -<http://ecoursesonline.iasri.res.in/course/view.php?id=476>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	M	S
CO2	S	S	S	S	M	S	S	S	M	M
CO3	S	S	S	S	M	S	S	S	L	M

CO4	S	S	S	S	S	S	S	S	M	L
CO5	S	S	S	S	S	S	S	S	M	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	3	3	3	3	3					
CO4	3	3	3	3	3					
CO5	3	3	3	3	3					
Weightage	15	15	15	15	15					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: II	Core Course 5			COURSE CODE: P23CN5	
TITLE OF THE COURSE: DIET IN METABOLIC DISEASES					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 5	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Ethics	Professional
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Sensitization	Gender
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Understand the etiology, physiology and metabolic anomalies of acute and chronic diseases and patient needs					
2. Know the effect of the various metabolic conditions on nutritional status, nutritional and dietary requirements					
3. Obtain knowledge on therapeutic diets and to develop capacity and attitude for taking up dietetics as a profession					
UNIT	CONTENT				HOURS
I	Nutrition in weight management. BMI and body composition. Weight imbalance – overweight, underweight, unintentional weight loss. Nutritional Management of obesity in children and adults. Total energy requirement - BMR and Physical Activity level. Role of complex carbohydrates. Reading nutrition labels - refined carbohydrates and empty calories. Macro modification for stubborn weight – Atkin’s, Ketogenic diet, Paleo, Low-carb High fat diet. Hormones that control hunger and fat storage - ghrelin, leptin, insulin, cortisol, estrogen. Nutritional management of hormonal imbalance – PCOD, hypo and hyperthyroidism.				18
II	Diabetes mellitus - Metabolic pattern of type-1 and type-2 diabetes. Abnormal metabolism in uncontrolled diabetes. Long term complications of diabetes and its management. Nutritional recommendations for management of diabetes – meal planning, food exchange system, carbohydrate counting, insulin carbohydrate ratio, portion control, dietary fibre, glycemic index and glycemic load.				18
III	Nutritional Management of Cardiovascular diseases - Coronary Artery Disease: Atherosclerosis, Thrombosis, Hyperlipidemia, Hypertension, Stroke. Inter-relationship between Diet and risk factors of CVD. Role of Dietary fibre, Saturated and Unsaturated fatty acids - omega 3 & 6 fatty acids, Mediterranean Diet, Prudent diet. Kempner’s rice diet, Dietary Approach to Stop Hypertension (DASH), Sodium intake in Hypertension. Lipoproteins and hyperlipidemia – risk factors and prevention.				18
IV	Nutritional management of Renal disorders – Acute and chronic glomerulonephritis, Nephrotic syndrome. Dietary management of Acute and Chronic Renal failure, End Stage Renal Disease; Importance of protein nutrition in renal failure and uremia. Role of low protein, fluid restricted diet. Sodium and Potassium exchange list. Diet in Nephrolithiasis - Acid and Alkaline Ash Diet.				18
V	Nutritional management of Liver, gallbladder disorders – Jaundice, cirrhosis, hepatic coma, gallbladder stones. Nutritional management of Gout - Role of low purine diet in gout. Nutritional management of Pancreatitis: Acute and chronic pancreatitis. Nutritional management of inherited metabolic disorders – phenylketonuria (PKU), Maple syrup disease, Alkaptonuria, Primary hyperoxaluria, Cystinuria, Homocystinuria, Tyrosinemia, Albinism, Histinemia. Glycogen storage diseases, Niemann-Pick disease and Farber’s disease.				18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:										
CO1	Explore new trends in dietary management of weight imbalances.									
CO2	Integrate meal planning techniques for nutritional management of diabetes and its complications.									
CO3	Integrate the cardiac, renal and liver functional tests with acute and chronic complications.									
CO4	Distinguish the clinical aberrations and medical nutritional management of various organ systems.									
CO5	Familiarize with influences of clinical nutrition on inherited metabolic disorders.									
TEXTBOOK:										
1. Rekha Sharma (2008) Diet Management, 3 rd edition, Elsevier India, Noida.										
2. Antia FP (2015) Clinical Dietetics and Nutrition, 4 th edition, Oxford University Press, New Delhi.										
3. Mahan L.K and Stump SE. (2012) Krause's Food, Nutrition and Diet Therapy, 13th edition, WB Saunders Co										
REFERENCES:										
1. Bamji MS, Rao NP, and Reddy V.(2010) Textbook of Human Nutrition, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.										
2. Michael J. Gibney, Hester V Vorster and Frans J Kok (2003) Introduction to Human Nutrition Blackwell publishing Oxford, U.K.										
3. Shills, E.M,Olson, S.J. and Shils,M.C. (2011) Modern Nutrition in health and disease, 11th edition,Lea and Febringer, Philadelphia.										
4. Williams SR (2009) Basic Nutrition and Diet Therapy, 13th edition, Mosby.										
5. Satyanarayana U and Chakrapani U (2009) Biochemistry, 3 rd edition, Books & Allied Pvt. Ltd., Vijayawada.										
E-LEARNING RESOURCES										
• Diabetic - https://epgp.inflibnet.ac.in/view_f.php?category=559										
• PCOD - https://epgp.inflibnet.ac.in/view_f.php?category=559										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	M	S	S	S	S	S	S	M
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	M	S	S	S	S
CO5	S	S	S	M	S	S	S	S	S	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	3	3	3	3	3					
CO4	3	3	3	3	3					
CO5	3	3	3	3	3					
Weightage	15	15	15	15	15					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER: II	Core Course 6 (P)		COURSE CODE: P23CN6P	
TITLE OF THE COURSE: TECHNIQUES IN FOOD ANALYSIS				
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 4	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE				
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability
Relevant to Local need				Addresses Human Values
LEARNING OBJECTIVES: To enable the students to :				
1. Learn the techniques of estimating the quantity of different nutrients present in food.				
2. To enable the students to get practical experience in the laboratory and develop the skills to undertake research work				
UNIT	CONTENT			HOURS
I	1. Introduction to Laboratory Practices Instrumental Techniques – <ul style="list-style-type: none"> ▪ Autoclave ▪ Hot Air Oven ▪ pH Meter ▪ Electronic Weighing Balance ▪ Centrifuges ▪ Hot Plate ▪ Spectrophotometer ▪ Water Bath ▪ Muffle Furnace ▪ Viscometer ▪ IR Moisture Analyzer ▪ Colorimeter 			18
II	Preparation and Standardisation of Solution			18
III	Ashing of Food (Thermo gravimetric Method) and Preparation of Ash Solution			18
IV	Food Analysis Experiments – Estimation of <ul style="list-style-type: none"> • Moisture Content – Thermo gravimetric Analysis -Air Oven Method and Infrared Radiation(IR) Moisture Analyzer Method • Crude Fibre–Gravimetric Method • Iodine Number of oils – Wij’s Method • Acid Number of oils - Titrimetric Method • Peroxide Value of oils - Titrimetric Method • Ascorbic Acid – 2, 6- Dichloroindophenol Titrimetric Method • Calcium -Precipitation Titrimetric Method • Iron – Wong’s Method • Phosphorus–Colorimetric Method 			18

V	Demonstration Experiments <ul style="list-style-type: none"> • Estimation of protein content in food by Kjeldahl method • Estimation of fat content in food by Soxhlet method • Pigment Analysis by Paper Chromatography Techniques 	18
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COURSE OUTCOMES: After successful completion of the course, the student will be able to:

CO1	Understand safety rules for the laboratory and demonstrate various instruments used for food analysis.
CO2	Acquire skills to prepare and standardise various solutions to conduct experiments for food analysis.
CO3	Acquire skills in ashing of foods and prepare ash solution to analyse mineral contents in food.
CO4	Demonstrate quantitative analysis of various nutrients in foods i.e. crude fibre, moisture, Vit -C, calcium, phosphorus, iron, etc.
CO5	Demonstrate experiments to check estimation of protein, fat content and Pigment Analysis

TEXTBOOK:

1. Ranganna, S. (2001). "Handbook of Analysis and Quality Control for Fruit and Vegetable Products". Tata-McGraw- Hill, India. 2nd edition.

REFERENCES:

1. S. Suzanne Nielsen (2017). Food Analysis Laboratory Manual. Springer International Publishing. Third Edition.
2. S. Suzanne Nielsen (2017). Food Analysis. Springer International Publishing. Fifth Edition.
3. Otles, S. (2005). "Methods of Analysis of Food Components and Additives" CRC Press, USA.
4. Sadasivam, S and Manickam, A (1997). "Biochemical Methods". New Age International Publishers, New Delhi. 2nd Edition.
5. Jayaram, I, (1996), "Laboratory Manual in Biochemistry", New Age International Publishers, New Delhi. Fifth ed.
6. Raghuramulu, N, Nair K.M & Kalayanasundaram, S.A, (1983), "Manual of Laboratory Techniques", National Institute of Nutrition, ICMR.

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	S	S	S	M	S
CO2	S	S	S	S	M	S	S	S	M	S
CO3	S	S	S	S	L	S	S	S	M	S
CO4	S	S	S	S	M	S	S	S	M	S
CO5	S	S	S	S	S	S	S	S	M	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III	Core Course 7			COURSE CODE: P23CN7	
TITLE OF THE COURSE: RESEARCH METHODS IN NUTRITION					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 5	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. To provide students understandings about the basic concepts, approaches and methods in conducting research thereby enabling them to appreciate and critique the nuances of designing a research study as well the ethical dimensions of conducting researches.					
2. To explain the importance of research in food science and nutrition					
3. To make students understand the types of tools applicable to research problem and develop skills of preparing out line of research work and construct common data collection tools.					
UNIT	CONTENT				HOURS
I	Foundation of Nutrition Research Meaning, Objectives and Classification of Research Designs: – Exploratory, Descriptive – Longitudinal and Cross sectional, Observation-Participant and Non-participant, Epidemiological Surveillance, Retrospective, IN VIVO, IN VITRO and Experimental – Pre-Experimental, Quasi Experimental, True Experimental and Statistical Experimental designs. Need of Research in Food Science and Nutrition, Research Process- Selection and Formulation of Research Problem, Objectives of Research: Explanation, Control and Prediction, Hypothesis: Definition, Importance, Types and Errors - I & II, Deciding Variables				18
II	Sampling and Sample Design Sampling Process and Characteristics of good Sampling, Classification of Sampling Techniques - Probability and Non Probability Sampling, Preparation of Laboratory Food Samples, Sampling and Non- Sampling Errors Measurements and Scaling Fundamental and Comparative Scales – Meaning and types: Nominal Scale, Ordinal Scale, Interval Scale, Ratio Scale Non comparative Scales– Meaning and types: Continuous Rating Scale, Itemized Rating Scale, Likert Scale, Semantic Differential Scale, Stapel Scale				18
III	Data Collection and Preparation Data Collection – -Tool-Primary Data: Interviews -structured and unstructured, Case studies, Questionnaire, Surveys – Pilot & KAP, Laboratory Experiments, Secondary Data -Published Sources, Unpublished Sources, Reliability and Validity of Tools– Meaning, Data Preparation Process –Editing, Coding, Classification, Tabulation				18

IV	Statistical Methods Parametric and Non-Parametric tests – Difference and Applications, Data Analysis Process- Descriptive Analysis -Graphical and Diagrammatic Presentations, Central Tendency – Mean, Median & Mode, Dispersion -Standard Deviation, Statistical Inference – Tests of Hypothesis , t – test, ANOVA – One Way & Two Way, Chi- square test – Goodness of Fit & Test of Independence	18
V	Reporting the Findings and Computer Applications Report Writing –Importance, Types, Mechanics, Guidelines and Precautions, End Notes- Bibliography, Appendices, Footnotes and Glossary of terms Computer applications in nutrition research -importance and uses, Applicable Statistical Analysis Software-Literature Searching-PubMed, Data Analysis- Micro Soft Excel, SPSS, Minitab, Plagiarism Checker – Turnitin, Scribbr	18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:

CO1	Demonstrate knowledge of the scientific method, purpose and approaches to research and Become a qualified researcher.
CO2	Identify and selection of the research sampling and scales of measurement
CO3	Understand the types of tools applicable to research problem and develop skills of preparing outline of research work and construct common data collection tools
CO4	Assess the numerical data for providing statistical evidences to support the research results and interpretation of data with the use of tables and pictorial representations
CO5	Present research data in a scientific manner and Understand the key elements of a research report and various applications of computer in Nutrition research

TEXTBOOK:

- Kothari C R (2004). Research Methodology – Methods & Methodology. Delhi, New Age International Pvt Ltd. 2nd Ed
- Chawla, Deepak and Neena Sondhi (2018): Research Methodology - Concepts and Cases. Noida, Vikas Publishing House Pvt Ltd. 2nd Ed.
- Gupta, S P (2019). Statistical Methods. New Delhi. S Chand & Sons. 45th Ed.
- Copper, H.M. (2002). Intergrating Research : A guide for literature reviews. California: Sage, 2nd Edition.
- Kerlinger, Foundation of Educational Research Ingle P.O. Scientific Report Writing. Nagpur, Sarla P. Ingle.

REFERENCES:

1. Ranjit Kumar (2011). Research Methodology: a step-by-step guide for beginners, SAGE Publications. 3rd edition.
2. Anderson, David R and et.al.(2013) : Statistics for Business and Economics. Delhi, Cengage Learning India Pvt Ltd. 11th Ed.
3. Bandarkar, P.L. and Wilkinson T.S. (2000): Methodology and Techniques of Social Research. Himalaya Publishing House, Mumbai.
4. Bell, Judith (2005): Doing your Research Project – A guide for first time researchers in education, health and social science. England, Open University Press. 4th Ed.
5. Daniai, Wayne W and Chad L Cross (2017): Biostatistics – Basic Concepts and Methodology For the Health Sciences – International Student Version. New Delhi, ArEmmInternational, 10th Ed.

E-LEARNING RESOURCES

- Research Methods in Nutrition - https://epgp.inflibnet.ac.in/view_f.php?category=1381
- Fundamental research: <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>
- Test of significance - <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>
- Correlations - <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	S	S	M	S
CO2	S	S	S	S	S	M	S	S	M	S
CO3	S	S	S	S	S	M	S	S	M	S

CO4	S	S	S	S	S	M	S	S	M	S
CO5	S	S	S	S	S	M	S	S	M	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	2	3	3	3	3					
CO2	2	3	3	2	3					
CO3	2	3	3	3	3					
CO4	2	3	3	2	3					
CO5	2	3	3	2	3					
Weightage	10	15	15	12	15					
Weighted percentage (rounded off) of Course contribution to Pos	2	3	3	2.4	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III	Core Course 8			COURSE CODE: P23CN8	
TITLE OF THE COURSE: CLINICAL NUTRITION AND DIETETICS					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 5	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. To acquire Knowledge regarding the effect of various diseases on nutritional status and nutrient requirement					
2. To understand the modifications in nutrients and dietary requirements for therapeutic condition.					
3. To learn recent concepts in dietary management of different diseases.					
UNIT	CONTENT				HOURS
I	Nutritional screening , Nutritional care process, Nutritional Assessment, Nutritional diagnosis, Nutritional Intervention, Monitoring and evaluation. Basic concepts of diet therapy – Therapeutic adaptations of Normal diet, Principles and classification of therapeutic diets. Routine Hospital diets – Regular, soft, fluid diet. Nutritional Management in critical care -Nutritional screening and nutritional Status assessment of critically ill, Nutritional requirement according to the critical condition. Nutritional support systems: Enteral and parenteral nutrition support- Types, composition and complications.				18
II	Medical Nutrition therapy for gastrointestinal and liver disorders: Upper Gastrointestinal tract Diseases – Nutritional care and diet therapy in Diseases of oesophagus - Oesophagitis, Gastro esophageal reflux disease [GERD] and Hiatus hernia. Disorders of stomach: Indigestion, Gastritis, Gastric and duodenal ulcers, and dumping syndrome. Lower gastrointestinal tract: Diseases/ Disorders-Common Symptoms of Intestinal dysfunction - Flatulence, constipation, haemorrhoids, diarrhoea, steatorrhoea, Diseases of the large intestine -Diverticular disease, Irritable bowel syndrome, inflammatory bowel disease. Diseases of Small intestine -Celiac disease, tropical sprue, intestinal brush border enzyme deficiencies. Diseases of the Liver - hepatitis, hepatic coma, cirrhosis, cholecystitis, cholelithiasis and pancreatitis, Zollinger Ellison syndrome and Biliary dyskinesia.				18
III	Medical Nutrition therapy for Pulmonary disease -Effect of malnutrition on pulmonary system, effect of pulmonary disease on nutritional status, chronic pulmonary disease- Asthma, cystic fibrosis, chronic obstructive pulmonary disease and Pneumonia- Pathophysiology and dietary management. Medical Nutrition therapy for Rheumatic disease - Etiology, Pathophysiology of Inflammation of Rheumatic diseases, Rheumatoid Arthritis, Osteoarthritis and sjogren syndrome. Nutritional management of physiological stress - Classification, Complications, Metabolic changes in protein and electrolytes and Dietary management of burns, dietary management				18

	of trauma and stress.	
IV	<p>Nutritional Management on Weight imbalance -Regulation of food intake and pathogenesis of obesity and malnutrition and starvation; Weight Imbalance: prevalence and classification.</p> <p>Underweight -Etiology and Dietary management; Obesity-Etiology, classification, Energy balance, dietary modifications and Bariatric surgery- types and dietary modifications of pre and post bariatric surgery.</p> <p>Nutritional Management in metabolic disorders- Prevalence, Etiology, risk factors, complications and dietary modifications of diabetes mellitus.</p>	18
V	<p>Nutritional management of cardiovascular diseases-etiology, risk factors, clinical features and dietary modifications of Dyslipidemias, Atherosclerosis , Hypertension, Ischemic heart disease, Congestive cardiac failure.</p> <p>Nutrition Management of Renal Disease -Etiology, Clinical and metabolic manifestations, Diagnostic tests, Types-Glomerulonephritis, Nephrotic syndrome, Renal Failure: Acute and chronic, ESRD, Nephrolithiasis and Dietary modifications.</p> <p>Nutritional management in cancer- Pathogenesis and progression of cancer, types, Symptoms and Dietary management.</p>	18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:		
CO1	Critique the nutritional screening technique	
CO2	Comprehend the current concepts of therapeutic diets and critically ill	
CO3	Implement the dietary principles on various disorders.	
CO4	Acquire the knowledge of diet counseling skills.	
CO5	Apply the dietary principles to manage the lifestyle disorders in the society	
TEXTBOOK:		
<ul style="list-style-type: none"> • Mahan L.K., Sylvia Escott-Stump.(2000).Krause"s Food Nutrition and Diet Therapy.W.B. Saunders Company London. 10th edition. • B. Srilakshmi. (2007).Dietetics. K.K. Gupta For New age International Pvt. Ltd. New Delhi Publisher. • Antia F.P. And Philip Abraham.(2001).Clinical Nutrition and Dietetics.Oxford Publishing Company. • Passmore P. And M.A. East Wood.(Digitised in 2010).Human Nutrition And Dietetics.Churchill Living Stone. • S.R.Mudambi.M.K.Rajagopal.(2009).Fundamentals, Food Nutrition and Diet therapy.New Age Publishers. 5th edition. • Robinson Ch., M.B. Lawlea, W.L., Chenoweth, And A.E., Carwick.(1990).Basic Nutrition and Diet therapy, Macmillan Publishing Company. 		
REFERENCES:		
1. Garrow JS, James WPT, Ralph A.(2000). Human Nutrition and Dietetics.Churchill Livingstone, NY. 10 th edition.		
2. Groff L James, Gropper S Sareen.(2000). Advanced Nutrition and Human Metabolism.West / Wadsworth, UK. 3 rd edition.		
3. Sue Rodwell Williams. (1993).Nutrition, Diet Therapy.W.B. Saunders Company London. 7 th edition.		
4. Whitney, E. N. and C. B..Cataldo.(1983). Understanding Normal and Clinical Nutrition. West Pub. S1. Paul.		
E-LEARNING RESOURCES		
➤ www.nutrition.gov - Service of National agricultural library, USDA.		
➤ www.nal.usda.gov/fnic -Food and Nutrition information centre. www.healthyeating.org .		
➤ www.eatrightpro.org .		
➤ https://www.globalhealthlearning.org .		

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	S	M	S	M	S	L	S
CO2	S	S	S	S	M	S	M	S	M	S
CO3	S	S	S	S	M	S	M	S	M	S
CO4	S	S	S	S	M	S	M	S	S	S
CO5	S	S	S	S	M	S	M	S	S	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	3	1	3
CO2	3	2	3	1	3
CO3	3	2	3	1	3
CO4	3	2	3	2	3
CO5	3	2	3	2	3
Weightage	15	10	15	7	15
Weighted percentage (rounded off) of Course contribution to Pos	3	2	3	1.4	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III	CORE COURSE 9 (P)			COURSE CODE: P23CN9P	
TITLE OF THE COURSE: CLINICAL NUTRITION AND DIETETICS PRACTICAL					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 4	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. To acquire Knowledge in planning diets for various disorders To gain knowledge in diet counseling and educating patients.					
2. To understand the therapeutic modifications of diet.					
UNIT	CONTENT				HOURS
I	Standardization of household food weights and measures. Preparation of routine hospital diets in surgical conditions- clear fluid, full fluid and soft diets.				18
II	Planning and preparing diets for the following conditions IBD – Lactose intolerance. Planning and preparing diet for type I and II Diabetes conditions with and without complications and on different drug therapy – carbohydrates counting, food exchange lists, ready reckoner based diet. Planning and preparing a diet for individuals with hypertension – sodium restricted diet.				18
III	Planning and preparing diet for Liver failure condition - fat restricted diet. Planning and preparing diet for renal failure – fluid and protein restricted diet. Planning and preparing a diet for post – burn condition – high calorie and protein diets.				18
IV	Planning and preparing a diet for HIV with and without comorbidities – protein and vitamin rich diet. Planning and preparing a diet for poor nutritional status in cancer patients – nutraceutical based diet.				18
V	Planning and preparing diet for over-weight, obese and conditions of hyperlipidemia – marco modified diet. Planning and preparing pediatric and geriatric diets.				18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	Evaluate various therapeutic diets				
CO2	Identify the requirements for disease conditions and critically ill patients.				
CO3	Assess and plan the diets for various disease conditions.				
CO4	Create Knowledge in nutrient calculations and dietary principles.				

CO5	Design the personalized diets for different individuals in the society									
TEXTBOOK:										
<ul style="list-style-type: none"> • Stump SE.(2012).Nutrition and diagnosis related care. Lippincott Williams and Wilkins. Canada.7th edition. • Width.M& Reinhardt.T. (2018).The Essential Pocket Guide for Clinical Nutrition. Wolters Kluwer Publishers. 2nd edition. • Whitney EN and Rolfes SR.(2002). Understanding Nutrition, 9th edition, West/Wordsworth. • Guthrie H.(2002). Introductory Nutrition. CV Mosby Co.St. Louis. • Elia M, Ljungqvist O, Stratton RJ, Lanham SA.(2013). Clinical Nutrition. • The Nutrition Society Textbook. Wiley Blackwell Publishers.2nd edition. Mitch, W. and Ikizler, Alp.(2010). • Handbook of Nutrition and the Kidney. Lippincott Williams and Wilkins, New Delhi.6th edition. • Mahan LK, Stump SE and Raymond JL.(2012). Krause's Food and Nutrition Care Process. Elsevier Saunders.Missouri.13th edition. 										
REFERENCES:										
1. Gopalan C., Ram Sastri B.V. And BalSubramaniam S.C. (2006). Nutritive Value of Indian Foods. Hyderabad, National Institute of Nutrition. Indian Council of Medical Research.										
2. Clinical Dietetics Manual.(2018). Indian Dietetic Association. 2 nd edition. Peggy										
3. Stanfield.Y.H.Hui.(2010). Nutrition and Diet therapy. Jones and Bartlett publishers.										
4. William's. (2012).Basic Nutrition and Diet therapy.14 th Edition.										
E-LEARNING RESOURCES										
➤ www.nutrition.gov - Service of National agricultural library. USDA.										
➤ www.nal.usda.gov/fnic -Food and Nutrition information centre.										
➤ www.healthyeating.org .										
➤ www.eatrightpro.org .										
➤ https://www.globalhealthlearning.org .										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	S	M	S	M	S
CO2	S	S	S	M	M	S	M	S	L	S
CO3	S	S	S	M	L	M	M	S	S	S
CO4	S	S	S	S	M	M	M	S	M	S
CO5	S	S	S	M	S	S	M	S	M	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	2	3	2	3					
CO2	3	2	3	2	3					
CO3	3	2	3	1	3					
CO4	3	2	3	2	3					
CO5	3	2	3	3	3					
Weightage	15	10	15	10	15					
Weighted percentage (rounded off) of Course contribution to Pos	3	2	3	2	3					

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER:III	Core Course 10		COURSE CODE: P23CN10	
TITLE OF THE COURSE: PERFORMANCE NUTRITION				
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE				
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability
Relevant to Local need				Addresses Human Values
LEARNING OBJECTIVES: To enable the students to :				
1. Learn about the role of nutrients in enhancing Sports Performance. Understand the fundamentals of planning diet for different sports.				
2. Know about the different types of sports supplements and nutrition for special athletes.				
UNIT	CONTENT			HOURS
I	Nutritional assessment for athletes-assessment of body composition, techniques of measuring body composition, surface anthropometry, Biochemical, clinical and dietary assessment, Body composition and sports performance. Energy requirements for optimal athletic performance-Energy production, Energy metabolism in Athletes, Fatigue and exercise, energy requirements of athletes, factors affecting energy requirements of athletes.			15
II	Carbohydrates in sports performance- Carbohydrate types, Glycaemic index and Glycaemic load, carbohydrate utilization during exercise, carbohydrate loading, fuelling before during and after exercise, carbohydrate requirements for athletes. Protein and fat requirement for sports performance -protein and exercise, requirements of protein and fat for athletes, factors affecting protein requirements, protein needs and vegetarian athletes.			15
III	Micronutrients in sports- vitamins and mineral requirements in athletes, sports anaemia, antioxidants and exercise induced free radicals. Hydration for athletes- Fluid balance and thermoregulation, fluid and electrolyte requirements for athletes, Effects of dehydration, factors affecting fluid intake, gastric emptying and fluid delivery to working muscles, Fluid intake before, during and after exercise.			15
IV	Nutrition for competition performance-Nutrient timing, pre-competition nutritional guidelines, nutrition during exercise and nutrition after exercise, nutrition plan for specific sports events. Ergogenic aids- Categories of Ergogenic aids and Ergolytics. Sports foods-sports drinks, sports gels, Sports energy bars and sports gels			15
V	Nutrition for athletes with special dietary needs- Nutrition for special population like children, young and older athlete, Female athlete triad, weight loss and weight gain in athletes, vegetarian athlete, diabetic athlete, athletes with disabilities, factors affecting nutritional needs for travel athlete, GI stress and athletes.			15

COURSE OUTCOMES: After successful completion of the course, the student will be able to:										
CO1	Analyze and assess the body composition of athlete.									
CO2	Comprehend the role of Macro and micronutrients towards athletic performance									
CO3	Emphasize the role of nutrition in competitive performance and for special needs.									
CO4	Retrieving the various sports supplements and Ergogenic aids for the athletes.									
CO5	Apply personalized nutrition guidance in the area of sports nutrition.									
TEXTBOOK:										
1. Deakin, Burke.(2006). Clinical Sports Nutrition.McGraw-Hill Australia.3 rd edition. Bean, Anit. (2010).The complete guide to Sports Nutrition.A&C.Black. London.6 th edition.										
2. Bourns, Fred.(2002).Essentials of Sports Nutrition. John and Wiley. 2 nd edition.										
3. B.Srilakshmi, Suganthi.v, C.Kalaivani Ashok.(2017). Exercise physiology fitness and sports Nutrition, New age publishers. 1 st edition.										
4. Benardot, Dan. (2000).Advanced Sports Nutrition. Human Kinetics.										
REFERENCES:										
1. Burke, Louise. (2007).Practical Sports Nutrition. Human Kinetics										
2. Gleeson, Jeukendrup.(2004).Sports Nutrition: An Introduction to Energy Production and Performance.Human Kinetics										
3. Suzanne Girard Eberle.(2000).Endurance Sports Nutrition. Human Kinetics. Natalie DigateMuth.(2015).Sports Nutrition for health professionals. Quincy Mcdonald										
4. D. Enette Larson-Meyer.(1963).Vegetarian sports nutrition.										
E-LEARNING RESOURCES										
<input type="checkbox"/> http://ijnpa.biomedcentral.com										
<input type="checkbox"/> www.acsm.org www.ausport.govt.au										
<input type="checkbox"/> www.sportsci.org www.gssiweb.com										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	M	L	S	S	M
CO2	M	M	S	M	M	M	L	M	S	M
CO3	M	M	M	M	M	S	S	S	L	L
CO4	S	S	L	L	L	M	M	M	L	L
CO5	S	S	M	M	M	M	M	M	S	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	2	2	3	3	3					
CO2	2	2	2	2	2					
CO3	3	2	2	1	2					
CO4	2	3	3	3	3					
CO5	2	2	2	2	2					
Weightage	11	11	12	11	12					
Weighted percentage (rounded off) of Course contribution to Pos	2.2	2.2	2.4	2.2	2.4					

ROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: IV	Core Course 11			COURSE CODE: P23CN11	
TITLE OF THE COURSE: INSTITUTIONAL FOOD ADMINISTRATION					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 5	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need	✓	Entrepreneurship Oriented	✓	Addresses Gender Sensitization	✓
Relevant to Regional need	✓	Skill Development Oriented	✓	Addresses Environment and Sustainability	✓
Relevant to Local need	✓			Addresses Human Values	✓
LEARNING OBJECTIVES: To enable the students to :					
1. To develop skills in handling and maintenance of equipment					
2. To understand the key areas of institutional food service administration					
UNIT	CONTENT				HOURS
I	<p>Food Service Industry- Commercial and Non Commercial Institutions. Commercial-Hotel, Motel, Restaurant, Bar, Pub and Fast Food Restaurant; Non Commercial-Transport catering, Industrial catering, hospital catering and outdoor catering.</p> <p>Menu Planning and Design: Types of menu: Table d'hote, A la carte, Plat du jour, Carte du jour, Cyclic menu, Special Occasional menu. Types and factors affecting menu planning, menu sequence, menu design. Essentials of a good menu card; method of display.</p>				18
II	<p>Food Service Management: Types of Organization - line, line and staff, functional, project, matrix, committee, hybrid; Management - Definition and Principles. Leadership style - autocratic, laissez faire, democratic, intellectual, institutional, manipulative, paternalistic; functions of a good leader. Decision making: Types and steps in decision making; Communication - purpose and process and types; Effective communication.</p> <p>Role of management in FSI: Planning, organizing, directing, controlling, evaluating.</p> <p>Concepts of quality assurance - Total Quality Management (TQM), Management by Objectives (MBO).</p>				18
III	<p>Equipment used in Food Service Industries - Classification of equipment- electrical and non-electrical equipment for food storage, Preparation, serving, dishwashing and laundering. Base materials used for finishes</p> <p>Food plant - Types of Kitchen - Island and Shore, Layout of different food service areas - receiving and storage, kitchen, dining, cleaning, laundering, drainage, water lines, lighting and ventilation adopted in different units such as kitchen, storage and dining area, working heights in relation to equipment.</p> <p>Food Management in FSI: Food Purchase: Buying and accounting procedures in food service institutions, Storage; Food Hygiene and Food Safety; Waste Management in food service.</p>				18
IV	<p>Personnel Management: Manpower planning, recruitment procedures, selection and induction, training, job description and specification, work schedule, work analysis. Laws governing staff management - Employee Law, Trade Union Contracts and Negotiations.</p> <p>Waste Management in food service - rules for waste disposal- avoidance, reduction, reuse and recycle; techniques for waste disposal - incineration, landfill, recycle, composting.</p>				18

V	Financial Management: Buying and receiving procedures in food service institutions; Budget, Inventory control, Cost analysis-Cost concepts- types of cost-fixed cost, semi fixed cost, variable cost. Food cost control - factors; methods of controlling food cost. Pricing - factors affecting pricing of food. Role of computers in management of FSI: menu planning, point of sale, inventory management, financial management, food safety, front office, marketing.										18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:											
CO1	Differentiate food service institutions based on the objectives and customers.										
CO2	Integrate management tools for quality assurance in food service.										
CO3	Apply the acquired skills in handling food service equipment and procedures.										
CO4	Plan layout of food service establishments.										
CO5	Manage human resources within a food service organisation.										
TEXTBOOK:											
1. Sethi, M.,Malhan,S.(2007) Catering Management: An integrated approach, New Age International											
REFERENCES:											
1. Sudhir Andrews (1999) Food and Beverage Service Training Manual, Tata McGraw Hill Publishing Company Ltd New Delhi											
2. Lilli Crap, D R and Cousins J A (1999) Food and Beverage Service, 4th Edition, Hodder and Stoughton.											
3. Aggarwal D.K (2006) Housekeeping Management, AMAN Publications, New Delhi.											
4. Singh.R.K (2006) Modern Trends in Hospitality industry, AMAN Publications,New Delhi.											
5. John Wiley (2005), Book Of Yields:Accuracy in Food Costing and Purchasing,6th Edition.											
JOURNALS											
1. Journal of Foodservice Business Research											
2. The Journal of Foodservice Management and Education											
E-LEARNING RESOURCES											
➤ Food service industry - https://epgp.inflibnet.ac.in/view_f.php?category=547											
➤ Classification of equipment - https://epgp.inflibnet.ac.in/view_f.php?category=547											
➤ Components of costing and Pricing methods- http://vidyamitra.inflibnet.ac.in/index.php/home/subjects?domain=Social+Sciences&subdomain=Home+Science											
MAPPING WITH PROGRAMME OUTCOMES											
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1	S	S	S	S	S	S	S	S	S	S	
CO2	S	S	S	S	S	S	S	S	S	S	
CO3	S	S	S	S	S	S	S	S	M	S	
CO4	S	S	M	S	S	S	S	S	S	S	
CO5	S	S	S	S	S	S	S	S	S	S	
* S-Strong, M-Medium, L-Low											
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES											
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5						
CO1	3	3	3	3	3						
CO2	3	3	3	3	3						
CO3	3	3	3	3	3						
CO4	3	3	3	3	3						
CO5	3	3	2	3	3						
Weightage	15	15	14	15	15						
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3						

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: IV	Core Course 12			COURSE CODE: P23CN12	
TITLE OF THE COURSE: FOOD PRODUCT DEVELOPMENT					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 5	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Understand the various aspects of food product development					
2. Develop products that meets consumer requirements and demands					
3. Formulate products that are nutritionally and commercially viable					
UNIT	CONTENT				HOURS
I	INTRODUCTION TO NEW FOOD PRODUCT DEVELOPMENT Definition, significance of product development, food needs and consumer preferences, market survey and designing a questionnaire to find consumer needs for a product. Steps involved in product development, formulation of nutritious food products and standardization, Factors that influence new product development success, Intellectual Property Rights and patenting of foods				18
II	SENSORY EVALUATION OF THE PRODUCT Assessing the sensory characteristics of food - colour, texture, odor and taste. Sensory evaluation of foods – Laboratory set up, equipment, panel selection and training, judging quality. Subjective evaluation techniques – Difference tests: paired comparison test, duo-trio test, triangle test. Rating tests – Ranking single sample, two samples and multiple samples. Objective tests to assess the sensory properties of foods.				18
III	ESSENTIALS OF FOOD PACKAGING Importance, definition, principles design requirement and basic FSSAI laws governing food packaging. Selection criteria and types of packaging material – metal, glass, paper, plastic, edible, wooden. Packages with special features – Boil-in-bag package, plastic-shrink package, cryovac film, microwave oven packaging, aseptic packaging and distribution packaging.				18
IV	PRODUCT LABELLING AND REGULATIONS Definition, purpose, importance, Function, Nutritional information and laws governing product labelling. Types of labelling – smart labels, barcode labels, radioactive labels, antimicrobial labels, security labels and other specialized food labels. Standards and regulations for nutrition harming and Nutrition claims in food labels.				18
V	QUALITY CONTROL, PRICING AND MARKETING Analyzing the product stability, evaluation of shelf life, determining the changes in sensory attributes due to environmental conditions. Pricing a product, Methods of pricing-cost plus pricing, Demand pricing, Competitive pricing, mark up pricing, Principles of pricing, determining the selling price and profit margin, price bundling, promotional pricing and quantity discounts. Advertising and marketing strategies- Basic techniques, Food advertising regulations, Marketing mix “four P’s”				18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	Apply a product development process to generate ideas, design, develop and evaluate new products				

	and their markets.
CO2	Demonstrate skill in the application of standard methods for the measurement and evaluation of sensory differences
CO3	Evaluate and analyze the different food packaging material
CO4	Review the appropriate labelling to adhere to standards
CO5	Gain knowledge on pricing and marketing of food product

TEXTBOOK:

1. Reddy S M. (2003) .Basic food science and technology. New age publisher, 1st edition.
2. Subbulakshmi G and Udipi A Shobha . (2017) .Food processing and preservation .new age publisher. 1st edition.
3. Manay S And Shadaksharamasamy . (2009) .Food: Facts and Principles. New Age International (P) Publishers New Delhi. 1stedition.
4. 4. AvantinaSharma. (2017) Textbook of food science and Technology. CBSOU Publishers and distributors ltd. 3rdedition.

REFERENCES:

1. 1.Lyon D H and Francombe M A and Hasdell T A Lawson . (2002) .Guidelines for Sensory Analysis in Food Products Development and Quality Control . Chepman and Hall London. 1st edition.
2. 2.Fuller G W. (1994). New Food Product Development from Concept to Market Place. RC Press New York. 2ndedition .
3. 3.Man C M D andJones A A. (1994) . Shelf Life Evaluation of Foods. Blackie Academic and Professional London. 2nd edition.
4. 4.Frewer L And Van TrijpH .(2007). Understanding consumers of food products. Florida USACRC Press.1st edition.

E-LEARNING RESOURCES

- Marketing -<https://epgp.inflibnet.ac.in/ahl.php?csrno=827>
- Entrepreneurship - <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	M	M	S	S	S	M	S
CO2	M	M	S	M	M	S	S	S	M	S
CO3	M	S	S	S	M	S	S	M	M	S
CO4	M	L	S	M	S	S	S	M	M	S
CO5	M	M	S	M	S	S	S	S	M	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER:IV	Core Course 13			COURSE CODE : P23NPW	
TITLE OF THE COURSE: PROJECT WITH VIVA VOCE					
HOURS OF INSTRUCTION PER WEEK: 10	CREDITS: 7	CIA: 60	EXTERNAL MARKS: 40	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Develop skills in conducting a research study					
2. Learn the art and science of preparing and presenting a research document.					
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO	CO STATEMENT				
CO1	Develop a research design on a topic relevant to their field				
CO2	Prepare a systematic literature review on the topic selected				
CO3	Select and execute the most appropriate methodology for the study and provide justification for the choice made.				
CO4	Acquire skill in collecting, analyzing, presenting and interpreting data accurately.				
CO5	Present findings of the study in a logical and sequential manner and discuss them against a backdrop of available scientific literature; Cite references in prescribed format and conduct plagiarism check on the document prepared.				
Evaluation Pattern for Internal marks shall be as follows: The 60 marks for internals to be given for three reviews of 20 marks each under the following criteria.					
Review I					
Problem selection / Choice of the Topic	Methodology / Technology used	Effective content delivery	Interaction/ Answering questions	Total	
5	5	5	5	20	
Review II					
Work Progress	Development of ideas	Effective content delivery	Interaction / Answering questions	Total	
5	5	5	5	20	
Review III					
Final outcome of the project	Implementation & execution	Effective content delivery	Interaction / Answering questions	Total	
5	5	5	5	20	

MAPPING WITH PROGRAMME OUTCOMES										
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	S	L	L	S	S	S
CO2	S	M	S	S	S	M	S	S	M	S
CO3	S	M	S	S	S	M	S	M	M	S
CO4	S	S	S	S	S	M	S	M	M	S
CO5	S	S	S	S	S	L	S	S	M	S
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	1	3	3					
CO2	3	3	1	3	3					
CO3	3	3	1	3	3					
CO4	3	3	2	3	3					
CO5	3	3	1	3	3					
Weightage	15	15	6	15	15					
Weighted percentage (rounded off) of Course contribution to POs	3	3	1	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: I	Discipline Specific Elective Course 1 A			COURSE CODE: P23DN01	
TITLE OF THE COURSE: FOOD PROCESSING AND TECHNOLOGY					
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need			Addresses Human Values		
LEARNING OBJECTIVES: To enable the students to :					
1. Understand the science behind processing of foods and its impact on nutritive value of food stuffs.					
2. Acquire in-depth knowledge on production of processed food products and the waste utilization techniques.					
3. Understand the changes in physicochemical properties of foods due to processing condition.					
4. Understand the various parameters related to post-harvest technology.					
UNIT	CONTENT				HOURS
I	Processing of foods: Primary, secondary and tertiary processing, historical perspective, traditional technologies used in food processing. Effects of processing on components, properties and nutritional value of foods. Enzymes in Food Processing: Enzyme- Review of classification, enzyme inhibitors, enzymatic browning.				18
II	Cereal Processing and Technology: Rice: parboiling, milling and pearling; Processing and milling of wheat, maize, barley, oats and rye. Millets: processing of millets; Cereal Products: Flours and its quality; Processed products of rice, wheat and maize; By products utilization; breakfast cereals and extrusion; Effect of processing on nutritive value of cereals; changes in physiochemical properties of cereal starch and protein due to processing. Milling process: Complete milling process, break rolls, reduction rolls, milled products and their nutritive value and applications Pulse Processing and Technology: Dals, flours, protein concentrates, isolates and hydrolysates; Byproducts utilization; Effect of processing on nutritive value and physiochemical properties of pulses. Nuts and Oil Seeds Processing and Technology: Nuts Processing methods, Oil seeds processing: Oil extraction methods and refining process; byproducts utilization; Effect of processing on nutritive value and physiochemical properties of vegetable oils.				18
III	Vegetables Processing and Technology: Pigments: Classification, effects on processing of vegetables; Preliminary processing of vegetables; Vegetable products: Fermented and non-fermented and its shelf life; Vegetable waste utilization; Effect of processing on nutritive value and physiochemical properties of vegetable Fruits Processing and Technology: Concept of maturity, ripening and senescence; Methods of fruit processing technologies: traditional and new methods. Fruit products: fermented and nonfermented; Effect of processing on nutritive value and physiochemical properties of fruits; Browning reactions: types and mechanism; prevention methods; Fruit waste utilization. Milk Processing and Technology: Milk types, composition, physiochemical properties; Milk processing- Separation, centrifugal process, natural creaming, pasteurization, sterilization, homogenization. Milk storage; Effects of processing on nutritive value and physicochemical properties of milk				18

IV	Egg Processing and Technology: Egg processing and storage; Effect of processing on nutritive value and physiochemical properties of eggs; changes in egg quality during storage and preservation methods. Meat Processing and Technology: Meat processing and storage; Factors influencing meat quality; Ageing and tenderization of meat. Poultry: Processing and storage of poultry meat; Preservation methods for poultry. Fish: Processing and storage; Preservation methods for fish. Effect of processing on nutritive value and physiochemical properties of meat, poultry and fish	18
V	Introduction of post-harvest technology: Introduction to post-harvest technology of agricultural produce; Status of Production, Losses, Need, Scope and Importance. Post-Harvest Loss- Definition, Factors contributing to Post-harvest Loss; and Technologies and Practices to reduce Post-harvest Losses.	18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:

CO1	The concepts and principles of food processing.
CO2	The various processed food products from plant and animal sources.
CO3	The by-products utilization from food processing.
CO4	The systematic knowledge of basic and applied aspects in food processing and technology.
CO5	The various post-harvest technologies for different food products

TEXTBOOK:

1. Shakuntala Manay N Shadaksharaswamy M. (2004) Food Facts and Principles. New age publisher . 2nd edition.
2. Roday S. (2011) .Food Science. Oxford publication . 1st edition.
3. B Srilakshmi (2015) Food science. New Age Publishers. 6th edition. Fellows P.(2000). Food Processing Technology, 2nd Edition.
4. Woodhead Publishing Limited and CRC Press LLC. 1st edition.
5. 4. Avantina Sharma. (2017).Text book of food science and Technology. CBS Publisheres and distributes ltd. 3rd edition

REFERENCES:

1. 1.Raocg . (2006).Essentials of food process engineering . PHI learning private ltd.
2. 2. Janet D Ward and Larry Ward.(2006). Principles of Food Science .Stem Publishers. 4th edition.
3. 3. Srivastava R P and Kumar S. (2006) Fruits and Vegetables Preservation- Principles and Practices. International Book Distributing Co. 3rd edition.
4. 4. W B Crusess.(2004). Commercial Unit and Vegetable Products.
5. 5. W.V. Special Indian Edition, PubAgrobios India . 2nd edition. Forsythe S J and Hayes P R (1998). Food Hygiene, Microbiology and HACCP. Gaitersburg Maryland Aspen.
6. 6. Eskein .(2012). Biochemistry of Food. Elsevier publications. 1st edition.

E-LEARNING RESOURCES

- <http://ecoursesonline.iasri.res.in/course/view.php?id=184>
- <http://ecoursesonline.iasri.res.in/course/view.php?id=468>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	M	S	M	L	M	M	M	M	S
CO2	M	M	S	M	M	M	S	L	M	S
CO3	M	M	S	M	M	M	M	M	M	S
CO4	S	L	S	M	S	M	M	S	M	S
CO5	S	L	S	M	M	M	S	M	M	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES					
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	3
CO2	2	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	13	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	2.6	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER: I	Discipline Specific Elective Course 1 B		COURSE CODE: P23DN02	
TITLE OF THE COURSE: FOOD SAFETY AND QUALITY CONTROL				
HOURS OF INSTRUCTION PER WEEK:6	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE				
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability
Relevant to Local need				Addresses Human Values
LEARNING OBJECTIVES: To enable the students to :				
1. To know the importance of quality assurance in food industry				
2. To know the tests and standards for quality assessment and food safety				
3. To know the laws and standards ensuring food quality and safety				
UNIT	CONTENT			HOURS
I	Food Spoilage: Food spoilage definition; Factors influencing food spoilage; Types of food spoilage such as microbes, enzymes and insects; Changes in food quality due to spoilage; Methods for detection of food spoilage; Concept of food preservation and the principles. Food Safety: Need and importance of food safety in food industries; Factors affecting food safety; Role of kitchen-hygiene, employee health and food plant hygiene in prevention of food spoilage and contamination; Regulatory authorities at local, district and national levels ensuring food safety in food industries.			18
II	Food Additives and Adulterants: Food additives definition; Common food additives and its function and usage; Permissible limits of additives in foods; Implications of additives on consumers health; Food adulteration: Meaning and definition; Types of food adulterants; Methods used for detection of food adulterants.			18
III	Testing of Food Quality: Quality - meaning and need for food quality testing; Types of evaluation – subjective and objective; Subjective evaluation methods based on difference, rate, sensitivity etc.; Difference tests: paired comparison test, duo-trio, triangle test; Rating tests: ranking, two-sample difference test, multiple sample difference, hedonic rating, numerical scoring, composite scoring; Sensitivity test- threshold, dilution. Descriptive test - flavour profile. Objective evaluation methods – tools and instruments used.			18
IV	Food Quality Control and Assurance: Current concepts of quality control and assurance; Need and importance of quality control programmes such as quality plan, documentation of records, product standards, Product and purchase specifications and process control; Principles of HACCP and its role in total quality process; Duties and responsibilities of food quality controller.			18
V	Food Laws and Standards: Need and importance; National food legislation such as FSSAI, Essential Commodities Act, ISI or BIS, AGMARK, FPO and PFA; International Organization such as FAO, WHO, Codex Alimentarius, and APEDA.			18
COURSE OUTCOMES: After successful completion of the course, the student will be able to:				
CO1	Identify types of food spoilage and the need for hygiene in food handling.			
CO2	Discuss the implications of food adulterants and additives on consumers' health.			
CO3	Demonstrate skill in food quality testing career for further career prospects in food industry.			

CO4	Describe the process of food quality assurance.									
CO5	Apply the guidelines of food laws and standards to ensure food quality in food industry.									
TEXTBOOK:										
<ol style="list-style-type: none"> Jaiswal P.K., (2011) Food Quality and Safety, CBS Publishers and Distributors, New Delhi Manay, S.M. & Shadakshara Swamy, M. (2010) Food Facts & Principles, New Age International (P)Limited Publishers, Chennai 										
REFERENCES:										
<ol style="list-style-type: none"> Early, R. (1995). Guide to Quality Management Systems for the Food Industry, Blackie, Academic and Professional, London Gould, W.A. and Gould, R.W. 1988. Total Quality Assurance for the Food Industries, CTI Publications Inc, Baltimore Pomeranz, Y. and Meloan, C.E. 1996. Food Analysis : Theory and Practice, CBS Publishers and Distributor, New Delhi Ranganna, S. 1986. Handbook of Analysis and Quality Control for Fruit and Vegetable Products, 2nd Edition, Tata McGraw hill Publishing Co Ltd., New Delhi Hagstad, H.V. and Hubbert, W.T. (1986). Food Quality Control, Foods of Animal Origin, Iowa State University Press, AMES Srilakshmi, B. 2005. Food Science, New Age International (P) Ltd., Publishers, New Delhi. 										
E-LEARNING RESOURCES										
<ul style="list-style-type: none"> Employee Hygiene - https://epgp.inflibnet.ac.in/view_f.php?category=547 Food spoilage - https://epgp.inflibnet.ac.in/view_f.php?category=548 Evaluation - https://epgp.inflibnet.ac.in/view_f.php?category=547 										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	L	L	M	M	M	M
CO2	M	M	M	M	S	S	S	M	M	M
CO3	S	M	M	S	M	M	S	S	S	S
CO4	M	S	S	M	M	M	L	S	M	M
CO5	S	M	M	S	S	S	M	S	M	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	2	3	2	3	2					
CO2	2	1	2	2	2					
CO3	3	2	3	3	2					
CO4	2	2	3	2	2					
CO5	3	3	3	2	2					
Weightage	12	11	13	12	10					
Weighted percentage (rounded off) of Course contribution to Pos	2.4	2.2	2.6	2.4	2					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: I	Discipline Specific Elective Course2 A			COURSE CODE: P23DN03	
TITLE OF THE COURSE: FAMILY RESOURCE MANAGEMENT CONCEPTS AND CONTEXTS					
HOURS OF INSTRUCTION PER WEEK: 6		CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE					
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Understand the factors motivating home management					
2. Acquire ability to use human resources					
3. Gain knowledge about management of family resources					
4. Know the importance of decisions in management					
5. Understand the significance of ergonomics in home and work environment					
UNIT	CONTENT				HOURS
I	Introduction to Resource Management in Family Settings -Introduction to home management- meaning, definitions, conceptual framework, need and scope of family resource management, family resources Vs. home management, Motivating factors in management – Values, Standards and Goals – meaning, types/ classification Theories of Motivation- Maslow's hierarchy of needs theory; human wants – nature and role in management				18
II	Resources- Concept, classification, characteristics and usefulness of family resources, Factors affecting utilization of family resources, Maximizing use of resources and resource conservation, guidelines for the use of resources, Significance of managing resources of the family				18
III	Management Process and Decision Making: An Overview- Management process: Definitions and steps in management process: Planning, Controlling, Organizing and Evaluation. Decision Making- the crux of management, Types of decisions; factors of control, role of values, standards and goals in decision making process.				18
IV	Time and Energy Management - Time – concept of timeschedule, time norms and peak loads, Energy – Types of effort (Manual, pedal, visual etc)., Concept of body posture, drudgery and fatigue, fatiguing activities, classification of activities (sedentary, moderate and heavy), use of labour saving devices in management of time and energy, methods of alleviating fatigue, Principles of Work simplification, Mundel's Classes of Change, time and motion studies.				18
V	Ergonomics: Role in Management of Human Resources- Ergonomics – concept and principles, scope and importance, work, worker and work environment relationship, role of work, workplace and equipment (appliances) as sources of drudgery, working heights at different levels, Principles of workplace design, Functional designs of kitchen and other storage areas				18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:										
CO1	Associate human values in achieving family goals.									
CO2	Demonstrate abilities in home management.									
CO3	Analyze effective usage of family resources.									
CO4	Develop skills in personal time and money management.									
CO5	Integrate ergonomics in home and work environment									
TEXTBOOK:										
1. Nickell, P., and Dorsey, J. M. (2002). <i>Management in Family Living</i> . New Delhi: CBS Publishers (ISBN13: 9788123908519)										
2. Seetharaman, P., Batra, S., & Mehra, P. (2005). <i>An Introduction to Family Resource Management</i> . New Delhi: CBS Publishers & Distributors (ISBN 13: 9788123911861)										
3. Varghese, M.A., Ogale, N.N. and Srinivasan, K. (2017) <i>Home Management 2nd Edition</i> New Age International (P) Ltd., Publishers, New Delhi. ISBN-9789386286635										
REFERENCES:										
1. Bhargava, B. (2005). <i>Family Resource Management and Interior Decoration</i> , Jaipur: Apple Printer and V. R. Printers										
2. Deacon, R. F., and Firebaugh, F.M. (1975). <i>Home Management: Contexts and Concepts</i> . Boston: Houghton Mifflin Company.										
3. Gandotra, V., and Jaiswal, N. (2008). <i>Management of Work in Home</i> , New Delhi: Dominant Publishers and Distributors. (ISBN No. 81-7888-526-3)										
4. Gross, I.H., Crandall, E. W. and Knoll, M. M. (1980). <i>Management for Modern Families</i> . New Jersey: Prentice Hall Inc.										
5. Rao V.S.P., and Narayana P.S. (2008). <i>Principles and Practices of Management</i> . New Delhi: Konark Publishers Pvt. Ltd. (ISBN 13: 9788122000283)										
6. Shukul, M., and Gandotra, V. (2006). <i>Home Management and Family Finance</i> . Dominant Publishers and Distributors. (ISBN No. 81-7888-403-8) New Delhi:										
E-LEARNING RESOURCES										
<ul style="list-style-type: none"> Values, Goals - http://ecoursesonline.iasri.res.in/course/view.php?id=218-- Resource management - http://vidymitra.inflibnet.ac.in/index.php/home/subjects?domain=Social+Sciences&subdomain=Home+Science 										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	L	M	M	M
CO2	S	S	S	M	S	M	L	M	M	M
CO3	S	S	S	S	S	M	L	S	L	S
CO4	S	S	S	M	S	M	L	S	L	M
CO5	S	S	S	M	S	M	L	M	M	M
* S-Strong, M-Medium, L-Low										

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES					
CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	1	2	1	1	2
CO2	1	2	1	1	2
CO3	1	2	2	1	1
CO4	1	2	2	1	2
CO5	1	2	1	1	2
Weightage	5	10	7	5	9
Weighted percentage (rounded off) of Course contribution to Pos	1	2	1.4	1	1.8

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER: I	Discipline Specific Elective Course 2 B		COURSE CODE: P23DN04	
TITLE OF THE COURSE: PERSPECTIVIES OF HOME SCIENCE				
HOURS OF INSTRUCTION PER WEEK: 6	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE				
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability
Relevant to Local need				Addresses Human Values
LEARNING OBJECTIVES: To enable the students to :				
1. To describe the importance of each branch of Home Science				
2. To understand the essence of each subject				
3. To prepare them for UGC NET, SLET and ASRB				
UNIT	CONTENT			HOURS
I	Extension Education a. Meaning, definition, objectives, characteristics, principles b. Extension teaching methods- types and methods c. Qualities of a good extension worker d. Communication, innovation and social change			18
II	Human Development a. Growth, development, maturation and learning b. Principles and developmental stages & task c. Parental disciplinary techniques – merits and demerits d. Early Childhood Education – Objectives. Types of Nursery Schools. e. Exceptional children – Deaf, Blindness, Physical Impairment, Mental Retardation and Giftedness, Rehabilitation.			18
III	Textiles and Clothing a. Classification and General properties textile fibres. b. Processing and manufacture of Cotton, Silk, Wool and Rayon fibres. c. Yarn: Classification. d. Fabric construction - woven, non-woven and knitted fabric e. Clothing: selection for the family.			18
IV	Family Resource Management a. Home Management – Meaning, objectives and process b. Resources - Classification and characteristics c. Time, Money and Energy management d. Decision making - Steps and Methods of resolving conflicts e. Work simplification - Importance of work simplification. Mundel's classes of Change f. Principles and Elements of Interior design, Various colours and colour schemes.			18
V	Guidance and Counseling a. Meaning, nature, types and scope of guidance and counseling b. Various steps and techniques of guidance and counseling c. Need and importance of educational guidance			18

COURSE OUTCOMES: After successful completion of the course, the student will be able to:										
CO1	Understand the concept of Extension Education and its importance									
CO2	Comprehend the key aspects of human growth and development and realize the importance of mastering developmental tasks of each life span stage									
CO3	Understand the basic concepts of Textile and Clothing									
CO4	List personal goals and values, set living standards									
CO5	Understand the meaning of Guidance and Counselling and Career perspectives in Home Science									
TEXTBOOK:										
1. Jha, J.K. (2002). Encyclopaedia of Teaching of Home Science, Vol.I,II and III . New Delhi: Anmol Publications.										
2. Suriakanthi.A., (2002). Child Development - An Introduction, Kavitha Publication, Gandhigram										
REFERENCES:										
1. Serene and Ahlawat Santos Shekhar (2013), Textbook of Home Science Extension Education										
2. Tami James Moore and Sylvia M.Asay (2008), Family Resource Management, Sage Publications.										
3. Diane E. Papalia (2004), 9 th edition, Human Development, McGraw Hill India.										
4. Rani K. Sudha and Srivastava Sushila, Textbook of Human Development: A lifespan development approach, S. Chand & Co Ltd.										
E-LEARNING RESOURCES										
• http://ecoursesonline.iasri.res.in/course/view.php?id=188										
• http://ecoursesonline.iasri.res.in/course/view.php?id=231										
• http://ecoursesonline.iasri.res.in/course/view.php?id=243										
• http://ecoursesonline.iasri.res.in/course/view.php?id=213										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	S	S	S	S	S	M
CO2	M	M	L	M	M	S	M	M	M	L
CO3	M	M	L	M	L	S	M	M	L	M
CO4	M	S	L	M	M	S	L	M	M	L
CO5	M	S	L	M	M	S	L	M	L	L
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	1	1	1	2					
CO2	1	1	1	1	2					
CO3	1	1	1	3	1					
CO4	1	1	3	1	1					
CO5	1	1	1	2	2					
Weightage	7	5	7	8	8					
Weighted percentage (rounded off) of Course contribution to Pos	1.4	1	1.4	1.6	1.6					

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER: II	Discipline Specific Elective Course 3 A		COURSE CODE: P23DN05	
TITLE OF THE COURSE: FUNCTIONAL FOODS AND HEALTH				
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE				
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability
Relevant to Local need				Addresses Human Values
LEARNING OBJECTIVES: To enable the students to :				
1. Get an overview of the field of functional foods, nutraceuticals and natural health products.				
2. Understand the functional food concept as related to ingredient efficacy and safety				
3. Get familiar with examples of bioactive ingredient-disease relationships				
UNIT	CONTENT			HOURS
I	Concept of functional foods and nutraceuticals a. Functional Food and Nutraceuticals-Definition, history, types and classification. b. Benefits of functional foods and nutraceuticals c. Criteria to discriminate between conventional and functional foods. Role of functional foods in health promotion and disease prevention. Market for functional foods and factors driving their growth			15
II	Probiotics a. Definition and important features of probiotic micro-organisms, Health effects of probiotics. b. Probiotics in various foods: fermented milk products, non-milk products and safety aspects of probiotics.			15
III	Prebiotics a. Definition, sources, effect of processing, physiological effects, effects on human health and potential applications in risk reduction of diseases. b. Food applications of – non-digestible carbohydrates/oligosaccharides, Dietary fibre, resistant starch, Gums.			15
IV	Functional foods and bioactive ingredients for risk reduction of diseases a. Bioactive compounds in foods- Polyphenols, Flavonoids, catechins, isoflavones, tannins, Phytoestrogens, Phytosterols, Glucosinolates, Organosulphur Compounds, Other components–Phytates, Protease. b. Definition, sources, effects on human health and potential applications in risk reduction of diseases.			15
V	Therapeutic potential of Indian Super foods a. Spices and Condiments b. Herbs and medicinal plants Millets and traditional rice varieties, spirulina, chlorella			15
COURSE OUTCOMES: After successful completion of the course, the student will be able to:				
CO1	Describe components of nutraceutical and functional foods. Distinguish between conventional foods vs. functional foods as well as nutraceuticals vs. pharmaceuticals.			

CO2	Critically of different types of evaluate the health nutraceutical.
CO3	Distinguish between prebiotic and probiotic foods, their sources, health effects and potential for risk reduction of diseases
CO4	Discuss the therapeutic potential of functional foods based on the bioactive ingredients present in them
CO5	Recall the functional properties of Indian super foods and recommend their appropriate usage.

TEXTBOOK:

1. G Subbulakshmi & M.Subhadra, Functional Foods and Nutrition, Astral International
2. Rekha Sharma (2023). Introduction to Functional Foods and Nutraceuticals. PharmaMed Press / BSP Books, Hyderabad, India

REFERENCES:

1. Aluko, Rotimi, Functional Foods and Nutraceuticals, Springer-Verlag New York Inc., 2012.
2. Satinder Kaur Brar, Surinder Kaur and Gurpreet Singh Dhillon, Nutraceuticals Functional Foods, 2014.
3. Robert E.C. Wildman, Robert, Wildman, Taylor C, Handbook of Nutraceuticals and Functional Foods, Third Edition, Wallace, 2002.
4. Wildman, R. E. (2016). Handbook of Nutraceuticals and Functional Foods. CRC Press
5. Gibson, G. R. and Williams, M. C. (2001). Functional Foods Concept to Product. CRC Press.
6. Vatter, D.A. and Maitin V. (2016). Functional Foods, Nutraceuticals and Natural Products, Concepts and Applications. DEStech Publications, Inc
7. Gupta, R. C. (2016). Nutraceuticals: Efficacy, Safety and Toxicity. Academic Press.

E-LEARNING RESOURCES

- <http://ecoursesonline.iasri.res.in/mod/resource/view.php?id=147663>
- <https://krishi.icar.gov.in/jspui/bitstream/123456789/71744/1/FINAL-231-250.pdf>
- <https://www.youtube.com/watch?v=Cnq0JFID7sA&t=43s>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	M	S	S	S	S	S	S	S
CO2	M	S	M	S	M	S	S	S	S	S
CO3	M	S	M	S	M	S	S	S	S	S
CO4	M	S	M	S	S	S	S	S	S	S
CO5	M	S	M	S	M	S	S	S	S	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER:II	Discipline Specific Elective Course 3 B		COURSE CODE: P23DN06	
TITLE OF THE COURSE:NUTRITIONAL BIOCHEMISTRY				
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE				
Relevant to Global need	✓	Employability Oriented		Addresses Professional Ethics
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability
Relevant to Local need				Addresses Human Values
LEARNING OBJECTIVES: To enable the students to :				
1. Understand the need for the study of biochemistry as the basis for nutritional sciences.				
2. Make students aware of metabolism of proximate principles and others.				
3. A basic understanding of the functions of biological systems in relation to Nutritional biochemistry.				
UNIT	CONTENT			HOURS
I	Biological oxidation and enzymes Biological oxidation, Electron transport chain and Oxidative Phosphorylation. Enzymes – Definition, Types , mechanism of action,factors affecting enzyme activity, coenzyme, role of b vitamin as coenzyme.Free radicals – definition, formation in biological systems. Antioxidants – definition, Role of antioxidants in prevention of degenerative disorders			15
II	Metabolism of Carbohydrates: Glycolysis, The Citric Acid Cycleglycogenesis, glycogenolysis, gluconeogenesis, The Hexose Monophosphate Shunt and bioenergetics. Hormonal regulations of blood glucose homeostasis			15
III	Protein and amino acid metabolism Classification of amino acids, Oxidative Deamination, decarboxylation, transamination and transmethylation of amino acids, urea cycle, biosynthesis of non-essential amino acids, catabolism of essential amino acids. Protein biosynthesis.			15
IV	Metabolism of Lipids: Classification of fatty acid, Biosynthesis of fatty acids, beta oxidation of fatty acids and ketone bodies. Essential fatty acids – types and functions. Metabolism of phospholipids, and cholesterol. Lipo proteins – classification and function.			15
V	Overview of intermediary metabolism of carbohydrates, protein and lipid. Hormonal regulation of carbohydrate protein and fat metabolism Structural components and functions of nucleic acid, Structure of DNA, DNA Replication, RNA synthesis – types and functions and metabolism, translation. Recombinant DNA technology, Metabolism of Xenobiotics, Nutrigenomics			15
COURSE OUTCOMES: After successful completion of the course, the student will be able to:				
CO1	Understand the role of enzymes and co enzymes in biological oxidation.			
CO2	Gain knowledge on metabolism and regulation of carbohydrate.			

CO3	Understand the concept of metabolism and bioenergetics of lipids.
CO4	Discuss the classification, structure, organization and metabolic pathway of protein.
CO5	Comprehend the biological metabolism and functions of nucleic acid and understand recent concepts in biochemistry.

TEXTBOOK:

1. Jain, J.L., Jain, S., & Jain, N., (2005). Fundamentals of Biochemistry. S. CHAND & COMPANY Ltd. Ram nagar, New Delhi-110 055. 6th revised edition.
2. Bettelheim, F. A., Brown, W. H., Campbell, M. K., & Farrell, S. O. (2009). *General, Organic & Biochemistry*. Brooks/Cole Cengage Learning.

REFERENCES:

1. Marshall, W. J., Lapsley, M., Day, A., & Ayling, R. (2014). Clinical Biochemistry E-Book: Metabolic and Clinical Aspects. Elsevier Health Sciences.
2. Bender, D. A. (2003). Nutritional biochemistry of the vitamins. Cambridge university press.
3. Albanese, A. (Ed.). (2012). Newer methods of nutritional biochemistry V3: With applications and interpretations. Elsevier.
4. Champe, P. C., Harvey, R. A., & Ferrier, D. R. (2005). Biochemistry. Lippincott Williams & Wilkins
5. Lieberman, M., & Ricer, R. E. (2009). Lippincott's Illustrated Q&A Review of Biochemistry. Lippincott Williams & Wilkins.

E-LEARNING RESOURCES

- <https://www.udemy.com/share/1027yA/>
- <https://www.classcentral.com/course/swayam-biochemistry-5229>
- <https://www.classcentral.com/course/edx-biochemistry-biomolecules-methods-and-mechanisms-12585>
- <https://www.classcentral.com/course/swayam-experimental-biochemistry-12909>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	M	M	L	M	S	S	M	M
CO2	S	M	M	M	L	S	S	S	M	M
CO3	L	L	S	M	M	M	M	L	S	M
CO4	S	M	M	M	L	L	M	M	S	M
CO5	S	S	M	M	L	L	S	S	M	M

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	2	2
CO2	2	2	3	2	2
CO3	3	3	2	1	2
CO4	2	2	3	2	3
CO5	3	3	3	3	3
Weightage	12	13	14	10	12
Weighted percentage (rounded off) of Course contribution to Pos	2.4	2.6	2.	2	2.4

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: II	Discipline Specific Elective Course 4 A			COURSE CODE: P23DN07	
TITLE OF THE COURSE: TRENDS AND ISSUE IN HUMAN DEVELOPMENT					
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE FO THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need	✓	Entrepreneurship Oriented	✓	Addresses Gender Sensitization	✓
Relevant to Regional need	✓	Skill Development Oriented	✓	Addresses Environment and Sustainability	✓
Relevant to Local need	✓			Addresses Human Values	✓
LEARNING OBJECTIVES: To enable the students to :					
1. To develop understanding of all round development of the individual from infancy to adulthood.					
2. To develop skills in achieving positive human relationships.					
UNIT	CONTENT				HOURS
I	How life begins: Conception-Prenatal Development, Pregnancy: Signs and symptoms of Pregnancy, ante-natal care, prenatal influences, Process of birth and types of birth, Postnatal care.				15
II	Growth and Development: Meaning and Principles of growth and Development. Basic concepts of development- maturation and learning, sensitive periods, individual differences, nature-nurture issues. Physical and motor, emotional, social and intellectual development during infancy and babyhood, Care during babyhood-feeding, weaning, clothing, immunization				15
III	Physical and motor development, emotional, social, intellectual development and developmental tasks during early and late childhood, Play behavior in children, early childhood education, early socialization, parenting and cultural processes, childhood illnesses, communicable diseases, deficiency diseases and other illnesses.				15
IV	Physical and motor, emotional, social, intellectual and moral development during adolescence, needs of children-Language Development- Perceptual, conceptual, common behavior problems, habits and habit formation. Adulthood- Characteristics and development, Old age-Characteristics, changes and problems				15
V	Preschool education; meaning, objectives, importance, types and Programme of a Preschool, Preschool building, (surroundings, site, plan) play equipment-selection of equipment, characteristics of preschool teacher. Children with special needs -definition, classification-physically handicapped, hearing impaired, visually impaired, speech impaired, mentally handicapped, gifted, emotionally and socially maladjusted.				15
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	Apply the acquired knowledge on ante, pre and post natal care to real life situations.				

CO2	Connect the milestones of growth and developmental tasks with child rearing practices.
CO3	Integrate the intricacies of early childhood development and behaviour with parenting techniques.
CO4	Promote positive habit formation to solve behaviour problems in late childhood.
CO5	Suggest measures to promote inclusive environment for pre-school education

TEXTBOOK:

1. Hurlock, E.B. (2001), Child development, MCGraw Hill, New York
2. Suriakanthi, A. (1989) Child Development- An Introduction, Kavitha Publications, Gandhigram

REFERENCES:

1. Devadas, R.P. and Jaya, N. (2003), A Textbook on Child Development, Macmillan India Ltd., Delhi,
2. Neil J. Salkind (2004) .An Introduction to theories of Human Development, Saga Publications. New Delhi
3. Dr. S.V. Kal. (2015), Child Psychology and child Guidance, Himalaya Publishing house, Bombay.
4. Dr. Sushma Gupta, (2003), Textbook of Nutrition, child care and Psychology, Kalyani Publisher, New Delhi.
5. Jersild, A.T., Telford, C.W. and Sawrey, J.M. (1975), Child Psychology, Prentice-Hall of India Private Limited, New Delhi

E-LEARNING RESOURCES

- Language development - <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>
- Type of preschool - <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>
- Growth and development - <https://epgp.inflibnet.ac.in/ahl.php?csrno=827>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	M	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: II	Discipline Specific Elective Course 4 B			COURSE CODE: P23DN08	
TITLE OF THE COURSE: DEVELOPMENTAL DISABILITIES					
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need	✓	Entrepreneurship Oriented	✓	Addresses Gender Sensitization	✓
Relevant to Regional need	✓	Skill Development Oriented	✓	Addresses Environment and Sustainability	✓
Relevant to Local need	✓			Addresses Human Values	✓
LEARNING OBJECTIVES: To enable the students to :					
1. To develop in students the significance of children's social and ecological contexts with in which developmental disabilities occur.					
2. To provide knowledge of definitions, etiology, diagnosis, and assessment of childhood disabilities and to create an understanding of the approaches and practices for inclusion and empowerment of children and families					
UNIT	CONTENT				HOURS
I	Introduction to disability – Concepts and meaning, various frameworks of disability- biomedical, social, legal and political (rights perspective)				15
II	Types of impairments and disabilities, Definitions, classification, identification and assessment related to disabilities as defined by the Rights of Persons with Disabilities Act 2016				15
III	Psychosocial ,Biological Causes of Developmental Disabilities, Characteristics of Mild and Severe Intellectual Disabilities, Developmental Disabilities through the life span				15
IV	Care, education and intervention for children and adolescents for development and inclusion Prevention of disabilities, Care and intervention approaches, Education, Therapeutic strategies				15
V	Role of family: Child and the family, parents, siblings, grandparents; family empowerment, Inclusive education: Role of school, curricular adaptations, teaching strategies, materials and resources; special and inclusive education, Role of community.				15
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	The student will understand conceptual approaches to developmental disabilities.				
CO2	The student will acquire knowledge of definitions, etiology, diagnosis, and assessment of childhood disabilities				
CO3	The student will understand psychological, biological causes of development disabilities and characteristics of mild and serve intellectual disabilities.				
CO4	The student will understand the prevention of disabilities care and intervention approaches, education and therapeutic strategies.				
CO5	The student will acquire knowledge of the family, community and education will empower the disability children				
TEXTBOOK:					
1. Dempsey, I., Foreman, P., Sharma, N., Khanna, D., &Arora, P. (2001). Correlates of Parental Empowerment in Families with a Member with a Disability in Australia and India. Developmental Disabilities Bulletin, 29(2),113-131.					

REFERENCES:										
1. Bailey, M. & Wolery, M. (1992). Teaching Infants and Preschoolers with Disabilities. New York: Macmillan.										
2. Baquer, A. (1994). Disabled, Disablement, Diabolism. New Delhi: Voluntary Health Association of India.										
3. Dempsey, I. (1996). Facilitating Empowerment in Families with a Member with a Disability. Developmental Disabilities Bulletin, 24(2), 1-19.										
4. Dempsey, I., Foreman, P., Sharma, N., Khanna, D., & Arora, P. (2001). Correlates of Parental Empowerment in Families with a Member with a Disability in Australia and India. Developmental Disabilities Bulletin, 29(2), 113-131.										
5. Dunst, C. J. (1985). Rethinking Early Intervention. Analysis and Intervention. Developmental Disabilities, 5, 165-201.										
6. Dunst, C. J., Trivette, C. M., & Deal, A.G. (1988). Enabling and Empowering Families. Cambridge, MA: Brookline Books.										
7. Hardman, M.L., Drew, C.J., and Egan, M.W. (2005). Human Exceptionality: Society, School and Family. Boston: Allyn and Bacon.										
8. Karanth, P. and Rozario, J. (2003). Learning Disabilities in India. New Delhi: Sage.										
9. Munford, R. and Sanders, J. (Eds.) (2003). Making a Difference in Families: Research that Creates Change. New South Wales, Australia: Allen & Unwin.										
10. Pandey, R. S., & Advani, L. (1996). Perspectives in Disability and Rehabilitation. New Delhi: Vikas Publishing House										
11. Ysseldyke, J.E and Algozzine, B. (1998). Special Education: A Practical Approach for Teachers. New Delhi: Kanishka.										
E-LEARNING RESOURCES										
• https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=8x0nJkh/R0vHkX1U70Z/CQ==										
• https://vikaspedia.in/education/parents-corner/guidelines-for-parents-of-children-with-disabilities/types-of-disabilities										
• http://ecoursesonline.iasri.res.in/course/view.php?id=624										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	S	M	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	3	3	3	3	3					
CO4	3	3	3	3	3					
CO5	3	3	3	3	3					
Weightage	15	15	15	15	15					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III	Discipline Specific Elective Course 5 A			COURSE CODE: P23DN09	
TITLE OF THE COURSE: HOME SCIENCE EXTENSION EDUCATION AND COMMUNICATION					
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need	✓	Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need	✓			Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. To obtain necessary skills in extension teaching and field work					
2. To study the existing organizations at village and block levels.					
3. To know the role of extension workers in planning programmes for the community.					
UNIT	CONTENT				HOURS
I	Extension Education — Concept, aim, Philosophy and Principles of Extension education. Extension Education and its relationship with other Social Sciences. Home science extension - Meaning, Objectives and role of Home Science Extension in national development.				15
II	Administrative setup for rural development - Central, State, District, Block and village level. Extension personnel working at block level, role and functions of women extension workers, qualities of an extension worker, training women extension workers.				15
III	Communication and Extension - Approaches for development. Advantages - Individual, Group and mass approaches, Motivation, Methods of extension teaching, Teaching tools, Difference in methods of extension and formal education, Direct contact, demonstration method. Audio visual aids-visual aids, audio aids and other teaching Aids. Communication through written words and satellite.				15
IV	Programme Planning, Meaning, and principles, developing a plan of work - Definition, analysis of the concept, Importance and scope of Extension. Steps in Programming evaluation-Criteria for judging the plan of the work.				15
V	Community Development Programme - meaning, objectives, types and principles of community development; Programmes in India - Socio-Economic programmes — IRDP, TRYSEM, DWCRA, ICDS, Social forestry. Community Organization - meaning, scope, role and characteristics of Community Organisation - Women's Club, Youth Club. Extension Training Institution — Meaning, need and importance; principles of training institutions-KVIC, RETC, NYK.				15
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	Apply the principles and philosophies of extension education to society.				
CO2	Exhibit the qualities and responsibilities of women extension workers.				
CO3	Display the individual, group and mass approaches for extension and communication.				
CO4	Plan and execute community nutrition programmes for extension activities.				

CO5	Compare the objectives and implementation of community development programmes in india.									
CO6	Act as change agents in extending health and nutrition knowledge to the community.									
TEXTBOOK:										
1. Adivi Reddy A. (1999). Extension Education , BapatlaSree Lakshmi Press.										
2. Serene Shekhar, (Gote) and Santosh Ahlawat, (2013). Text Book of Home Science Extension Education , New Delhi: Daya Publishing House.										
REFERENCES:										
1. Pankajam, G. (2000). Extension – Third Dimension of Education , New Delhi: Gyan Publishing House.										
2. Adivi Reddy A. (1999). Extension Education ,BapatlaSree Lakshmi Press.										
3. Supe, S.V. (1983). An Introduction to Extension Education , New Delhi : Oxford AD IBH Publishing Company.										
4. Dahama, O.P. and Bhatnagar, O.P. (1985). Education and communication for development , New Delhi: Oxford IBH publishing company.										
E-LEARNING RESOURCES										
• http://ecoursesonline.iasri.res.in/course/view.php?id=691										
• https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=8x0nJkh/R0vHkX1U70Z/CQ==										
• https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=8x0nJkh/R0vHkX1U70Z/CQ==										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	L	M	M	M
CO2	S	S	S	M	S	M	L	M	M	M
CO3	S	S	S	S	S	M	L	S	L	S
CO4	S	S	S	M	S	M	L	S	L	M
CO5	S	S	S	M	S	M	L	M	M	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	2	3	3					
CO2	3	2	3	3	3					
CO3	2	3	3	3	3					
CO4	3	3	3	3	2					
CO5	3	3	3	3	3					
Weightage	14	14	14	15	14					
Weighted percentage (rounded off) of Course contribution to Pos	2.8	2.8	2.8	3	2.8					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III	Discipline Specific Elective Course 5 B			COURSE CODE: P23DN10	
TITLE OF THE COURSE: PUBLIC HEALTH NUTRITION					
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	✓
LEARNING OBJECTIVES: To enable the students to :					
1. To understand the concept of Public Nutrition					
2. To enable students to develop a holistic knowledge base on the Importance of understanding the nutritional problems and their prevention					
3. To understand the nutritional problems during emergencies/disasters as well as the strategies to tackle them					
4. To develop skills in preparation of communication aids and planning nutrition education programme for the community.					
UNIT	CONTENT				HOURS
I	CONCEPT OF PUBLIC NUTRITION Nutrition and Health -National Development, .Relationship between health and nutrition, National Health Care Delivery System, Determinants of Health Status, Indicators of Health, Nutritional deficiency disorders in India, Current status and Recent updates PEM ,VADD , Anemia, Nutrition and infection, Role of public nutritionists in the health care delivery system				15
II	ASSESSMENT OF NUTRITIONAL STATUS Direct methods: Direct methods of Nutritional anthropometry biochemical, clinical and dietary assessment and Growth chart, plotting of growth charts, growth monitoring and promotion (GMP); Indirect methods: Demography, population dynamics and vital health statistics and their health implication, Food balance sheets, recent nutritional assessment methods MUST, SOA, SOAP , Status of health and nutrition, Causes of malnutrition, Vicious cycle of malnutrition Basic concepts of Nutritional Surveillance, Millennium Development Goals (MDG)				15
III	STRATEGIES FOR IMPROVING NUTRITION STATUS AND HEALTH STATUS OF THE COMMUNITY Immunization Awareness - types of vaccines, importance and schedule of immunisation, Measures to overcome malnutrition , Food Security- Concepts, Meaning and significance, Food security act , Food fortification and Food enrichment, Genetic improvement of foods. National nutrition policy and action plan , Nutrition intervention programmes Mid-day Meal Programme, Sawadi Feeding Programme , Public Distribution System (PDS) Antyodaya Anna Yojana (AAY) Annapurna Scheme, Food for Work Programme, Special Nutrition Programme, Nutrition Intervention Schemes and prophylaxis programmes: Vitamin A, Anemia, Goiter, Environmental sanitation and health				15

IV	ORGANIZATION TO COMBAT MALNUTRITION AND NUTRITION DURING EMERGENCIES AND SPECIAL CONDITIONS International organizations concerned with food and nutrition, FAO, WHO, UNICEF, CARE, AFPRO, CWS, CRS, World Bank; National organization – NIN, CFTRI, ICMR, ICAR, CFTRI, CHEB, NIPCCD, DFRL, NGOs; Nutritional deficiency diseases in emergencies- Major and micro nutrient. Control of communicable diseases in emergencies- Factors responsible for spread of communicable disease, mode of transmission and prevention of chicken pox, malaria, swine flu, tuberculosis, COVID-19 and AIDS.	15
V	NUTRITION EDUCATION AND EXTENSION FOR BETTER NUTRITION Nutrition education for the community-Objectives, Definition and importance of nutrition education to the community, Principles of planning, executing and evaluating nutrition education programmes; Development and Use of AV aids in Public Nutrition Education- Charts. Pie chart, posters, flannel board, models.	15
COURSE OUTCOMES: After successful completion of the course, the student will be able to:		
CO1	Understand the role of nutrition for national development	
CO2	Acquire skill in assessment of Nutritional status of Community	
CO3	Gain in-depth knowledge on Strategies for Improving nutrition status and health status of the community	
CO4	Evaluate the organization in combating Malnutrition	
CO5	Understand and apply Nutrition education for the community welfare	
TEXTBOOK:		
<ol style="list-style-type: none"> 1. Park K (2012) Text Hook of Preventive and Social medicine M/s Banarsidas Bhanot Publishers, Jabalpur. 22nd Edition 2. Buryatapa Das (2020) Textbook of Community Nutrition, Academic Publishers, Kolkata (2017) 3. Srilakshmi B. (2017). Nutrition Science. New Age International (P) Ltd. Publishers. 4. Connolly, MA. (2005) Communicable Disease Control in Emergencies: WHO, WHO Library Cataloguing in-Publication Dan 5. WHO (2002) The management of Nutrition in Major Emergmises Published by AITES Publishers New Delhi 		
REFERENCES:		
<ol style="list-style-type: none"> 1. Muthuk (2014) A Short Book of Public Health, Jaypee Brothers Mocal Publishers 2th Edition. 2. Di Sao B (2018): Principles of Community Medicine, ATTES Publishers Info Edition . 3. Scott M. Smith, Sera R. Zwart and Martina Heer (2014) Human Adaptation to Spion Fight The role of nuntion NASA Publication 4. Owen AY. and Frackle RT, (2002) Marision in the Community The Art of Delivering Services Times Miro/Mosby, 2nd Edition 5. Carolyn D. Berdanser Johanna T: Dwyer David Haber (2014) Handbook of Mumtion and Foot, CRC Press, New York. Third Edition 		
E-LEARNING RESOURCES		
<input type="checkbox"/> https://apps.who.int/irishttp://egyankosh.ac.in/bitstream/123456789/33312/1/Unit-18.pdfhttps://www.seafarerswelfare.org/assets/documents/ship/SHIP-HealthyFood_A5_20151209_LR.pdf		

MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	S	S	S	S	S
CO2	S	S	S	S	S	M	L	S	S	S
CO3	M	S	S	S	S	S	S	S	S	S
CO4	S	M	S	S	S	S	S	S	M	S
CO5	S	S	L	S	S	S	S	S	S	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	2	3	3					
CO2	3	2	3	3	3					
CO3	2	3	3	3	3					
CO4	3	3	3	3	2					
CO5	3	3	3	3	3					
Weightage	14	14	14	15	14					
Weighted percentage (rounded off) of Course contribution to Pos	2.8	2.8	2.8	3	2.8					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: IV	Discipline Specific Elective Course 6 A			COURSE CODE: P23DN11	
TITLE OF THE COURSE: TEXTILES AND CLOTHING					
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Ethics	Professional
Relevant to National need	✓	Entrepreneurship Oriented	✓	Addresses Sensitization	Gender
Relevant to Regional need	✓	Skill Development Oriented	✓	Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. Understand the textile fibers, their properties and uses					
2. Impart knowledge on spinning, fabric production					
3. Acquire knowledge on the finishing, dyeing, printing and laundering processes					
4. Know the selection and care of clothing					
UNIT	CONTENT				HOURS
I	Fiber – Definition, Meaning, Classification of Textiles Fibers - Natural fiber - cotton, flax, silk, wool - origin, manufacturing process, properties and end uses. Minor Textile fibers, properties and uses. Synthetic Fibers - Nylon, Dacron, Orlon and Acrylic - origin, manufacturing process, properties and end uses.				15
II	Spinning and Weaving: Spinning – Definition, meaning, types of spinning. Yarn and Twist – Definition, counts of yarns. Meaning and Classification of natural, manmade and Novelty yarns. Blends and Mixtures. Weaving - Definition, Meaning, parts and functions of simple loom. Types of weaves - Basic weaves and fancy weaves. Non - woven - Classification of non-woven fabric - Bonding and Felting. Knitting – Definition, classification of knitting, braiding. Types of laces.				15
III	Wet processing - Importance of wet processing of textiles - Fiber, Yarn and Fabric processing. Basic finishes - Singeing, Desizing, Scouring, Bleaching, Calendering, Mercerizing, Napping, Sanforizing, Special finishes, finishes suitable to Natural and manmade fibers.				15
IV	Dyeing -Definition, Meaning and concept of Dyes, Classification of dyes, Methods of Dyeing. Printing – Definition, Methods of printing -Block printing, Roller, Screen, Resist Printing – Batik, Tie and Dye, stencil.				15
V	Laundry – Method of washing, laundry agents, Laundry finishing of different fabrics, Clothing budget – selection, factors influencing the choice of clothing materials for different age groups. Stain removal – types, principles and techniques				15

COURSE OUTCOMES: After successful completion of the course, the student will be able to:										
CO1	Classify textile fibres based on origin, properties and uses.									
CO2	Familiarize with spinning and weaving									
CO3	Identify fabric processing and finishing methods.									
CO4	Exhibit skills in identification, selection and care of clothing for different age groups.									
CO5	Choose appropriate methods of dyeing and printing of textiles and clothing.									
TEXTBOOK:										
1. Dantyaagi,S. (1996). Fundamentals of Textiles and Their Care , New Delhi. Orient Longman limited										
REFERENCES:										
1. E.P.G. Gohl, L.D. Velensky, (2003). Textile Science , New Delhi :CBS Publishers and Distributors, New Delhi										
2. AJ. Hall. (2004). The standard hand book of Textiles , Wood head Publishing 8 th edition.										
3. P.V. Vidyasagar (2005). Hand Book of Textiles , Mittal Publications.										
4. Sara J. Kadolph (2007). Textiles , Prentice Hall, 10 th edition.										
E-LEARNING RESOURCES										
➤ Textile Finishing http://vidyamitra.inflibnet.ac.in/index.php/home/subjects?domain=Social+Sciences&subdomain=Home+Science										
➤ Textile fiber - https://epgp.inflibnet.ac.in/ahl.php?csno=827										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	M	M	M	M	M	M	M	M	M	M
CO4	M	M	M	M	M	M	M	M	M	M
CO5	S	S	S	M	S	M	S	S	M	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	2	2	2	2	2					
CO4	2	2	2	2	2					
CO5	3	3	3	3	3					
Weightage	13	13	13	13	13					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: IV	Discipline Specific Elective Course 6 B		COURSE CODE: P23DN12		
TITLE OF THE COURSE: TECHNICAL TEXTILES					
HOURS OF INSTRUCTION PER WEEK: 5	CREDITS: 3	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need		Entrepreneurship Oriented	✓	Addresses Gender Sensitization	
Relevant to Regional need	✓	Skill Development Oriented	✓	Addresses Environment and Sustainability	✓
Relevant to Local need				Addresses Human Values	✓
LEARNING OBJECTIVES: To enable the students to :					
1.Understand the Techniques of fibers, their properties and uses					
2.Impart knowledge on spinning, fabric production					
3. Acquire knowledge on safety, chemical and mechanical productivity of textiles					
UNIT	CONTENT			HOURS	
I	Classification of Technical Textiles & Its Economy, Military and Defense textiles. Medical textiles – Introduction – materials used in bio-textiles – classification of medical textiles – textiles for implantation – non-implantable textiles – textiles for extra corporeal (biomedical) – Health care and hygiene products			15	
II	Geotextiles, Filtration Textile, Sports & creation textiles and water proof breathable fabrics – Sports and creation textiles – Introduction sports uniforms – camping and hiking – base ball – tennis – foot ball – golf & hockey – bikes – marine products – textiles in sports surfaces –hot air ballooning. Water proof breathable fabrics – Introduction – types, assessment techniques and performance of water proof breathable fabrics.			15	
III	Safety protective textiles and transportation textiles. Introduction, high temp. textiles – flame resistant protective clothings, chemical, protective clothing's (CPC)Mechanical protection, electrical protective clothings-clean room textiles, radiation protection, thermal insulation, high visibility textiles.			15	
IV	Transportation textiles : Types – airbags – seat belts – automotive interior and exterior trim – truck and car covers – belts, hoses and filters in cars – textiles for aircrafts – textiles & structural elements in transport vehicles – Inflatable products used in transportation			15	
V	Colouration and finishing of technical textiles – Introduction – object of colouration colouration of technical textiles – dyestuffs and pigments – mass colouration, conventional dyeing and printing of technical textiles. Smart Textiles – Concept of phase change materials like temperature sensitive, Ph Sensitive, photo sensitive etc., Applications of phase change materials in textiles. Concept of shape memory polymers and their applications in textiles. Use of electronics in clothings			15	
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					

CO1	Classify textile fibres based on origin, properties and uses.									
CO2	Familiarize safety, chemical and mechanical productivity of textiles									
CO3	Identify fabric processing and finishing methods.									
CO4	Exhibit skills in identification, selection and care of clothing for different age groups.									
CO5	Choose appropriate methods of dyeing and printing of textiles and clothing.									
TEXTBOOK:										
1. Dantiyagi, S. (1996). Fundamentals of Textiles and Their Care , New Delhi. Orient Longman limited										
REFERENCES:										
1. E.P.G. Gohl, L.D. Velensky, (2003). Textile Science , New Delhi :CBS Publishers and Distributors, New Delhi										
2. AJ. Hall. (2004). The standard hand book of Textiles , Wood head Publishing 8 th edition.										
3. P.V. Vidyasagar (2005). Hand Book of Textiles , Mittal Publications.										
4. Sara J. Kadolph (2007). Textiles , Prentice Hall, 10 th edition.										
E-LEARNING RESOURCES										
➤ Textile Finishing http://vidyamitra.inflibnet.ac.in/index.php/home/subjects?domain=Social+Sciences&subdomain=Home+Science										
➤ Textile fiber - https://epgp.inflibnet.ac.in/ahl.php?csrno=827										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	M	M	M	M	M	M	M	M	M	M
CO4	M	M	M	M	M	M	M	M	M	M
CO5	S	S	S	M	S	M	S	S	M	M
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	2	2	2	2	2					
CO4	2	2	2	2	2					
CO5	3	3	3	3	3					
Weightage	13	13	13	13	13					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: II		Skill Enhancement Course 1		COURSE CODE: P23SEN1	
TITLE OF THE COURSE: EARLY CHILDHOOD CARE AND EDUCATION					
HOURS OF INSTRUCTION PER WEEK: 2		CREDITS: 2	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need	✓	Entrepreneurship Oriented	✓	Addresses Gender Sensitization	✓
Relevant to Regional need	✓	Skill Development Oriented	✓	Addresses Environment and Sustainability	✓
Relevant to Local need	✓			Addresses Human Values	✓
LEARNING OBJECTIVES: To enable the students to :					
1. To know the importance of early childhood years and significance of intervention programs for early childhood development.					
2. To develop awareness of ECCE programs in different contexts in India.					
UNIT	CONTENT				HOURS
I	Introduction to Early Childhood Care and Education - Concept, meaning, scope and significance of ECCE, Aims and objectives of ECCE– General and specific, Types of ECCE service delivery – Formal and informal; Government funded, Philosophy oriented, Laboratory nursery school, Franchise oriented				6
II	ECCE in India -History of Early Childhood Care and Education in pre and post-independence India. Contributions of educational philosophers: global and Indian perspective- views of educationists and philosophers: Rousseau, Froebel, Montessori, Sri Aurobindo, Tagore, Mahatma Gandhi, Recent Policies in ECCE-Variou Education commissions of India : National Policy on Education (1986) Programmes / schemes and innovations in ECCE – ICDS, Balwadis, mobile crèches, National Curriculum Framework 2005, National Policy on Early Childhood Care and Education 2013, Curriculum Framework for Early Childhood Care and Education 2012/2013 2.7 New Education Policy, 2020				6
III	Early Childhood Curriculum -Definition and concept of curriculum, Curriculum approaches – subject centered, learner centered, community centered, Developmentally Appropriate Practice (DAP) – definition and core considerations, Components and essential features of developmentally appropriate ECCE curriculum				6
IV	Play and its importance -Play and its characteristics, Theories of play- surplus energy theory, recreational theory, recapitulation theory, Stages and types of play, Role of play in overall development of children, Teacher's role in creating environment and promoting play, Use of play way approach in the curriculum for young children.				6
V	Innovative ECCE Models- Indian Models - Nutan Bal Shikshan Sangh, Daxinamurti Bal Mandir, Gram Bal Shikshan Kendra, Lok Jumbish Program, Mirambika, Rishi Valley, Foreign Models -High/Scope Model, USA, Reggio Emilia Approach, Italy , <i>TeWhāriki</i> Model, New Zealand, The ECEC Model, Sweden, SetoGurans National Child Development Services, Nepal				6

COURSE OUTCOMES: After successful completion of the course, the student will be able to:										
CO1	Explain the importance of early childhood years and significance of intervention programs for early childhood development.									
CO2	Describe the historical developments - global and Indian including the current programs and policies in ECCE.									
CO3	Analyze curriculum models and pedagogical approaches in early childhood education.									
CO4	Identify various indigenous (Indian) models of Early Childhood Education and apply it to understand the current early childhood research, theoretical trends and issues.									
CO5	Create developmentally appropriate programs for young children.									
TEXTBOOK:										
1. Hurlock, E.B. (2001), Child development, McGraw Hill, New York										
2. Suriakanthi, A. (1989) Child Development- An Introduction, Kavitha Publications, Gandhigram										
REFERENCES:										
1. Devadas, R.P. and Jaya, N. (2003), A Textbook on Child Development, Macmillan India Ltd., Delhi,										
2. Neil J. Salkind (2004) .An Introduction to theories of Human Development, Saga Publications. New Delhi										
3. Dr. S.V. Kal. (2015),Child Psychology and child Guidance, Himalaya Publishing house, Bombay.										
4. Dr. Sushma Gupta, (2003), Textbook of Nutrition, child care and Psychology, Kalyani Publisher, New Delhi.										
5. Jersild, A.T., Telford, C.W. and Sawrey, J.M. (1975), Child Psychology, Prentice-Hall of India Private Limited, New Delhi										
E-LEARNING RESOURCES										
➤ Language development - https://epgp.inflibnet.ac.in/ahl.php?csrno=827										
➤ Type of preschool - https://epgp.inflibnet.ac.in/ahl.php?csrno=827										
➤ Growth and development - https://epgp.inflibnet.ac.in/ahl.php?csrno=827										
MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	M	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	3	3	3	2	3					
CO4	3	3	3	3	3					
CO5	3	3	3	3	3					
Weightage	15	15	14	15	15					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III	Skill Enhancement Course 2			COURSE CODE: P23SEN2	
TITLE OF THE COURSE: DIET AND NUTRITION COUNSELLING					
HOURS OF INSTRUCTION PER WEEK: 2	CREDITS: 2	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
1. List out the steps in diet counselling process.					
2. Understand and apply the counselling skills in establishing rapport with patients.					
3. Analyze the nutritional needs of the patients after assessing the nutritional status.					
4. Evaluate the improvement of the patient after counselling.					
5. Create awareness among the patients to use the computer and mobile applications.					
UNIT	CONTENT				HOURS
I	Introduction to Dietician and IDA Dietician – Definition and Educational qualification, Types of Dietician – Clinical, academic, research, specific, food service, public/ Community, industrial, consultant, sports, business etc. Qualities, Role and responsibilities of Dietician, IDA – Objectives, membership; Registered Dietician – eligibility for R.D. exam				6
II	Diet Counseling/ Nutrition Care Process (NCP) Diet Counseling/ Nutrition Care Process (NCP) – Definition, importance, purposes and ethical principles, Steps in Diet counseling Process; Documentation – SOAP, Counseling Skills for a Dietitian; Tools of Dietitian; Guidelines for effective Counseling				6
III	Counseling Approaches Counseling Approaches – Meaning, Developing a counselling approach, Different Counselling Approaches – Psychoanalytical, behavioural, humanistic, Patient centered GALIDRAA approaches etc.				6
IV	Nutrition Education Nutrition Education – Meaning and importance, Teaching Methods and aids used for Nutrition Education in the Community, Teaching Methods – Lecture, Group discussion, Role Play, Story telling, Demonstrations, Nutrition Exhibition, Marathon race etc. Teaching Aids – Posters, pictures, models, charts, flash cards etc. Teaching Materials for patients – Models, pamphlets, leaflets, booklets etc.				6
V	Use of Modern Technology in Diet Counselling Use of Computers in Diet Counselling and Nutrition Education, Use of Computer Applications and Mobile Applications in Diet Counselling and Nutrition Education; Computer and mobile applications available for Diet Counselling, Pre requisites for setting up a Diet Counselling Center.				6
COURSE OUTCOMES: After successful completion of the course, the student will be able to:					
CO1	Define Dietician and recall the qualities, role and responsibilities of a dietician				
CO2	Describes or explains the steps in diet and nutrition counseling				

CO3	Uses the skills in assessment of nutritional status of normal and diseased people
CO4	Relate practical skills in dietary counseling of various health and disease conditions
CO5	Develop teaching aids and uses computer applications and smart phones in diet counseling

TEXTBOOK:

1. Rekha Sharma , Diet Management, Elsevier Publication, 4th Edition
2. Meenakshi Bajaj , Diet Metrics Hand Book Of Food Exchanges, Notion Press, 1st Edition
3. Indian Dietetic Association (2011) , Clinical Dietetics Manual, Elite Publishing House Pvt Ltd, ISBN: 9788193576649
4. Sunita Malhotra, Dietetics In Practice: A Handbook, New Era, Chandigarh, 2nd Revised Edition, ISBN: 978-8129002020
5. Luxita Sharma, Clinical Studies And Diet Plans For Common Diseases Case Studies, Wiley India, ISBN: 9789389872781

REFERENCES:

1. Srilakshmi, B. "Dietetics", 8th edition, 2018, New Age International Publishes, New Delhi
2. Corinne H. Robinson, Marilyn R. Lawler, "Normal & Therapeutic Nutrition" 17th edition 1986
3. Shubangini A Joshi, "Nutrition & Dietetics" 5th edition, 2022, McGraw hill Education India Pvt.Ltd.
4. Judy Gable "Counselling Skills for Dietitians" 2nd edition, 2007, Black Well Publishing Ltd, Oxford, UK
5. "Clinical and Therapeutic Nutrition M.Sc." published by directorate of Distance Education, Swami Vivekanand Subharti University, Meerut, U.P.
6. Linda Snetselaar "Nutrition Counselling Skills for the Nutrition Care Process" 4th edition, 2021, Jane and Bartlett Publishers, London.

E-LEARNING RESOURCES

- <http://ecoursesonline.iasri.res.in/course/view.php?id=181>
- https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000444FN/P000559/M012555/ET/1527077724F14TN38Q1.pdf

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO2	S	S	S	S	S	S	S	S	M	S
CO3	S	S	S	S	M	S	S	S	M	S
CO4	S	S	S	S	M	S	S	S	M	S
CO5	S	S	S	S	M	S	S	S	M	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: IV	Skill Enhancement Course 3			COURSE CODE: P23SEN3	
TITLE OF THE COURSE: HOMESCIENCE FOR COMPETITIVE EXAMINATIONS					
HOURS OF INSTRUCTION PER WEEK: 3	CREDITS: 2	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100	
NATURE OF THE COURSE					
Relevant to Global need		Employability Oriented	✓	Addresses Professional Ethics	
Relevant to National need	✓	Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented		Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
<ul style="list-style-type: none"> • Overview the general concepts of Home Science and its branches • Inculcate competencies in various disciplines of Home Science targeted towards competitive examinations 					
UNIT	CONTENT				HOURS
I	Family Studies and Child Development Family Studies - Dynamics of Marriage and Family Relationships, Domestic Violence, Marital Disharmony, Community Education, Family Studies, Family Welfare, Human Rights and Gender rules. Child Development - Theories of human Development and behaviour. Influence of family, peers, school, community, culture on personality development. Children at risk: child labour, street children, children of destitute, orphans, child abuse and trafficking.				9
II	Resource Management and Interior Decoration Resource Management - Function, need, human resource development: challenges, function, manpower planning, training need assessment, training methodologies, training evaluation. Interior Decoration - Housing and environment: building materials - impact on environment, green rating system, energy efficiency in buildings, energy auditing, indices of indoor comfort. Product design: design thinking process, diffusion and innovation, design communication, ergonomic consideration. Ergonomics: significance, scope, anthropometry, man, machine, environment relationship, factors affecting physiological cost of work, body mechanics, functional Design of workplace, time and motion study, energy studies.				9
III	Textiles and Apparel Designing Textiles - Textiles terminologies: fibre, yarn, weave, fabric etc., Classification of fibres, yarns and weaves, identification of fibres and weaves. Traditionally textiles of India: embroidered textiles, printed textiles, woven textiles, dyed textiles of various regions in India. Identification on the basis of fibre content, technique, motif, colour and design. Apparel Designing - body measurements, equipment and tools for manufacturing, patterns Making, quality testing for apparel, care and maintenance of clothes. Fashion: fashion Theories and adoption, fashion forecasting. Designing and principles of design, selection of clothing for different age groups.				9
IV	Communication Role of communication in development: need and importance, development journalism, writing for development- print, radio, television and internet. Traditional, modern and new media for development: folk forms of songs, arts, dance, theater, puppetry, advertisement, cinema, ICTs for development- community. Radio, participatory video, social media and mobile phones.				9
V	General Concept Of Food Safety International Food Control System/Laws, Regulations and Standards/Guidelines with regard to food safety - overview of CODEX Alimentarius commission (history, members, standard setting and advisory mechanisms: JECFA, JEMRA, JMPR), WTO agreement (SPS/TBT); Promoting				9

	Safe and Wholesome Food - RUCO, Clean street food hub; Food Safety Ecosystem in India - Detect adulteration with rapid test (DART), Blissful hygienic offering to god (BHOG), regulations related to nutraceutical food for special dietary uses, Provision on organic foods and non specified food/food ingredients, Central advisory committee and scientific committee/ panel, food import clearance system, General Principles of Food Safety Management System - HACCP, GMP, GAP, GHP, GLP and BAP.	
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COURSE OUTCOMES: After successful completion of the course, the student will be able to:

CO1	State the dynamics of family relationships and differentiate the theories of human development
CO2	Enumerate the functions and methodologies of resource management, interior decoration and work place design
CO3	Classify the types of fibre, yam, weave and design apparel for different age groups
CO4	Identify the types of communication and ICT for extension activities
CO5	Apply the good safety regulations and standards in food safety management

TEXTBOOK:

1. Hurlock, E B (2001), Child Development, McGraw Hill Publication, New York.
2. Premlatha Mullick (2012), Textbook of Home Science, Kalyani Publishers, New Delhi.

REFERENCES:

1. Nandhini Sharma, Kanika Khandelwal, Renu Kulshreshtha, Monika Manjumdar (2021): UGC/NET/JRF/SET, Home Science paper-2, Arihant publications (INDIA) limited.
2. KVS Madaan (2022), UGC/NET/SET/JRF, Teaching and Research Aptitude Paper-I, Pearson India Education Services Pvt. Ltd, India.
3. Dr. K. Sathishkumar, P. Sankari (2022): MRB - Food Safety Officer, Sakthi Publishing House, Chennai.
4. Deepak Mudgil, Sheweta Barack Mudgil, Objective Food Science & Technology, Scientific Publishers, India.

E-LEARNING RESOURCES

- <https://egyankosh.ac.in/bitstream/123456789/23321/1/Unit-2.pdf>
- <https://egyankosh.ac.in/bitstream/123456789/59142/1/Unit3.pdf>
- <https://egyankosh.ac.in/bitstream/123456789/61755/3/Block-1.pdf>
- <http://ecoursesonline.iasri.res.in/course/view.php?id=696>
- <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA==>

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	L	M	M	M	S	S	S	M	M
CO2	M	S	L	L	S	S	S	M	M	M
CO3	M	S	M	M	M	M	M	M	M	M
CO4	M	M	L	L	M	S	M	M	L	L
CO5	M	M	L	L	M	M	M	S	S	S

* S-Strong, M-Medium, L-Low

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	2	1	2	2
CO2	3	2	2	2	3
CO3	3	3	2	2	2
CO4	2	2	2	2	2
CO5	2	2	3	2	3
Weightage	12	11	10	10	12
Weighted percentage (rounded off) of Course contribution to Pos	2.4	2.2	2	2	2.4

PROGRAMME: M.Sc. HOME SCIENCE					
SEMESTER: III			COURSE CODE: P23SIN1		
TITLE OF THE COURSE: INTERNSHIP/INDUSTRIAL ACTIVITY					
HOURS OF INSTRUCTION PER WEEK:		CREDITS: 2	CIA: 25	EXTERNAL MARKS: 75	TOTAL: 100
NATURE OF THE COURSE					
Relevant to Global need	✓	Employability Oriented	✓	Addresses Professional Ethics	✓
Relevant to National need		Entrepreneurship Oriented		Addresses Gender Sensitization	
Relevant to Regional need		Skill Development Oriented	✓	Addresses Environment and Sustainability	
Relevant to Local need				Addresses Human Values	
LEARNING OBJECTIVES: To enable the students to :					
<ul style="list-style-type: none"> The Internship is committed to preparing graduates in the M.Sc. Home Science Degree to join as dietitians and also to become a Registered Dietitian , with a strong foundation in the theory and application of medical nutrition therapy. 					
COURSE OUTCOMES: On successful completion of the Internship, the student					
CO 1	Learns how a dietary department functions and the specific roles and responsibilities of a dietitian.				
CO 2	Acquires training in nutrition diagnoses of each patient assessed				
CO 3	Demonstrates the ability to implement nutrition care plans; document nutrition care provided maintain internship logbook and monitor outcomes of the nutrition plan				
CO 4	Demonstrates competency in professional presentation, communication and writing skills.				
CO 5	Acquires training in diet counseling, online counseling and group counseling				
Evaluation pattern for Summer Internship shall be as follows:					
Attendance (Mandatory) - 40 marks					
Field Work and Performance - 40 marks					
Report Writing- 20 marks					

MAPPING WITH PROGRAMME OUTCOMES										
CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	S	M	M	S	S
CO2	S	S	S	M	S	S	M	S	S	S
CO3	S	S	S	M	S	S	M	M	S	S
CO4	S	S	S	M	S	S	M	M	S	S
CO5	S	S	S	M	S	S	M	S	S	S
* S-Strong, M-Medium, L-Low										
MAPPING WITH PROGRAMME SPECIFIC OUTCOMES										
CO / PSO	PSO1	PSO2	PSO3	PSO4	PSO5					
CO1	3	3	3	3	3					
CO2	3	3	3	3	3					
CO3	3	3	3	3	3					
CO4	3	3	3	3	3					
CO5	3	3	3	3	3					
Weightage	15	15	15	15	15					
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3					

PROGRAMME: M.Sc. HOME SCIENCE				
SEMESTER: IV		COURSE CODE: P23EAN		
TITLE OF THE COURSE: EXTENSION ACTIVITY				
TOTAL HOURS: -	CREDITS: I	CIA:---	EXTERNAL MARKS: 100	TOTAL: 100
S.NO	CONTENT			
I	Demonstration of low cost locally available nutritious recipes to members of Self Help Groups (SHGs), especially pregnant and lactating women.			
II	Study of functioning of Balwadi and Anganwadi centers.			
III	Assessment of nutritional status of school children and imparting nutrition education.			
IV	Assessment of nutritional status and diet survey of college going girls			
V	Awareness on food hygiene practices to street food vendors			
VI	Introduce the concept of health and nutrition to mentally retarded children			
VII	Formulation and sales of nutritious low cost food products.			
VIII	Awareness generation on causes, symptoms, prevention and treatment of anaemia to adolescent girls.			
IX	Conduct exhibitions on adverse effects of junk foods to college students.			
X	Assessment of nutritional status of college teachers.			
Evaluation pattern for Extension Activity shall be as follows:				
Attendance - 50 marks				
Participation - 25 marks				
Report - 25 marks				