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.

B.Sc. Home Science

(NUTRITION, FOOD SERVICE MANAGEMENT & DIETETICS)

CHOICE-BASED CREDIT SYSTEM

OUTCOME-BASED EDUCATION

SYLLABUS

(For those who joined in 2023 - 2024)

Syllabus for

B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT & DIETETICS)

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SRI MEENAKSHI GOVERNMENT ARTS COLLEGE FOR WOMEN (A), MADURAI-2

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 opportunity 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 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

NAME OF THE PROGRAMME: B.Sc. HOME SCIENCE
(Nutrition, Food Service Management & Dietetics)
ELIGIBILITY FOR ADMISSION: As per DCE norms (Pass in +2 or equivalent exam)

Programme	**B.Sc. Home Science-Nutrition, Food Service Management and Dietetics**
Code	**UHSE 1**
Duration	**3 years (Six Semesters)**
Programme Outcomes (POs)	
PO1	**Disciplinary Knowledge and Skills** Demonstrates theoretical and practical knowledge and understanding in subjects related to Food Science and Nutrition/ Textiles and Clothing/ Resource Management/ Extension and Communication/Human Development and Family Studies
PO2	**Effective Communicator** Is capable of effective communication of subject specific scientific information through oral and written formats using ICT wherever necessary. Explores communication skill set to engage key stakeholders such as the family and community
PO3	**Critical thinking, Analytical reasoning and problem solving** Applies disciplinary knowledge, understanding and transferable skills to the given context. Is capable of identifying and analysing problems and issues and seek solutions to real-life problems
PO4	**Research and Scientific Reasoning** Demonstrates skills in research through collection of relevant qualitative and quantitative data, analysis and interpretation of data using appropriate methodologies for formulating evidence based solutions and arguments
PO5	**Co-operation/ Team Work** Is capable of contributing significantly and working enthusiastically both independently and in a group
PO6	**Digital Literacy** Demonstrates competency in accessing relevant and authentic information and data from electronic media with a motive to learn and synthesize information for academic and extension work presentation; prepare computer aided designs and use specific software
PO7	**Multicultural competence** Recognizes and assesses societal, environmental and cultural issues related to area of study within the local and global context
PO8	**Moral and Ethical awareness / reasoning:** Displays moral responsibility and values; Has a professional approach, is objective, unbiased and truthful in all aspects of work and refrains from unethical practices such as plagiarism, fabrication, falsification, misinterpretation of the data and breaching intellectual property rights
PO9	**Leadership readiness /qualities** Possesses leadership skills, takes initiative, mobilizes resources, has the capacity to lead community based projects and initiatives successfully
PO10	**Lifelong learning** Is capable of staying motivated to be updated consistently with content, concepts, theories, specializations, fields, technologies, books and avenues to meet professional and personal needs at any given instant.

Programme Specific Outcomes (PSOs)	
On successful completion of the programme, the student:	
PSO1	Acquires fundamental knowledge in the core areas of Home Science
PSO2	Develops competency in the application of knowledge in different settings such as family and community
PSO3	Displays skills in oral and written communication for effective dissemination of knowledge gained in a particular field of Home Science to benefit society and mankind
PSO4	Acquires skills that create professionals indifferent fields related to Home Science
PSO5	Can pursue higher education, research, teaching, entrepreneurship or render service in the government, public or corporate sector

Mapping of COs with POs and PSOs

Mapping	1-40%	41-80%	81-100%
Scale	Low	Medium	Strong
Relation	0.0-1.0	1.1-2.0	2.1-3.0
Quality	Poor	Moderate	High
Mean Score of COs = $\frac{\text{Total Value}}{\text{Total No. of POs \&PSOs}}$		Mean Overall Score of COs = $\frac{\text{Total of Mean Score}}{\text{Total No. of COs}}$	

SCHEME FOR INTERNAL ASSESSMENT

Theory: Internal: 25 marks

Practical: Internal: 25 marks

The pattern of internal assessment will be as follows:

Type of Assessment	Marks
Test (Average of two tests)	10 marks
Model Exam	10 marks
Assignments/Group Discussion/ Seminar /Quiz	5 marks
Total	**25 marks**

EXTERNAL ASSESSMENT

Theory: External Exam: Maximum 75 marks

Practical: External Exam: Maximum 75 marks

PASSING MINIMUM

Assessment	Internal	External	Aggregate
Theory	No minimum	35% of 75 (27/75)	40/100
Practical	No minimum	35% of 75 (27/75)	40/100

QUESTION PAPER PATTERN

Title of the paper		
Course code:	**Time : 3 Hours**	**Max Marks: 75**
	Section - A **(5x2=10 marks)** Question No. 1 to 5 (One question from each unit) Answer ALL Questions Answers not exceeding two sentences	
	Section - B **(5x5=25 marks)** Question No. 6 to 10 (Two questions from each unit) Answer ALL Questions **(Internal Choice)** Answers not exceeding two pages	
	Section – C **(5 x 8 = 40 marks)** Question No. 11 to 15 (Two questions from each unit) Answer ALL Questions **(Internal Choice)** Answers not exceeding four pages	

BLUE PRINT

UNIT	SECTION			TOTAL Questions
	A 2 MARKS EACH (5 questions)	B 5 MARKS EACH (5 questions) INTERNAL CHOICE	C 8 MARKS EACH (5 questions) INTERNAL CHOICE	
I	1	2	2	5
II	1	2	2	5
III	1	2	2	5
IV	1	2	2	5
V	1	2	2	5
Total Marks	10	25	40	25 75

Levels of Mapping for Undergraduate 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, Analyse, Describe, Sketch, Draw, Evaluate, Discuss, Explore, Compare and contrast, Appreciate, Elucidate, Review, etc.

Year	K1	K2	K3
I	40%	30%	30%
II	30%	40%	30%
III	30%	30%	40%

Question Pattern

Year	K1	K2	K3
I	Part-A (3 questions) Part-B (3 questions) Part-C (3 questions)	Part-A (1 questions) Part-B (1 questions) Part-C (1 questions)	Part-A (1 questions) Part-B (1 questions) Part-C (1 questions)
II	Part-A (1 questions) Part-B (2 questions) Part-C (2 questions)	Part-A (3 questions) Part-B (2 questions) Part-C (2 questions)	Part-A (1 questions) Part-B (1 questions) Part-C (1 questions)
III	Part-A (1 questions) Part-B (1 questions) Part-C (1 questions)	Part-A (1 questions) Part-B (1 questions) Part-C (1 questions)	Part-A (3 questions) Part-B (3 questions) Part-C (3 questions)

ABSTRACT OF COURSE STRUCTURE FOR B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)					
PART	**COURSES**	**TOTAL NO OF COURSES**	**HRS**	**CREDITS**	**MARKS**
I	Tamil	4	24	12	400
II	English	4	24	12	400
III	Core Courses	15	69	60	1500
III	GEC Courses (Allied)	6	24	20	600
III	Discipline Specific Elective Courses	4	18	12	400
IV	Skill Enhancement Courses	7	13	13	700
IV	Foundation Course	1	2	2	100
IV	Summer Internship	1	--	2	100
IV	Extension Activity/NSS/NCC/Sports	1	--	1	100
IV	Professional Competency Skill	1	2	2	100
IV	E.V.S	1	2	2	100
V	Value Education	1	2	2	100
Total		**46**	**180**	**140**	**4600**

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

CURRICULAR FRAMEWORK FOR UNDERGRADUATE PROGRAMME 2023- 2024

B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)

SEMESTER I

PART	COURSE TYPE	COURSE CODE	TITLE OF THE COURSE	HRS/ WK	CREDITS	DURATION OF EXAM (HRS)	MARKS		
							INT	EXT	TOTAL
I	LC		Tamil	6	3	3	25	75	100
II	ELC		English	6	3	3	25	75	100
III	CC 1	U23CN1	Food Science	5	5	3	25	75	100
III	CC 2 (P)	U23CN2P	Basic Cookery Practical	3	3	3	25	75	100
III	GEC 1	U23GN32	Nutritional Biochemistry	4	4	3	25	75	100
III	GEC 2 (P)	U23GN33P	Nutritional Biochemistry Practical	2	--	--	--	--	--
IV	SEC 1	U23SEN1	Fundamentals of Art and Design	2	2	3	25	75	100
IV	FC	U23FN1	Introduction to Home Science	2	2	3	25	75	100
			TOTAL	**30**	**22**				**700**

SEMESTER II

PART	COURSE TYPE	COURSE CODE	TITLE OF THE COURSE	HRS/ WK	CREDITS	DURATION OF EXAM (HRS)	MARKS		
							INT	EXT	TOTAL
I	LC		Tamil	6	3	3	25	75	100
II	ELC		English	6	3	3	25	75	100
III	CC 3	U23CN3	Human Nutrition	5	5	3	25	75	100
III	CC 4 (P)	U23CN4P	Food Preparation Practical	3	3	3	25	75	100
III	GEC 2 (P)	U23GN33P	Nutritional Biochemistry Practical	2	2	3	25	75	100
III	GEC 3	U23GN34	Food Microbiology	4	4	3	25	75	100
IV	SEC 2	U23SEN2	Housekeeping	2	2	3	25	75	100
IV	SEC 3/**NM**	U23SEN3	Front Office Management	2	2	3	25	75	100
			TOTAL	**30**	**24**				**800**

SEMESTER III									
PART	**COURSE TYPE**	**COURSE CODE**	TITLE OF THE COURSE	HRS/ WK	CREDITS	DURATION OF EXAM (HRS)	MARKS		
							INT	EXT	TOTAL
I	LC		Tamil	6	3	3	25	75	100
II	ELC		English	6	3	3	25	75	100
III	CC 5	U23CN5	Food Production and Service	5	4	3	25	75	100
III	CC 6 (P)	U23CN6P	Food Preservation Practical	3	3	3	25	75	100
III	GEC 4		Chemistry I	4	4	3	25	75	100
III	GEC 5 (P)		Chemistry Practical	2	--	--	--	--	--
IV	SEC 4	U23SEN4	Entrepreneurship Development	1	1	3	25	75	100
IV	SEC5 (P) **/NM**	U23SEN5P	Bakery Practical	2	2	3	25	75	100
IV	EVS	U23EVS1	Environmental Studies	1	--	--	--	--	--
			TOTAL	**30**	**20**				**700**

SEMESTER IV									
PART	**COURSE TYPE**	**COURSE CODE**	TITLE OF THE COURSE	HRS/ WK	CREDITS	DURATION OF EXAM (HRS)	MARKS		
							INT	EXT	TOTAL
I	LC		Tamil	6	3	3	25	75	100
II	ELC		English	6	3	3	25	75	100
III	CC 7	U23CN7	Nutrition Through Life Cycle	4	4	3	25	75	100
III	CC 8 (P)	U23CN8P	Nutrition Through Life Cycle Practical	3	3	3	25	75	100
III	GEC 5 (P)		Chemistry Practical	2	2	3	25	75	100
III	GEC 6		Chemistry II	4	4	3	25	75	100
IV	SEC 6	U23SEN6	Interior Decoration	2	2	3	25	75	100
IV	SEC7/**NM**	U23SEN7	Women's Health and Wellness	2	2	3	25	75	100
IV	EVS	U23EVS1	Environmental Studies	1	2	3	25	75	100
			TOTAL	**30**	**25**				**900**

SUMMER INTERNSHIP / INDUSTRIAL TRAINING

SEMESTER V									
PART	**COURSE TYPE**	**COURSE CODE**	TITLE OF THE COURSE	HRS/ WK	CREDITS	DURATION OF EXAM (HRS)	MARKS		
							INT	EXT	TOTAL
III	CC 9	U23CN9	Food Service Management	5	5	3	25	75	100
III	CC 10	U23CN10	Dietetics	5	5	3	25	75	100
III	CC 11 (P)	U23CN11P	Dietetics Practical	6	3	3	25	75	100
III	CC 12	U23CN12	Home Science Extension Education	4	4	3	25	75	100
III	DSEC I A	U23DN01	Human Physiology	4	3	3	25	75	100
	DSEC I B	U23DN02	Sports Nutrition						
III	DSEC II A	U23DN03	Public Health Nutrition	4	3	3	25	75	100
	DSEC II B	U23DN04	Functional Foods for Chronic Diseases						
V	VE	U23VE1	Value Education	2	2	3	25	75	100
IV		U23SIN1	**SUMMER INTERNSHIP**		2		--	100	100
			TOTAL	**30**	**27**				**800**

SEMESTER VI									
PART	**COURSE TYPE**	**COURSE CODE**	TITLE OF THE COURSE	HRS/ WK	CREDITS	DURATION OF EXAM (HRS)	MARKS		
							INT	EXT	TOTAL
III	CC 13	U23CN13	Human Development	6	5	3	25	75	100
III	CC 14	U23CN14	Fibre to Fabric	6	5	3	25	75	100
III	CC 15 (P)	U23NPW	Project with viva voce	6	3	3	25	75	100
III	DSEC III-A	U23DN05	Principles of Resource Management	5	3	3	25	75	100
	DSEC III-B	U23DN06	Family Dynamics						
III	DSEC IV A	U23DN07	Food Packaging	5	3	3	25	75	100
	DSEC IV B	U23DN08	Food Safety and Quality Control						
IV			Extension Activity	--	1	--	--	100	100
IV	**Professional Competency**	U23PCN1	Life Skill Strategies and Techniques	2	2	3	25	75	100
TOTAL				**30**	**22**	**700**			
GRAND TOTAL				**180**	**140**	**4600**			

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**I**	**Part III** **Core Course 1**	COURSE CODE : **U23CN1**			
TITLE OF THE COURSE: **FOOD SCIENCE**					
HOURS OF INSTRUCTION PER WEEK: **5**	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 importance of various macronutrients in relation to health.
2. Highlight dietary guidelines for various nutrients and contribute towards a better lifestyle for prevention of non-communicable diseases.

UNIT	CONTENT	HOURS
I	**Nutrient content of foods and Cooking Methods -** Classification of foods according to nutrient content. Food groups for balanced diets. Study of the different cooking methods- dry heat, moist and combination methods, solar cooking, microwave cooking - merits and demerits, dishes prepared by these methods. **Cereals:-** Classification of Cereals, Structure, nutrient composition, scientific methods of preparation and cooking, Dextrinization and gelatinization, retrogradation and resistant starch	**15**
II	**Pulses and legumes** - Types, nutritive value, methods of cooking, effect of soaking and germination. **Nuts** - types, composition, market forms, roasting, steaming of nuts, nuts butters; uses in sweets, baking, and confectionery; Storage. **Oilseeds** - types, composition, methods of processing, uses and shelf life **Vegetables and Fruits :** Classification, nutritive value, effect of cooking on color, texture, flavor, appearance and nutritive value, Purchase - storage and preservation	**15**
III	**Fruits:** Classification, nutritive value, changes during ripening, enzymatic browning, uses, preservation. **Flesh foods and Eggs** **Meats** – structure, nutritive value, selection of meat, postmortem changes in meat, aging, factors affecting tenderness of meat, methods of cooking and storage. **Poultry**-types, nutritive value, selection and cooking **Fish** - classification, nutritive value, selection, storage, cooking and preservation. **Eggs:** Structure, nutritive value, methods of cooking, storage, preservation and uses in cookery	**15**
IV	**Milk and milk products** Nutritive value, kinds of milk, pasteurization, and homogenization, coagulation of milk, fermentation of milk; milk products - whole and skimmed milk, milk powders and yogurt, ghee, butter, cheese. Storage and preservation. **Fats and oils, sugars, food adjuncts and beverages** **Fats and Oils**: Types, sources-animal fats and vegetable fats, functions, processing- difference between cold pressed and regular cooking oils, hydrogenated fat, emulsification, rancidity, smoking point. Factors affecting absorption of oils while frying foods, harmful effects of reheated oils. **Sugars:** Types and market forms of sugars; stages of sugar cookery, crystallization, factors affecting crystallization, uses in confectionery	**15**

V	**Food adjuncts and food additives** **Spices and condiments**: classification, source, use in food preparation, Leavening agents, stabilizers, thickeners, anticaking agents, enzymes, shortenings, stabilizers, flavoring agents, coloring agents, sweeteners-use and abuse. **Food adulteration:** Definition, common adulterants in food **Beverages:** Classification-fruit based beverages; milk-based beverages nutritive. value and uses, alcoholic beverages, coffee, tea and cocoa, malted beverages. Sources, manufacture, processing, and service; methods of preparation of coffee and tea.	**15**

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

CO1	Define nutrients and terms related to nutrition.
CO2	Describe the sources, recommended allowances of macronutrients, micronutrients, and water.
CO3	Interpret the significance of macro and micronutrients, and water for maintenance of optimum health.
CO4	Explain the functions, deficiency or toxicity of macro and micronutrients, and water.
CO5	Evaluate the role of macronutrients, micronutrients, and water in health and disease.

TEXTBOOK: Srilakshmi B. (2017) Nutrition Science, 5th Edition, New Age International (P), Ltd., Chennai.

REFERENCES:

1. Manay, S. and Shadaksharaswamy, M. (1987) Food Facts and Principles. New Age International Publishers, New Delhi.
2. Peckham, G.C. and Freeland-Graves, J.H. (1979) Foundations of Food Preparation, 4th edition, Macmillan Publishing Co. Inc., New York.
3. Shewfelt R.L. (2015) Introducing Food Science. CRC Press, Taylor and Francis Group. Boca Raton
4. Srilakshmi B (2019) Food Science, (7th Ed.) New Age International Publishers
5. Thangam E.Philip, Modern Cookery for Teaching and the Trade Volume - 1&2 (6th Revised Edition), Orient Black
6. Vaclavik, V.A. and Elizabeth, W.C. (2013) Essentials of Food Science.2nd ed.

E-LEARNING RESOURCES

- https://ia801408.us.archive.org/20/items/textbookoffoodsc0000khad/textbookoffoodsc00 00khad.pdf
- https://egyankosh.ac.in/handle/123456789/32947 https://unacademy.com/content/kerala-psc/study-material/basic-food-science/

MAPPING WITH PROGRAMME OUTCOMES

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

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	2	3	3
CO2	3	3	3	3	3
CO3	3	3	2	3	3
CO4	3	3	2	3	3
CO5	3	3	3	3	3

Weightage	15	15	12	15	15
Weighted percentage (rounded off) of Course contribution to POs	3	3	2	3	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**I**	**Part III Core Course 2(P)**	COURSE CODE : **U23CN2P**			
TITLE OF THE COURSE: **BASIC COOKERY PRACTICAL**					
HOURS OF INSTRUCTION PER WEEK: **3**	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 the principles and scientific methods of cooking
2. Learn the best methods of cooking foods to preserve its nutrient content and minimize cooking time.
3. Apply the principles of cookery to prepare tasty and nutritious food

UNIT	CONTENT	HOURS
I	**Introduction to Basic Cooking Skills** Introduction to different cooking methods, cooking terminology; equipment and techniques used for pre-preparation and for different cooking methods. Methods of measuring and weighing liquids and dry ingredients. The use and care of simple kitchen equipment. Introduction to food safety, sanitation and hygiene in the kitchen, Safe practices in handling knives, sharp instruments and materials at high temperature.	**9**
II	**Cereals, Millets and pulses** Cooking rice by boiling and straining, absorption method, steaming, pressure cooking. **Pulses:** Factors influencing texture, digestibility of whole gram/legumes and pulses -soaking, addition of soda bicarbonate, addition of salt, water quality- hard and soft water, pressure cooking, boiling and straining.	**9**
III	**Vegetables and Fruits** **Vegetables:** Basic cuts of vegetables-Slice and mince (onions) Shred (cabbage, spinach),dice (carrot), chop (tomato), grating (beetroot), and their uses in dishes. Changes in color and texture of vegetables.	**9**
IV	Enzymatic browning in fruits and methods to prevent it. Milk and milk products Curdling of milk using lime juice, buttermilk, tomato juice.	**9**
V	**Sugar Cookery -** Stages of sugar cookery and uses. Role of MSG, sodium benzoate and KMS in food preparation and preservation. Natural versus synthetic preservatives.	**9**

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

CO1	Identify appropriate methods for weighing dry and wet food ingredients and for cooking different foods.

CO2	Select suitable methods for cooking cereals, pulses, vegetables, meat, fish and Poultry.
CO3	Apply the principles of cookery, cooking techniques and suitable ingredients in preparing dishes
CO4	Explain the reasons behind the changes that occur during food preparation.
CO5	Justify the best preparation and cooking methods for acceptability and retention of nutrients in different dishes

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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **II**	PART **III** **Core Course 3**			COURSE CODE: **U23CN3**	
TITLE OF THE COURSE: **HUMAN NUTRITION**					
HOURS OF INSTRUCTION PER WEEK: **5**	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 importance of various macronutrients in relation to health.
2. Highlight dietary guidelines for various nutrients and contribute towards a better lifestyle for prevention of non-communicable diseases.

UNIT	CONTENT	HOURS
I	**Nutrition and Health-** Nutrient, Macronutrient & Micronutrient, Nutritional status, Malnutrition-Under nutrition, Function of foods- Physiological, Social, Psychological. Function of nutrients - Energy giving, Bodybuilding, Protective/Regulatory. Food groups - Classification, Uses. Food pyramid, Balanced diet. Definition of RDA. Carbohydrate - Classification - Simple and Complex, Function, RDA, Dietary fiber - Sources & Types - Soluble, insoluble.	**15**
	Activity- Plan meals based on My- Plate concepts, Record Height, Body weight, and calculate Body Mass Index (BMI) in a small sample, and categorize according to BMI.	
II	**Proteins** Amino acids - Indispensable and dispensable amino acids. Classification, Sources, Requirements and functions of protein. Mutual supplementation of proteins. Protein deficiency-Protein Energy Malnutrition- Kwashiorkor and Marasmus –etiology, clinical features, treatment and prevention Evaluation of protein quality- PER, BV, NPU and NPR, chemical score. Protein Supplements and Novel Protein sources- Benefits and Health concerns **Lipids** Classification, Sources, Requirements and functions, Essential fatty acids- deficiency, food sources and functions, Healthy and Unhealthy Fats in the diets, Dietary lipids and its relation to cardiovascular diseases.	**15**
	Activity-List foods based on their GI, and Protein supplements available in the market.	
III	**Energy** Determination of energy value of foods using Bomb calorimeter, Physiological value of foods, relation between oxygen used and calorific value. Direct and Indirect calorimetry direct calorimetry, Respiratory quotient Components of Energy expenditure- Basal metabolism, factors affecting BMR, Food related thermogenesis, Physical activity, Energy requirements for different age groups, and for various types of activities.	**15**

	Activity-List healthy and unhealthy sources of fats in one's diet. Learn to estimate BMR.	
IV	**Fat Soluble Vitamins A,D,E,K** Classification, sources, functions, requirements, Effects of deficiency or Toxicity (wherever applicable). **Water Soluble Vitamins B complex and C** Classification, sources, functions, requirements, Effects of deficiency. Antioxidant role of certain Vitamins in Health promotion	**15**
V	**Macro minerals** Calcium, Phosphorous, Magnesium, Potassium, Sodium and Chloride- Distribution in the body, functions, food sources, requirements, effects of deficiency and toxicity. **Micro/Trace minerals** Iron, Zinc, Iodine, Selenium, Manganese, Chromium, Fluoride and Copper Distribution in the body; functions, effects of deficiency, food sources and requirements, Role of Antioxidant minerals **Water** As a nutrient, functions, sources, requirements. Distribution of water in the body, exchange of water in the body, composition of body fluids. Water balance, factors regulating it, dehydration, water intoxication.	**15**

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

CO1	Define nutrients and terms related to nutrition.
CO2	Describe the sources, recommended allowances of macronutrients, micronutrients, and water.
CO3	Interpret the significance of macro and micronutrients, and water for maintenance of optimum health.
CO4	Explain the functions, deficiency or toxicity of macro and micronutrients, and water.
CO5	Evaluate the role of macronutrients, micronutrients, and water in health and disease

TEXTBOOK: 1. Srilakshmi, B. (2021) Nutrition Science, 7th Edition, New Age International (P) Ltd., Chennai.

REFERENCES:

1. Anderson J. J. B., Root M. M., Garner S. C. (2015) Human Nutrition: Healthy Options for Life. Jones & Bartlett Learning, Massachusetts, USA
2. Guthrie, H.A. (1989) Introductory Nutrition. 7th ed. Times Mirror / Mosby College Publishing, St. Louis.
3. Insel P., Ross D., McMahon K., Bernstein M. (2016) Discovering Nutrition. 5th Ed., Jones & Bartlett Learning, Massachusetts, USA.
4. Mahan K and Sylvia E. Stump (2000) Krause's Food Nutrition and Diet Therapy, Saunders, USA.
5. Medeiros D. M., and Wildman R. E. C. (2019) Advanced Human Nutrition. 4th Ed., Jones & Bartlett Learning, Massachusetts, USA.
6. Ross A. C., Caballero B., Cousins R. J., Tucker K. L., Ziegler T. R. (2014) Modern Nutrition in Health and Disease. 11th Ed., Wolters Kluwer | Lippincott Williams & Wilkins, Philadelphia, USA.
7. Sizer F. S. and Whitney E. (2014) Nutrition: Concepts & Controversies. 13th Ed., Wadsworth, Cengage Learning, USA.
8. Whitney, E.R. and Rolfes S.R. (1996) Understanding nutrition. 7th Ed., West Publishing Company, USA.

E-LEARNING RESOURCES

- http://www.merck.com/mmhe/seciz/ch155/ch155a.html
- http://www.whereincity/medical/vitamins

MAPPING WITH PROGRAMME OUTCOMES

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

CO2	S	S	S	M	M	M	L	L	M	S
CO3	S	S	S	S	M	M	S	M	M	S
CO4	S	S	S	M	M	M	L	M	M	S
CO5	S	S	S	S	M	M	L	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER:**II**	PART **III** **Core Course 4** (P)	COURSE CODE: **U23CN4P**
TITLE OF THE COURSE: **FOOD PREPARATION PRACTICAL**		

HOURS OF INSTRUCTION PER WEEK: **3**	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. Develop skills to prepare acceptable foods with regard to appearance, palatability and nutritive value.
2. Understand basic rules for laying a table for various meal patterns

UNIT	CONTENT	HOURS
I	Preparation of Cereal, Pulse, Vegetables, Fruits, Egg, Milk, Sweets, Beverages, Meat, Poultry and Fish cookery.	**9**
II	Preparation of menu from Regions of India: North and South Indian cooking.	**9**
III	Develop Techniques in Tandoor and its related products	**9**
IV	Preparation of menu from International Cuisine.	**9**
V	Develop knowledge on Food costing for their prepared recipes	**9**

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

CO1	Apply principles of cooking to various food groups and Preservation techniques.
CO2	Develop skills techniques in Continental dishes and Indian dishes
CO3	Display the acquired skills in food preparation and service.
CO4	Develop skills and techniques in Preparation of Tandoor and its related products
CO5	Develop skills and techniques in Preparation of International cuisine.

TEXTBOOK:

1. Bali, Parvinder S., Quantity food production operations and Indian cuisine, Oxford University Press, New Delhi, 2011.
2. Mohini Sethi, Institutional Food Management, New Age International Publishers, New Delhi, Third edition, 2016.
3. Krishna Arora, Theory of cookery, Published by Frank Brothers & Company, 2008.

REFERENCES:

1. Philip E Thangam (2008) Modern Cookery for teaching and Trade Part I & II or Longmam.
2. Taneja S and Gupta SL (2001) Entrepreneurship development, Galgotia Publishing

MAPPING WITH PROGRAMME OUTCOMES

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

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

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	1	3
CO2	3	1	2	1	3
CO3	3	1	2	1	3
CO4	3	1	2	1	3
CO5	3	1	2	1	3
Weightage	15	5	10	5	15
Weighted percentage (rounded off) of Course contribution to Pos	3	1	2	1	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **III**	PART **III** **Core Course 5**			COURSE CODE: **U23CN5**	
TITLE OF THE COURSE: **FOOD PRODUCTION AND SERVICE**					
HOURS OF INSTRUCTION PER WEEK: **5**	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. Acquaint with the type and operation of food service establishments.
2. Familiarize with the different types of menus and styles of service.
3. Foster entrepreneurship skills.

UNIT	CONTENT	HOURS
I	**Food Service Industry** History of development of food service institutions in India. **Classification of food service establishments** – Commercial -Transport catering, Hotels, Restaurants, Outdoor catering and Non-commercial / Welfare - Hospital, Institutional -School / College, Orphanage / Old age homes, prisons, Industrial catering. **Food Service systems** - conventional, ready–prepared, commissary, assembly-serve.	**15**
II	**Quantity food production** Production forecasting, planning, production scheduling; Food measures, Market survey. Standardization of recipes definition, need, uses, methods of enlargement of recipes. Food costing methods-Calculation of Food Cooked and Portion control, effective use of left-overs. Storage of Food- Principle of dry, wet refrigerated storage, Danger Zone and Cross contamination.	**15**
III	**Menu Planning** **Menu** – origin, definition and functions of menu, importance of planning menus, factors affecting menu planning, French classical menu. Types of menu - A la carte, Table d'hôte, Du jour, static, cyclic, single use, construction and writing menu, menu display. **Basic terminologies** in food service relating to stocks, soups, sauces, salads and beverages **-** alcoholic and non-alcoholic.	**15**
IV	**Food and Beverage Service** Table Setting - mise en scène, Mise-en-place, Basic rules for laying a table, Cover – definition, A la Carte cover and Table d'hôte cover. **Styles of Service** Table Service - Waiter – Silver / English, Family, American, French, Russian, Gueridon; Bar Counter, Assisted**-** Carvery, Buffet, Self-service-Cafeteria - Counter, Free-flow, Echelon, Supermarket, Single-point Service- Takeaway, Drive-thru, Fast food; Vending; Kiosks; Food court , In- situ Service- Tray, Trolley, Home delivery, Lounge, Room, Drive-in.	**15**
V	**Entrepreneurship in catering** Entrepreneurship–concept and significance, Entrepreneur-definition, characteristics and classification. Food start up, Start -up process, steps, opportunities and challenges, problems faced by women entrepreneurs.	**15**

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

CO1	Identify and differentiate the types of food service sectors.

CO2	Develop skills to formulate and standardize recipes from various cuisines.
CO3	Demonstrate skills in quantity food production.
CO4	Distinguish various styles of service and identify the basic technical skills, and interpersonal skills required for food service.
CO5	Identify entrepreneurial ventures in food production and service.

TEXTBOOK: Sethi, Mohini, Malhan, Surjeet. (2015). Catering Management – An Integrated Approach, 3rd ed, New Age International Publishers, New Delhi.

REFERENCES:

1. June Payne-Palacio, Monica Theis, Introduction to Foodservice (2009), 11th illustrated, Published by Pearson/Prentice Hall.
2. Dhawan and Vijay. (2001). Food and Beverage Service, Frank Boss and Co, New Delhi.
3. Suganthi, V and Premakumari, C. (2017). Food Service Management, Dipti Press (OPC) Pvt. Ltd, Chennai.
4. Andrews and Sudhir. (2000). Introduction to Hospitality Industry, Tata-McGraw Hill Pub. Co., New Delhi.
5. Foskett David. (2011). The Theory of Hospitality and Catering, Hodder Education, London.
6. Gupta, CB and Srinivasan, NP. (2002) Entrepreneurial Development, Sultan Chand & Sons, New Delhi.
7. Jagmohan. N. (2013). Food and Beverage Service Operation, S. Chand & Co. Ltd., New Delhi.

E-LEARNING RESOURCES

- https://www.scribd.com/document/119449120/History-of-Food-Service-Industry
- https://sirvo.com/
- https://www.yaaka.cc/unit/types-of-catering-establishment/
- https://www.scribd.com/doc/24003230/Unit-1-Food-and-Beverage-Service-Management
- https://www.universalclass.com/.../types-of-service-and-table-settings-in-waiter

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	M	S
CO2	S	S	S	S	S	M	S	S	S	S
CO3	S	S	S	S	S	M	S	M	M	S
CO4	S	S	S	M	S	M	S	M	M	S
CO5	S	S	S	S	S	M	S	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **III**	PART **III** **Core Course 6(P)**			COURSE CODE: **U23CN6P**	
TITLE OF THE COURSE: **FOOD PRESERVATION PRACTICAL**					
HOURS OF INSTRUCTION PER WEEK: **3**	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. Gain knowledge on principles of food preservation of foods
2. Understand the techniques use in processing foods to preserve their shelf life
3. Apply skill learnt to develop preserved food product

UNIT	CONTENT	HOURS
I	Identification of class I and II preservatives. Natural preservatives and chemical preservatives identifications. Identification of spoiled foods.	**9**
II	Fermented foods and non- fermented foods. Dying of Fruits and vegetables. Blanching of vegetables. Preservation of fruit by syruping.	**9**
III	Preparation of product by using of high concentrated sugars as preservatives. Like jam, jelly, squash, syrup, marmalade. (jelly making process, alcohol test and sheet test)	**9**
IV	Preservation of product by using of salt and oils as preservatives. Like pickles and chutneys of different varieties. Eg – mango pickle, lime pickle, chili ketchup, tomato sauce & ketchup.	**9**
V	Preparation of product by using of slt and turmeric as preservatives. Like vathal, vadam , pappad. Eg- non veg –Dry fish, curing of meat.	**9**

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

CO1	Define and explain the principles of food preservation and relate the role of microorganism in food spoilage.
CO2	Explain the cause of food spoilage, need and principles of food preservation.
CO3	Apply the various techniques of food preservation preserve different foods so as to increase the shelf life of foods.
CO4	Compare the principles and techniques of various food preservation methods and explain the role of packaging in food processing.

CO5	Justify the use of various preservation techniques, and packaging materials describe the terms relate to food preservation and classify foods based on the shelf life.

TEXTBOOK: Suganthi.V and Subaratinam.R (2021)Textbook on Food preservation, Dipti Press(OPC)Pvt. Ltd, Chennai.

REFERENCES:

1. Arthey,D and Ashurst,P.R(1996),Fruit processing, Blackie academic and professional. London.
2. Fellows,P.J(2016):Food Processing Technology: Principles and Practice, Second edition, CRC Wood head publishing Ltd, Cambridge.
3. Gould.G.W(1995),New methods of Food Preservation. Blackie academic and professional. London.
4. Rahman MS(2020) Handbook of Food Preservation CRC Press, USA
5. Srilakshmi B (2017) Food Science, New Age International Publications, NewDelhi.

E-LEARNING RESOURCES

- https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/food-spoilage
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111436
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111435
- http://www.homepreservingbible.com/2247-an-introduction-to-the-drying-food-preservation-method/

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	M	M	L	M	M	S
CO2	S	S	S	M	M	M	M	M	M	S
CO3	S	S	M	S	M	M	M	M	M	S
CO4	S	S	S	M	M	M	M	M	M	S
CO5	S	S	M	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	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER: **IV**	PART **III** **Core Course 7**	COURSE CODE: **U23CN7**
TITLE OF THE COURSE: **NUTRITION THROUGH LIFE CYCLE**		

HOURS OF INSTRUCTION PER WEEK: **4**	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. Understand the role of nutrition in the growth and development through the lifecycle.
2. Gain insight into the principles of effective meal planning
3. Understand the nutritional needs of various age groups
4. Acquire skills to plan diets for various age groups across the lifecycle.

UNIT	CONTENT	HOURS
I	**Introduction to meal planning -** Balanced diet, food groups, Food Guide Pyramid (ICMR), Food plate, RDA, factors affecting RDA. Principles of meal planning – steps involved in planning a diet. **Nutrition for Adult** - Nutritional requirements, planning balanced diets for adult men and women, promoting healthy lifestyle through holistic approach	**12**
II	**Nutrition during pregnancy**- Physiological demands of pregnancy, nutritional needs, effect of nutrition on pregnancy outcome, optimal weight gain, nutrition related problems in pregnancy, complications of pregnancy. **Nutrition during lactation**- Physiology of lactation, nutritional requirements, concerns of breast-feeding mother	**12**
III	**Nutrition during infancy**- Growth and development, growth standards, food and nutritional requirements, breast feeding, artificial feeding, low birth weight babies, complementary feeds. **Nutrition for preschool children**- Growth and development, food and nutritional requirements, eating habits and food behaviors, nutrition related problems- PEM, VAD and their dietary interventions.	**12**
IV	**Nutrition for school children**- Growth pattern, nutritional requirement, importance of healthy snacks, factors affecting eating habits, school lunch. **Nutrition during adolescence-** Growth and development, nutritional requirements, food habits, nutritional problems – obesity, underweight, anaemia and eating disorders.	**12**
V	**Nutrition for old age-** Physiological changes in elderly, food and nutritional requirements, nutritional and health concerns in old age, healthy lifestyle	**12**

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

CO1	Explain the physiological basis for nutritional needs through the human lifecycle
CO2	Identify nutrition related concerns and deficiency disorders at every stage of lifecycle
CO3	Discuss appropriate dietary guidelines for various age groups
CO4	Develop indigenous, value added and low cost complementary feeds
CO5	Demonstrate skills to plan and prepare appropriate and sustainable diets for deficiency diseases

TEXTBOOK: Srilakshmi B. (2023) Dietetics, Ninth Edition, New Age Publishing Press, New Delhi.

REFERENCES:

1. Abraham S, Nutrition through Lifecycle. (2016) 1st edition, New age international publishers, New Delhi.
2. Antia, F.P. (2015) Clinical Dietetics and Nutrition, 4th edition, Oxford University Press, New Delhi
3. Brown, J.E. (2008) Nutrition Now, 5th edition, Wordsworth Thomson Learning, Inc., Canada.
4. Cataldo, DeBruyne and Whitney, Nutrition and Diet therapy– Principles and Practice.(1999) 5th edition, West/ Wadsworth, London.
5. Gopalan,C., Ramanathan, P.V. Balasubramanian, S.C. (2001) Nutritive value of Indian foods, NIN, Hyderabad.
6. Groff JL, Gropper SS, Advanced Nutrition and Human Metabolism.(2000) 3rd edition, West / Wadsworth, United Kingdom.
7. Longvah T, Ananthan R, Bhaskar K, Venkaiah K. (2017) Indian Food Composition Tables, National Institute of Nutrition.
8. Stacy N, William's Basic Nutrition and Diet Therapy. (2005) 12th edition, Elseivier publications, United Kingdom.
9. Whitney EN and Rolfes SR, Understanding Nutrition. (2002) 9th edition West/Wordsworth, London.
10. Williams, S.R. (2009) Basic Nutrition & Diet Therapy, 12th ed., Mosby, Inc., St. Louis.

E-LEARNING RESOURCES

- https://www.nin.res.in/RDA_short_Report_2020.html
- https://egyankosh.gkpad.com/page/72304
- http://ecoursesonline.iasri.res.in/course/view.php?id=190

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	S	M	S	S
CO2	S	S	S	S	S	S	S	M	S	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	S	S	S	S	S	M	S	S
CO5	S	S	S	S	S	S	S	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **IV**	PART: **III** **Core Course 8 (P)**	COURSE CODE: **U23CN8P**			
TITLE OF THE COURSE: **NUTRITION THROUGH LIFE CYCLE PRACTICAL**					
HOURS OF INSTRUCTION PER WEEK: **3**	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 role of nutrition in the growth and development through the lifecycle
2. Gain insight into the principles of effective meal planning.
3. Understand the nutritional needs of various age groups
4. Acquire skills to plan diets for various age groups across the lifecycle

UNIT	CONTENT	HOURS
I	1. Preparation of Complementary feed.	**9**
II	2. Planning and preparation of diets for different activity levels and income group. a. Pre- school child b. School going children c. Adolescents d. Adult	**9**
III	3. Planning and preparation of diets for different activity levels and income group. a. Expectant mother b. Nursing mother c. Old age	**9**
IV	4. Planning and preparation of diets (low and medium cost) for deficiency diseases- a. PEM b. Vitamin A deficiency c. Nutritional anemia	**9**
V	5. Packed lunch for school	**9**

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

CO1	Explain the physiological basis for nutritional needs through the human lifecycle
CO2	Identify nutrition related concerns and deficiency disorders at every stage of lifecycle
CO3	Discuss appropriate dietary guidelines for various age groups

CO4	Develop indigenous, value added and low cost complementary feeds.
CO5	Demonstrate skills to plan and prepare appropriate and sustainable diets for deficiency diseases

TEXTBOOK:

1. Srilakshmi B. (2011) Dietetics, sixth edition, New age Publishing Press, New Delhi
2. Abraham S, Nutrition through Life cycle. (2016) 1st edition, New age international publishers, New Delhi.

REFERENCES:

1. Srilakshmi B. (2011) Dietetics, sixth edition, New age Publishing Press, New Delhi
2. Gopalan,C., Ramanathan, P.V. Balasubramanian, S.C. (2001) Nutritive value of Indian foods, NIN, Hyderabad
3. Longvah T, Ananthan R, Bhaskar K, Venkaiah K. (2017) Indian Food Composition Tables, National Institute of Nutrition
4. Abraham S, Nutrition through Lifecycle. (2016) 1st edition, New age international publishers, New Delhi.
5. Stacy N, William's Basic Nutrition and Diet Therapy. (2005) 12th edition, Elseivier publications, United Kingdom.
6. Whitney EN and Rolfes SR, Understanding Nutrition. (2002) 9th edition West/Wordsworth, London
7. Groff JL, Gropper SS, Advanced Nutrition and Human Metabolism.(2000) 3rd edition, West / Wadsworth, United King.
8. Cataldo, DeBruyne and Whitney, Nutrition and Diet therapy– Principles and Practice.(1999) 5th edition, West/ Wadsworth, London.

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	S	M	S	S
CO2	S	S	S	S	S	S	S	M	S	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	S	S	S	S	S	M	S	S
CO5	S	S	S	S	S	S	S	M	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: B.**Sc. HOME SCIENCE(NUTRITION ,FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **V**	Part **III** **CORE COURSE 9**	COURSE CODE: **U23CN9**			
TITLE OF THE COURSE: **FOOD SERVICE MANAGEMENT**					
HOURS OF INSTRUCTION PER WEEK: **5**	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 :

This course will enable students to:

1. Gain basic understanding of organizing and managing a food service institution.
2. Impart knowledge regarding purchase and storage of food to ensure quality service.
3. Familiarize with the layout of food service outlet and food service equipment

UNIT	CONTENT	HOURS
I	**Organization Management** Types of Organization, Management - definition, principles, functions and tools of management- Tangible tools-organization chart, job description, job specification, job analysis, work schedule, Intangible tools-budget, leadership styles, decision making, and communication skills.	**15**
II	**Personnel Management** Definition, functions of personnel department, Recruitment- sources, Selection- steps, Induction - definition, methods, uses, Training- advantages, methods, supervision, performance appraisal, promotion, demotion, transfer, retirement, termination and dismissal of employees. Labor laws pertaining to the food service establishment	**15**
III	**Food Management** **Food purchase** – purchasing process, functions of food buyer, methods of buying open market, formal, negotiated, wholesale, blanket order, contract. **Storage in food service** – types of stores, storeroom management, purchase, stores records- Physical and perpetual inventory order form, requisition slip, invoice, goods received book, stock book, bin card, stores ledger.	**15**
IV	**Plant and equipment management** **Planning of food service unit** - Layout of a food service, planning of storage, production and service areas, concepts of workflow and work simplification technique. Environmental hygiene-pest control-types of pests and pest control methods; garbage disposal method. **Safety** in food service institution - Accidents - causes and prevention. **Equipment** in food service - Classification of equipment, factors affecting selection of equipment.	**15**

V	**Financial Management** **Book- keeping** – definition, advantages of double entry system, books of accounts– an introduction. **Costing and Cost control**: Basic cost concepts – elements of cost (material, labor, overheads), behavior of cost (fixed, variable, semi-fixed / semi-variable), methods of costing (Dish, meal, menu costing & costing for events), cost control, concept of break-even, break-even point. **Pricing** - factors affecting pricing, pricing methods (cost plus, factor, rate of return, subsidy, discount).	**15**

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

CO 1	Apply the principles, tools of management to ensure for effective functioning of organization.
CO 2	Develop the managerial skills to select, train, appraise human resources.
CO 3	Recognize the use and operation of equipment and acquire skills in the selection of equipment, sketch sample lay out of the food service units.
CO 4	Evaluate and implement food safety and environmental sanitation in the workspace
CO 5	Use the basic concept of bookkeeping and elements of cost to assess the financial viability of the organization.

TEXT BOOK: Sethi Mohini, Malhan, Surjeet. (2015). Catering Management – An Integrated Approach, 3rd ed, New Age International Publishers, New Delhi.

REFERENCES:

1. Andrews and Sudhir. (2000). Introduction to Hospitality Industry, Tata- Mc Graw Hill Pub. Co., New Delhi.
2. Dhawan and Vijay. (2001). Food and Beverage Service, Frank Boss and Co, New Delhi.
3. Foskett David. (2011). The Theory of Hospitality and Catering, Hodder Education, London.
4. Lillicrap, D.R. and Cousins, J. (2010). Food and beverage Service, 8th edition, Hodder Education, London.
5. Sethi, Mohini, Malhan, Surjeet. (2015). Catering Management – An Integrated Approach, 3rd ed, New Age International Publishers, New Delhi
6. Suganthi, V and Premakumari, C. (2017). Food Service Management, Dipti Press (OPC) Pvt. Ltd, Chennai.
7. Verghese and Brian. (2000). Professional Food and Beverage Service Management, Macmillan India Ltd., India.

E-LEARNING RESOURCES

- http://open.lib.umn.edu/principlesmanagement/chapter/1-5-planning- organizing- leading-and-controlling-2/
- https://www.managementstudyguide.com/management_functions.htm
- http://www.bngkolkata.com/web/food-and-beverage-service-equipment/
- http://www.fcijammu.org/food/food/orders/F&B%20Service-Unit-2.pdf
- https://www.scribd.com/doc/29362905/Equipments-in-Food-amp-Beverage

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	M	M	M	S
CO2	S	S	S	S	S	M	S	S	S	S
CO3	S	S	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	M	M	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER**: V**	PART **III** **Core Course 10**			COURSE CODE: **U23CN10**	
TITLE OF THE COURSE: **DIETETICS**					
HOURS OF INSTRUCTION PER WEEK**: 5**	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 causes and symptoms and dietary management of various disease conditions.
2. Gain comprehensive knowledge on principles and planning of therapeutic diets
3. Acquire knowledge on nutritional needs of sick persons and develop aptitude and skills for taking up dietetics as a profession.

UNIT	CONTENT	HOURS
I	**Concept of diet therapy and role of dietitian** Therapeutic Diets- concepts and principles of diet therapy, modification of diet- routine hospital diet, pre- operative diet, post - operative diet, clear fluid diet, full fluid diet, soft diet, bland diet, and restrictive diet. Enteral and Parenteral Feeding, Role of dietitian, diet counseling.	**15**
II	**Diseases of Gastrointestinal tract** Etiology, symptoms, dietary management of: Diarrhea, dysentery, and constipation. Peptic ulcer, irritable bowel syndrome & inflammatory bowel disease (ulcerative colitis), Crohn's disease and celiac disease	**15**
III	**Diseases of liver, gall bladder & febrile conditions** Etiology, symptoms, dietary management of: Disease of liver & Gallbladder- Hepatitis, cirrhosis, gallstones Febrile conditions - Acute & Chronic fevers (Typhoid, influenza, malaria, tuberculosis, COVID)	**15**
IV	**Metabolic disorders** Etiology, symptoms, and dietary management of: Obesity and PCOS. Diabetes mellitus- types, symptoms and metabolic changes, treatment with diet and insulin, GI, GL, carbohydrate counting, artificial sweeteners and complications. Cardiovascular diseases – hypertension, atherosclerosis.	**15**
V	**Diseases of excretory system and cancer** Etiology, symptoms, dietary management of: Glomerular nephritis Nephrotic syndrome, urinary calculi, renal failure. Cancer – Risk factors, modification of diet in cancer, nutritional problems of cancer therapy. Role of antioxidants in prevention of degenerative diseases.	**15**

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

CO1	Explain concepts of diet therapy and role of dietitian.
CO2	Identify the etiology symptoms and principles of dietary management for various diseases.

CO3	Apply the principles of dietetics to plan therapeutic diets for various disease conditions.
CO4	Examine the physiological condition of the individual and explain the role of food and diet in treating that condition.
CO5	Summarize the causes, symptoms of a disease/ disorder and design a suitable diet plan using principles of nutritional management and recommended dietary allowances.

TEXTBOOK: Srilakshmi B, Dietetics (2019),8th edition, New Age International Publishing Ltd, New Delhi.

REFERENCES:

1. Antia F. P. (2002), Clinical Dietetics and Nutrition, 4th edition, Oxford University Press, Chennai.
2. Guthrie H. A, Picciano M. F (1995) Human Nutrition, Mosby, St. Louis Missouri.
3. Joshi. S.A. (2005), Nutrition and Dietetics, Tata Mc Graw-Hill Publishing Company Limited, New Delhi.
4. Passmore R. and Davidson S. (1986) Human nutrition and Dietetics. Liming stone publishers.
5. Sharma.A.(2017), Principles of Therapeutic Nutrition and Dietetics, CBS Publishers & Distributors Pvt Ltd, New Delhi.
6. Williams S.R, (2000) Basic Nutrition and Diet Therapy, Mosby publication

E-LEARNING RESOURCES

- https://www.cdss.ca.gov/agedblinddisabled/res/VPTC2/9%20Food%20Nutrition% 20a nd%20Preparation/Types_of_Therapeutic_Diets.pdf
- http://www.differencebetween.net/science/health/difference-between-enteral- and- parenteral-nutrition/
- https://www.medicinenet.com/difference_between_diarrhea_and_dysentery/articl e.html
- https://my.clevelandclinic.org/health/diseases/15587-inflammatory-bowel- disease- overview

MAPPING WITH PROGRAMME OUTCOMES

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

* 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	3	2	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	13	15	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **V**	PART **III** **Core course 11(P)**	COURSE CODE : **U23CN11P**			
TITLE OF THE COURSE: **DIETETICS PRACTICAL**					
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. Gain knowledge and develop skills and techniques in planning and preparation of therapeutic diets.
2. Plan diets based on the medical history of the patients and nutritional assessments – anthropometric measurements
3. Calculate the nutrient content of diets

UNIT	CONTENT	HOURS
I	Planning, Calculation of nutrient content, Preparation and Service of diets for: Tube feeds for special conditions Fevers – Typhoid and Tuberculosis	**18**
II	Planning, Calculation of nutrient content, Preparation and Service of diets for: Peptic Ulcer, Diarrhoea and constipation	**18**
III	Planning, Calculation of nutrient content, Preparation and Service of diets for: Viral hepatitis Cirrhosis of liver	**18**
IV	Planning, Calculation of nutrient content, Preparation and Service of diets for: Obesity, Diabetes Mellitus Atherosclerosis	**18**
V	Planning, Calculation of nutrient content, Preparation and Service of diets for: Hypertension , Chronic kidney disease	**18**
	SELF STUDY/EXPERIENTIAL LEARNING 1. Initiate a diet counseling center in the institution for students, teaching, and non-teaching faculty. 2. Conduct exhibitions to display diets for various disease conditions. 3. Prepare pamphlet indicating foods to be included / avoided/ restricted in different disease conditions. Commemorate days such a World Diabetes Day, World Heart Day and organize Seminars and awareness programs.	

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

CO1	List the principles of dietary management for various conditions.
CO2	Calculate the nutrient content of the diet for various conditions and compare it. with the recommended allowances

CO3	Apply the principles of dietary management in planning diets for various conditions.
CO4	Justify choice of foods, preparation methods, content, and consistency for different disease conditions
CO5	Plan and prepare diets for various disease conditions.

TEXTBOOK:

1. Vimala V. Advances in Diet Therapy Practical Manual, 2009, New Age International Pvt. Ltd. Publishers, New Delhi. SBN 9788122426779.
2. Suganthi, V and Anitha, V. Manual on Diet Therapy, 2017, Dipti Press Pvt. Ltd, Chennai. ISBN 9788193103173.

REFERENCES:

1. Antia, F.B. (2010), Clinical Nutrition and Dietetics, Oxford University Press, London.
2. IDA. (2018), Clinical Dietetic Manual, 2nd edition, Elite Publishing House, New Delhi
3. Sri Lakshmi. B.,(2019) Dietetics, 8th Ed,New Age International Pub. Co, Chennai
4. Vimala V. (2010). Advances in Diet Therapy, 1st Ed., National Institute of Nutrition – Hyderabad
5. Williams S.R, (2000) Basic Nutrition and Diet Therapy, Mosby publication.
6. Sharma.A.(2017), Principles of Therapeutic Nutrition and Dietetics, CBS Publishers & Distributors Pvt Ltd, New Delhi.
7. Bajaj .M (2019) Diet Metrics: Handbook of Food Exchanges, Norton Press, Chennai.

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	L	L	M	L	L	S
CO2	S	S	S	S	S	S	M	M	M	S
CO3	S	S	S	S	S	S	S	S	L	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	2	2	3
CO2	3	3	3	3	3
CO3	3	3	2	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	13	14	15
Weighted percentage (rounded off) of Course contribution to POs	3	3	3	3	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**V**	**PART III** **Core Course 12**	COURSE CODE: **U23CN12**			
TITLE OF THE COURSE: **HOME SCIENCE EXTENSION EDUCATION**					
HOURS OF INSTRUCTION PER WEEK: **4**	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 impart knowledge to the students on concept, objectives, philosophy and principles of extension education as well as pioneering extension efforts and analysis of the extension system of ICAR and SAU. Course also gives exposure to the student on current approaches in extension as well as various development programmes
2. To understand the changing concept of extension
3. To get acquainted with the trends in extension approaches and models
4. To identify the support system development for extension education.

UNIT	CONTENT	HOURS
I	**Home Science Extension Education** Extension education – meaning, scope, characteristics, objectives, need, principles, process, models and philosophy. Emergence of Home Science Extension Education in India Extension Education as a profession – adult education and distance education. Leadership – role, styles and management grid, Qualities of a goad extension manager: Changing role of extension managers caused by globalization in Home Science.	**12**
II	**Diffusion and Adoption of Innovations** Predicting innovativeness: Simulation of innovation, innovation decision process - Types of innovation decision, consequence on innovations, desirable or undesirable, direct or indirect anticipated or unanticipated consequence. Concept of homophily and heterophony and their influence on flow of innovation, Concept of Diffusion and its elements. Adoption Process - concept of stage, shade of agreement, neglected element. Adopter categories - Innovativeness and adopter categories, adopter categories as idea types, characteristics of adopter categories. Diffusion - perceived attributes of innovation and their rate of adoption.	**12**
III	**Communication process** Communication process – concept, elements and their characteristics Models and theories of communication, communication skills – fidelity of communication, communication competence and empathy, communication effectiveness and credibility, feedback in communication, social networks and Development communication – Barriers in communication, Message – Meaning, dimensions of a message, characteristics of a good message, Massage treatment and effectiveness, distortion of message.	**12**

IV	**Teaching and Learning** Concept of teaching and learning Classification of Extension teaching methods Various extension teaching aids – selection of appropriate methods, features, advantage, limitation of various methods of teaching (mass, group, individual) Audio visual aids – planning, selection and types of visual, audio and audio – visual aids, Contribution of AV Aids in Extension education.	**12**
V	**Current approaches in extension education** Farming situation-based extension, market – led – extension, farm field school, ATIC, Kisan Call Centers, and NAIP. Problems in Rural Development. Need for Volunteerism in Rural Development, Role of NGO's Assistance available to Voluntary agencies from different ministries/Departments of Govt. of India. Details of function in to Central/State Social Welfare Board and CAPART Employments Generation Programmes – NREGP, Women Development Programmes – ICDS, Self Help Groups, MSY, RMK	**12**

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

CO1	Describe key Concept of Home Science Extension Education
CO2	Explain Diffusion and Adoption of Innovations
CO3	Understand the criteria for Communication process
CO4	Identify importance and Planning teaching and learning
CO5	Introduction to Current approaches in extension education

TEXTBOOK:. Adivi Reddy. (1987) Extension Education, 4th Edition, Sree Lakshmi Press, Guntur.

REFERENCES:

1. Albrecht, H. et al (1989): Rural Development Series, Agricultural Extension, Vol I & II, Basic concepts and methods, Wiley Eastern Limited, New Delhi.
2. Chaubey, B.K. (1979): A Hand Book of Education Extension, Jyoti Prakashan, Allahabad.
3. Extension Education in Community Development (1981): Ministry of Food and agriculture, A Government of India, New Delhi.
4. Pankajam, G. (2000): Extension – Third Dimension of Education, Gyan Publishing House, New Delhi.
5. Reddy, A. (1999): Extension Education, Sree Lakshmi Press, Bapatla.
6. Waghmare, S.K. (1989): Exploring Extension Excellence, Multi Tech. Pub. Company.

E-LEARNING RESOURCES

1. http://ecoursesonline.iasri.res.in/course/view.php?id=243
2. https://onlinecourses.swayam2.ac.in/cec19_mg32/preview

MAPPING WITH PROGRAMME OUTCOMES

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	S	M	S
CO2	S	S	S	M	S	M	S	S	M	S
CO3	S	S	S	M	S	S	S	S	M	S
CO4	S	S	S	M	S	S	S	S	S	S
C05	S	S	S	M	S	M	S	S	S	S

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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **VI**	PART **: III** **Core Course 13**	COURSE CODE: **U23CN13**			
TITLE OF THE COURSE: **HUMAN 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. Familiarize with the growth process from conception to confinement.
2. Know the development of an individual from infancy to old age.
3. Understand the physical, psychological, and social development of the individual from infancy to old age.
4. Develop an awareness of the problems of children, adolescent, and exceptional children.

UNIT	CONTENT	HOURS
I	**Growth and development** Meaning - growth and development, principles of governing growth and development, developmental task of different stages. Methods of study of human development.	**18**
	Practical - preparation of case study - observing various development- physical, motor, cognitive, creative, social, emotional, and intellectual of a particular child.	
II	**Infancy and Childhood** Characteristics, physical, social, and emotional development, cognitive and language development during infancy, early childhood, and late childhood. Children's play – meaning, types, importance stages. Parental disciplinary Techniques – merits and demerits	**18**
	Practical - Socio-metric study of early adolescents. Analysis of various play technique	
III	**Adolescence** Adolescence –physical and psychological changes, emotional, moral and social development, Problems of adolescence. Delinquency – causes, prevention, and rehabilitation. Educational and vocational guidance, role of family and schools and colleges in guiding adolescence	**18**
	Practical - A survey on Juvenile Delinquency prevalence.	
IV	**Adulthood and Old Age** Adulthood - Characteristics and developmental tasks, all aspects of development and vocational adjustments. Old age - Characteristics of old age, physical changes, psychological changes. Place of the aged in Indian Society	**18**

	Practical - Survey on problems of old age.	
V	**Exceptional Children** Introduction to Children with Special Needs and identification & Educational Rehabilitation Gifted children Orthopedically challenged Mentally retarded Hearing impaired Visually handicapped Learning disability	**18**
	Practical - Visit to an institution for exceptional children.	

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

CO1	Describe the meaning and principles of Growth & Development
CO2	Explain developmental aspects during infancy, early and late childhood.
CO3	Evaluate developmental aspects during adolescence.
CO4	Identify the developmental tasks during adulthood and old age.
CO5	Introduction to Children with Special Needs and identification & Educational Rehabilitation

TEXTBOOK:

1. Hurlock E.B., (1972). Child Development, New York: McGraw Hill Book company.
2. Nanda V.K., (1998): Principles of Child Development, NewDelhi: Anmol Publications Pvt. Ltd.

REFERENCES:

1. Hurlock E.B., (1972). Child Development, New York: McGraw Hill Book company.
2. Hurlock, E.B., (1995): Developmental Psychology - A Life Span Approach, 5th (Ed.) New York: McGraw Hill Book Co.
3. Nanda V.K., (1998): Principles of Child Development, NewDelhi: Anmol Publications Pvt. Ltd.
4. Rajammal P. Devadas and Jaya N. Muthu (2002). A Textbook of Child Development, New Delhi: Macmillan Publishers
5. Singh, A. (2015). Foundations of Human Development: A Life Span Approach. New Delhi: Orient Black Swan
6. Suriakanthi A., (1997). Child Development – An Introduction, Tamil Nadu: Kavitha Publishers
7. Swaminathan, M (1998). The First Five Years: A Critical Perspective on Early Childhood Care and Education in India. New Delhi: Sage Publications
8. Suriakanthi, A., (2009). Child Development. Kavitha publications, Tamil.

E-LEARNING RESOURCES

i. http://www.wbnsou.ac.in/online_services/SLM/BED/SEM-01_A1.pdf
ii. https://ncert.nic.in/textbook/pdf/kepy104.pdf
iii. https://egyankosh.ac.in/bitstream/123456789/17134/1/Unit-3.pdf
iv. https://www.cukashmir.ac.in/departmentdocs_16/Growth%20&%20Development%20-%20Dr.%20Ismail%20Thamarasseri.pdf

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	S	M	S
CO2	S	S	S	M	S	M	S	S	M	S
CO3	S	S	S	M	S	M	S	S	M	S
CO4	S	S	S	M	S	M	S	S	S	S
CO5	S	S	S	M	S	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**VI**	PART **III** **Core Course 14**	COURSE CODE : **U23CN14**			
TITLE OF THE COURSE: **FIBER TO FABRIC**					
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 concepts in textiles, the properties of textile fiber, yarn and fabric.
2. Acquire knowledge about different types of fabric, make wise selection of textiles and its contribution to clothing and interior.

UNIT	CONTENT	HOURS
I	**Introduction to Textile -** Introduction, Terms and definition related to textiles, importance of textiles.	18
II	**Textile fibers** a) Properties of fibers- primary and secondary properties b) Classification of fibers – natural and man-made fibres. c) Manufacturing processes/Cultivation, properties and uses of Cotton, Silk, Wool, Polyester, Rayon and Nylon.	18
III	**Yarns** a) Definition of yarn b) Spinning process- Conventional yarn spinning - Cotton system and Unconventional yarn spinning. c) Types of yarn- spun yarns, filament yarns, sewing threads, simple and complex yarns. d) Properties of yarn-Yarn twist, Yarn count/ number (definition, unit of yarn count), e) Texturization – types	18
IV	**Woven Fabric Construction** a) Weaving- Warp and weft yarns, grain line, selvedge and Fabric count. b) Parts of a simple loom and basic weaving operations. c) Types of weaves- Basic weaves (Plain weave, variations in plain weave, Twill weave, variations in Twill weave, Satin weave and Sateen weave) Decorative weaves (Dobby weave, Jacquard weave, Leno weave, Surface figure weave, Pile, Double weave)	18
V	**Other fabric construction** a) Knitted fabric- warp and weft knitting b) Non-Woven fabric- method of manufacture – web formation- parallel laid, cross laid, random laid, high velocity sprayed. Types- bonded fabrics, felts and care of non-woven Other fabric construction process- Braided fabric, Net, Laces, Film fabric, tufted fabric.	18

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

CO1	Describe the essential properties of textile fibers, yarns and the basic fabric construction techniques
CO2	Explain the manufacturing process of man-made fibers, yarn construction and fabric construction.
CO3	Classify textile fibers, yarns and fabrics.
CO4	Categorize the fibers, yarns and fabrics for its appropriate end use.

CO5	Assess the sequence of developing fibers into yarns and fabric

TEXTBOOK:. Susheela Dantyagi, Fundamentals of textiles and their care, Fifth edition, Orient Blackswan Pvt Ltd.

REFERENCES:

1. Corbman, B.P (1975) Textiles fiber to fabric. Mc. Graw hill, New York.
2. Klein W.D A Practical Guide to Ring Spinning Textile Institute, Manchester
3. Marjory L. J (1977) Introductory Textile Sciences Holt Reinhart and Winston, New York
4. .Sara.K.J, Langford.A (2002) Textiles. 9th ed Prentice Hall, London
5. Rastogi, D., & Chopra, S. (2017). Textile Science. India: Orient Blackswan Private Limited.
6. .Robert, R. & Mather, R. H. (2015). The Chemistry of Textile Fibers. Cambridge: RSC Publishers.
7. Sekhri, S. (2011) Textbook of Fabric Science: Fundamentals to Finishing. India: PHI Learning Pvt. Ltd.
8. Smith, J.L. (2015).Textile Processing: Printing Dyeing Finishing. Chandigarh: Abhishek Publication

E-LEARNING RESOURCES

1. http://fibersource.com/f-tutor/rayon.htm
2. http://www.fibersource.com/f-tutor/nylon.htm
3. http://www.ehow.com/facts 5016460 parts-loom.html
4. http://www.fabrics-manufacturers.com/

MAPPING WITH PROGRAMME OUTCOMES

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

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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**VI**	**Part III** **Core Course 15(P)**	COURSE CODE : **UU23NPW**			
TITLE OF THE COURSE: **PROJECT**					
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. Develop skills in conducting a research study
2. Learn the art and science of preparing and presenting a research document.

UNIT	CONTENT	HOURS
Unit 1	Introduction	**18**
Unit 2	Review of Literature	**18**
Unit 3	Methodology	**18**
Unit 4	Results and Discussion	**18**
Unit 5	Summary and Conclusion, Bibliography	**18**

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 studyand 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 onthe document prepared.

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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER: **I**	PART **III** **Generic Elective Course 1**	COURSE CODE: **U23GN32**
TITLE OF THE COURSE: **NUTRITIONAL BIOCHEMISTRY**		

HOURS OF INSTRUCTION PER WEEK: **4**	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. Study the basic concepts of metabolism of proximate principles and others.
2. Learn the metabolic pathways of nutritional significance.

UNIT	CONTENT	HOURS
I	**Enzymes:** Enzymes – Definition, Classification, Nomenclature, Properties Mechanism of Enzyme action, Factors affecting enzyme activity, Enzyme inhibition, Specificity of enzyme, prosthetic groups. Coenzyme, Role of vitamin as coenzyme and mechanism of coenzyme action.	**12**
II	**Metabolism of Carbohydrates:** Classification, Glycolysis, The Citric Acid Cycle Glycogenesis, Glycogenolysis, Gluconeogenesis, The Hexose Monophosphate Shunt and bioenergetics.	**12**
III	**Metabolism of Protein:** 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.	**12**
IV	**Metabolism of Lipids:** Classification of fatty acid, Biosynthesis of fatty acids, beta oxidation of saturated fatty acids, ketone bodies. Essential fatty acids – types and functions. Lipoproteins – classification and function. Biosynthesis of cholesterol.	**12**
V	**Intermediary Metabolism, Nucleic acid & Recent concepts:** 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, RNA types and functions. Concepts of Xenobiotics and Nutrigenomics.	**12**

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

CO1	Describe the role of enzymes and coenzymes in biological oxidation.
CO2	Explain metabolism and regulation of carbohydrate, lipids and proteins
CO3	Analyze the integration of carbohydrate, lipid and protein metabolism
CO4	Comprehend the significance of recent biochemical concepts namely xenobiotics, recombinant DNA technology and Nutrigenomics.
CO5	Discuss the structure and functions of nucleic acids.

TEXTBOOK: 1. Fatima et al., (2015) Biochemistry, Saras Publication, Nagercoil.

REFERENCES:

1. Albanese, A. (Ed.). (2012). Newer methods of nutritional biochemistry V3: With applications and interpretations. Elsevier.
2. Bettelheim, F. A., Brown, W. H., Campbell, M. K., & Farrell, S. O. (2009). General, Organic & Biochemistry. Brooks/Cole Cengage Learning.
3. Champe, P. C., Harvey, R. A., & Ferrier, D. R. (2005). Biochemistry. Lippincott Williams & Wilkins, 6th Edition, Wolters Kluwer, London.
4. Harvey, R. and Ferrier, D., Lippincott's Illustrated Reviews: Biochemistry, 6th edition, Lippincott Williams and Wilkins, Philadelphia.
5. Lehninger, A.L. (1993) Biochemistry. 3rd ed. CBS Publishers, New Delhi.
6. Lieberman, M., & Ricer, R. E. (2009). Lippincott's Illustrated Q&A Review of Biochemistry. Lippincott Williams & Wilkins.
7. Murray, R.K., Granner, D.K., Mayes, P.A. and Rodwell, V.W. (2000): 25th Ed. Harpers Biochemistry.Macmillan worth publishers.
8. Shanmugham Ambika (1985) Fundamentals of bio-chemistry to medicalstudents. NVA Bharat Printers, and traders 56, Peters Road, Madras-86.

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
- https://youtu.be/y6YGZfcAegw

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	L	L	M	S
CO2	S	S	S	M	M	M	L	L	M	S
CO3	S	S	S	S	M	M	S	M	M	S
CO4	S	S	S	S	M	M	L	M	M	S
CO5	S	S	S	S	M	M	L	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER:**I & II**	PART **III** **Generic Elective Course 2(P)**	COURSE CODE: **U23GN33P**

TITLE OF THE COURSE: **NUTRITIONAL BIOCHEMISTRY PRACTICAL**				
HOURS OF INSTRUCTION PER WEEK: **2+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.Be familiar with qualitative tests and quantitative determination

2. Develop skills in analyzing bio molecules and in basic diagnostic procedures

UNIT	CONTENT	HOURS
I	Qualitative tests for sugars: Monosaccharide – Glucose, Galactose and Fructose; Disaccharides – Maltose, Lactose and Sucrose	**6+6**
II	Qualitative tests for proteins – Peptide linkage, Tryptophan, Tyrosine, Aromatic amino acids and Alpha group of amino acids; Qualitative tests for minerals: Ferrous and Ferric ion, Calcium, Magnesium, Phosphorus and Sulphur	**6+6**
III	Quantitative estimation of reducing sugar	**6+6**
IV	Quantitative estimation of vitamin C in lime juice and green chillies	**6+6**
V	Estimation of iron and Phosphorus in drumstick leaves	**6+6**

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

CO1	Demonstrate the skills in qualitative testing of sugars
CO2	Exhibit skills in performing qualitative tests of protein, amino acids and minerals
CO3	Show dexterity in estimating the quantity of reducing sugar
CO4	Display skill in estimation of vitamin C in different foods using Colorimeter
CO5	Estimate the quantity of iron and phosphorus in foods

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	L	L	M	S
CO2	S	S	S	M	M	M	L	L	M	S
CO3	S	S	S	S	M	M	S	M	M	S
CO4	S	S	S	S	M	M	L	M	M	S
CO5	S	S	S	S	M	M	L	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**II**	PART **III** **Generic Elective Course 3**		COURSE CODE: **U23GN34**		
TITLE OF THE COURSE: **FOOD MICROBIOLOGY**					
HOURS OF INSTRUCTION PER WEEK: **4**	CREDITS**: 4**	CIA: **25**	EXTERNAL MARKS: **75**	TOTAL: **100**	

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 characteristics of micro -organisms in food and environment
2. Understand the role of microorganisms in food spoilage, health and illness
3. Familiarize with the methods of controlling microorganisms

UNIT	CONTENT	HOURS
I	**Introduction to Microbes in Foods** History and Development of Food Microbiology Classification of microorganisms. General morphological characteristics of bacteria, yeast, algae, mold, virus and protozoa. Characteristics of predominant microorganisms in food, sources of microorganisms in foods	**12**
II	**Microorganisms found in water, soil, air and sewage**- List of microorganisms and diseases caused; Test for sanitary quality of water, Purification of water **Control of Microorganisms in food** Control of Access of Microorganisms: sanitation, sterilization and disinfection, Control by Heat (Thermal Processing), Low Temperature, Reduced Water Activity and Drying, Low pH and Organic Acids, Removal of microbes – filtration, sedimentation. Chemical agents – preservatives & antibiotics.	**12**
III	**Microbial spoilage and contamination of common food** Factors affecting growth of microorganisms- intrinsic and extrinsic. Sources of contamination and spoilage of common foods -Cereal and cereal products, fruits and vegetables, egg, meat, poultry, fish, milk & milk products and canned foods	**12**
IV	**Food poisoning and Food borne diseases** Food poisoning/ intoxication and food infection- definition. Bacterial food poisoning – Staphylococcus aureus, Clostridium botulinum, Clostridium perfringens, Bacillus cereus **Food Infection**- Salmonellosis, Shigellosis, Cholera, Gastroenteritis. Measures to prevent food poisoning and food borne infection. Importance of sanitation and hygiene in foods. HACCP – concept, principles & application in food safety	**12**
V	**Beneficial uses of microorganisms in food and health** Microorganisms used in fermented products - Alcoholic drinks, Dairy products, Bread, Vinegar, Pickled foods. Single-cell protein Food Bio preservatives of microbial origin. Intestinal Bacteria and Probiotics	**12**

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

CO1	Summarize the general characteristics of microorganisms
CO2	Identify and apply techniques to control microbes
CO3	Recognize microbial spoilage in various foods
CO4	Distinguish food borne infections and intoxication and apply quality control measures
CO5	Explain the beneficial role of microbes in foods

TEXTBOOK: Joshua, A.K. (1988) Microbiology: III Edition, Popular Book Depot, Madras

REFERENCES:

1. Adams M.R, Moss M.O and Peter. M (2016). Food Microbiology. 4th edition. Royal Society of Chemistry, United Kingdom.
2. Ananthanarayan and Paniker. (2017). Text book of Microbiology, Tenth Edition, Orient Longman Limited, Hyderabad.
3. Frazier, W.C. & Westhoff D.C (2013) Food Microbiology, 5th ed. Tata McGraw hill Book Company, New Delhi.
4. Garbutt J. (1997) Essentials of Food Microbiology, 2nd edition, Arnold publication, New York,1997
5. Gerald McDonell. (2020). Block's Disinfection, Sterilization and Preservation. 6th edition. Lippincott Williams and Wilkins, Philadelphia.
6. Jay J.M, Loessner MJ and Golden D.A. (2005). Modern Food Microbiology. 7th edition, CBS Publishers and Distributors, New Delhi.
7. Jay, J.M., (1986) Modern Food Microbiology, 3rd ed. Van Nostrand Reinhold Co. Inc.
8. Parija SC. (2012) Textbook of Microbiology and Immunology, 2nd edition, Elsevier India.
9. Ramesh. V. (2007). Food Microbiology, MJP publishers, Chennai.

E-LEARNING RESOURCES

- https://egyankosh.ac.in/bitstream/123456789/12422/1/Unit-1.pdf
- https://microbenotes.com/category/food-microbiology/#:~:text=Food%20microbiology%20is%20a%20branch,transmission%20of%20various%20infectious%20agents.
- https://microbiologynote.com/microbiology/food-microbiology/page/2/

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	M	S	M	M	S
CO2	S	S	S	S	L	S	M	M	M	S
CO3	S	S	S	S	M	S	M	M	M	S
CO4	S	S	S	S	M	S	M	M	M	S
CO5	S	S	S	S	M	M	M	M	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: B.**Sc. HOME SCIENCE(NUTRITION,FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER**: V**	PART **III** **Discipline Specific Elective Course I A**		COURSE CODE: **U23DN01**		
TITLE OF THE COURSE**: HUMAN PHYSIOLOGY**					
HOURS OF INSTRUCTION PER WEEK**: 4**	CREDITS**: 3**	CIA: **25**	HOURS OF INSTRUCTION PER WEEK**: 4**	CREDITS**: 3**	

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. Learn the integrated functioning of cells, tissues, organs and systems
3. Apply the principles of nutrition and dietetics on the basis of thorough understanding of human physiology

UNIT	CONTENT	HOURS
I	**Cell and tissues -** Structure of Cell and functions of different organelles. Classification, structure and functions of tissues. **Blood-** Constituents of blood- RBC, WBC and Platelets and its functions. Erythropoiesis, Blood clotting, Blood groups and histocompatibility **Immune system-** Antigen, Antibody, Cellular and Humoral Immunity(in brief)	**12**
II	**Nervous system:** General anatomy of nervous system, functions of the different parts **Sense organs:** Structure and functions of Eye, Ear, Nose, Tongue and Skin. Mechanism of vision and hearing, Physiology of Taste and Smell-In Brief	**12**
III	**Heart and circulation:** Anatomy of the heart and blood vessels, properties of cardiac muscle, origin and conduction of heartbeat, cardiac cycle, cardiac output, blood pressure - definition and factors affecting blood pressure, and description of ECG **Respiratory system:** Anatomy and physiology of respiratory organs. Gaseous exchange in the lungs and tissues, Mechanism of respiration	**12**
IV	**Digestive system:** Anatomy of Gastro-intestinal tract, Structure and functions of Liver and Pancreas. Digestion and absorption of carbohydrates, proteins and fats. **Excretory system:** Structure of kidney, functions of Nephron, physiology and formation of urine, physiology of micturition	**12**
V	**Endocrine system:** Functions of hormones secreted by Pituitary, thyroid, parathyroid and adrenal glands and Pancreas. Effects of hypo and hypersecretion of these glands. **Reproductive system:** Anatomy of male and female reproductive organs, Ovarian and Uterine cycle, influence of hormones on pregnancy and lactation.	**12**

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

CO 1	Describe the structure and functions of a cell, various tissues, primary organs and systems in the body.
CO 2	Explain the interrelationship between systems for maintenance of equilibrium
CO 3	Evaluate the role of the nervous and endocrine system in regulating the activities of other systems
CO 4	Identify the microscopic structure of basic tissues, label the parts of primary physiological systems in the body such as nervous, respiratory, digestive, endocrine and reproductive systems
CO 5	Perform haematological study of blood such as blood smear, blood count and blood grouping, record pulse, blood pressure and interpret a normal ECG.

TEXTBOOK: Uma Maheshwari, B & Sampath, K. (2007) A Textbook of Human Anatomy & Physiology, Birla Publications Pvt. Ltd.

REFERENCES:

1. Beck, W.S. (1971) Human Design. Harcourt Brace Jovanovich Inc., New York
2. Best, C. H. and Taylor, N. B. (1980) Living Body. 4th ed. BIP, Bombay
3. Creager, J. G. (1992) Human Anatomy and Physiology. 2nd ed. WMC Brown Publishers,England.
4. Guyton, A.C. (1979) Physiology of the Human Body. 5th ed. Saunders College of Publishing, Phiadelphia
5. Subramanium, S. And Madhavankutty, K. (1971) the Text Book of Physiology. Orient. Longman LTD., Madras.
6. Tortora G. J.Anagnostakos. N.P. (1984) Principles of Anatomy and Physiology, 4th edition, Harper and Row Publishers, New York.
7. Waugh A and Grant A. (2012) Ross and Wilson Anatomy and Physiology in Health and Illness. 11th ed. Churchill and Livingston, Elsevier.
8. Wilson, K. J. W. (1987) Anatomy and Physilogy in Health and Illness. 6th ed. ELBS, Churchill Livingstone, London.

E-LEARNING RESOURCES:

- https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA==
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=21273
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=21294

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	L	M	M	S
CO2	S	S	S	M	M	M	L	M	M	S
CO3	S	S	S	M	M	M	L	M	M	S
CO4	S	S	S	M	M	M	L	M	M	S
CO5	S	S	S	M	M	M	L	M	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: B.**Sc. HOME SCIENCE(NUTRITION,FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **V**	Part **III** **Disciple Specific Elective Course I B**		COURSE CODE: **U23DN02**		
TITLE OF THE COURSE: **SPORTS NUTRITION**					
HOURS OF INSTRUCTION PER WEEK: **4**	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 basic concepts of nutrition for physical fitness and sports.
2. Enumerate the special nutritional requirements for athletes.

UNIT	CONTENT	HOURS
I	**Introduction to Physical Fitness** Components of fitness, Health and Sports related fitness, Description of Aerobic and anaerobic sports- Types and Benefits, Body weight and composition for health and sport, Strategies for weight management	**12**
II	**Energy systems for Exercise** Types of muscle fibers, Fuel sources and energy systems for exercise, energy pathways, regulation of energy metabolism-metabolic response to exercise and metabolic adaptations to exercise training	**12**
III	**Role of Macronutrients in Physical Fitness** Carbohydrates – Utilization of carbohydrate before, during and after exercise, importance of glycogen loading. Proteins – role of proteins for exercise, requirements before, during and after exercise. Fats – role of fats in exercise, requirements before, during and after exercise, Fat loading-effects on exercise performance. Macronutrients Requirements for Power, endurance sports and strength training activities	**12**
IV	**Role of Micronutrients and Water for Exercise** Role of vitamins and minerals for exercise, Role of Antioxidant nutrients for exercise, Relative energy deficiency. Water, electrolyte and temperature regulation. Effect of dehydration and hyper hydration on performance. Fluid guidelines before, during and after exercise.	**12**
V	**Nutrition for Athletes** Importance of pre-event, during and post-event meals, preparing for competition, dealing with cramps, GI distress, electrolyte balance-sports drinks. Role of Sports supplements, Ergogenic aids to improve performance. Nutrient requirements for children, adults and elderly involved in different sports. Eating disorders – types, prevalence, risk factors, effect on sports performance, treatment and prevention.	**12**

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

CO 1	Define terms related to physical fitness, nutrients and supplements for exercise.
CO 2	Discuss the benefits of different exercise, significance of body weight and composition parameters, fuel system, nutrients, supplements and ergogenic aids for exercise.
CO 3	Explain the significance of body composition parameters, fuel systems, energy pathways and utilization of nutrients, sports supplements and ergogenic aids for exercise.
CO 4	Analyze the role of energy pathways, macro and micronutrients, sports supplements and ergogenic aids used by athletes to improve performance.
CO 5	Assess the functions of nutrients before, during and after exercise, and recommend meal plans for athletes involved in different sports.

TEXT BOOK: Mahan K and Sylvia E. Stump (2000) Krause's Food Nutrition and Diet Therapy, Saunders, USA.

REFERENCES:

1. Fink H.H., Burgoon L.A., Mikesky A.E.(2018) Practical applications in Sports Nutrition. Jones and Bartlett Publishers. Sudbery, Massachusetts.
2. Mahan K and Sylvia E. Stump (2000) Krause's Food Nutrition and Diet Therapy,Saunders, USA.
3. McArdle .W.D., Frank. I. Katch, Victor L Katch (2005) Sports and Exercise Nutrition.Lippincott, Williams and Wilkins, Philadelphia
4. Sharkey B.J. (2002) Fitness and Health: Human Kinetics, Hong Kong
5. Williams M.H., Anderson D.E., Rawson E.S. (2013) Nutrition for Health, Fitness and Sport. McGraw Hill, New York.

E-LEARNING RESOURCES:

- sportsmedicine.about.com
- http://sportsmedicine.about.com/od/sportsnutrition/a/carbohydrates.htm

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	L	L	M	S
CO2	S	S	S	M	M	M	L	M	M	S
CO3	S	S	S	S	M	M	S	M	M	S
CO4	S	S	S	S	M	M	M	M	M	S
CO5	S	S	S	S	M	M	M	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **V**	PART **III** **Discipline specific elective course II A**			COURSE CODE: **U23DN03**	
TITLE OF THE COURSE: **PUBLIC HEALTH NUTRITION**					
HOURS OF INSTRUCTION PER WEEK: **4**	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. Gain knowledge about nutritional policies, programs and agencies involved in combating malnutrition.
2. Acquire knowledge and skills in assessment of nutritional status.
3. Create awareness on improving health and nutrition of the community

UNIT	CONTENT	HOURS
I	**Concept and scope of public nutrition** Definition, concept, scope and multidisciplinary nature of public nutrition **Nutritional problems affecting the community.** Etiology, prevalence, clinical features and preventive strategies for malnutrition related problems and deficiency disorders - Under nutrition (Protein energy malnutrition, Wasting, Stunting), Over nutrition (obesity and related risks), Nutritional anemia, Vitamin A deficiency, Iodine deficiency disorders, Fluorosis.	**12**
II	**Assessment of nutritional status** Objectives and importance, Methods of assessment: Direct (Clinical signs, Anthropometry, Biochemical tests); Indirect (Diet surveys, vital statistics)	**12**
III	**Nutrition policy and programs** National nutritional policy**;** Integrated child development scheme (ICDS), Midday Meal Program- State and National (Poshan Abhyan), National programs for the prevention of anemia, Vitamin A deficiency, Iodine deficiency disorders, Fortification of Foods and Public Distribution System as a preventive approach.	**12**
IV	**Nutrition education** Objectives, principles and scope of nutrition and health education, creating awareness on current public health issues and devising strategies for prevention and management.	**12**
V	**Role of National and International agencies in combating malnutrition** WHO, FAO, UNICEF; National: FSSAI, ICAR, ICMR, NIN, FNB, CFTRI, NNMB- Role, Target groups (if specified), Policies and Programs.	**12**
	Practical/experiential learning Planning low- cost nutritious recipes for infants, pre- schoolers, and pregnant/lactating mothers for nutrition education. Assessment of nutritional status	

	- Anthropometry: Weight and height measurements - Plotting and interpretation of growth charts for children below 5 years - Identification of clinical signs of common nutritional disorders - Dietary assessment: 24-hour recall, Food Frequency Questionnaire, Diet Diversity Score Planning a Nutrition Education Program, and imparting nutrition education to the community.	

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

CO1	Define terms related to Public Health nutrition.
CO2	Describe the nutritional problems prevalent in the community.
CO3	Explain the significance of assessment of nutritional status.
CO4	Assess the role of various organizations in combating nutritional problems.
CO5	Conduct nutrition education programs to create awareness on improving health and nutrition of the community at large.

TEXTBOOK: 1. Srilakshmi, B. (2021) Nutrition Science, 7th Edition, New Age International (P) Ltd., Chennai.

REFERENCES:

1. Wadhwa A and Sharma S (2003). Nutrition in the Community- A textbook. ElitePublishing House Pvt. Ltd. New Delhi.
2. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.
3. Jellife DB, Jellife ERP, Zerfas A and Neumann CG (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
4. WHO (2006). Child Growth Standards: Methods and development: height- for- age, weight-for-age, weight-for-length, weight-for-height and body mass index- for-age (http://www.who.int/childgrowth/standards/en/).
5. Gupta,MC. AND Mahajan BK. (2003) Textbook of preventive and social medicine 3rd ED Jaypee brothers, Medical Publishers (P) Ltd.

E-LEARNING RESOURCES

- Mohfw.nic.in/NRHM/NIDD
- www.nrhmorissa.gov.in/NIDDCP.html
- www.Scripts.mit.edu

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	L	L	L	L	S	L	L	S
CO2	S	S	S	S	M	S	S	S	M	S
CO3	S	S	S	S	M	S	S	S	M	S
CO4	S	S	S	S	M	M	S	S	M	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	2	3	1	3
CO2	3	3	3	3	3
CO3	3	3	2	3	3
CO4	3	3	3	3	3

CO5	3	3	3	3	3
Weightage	15	14	14	13	15
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **V**	PART **III** **Discipline Specific Elective Course II B**			COURSE CODE: **U23DN04**	
TITLE OF THE COURSE: **FUNCTIONAL FOODS FOR CHRONIC DISEASE**					
HOURS OF INSTRUCTION PER WEEK: **4**	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. Gain a basic understanding of functional foods and their use in managing chronic diseases.
2. Understand the properties and functions of active compounds in functional foods.
3. Identify the potential sources of functional foods that could be beneficial in the management of specific chronic diseases.

UNIT	CONTENT	HOURS
I	**Introduction** Functional foods **-** Definition, History, types and classification of functional foods, Relation of functional foods (FF) to chronic diseases. **Food sources** Functional foods in different foods: cereal products (oats, wheat bran, rice bran, etc.), fruits and vegetables, milk and milk products, legumes, nuts, oil seeds and sea foods, herbs, spices and medicinal plants. Coffee, tea and other beverages as functional foods/drinks and their protective effects.	**12**
II	**Antioxidants** Concept of free radicals and antioxidants, antioxidant role as functional foods. Antioxidant and chronic diseases. **Properties and functions of various functional food ingredients** Protein, complex carbohydrates (dietary fiber) as functional food ingredients; probiotic, prebiotics and symbiotic foods, and their functional role. Sources and role of isoprenoids, isoflavones, flavonoids, carotenoids, tocotrienols, chlorophyll, polyunsaturated fatty acids, lecithin, choline, terpenoids, Glucosamine, lycopene, proanthocyanins.	**12**
III	**Functional foods and cardiovascular diseases (CVD)** Epidemiology of cardiovascular diseases, Biomarkers of different cardiovascular diseases, effect of functional foods on biomarkers of CVD, Effect of functional foods like green tea, grapes, oats, soybean, sunflower seeds or pumpkin seeds on CVD	**12**
IV	**Functional foods and cancer** Functional Food Components in Cancer Disease, Effect of functional foods like cruciferous vegetables, green tea, garlic, walnuts, berries on cancer. **Functional foods and renal diseases** Epidemiology of kidney disease, functional foods for kidney diseases, Effect of functional foods like garlic, buckwheat on kidney.	**12**
V	**Functional foods and obesity** Functional foods and obesity, biomarkers of obesity, bioactive compounds in functional foods to manage healthy weight. Effect of functional foods like dietary fibres, psyllium husk, apple on obesity. **Functional foods and diabetes**	**12**

	Epidemiology of Diabetes, Functional Foods for Type 2 diabetes, effect of functional foods like turmeric, garlic, green tea, dietary fibre on diabetes.	

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

CO1	Define functional foods and recall the components of functional foods and their health Benefits.
CO2	List out different functional foods, properties, and their functions.
CO3	Explain the impact of functional foods in the prevention and management of CVD and kidney diseases.
CO4	Evaluate the role of functional foods in the prevention and management of cancer.
CO5	Summarize the role of functional foods in the prevention and management of obesity and type 2 diabetes mellitus.

TEXTBOOK:

1. Functional Foods and Nutraceuticals - Bioactive Components, Formulations, and Innovations, Edited by R. R. Watson, Victor R. Preedy, and Sherma Zibadi, CRC Press

REFERENCES:

1. Cho S. S. and Dreher, M.L. (2001): Handbook Dietary Fibre, Marcel Dekker Inc.,New York.
2. Gibson, G.R. and C.M.Willams (2000), "Functional Foods : Concept to Product".Woodhead.
3. Goldberg, I. Ed (1994): Functional Foods: Designer Foods, Pharma Foods, Nutraceuticals, Chapman & Hall, New York.
4. Ikan, Raphael (2005), "Natural Products: A Laboratory Guide", 2nd Edition, Academic Press / Elsevier.
5. Webb, P P (2006), "Dietary Supplements and Functional Foods". Blackwell.
6. Wildman, Robert E.C (2006), "Handbook of Nutraceuticals and Functional Foods".CRC.

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	M	M	M	L	M	M	S
CO2	S	S	S	M	M	M	L	M	M	S
CO3	S	S	S	M	M	M	L	M	M	S
CO4	S	S	S	M	M	M	L	M	M	S
CO5	S	S	S	M	M	M	L	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
EMESTER:**VI**	PART **III** **Discipline Specific Elective Course III A**			COURSE CODE: **U23DN05**	
TITLE OF THE COURSE: **PRINCIPLES OF RESOURCE MANAGEMENT**					
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. Recognize and use appropriate resources to achieve one's goal
2. Develop skills in utilizing the available resources in day-to-day life
3. Gain knowledge about work simplification and effective management of Time, Energy and Money

UNIT	CONTENT	HOURS
I	**Introduction to Management -** Management Concepts - Definition, Concept, Micro and Macro environment. Principles of Management Process - Planning, Controlling, Evaluating. Qualities of a Good Manager. Motivational factors - Values, Goals and Standards.	**15**
	Activity: Identification of personal and family values and goals – their interrelationship.	
II	**Resources -** Meaning and classification, optimizing the use of family resources, Factors affecting the use of resources. **Decision making -** Meaning and its importance, Types of decisions, Decision making process, Methods of resolving conflicts	**15**
	Activity: List out the resources optimizing the goal.	
III	**Time Management -** Tools in time management - Time norms, Peak loads, Work Curves and rest periods, Time management process - Planning - Steps in making time plans - Controlling the planning action- Evaluation. **Energy Management -** The efforts required in home-making activities; Energy required for household activities.	**15**
	Activity: Preparation of a time schedule and Evaluate time schedule using the Gantt chart.	
IV	**Work Simplification -** Definition, Importance, Techniques – Formal and Informal Techniques - Mundel's Classes of change - Planning efficient work areas in kitchen. **Body Mechanics -** Posture, Gravity, Rhythmic movement, Proper use of Muscle and to take advantage of Momentum. **Fatigue -** Concepts, Types - Physiological and Psychological fatigue and Managerial process applied to energy	**15**
	Activity: Study on work heights based on anthropometric measurement on vertical and horizontal planes.	
V	**Money Management -** Family Income - Types, sources and methods of augmenting family income. **Family Expenditure -** Budget - Meaning - Types of budgets, Planning a budget for a family of a fixed income, Hotel / Restaurant, advantages of budgeting, Factors affecting family budget, Engel's law of consumption, methods of handling money - Family financial records, Savings-importance and types.	**15**
	Activity: Preparation of family budget. Study of a saving institution and its scheme.	

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

CO1	Apply the principles of management process in day-to-day life
CO2	Identify and analyze the need for resources
CO3	Utilize tools of time management effectively in day-to-day life
CO4	Apply work simplification techniques while managing work.
CO5	Develop good decision-making skills and plan a budget within the available income and to maintain accounts.

TEXTBOOK: Varghese, M.A., Ogale,N.N. & Srinivasan,K (2011) Home Management, New Age International Pvt. Ltd., New Delhi.

REFERENCES:

1. BelaBhargava (2005), "Family Resource Management & Interior Decoration", University Book House Pvt. Ltd., ISBN-13: 978-8187339229
2. Deacon, R and Firebaugh, F.M.(1975), Home Management context and concepts, Houghton Mifflin Company
3. Gross, I.H.Crandall, E. N. and Knoll(1976), M. Management for Modern Families, Appleton Century Crafts Inc.
4. Gupta,S. Garg,N&Agarwal,A (1998) Textbook of Home Management, Hygiene & Physiology, Kalyani Publishers, New Delhi.
5. Nickell& Dorsey (2002), "Management in Family Living", CBS; 4th edition, ISBN-13: 978-8123908519
6. Rao (2020), "Taxmann's Human Resource Management", Taxmann Publications Pvt. Ltd.; 2nd edition, ISBN-13: 978-9390128396
7. Sudhir Dixit (2018), "Time Management", Manjul Publishing House, ISBN-13: 978- 9388241106

E-LEARNING RESOURCES

- http://ecoursesonline.iasri.res.in/course/view.php?id=218
- https://drive.google.com/file/d/1iPmIpRt71o-kHanWgXDstkZas8nC9D28/view
- 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	M	S	S	S	L	M	S	S	M
CO2	S	L	S	S	M	L	L	M	S	S
CO3	S	M	S	S	S	L	S	S	S	M
CO4	S	S	S	S	S	L	M	S	S	M
CO5	S	S	S	S	S	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**						
SEMESTER: **VI**	PART : **III** **Discipline Specific Elective Course III B**		COURSE CODE: **U23DN06**			
TITLE OF THE COURSE: **FAMILY DYNAMICS**						
HOURS OF INSTRUCTION PER WEEK**: 5**	CREDITS: **3**	CIA: **25**	EXTERNAL MARKS: **75**	TOTAL: **100**		
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 acquaint the students with the dynamics of contemporary marriage and it alternates.
2. To sensitization the students to dynamics of family systems in India.
3. To make the students aware of same pertinent contemporary issues that affects the quality of life of individual families and community.

UNIT	CONTENT	HOURS
I	**Family** Meaning, significance of family, Types, characteristics of family Types of family with reference to India Family Dynamics-Meaning and Significance The place of the individual, man, woman and child in the family and their roles in society,Changing trends in India regarding family pattern – structural, functional Alternate family lifestyles	**15**
	Practical Analysis of various types of family	
II	**Contemporary Alternative Family Patterns and Relationships** Family life cycle – stages and sub- stages, The Child-Free family: Voluntary childlessness Single-parent Families: Divorce, binuclear family, custody of children (mothers, fathers, split, joint) Stepfamilies: Phases Individual roles, rights, and responsibilities within the family Areas of adjustment within the family at different stages of life cycle Ways of dealing with adjustment.	**15**
	Practical Analysis of family life cycle Analysis of various contemporary Family Patterns	
III	**Marriage - Concepts of marital behavior** **Selection of a life partner** Meaning, preparation, motives, functions, and types of marriage Characteristics of high-quality marital relationships, Factors affecting marriage relationship – religion, socio economic status, careers, Social and emotional issues, financial concerns Marital adjustments – physiological, domestic, social, in- laws relationship, Marital satisfaction and marital stability Changes and challenges in marriage	**15**
	Practical A survey on preferences of adolescents in choosing a life partner.	

IV	**Parent's Nurturance of Children over the Life Course** 1. Parent-Child Relationships in Diverse Contexts – 2. Planned parenthood and duties 3. styles of parenting 4. child rearing techniques 5. small family norms 6. Family process and relationship variables- 7. Reciprocity between parents and children 8. Parental attitudes & behavior and their influence on their children 9. Parental support, parental psychological and behavioral control autonomy granting	**15**
	Practical Prepare case studies on parent – child relationships in concern with parenting style	
V	**Family Crisis - Significant contemporary issues and concerns** **Families with marital disharmony** crisis casual factor responsible for stress and violence in family Family conflict: Parent-child conflict, inter-parental conflict Intergenerational Family Problems children, women, and elderly Interventions for families in trouble scope Needs and assessment Counseling – premarital and marital Help lines and welfare programs.	**15**
	Practical Conduct counseling session for family issues and marital problems	

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

CO1	Describe key elements of family dynamics across a range of family issues
CO2	Explain Family Patterns and Relationships
CO3	Understand the main content and concepts of marriage
CO4	Identify family roles and explain theoretical Perspectives and Ecology of Parent Child Relations
CO5	Introduction to Significant contemporary issues and concerns regarding family crisis

TEXTBOOK:

1. Erlbaum Heath, P. (2005). Parent-child relations: History, theory, research, and context. New Jersey: Prentice-Hall
2. G.W. Peterson & K.R. Bush (eds). Handbook of marriage and the family (pp 423-447). New York, NY: Springer.

REFERENCES:

1. Bengston, V. L., Acock, A. C., Allen, K. R., Dilworth-Anderson, P., & Klein, D. M. (Eds.) (2005). Sourcebook of family theory & research. New Delhi: Sage
2. Bretherton, I. (1993). Theoretical contributions from developmental psychology. In P.G. Boss, W.J. Doherty, R. LaRossa, W.R. Schumm, & S.K. Steinmetz (Eds.), Sourcebook of family theories and methods: A contextual approach (pp. 505-524). New York, NY: Plenum.
3. Broderick, C. B. (1993) Understanding family process: Basics of family systems theory. New York: Sage
4. Cole M & Cole. S (1993) The development of children. New York: Scientific American Books
5. DeLamater, J., & Hyde, J. (2004). Conceptual and theoretical issues in studying sexuality in close relationships
6. Erlbaum Heath, P. (2005). Parent-child relations: History, theory, research, and context. New Jersey: Prentice-Hall.
7. Ingoldsby, B. B., Smith, S., & Miller, J. E. (2004). Exploring family theories. Los Angeles: Roxbury. Kuczynski, L. (2002). Handbook of dynamics in parent-child relations. New York: Sage
8. G.W. Peterson & K.R. Bush (eds). Handbook of marriage and the family (pp 423-447). New York, NY: Springer.

E-LEARNING RESOURCES

- https://us.sagepub.com/sites/default/files/upm-assets/109149_book_item_109149.pdf
- https://www.npaonline.org/sites/default/files/6.%20NPA%20Family%20Dynamics%20The%20Good%20The%20Bad%20The%20Ugly_DePasquale.pdf

- https://www.researchgate.net/publication/327078511_Family_Dynamics_and_Intergenerational_Relations_A_psycho-Social_Analysis
- http://www.familiesandsocieties.eu/wp-content/uploads/2014/12/WP04BernardiEtal2013.pdf

MAPPING WITH PROGRAMME OUTCOMES

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

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

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	2	3	3
CO2	2	3	3	3	3
CO3	2	3	2	3	3
CO4	2	3	2	3	3
CO5	3	3	3	3	3
Weightage	11	15	12	15	15
Weighted percentage (rounded off) of Course contribution to POs	2	3	2	3	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**VI**	PART **III** **Discipline Specific Elective Course IV A**			COURSE CODE: **U23DN07**	
TITLE OF THE COURSE: **FOOD PACKAGING**					
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. Know different food packaging materials available in the market.
2. Select appropriate packaging materials for varied food products.
3. Promote positive consumer behavior among students.

UNIT	CONTENT	HOURS
I	Introduction of Packaging – Origin of food packaging, prehistoric package materials and methods; functions of packaging, primary elements of package forms, material and decoration. Various package forms – tubes, tetra packs, cans, bottles.	**15**
II	Packaging materials – Classification – Flexible and Rigid - properties, advantages and limitations – aluminum, glass, tinned steel plate, carton board, paper, flexible films, bio films, laminates and oth	**15**
III	Recent packaging technology : Edible packaging, retort packaging, aseptic packaging, vacuum packaging, modified atmosphere packaging, controlled atmosphere packaging, shrink packaging.	**15**
IV	Application of packaging technology to dairy products, sea foods, flesh foods, convenience foods , fruit products.	**15**
V	Food and nutrition labeling. Food laws and standards for Nutrition labeling; Acceptable Daily Intake Percent Daily Value, National: FSSAI, BSI, AGMARK, International: Codex, FAO/WHO, GRAS, ISO.	**15**
	PRACTICAL EXPERIENCE Visit to food packaging industries. Identifying different packaging materials and forms in day – to – day life.	

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

CO1	Summarize the functions and properties of food packaging
CO2	Compare and assess different food packaging materials
CO3	Distinguish various food packaging methods and performances
CO4	Identify suitable packaging methods and materials for different foods

CO5	Integrate knowledge on food laws and standards with consumer behavior

TEXTBOOK:

1. Manay, N.S. and ShadaksharaSwamy, M (2001) Foods, Facts and Principles, 2nd edition, New Age International Publishers, Chennai.

REFERENCES:

1. Potter, N.N. and Hotchkiss, J.H. (1996) Food Science, 5th ed., CBS Publishers and Distributors, New Delhi.
2. Sacharow, S. and Griffin, R (1970) Food Packaging – A Guide for the supplier, processor and distributor, The AVI Publishing Company, Inc.
3. Subbulakshmi, G. and Udupi, A.S. (2001) Food Processing and Preservation, New Age International Publishers, New Delhi.

E-LEARNING RESOURCES

- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=1092
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=1109

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	L	M	M	S
CO2	S	S	S	M	M	M	L	M	M	S
CO3	S	S	S	M	M	M	L	M	M	S
CO4	S	S	S	M	M	M	L	M	M	S
CO5	S	S	S	M	M	M	L	M	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: B.**Sc. HOME SCIENCE(NUTRITION,FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**VI**	Part **III** **Discipline Specific Elective Course IV B**			COURSE CODE: **U23DN08**	
TITLE OF THE COURSE: **FOOD SAFETY AND QUALITY CONTROL**					
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 the importance of food safety, quality control, food laws and regulations in food industry.
2. Get acquainted with the existing food safety quality management system.
3. Acquire basic understanding of quality concepts and practice in food companies.
4. Gain familiarity with the standards and specifications.

UNIT	CONTENT	HOURS
I	**Food safety -** Introduction to concepts of food quality, food safety, food quality assurance. General food laws and food safety regulations. History of Food regulations. Importance of Food Safety and quality control concepts applied in the food processing industry. Evaluation Of Food safety – Applications of HACCP in the food industry. **Activity -** Assignment on the preparation of food safety related risk analysis in food processing industry. Prepare a HACCP Plan for a food processing industry.	**15**
II	**Quality assurance -** Importance and functions of quality control. Theoretical and practical considerations, description of different systems: GAP, GMP, TQM, ISO. Indian food standards - Voluntary and Obligatory standards (PFA, FPO, MMPO, AGMARK etc) Codex Alimentarius. **Activity -** Training on the preparation of Standard Operating Procedure (SOP) and manual for GMP	**15**
III	**Food sanitation and safety -** Factors contributing to physical, chemical and biological contamination in food chain, prevention and control of food borne hazards. Personal hygiene of food handlers, cleaning compounds, sanitation methods, waste disposal strategy (solid and liquid waste) and pest control **Activity -** Preparing work instructions for the staff in charge of sanitation and the cleaning staff in food industry/food outlets. **Food adulteration -** Food adulteration, Common adulterants, Simple tests for detection of adulteration and toxic constituents. Functional role and safety issues - Recent trends and challenges in food adulteration **Activity -** Practical analysis of the detection of adulteration in different types of foods.	**15**

IV	**Food safety regulation in India -** An overview of Food Regulation in India; Food Laws and Regulations; Structure, organization and duties of regulatory system; Duties and responsibilities of food business operator; Registration and Licensing process and requirements; Labeling of Food Products; Traceability; Import and Export of Foods; Liability for Defective Products; Food safety management systems and certifications. **Activity -** Assignment to prepare a PPT to educate the food business operator about FSSAI licensing of their outlet	**15**
V	**Standard operating procedure and checklist -** Preparing scope, quality policy and quality objectives of food processing company, Defining Standard operating procedure. SOP for purchasing raw materials, receiving raw materials, storage, cleaning, holding, cooling, freezing, thawing, reheating, personal hygiene, facility and equipment. Preparation of HACCP based SOP checklist - personal hygiene, food preparation, hot holding, cold holding, refrigerator, freezer and milk cooler, food storage and dry storage, cleaning and sanitizing, utensils and equipments, large equipments, garbage storage and disposal and pest control. **Activity -** Prepare Audit Checklist for various food industries.	**15**

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

CO 1	Explain the areas in food systems that come under the purview of Food Safety & Quality Assurance.
CO 2	Cite Indian and international food laws and food safety programs
CO 3	Demonstrate familiarity with FSSAI regulations and Licensing
CO 4	Acquire skills to prepare manual and SOP for food industry
CO 5	Demonstrate the ability to detect common adulterants in food

TEXT BOOK:

1. Food safety and standards act 2006, Rules 2011, Regulations 2011, 10th Edition, ILBCOIndia, Indian Law Book Company, 2013.
2. FAO (2006) Manuals of Food Quality Control. 2-Additives Contaminants Techniques,Rome.

REFERENCE:

1. AOAC International. (2005) Official methods of analysis of AOAC International. 17thEd., current through 1st revision. Gaithersburg, MD, USA, Association of Analytical Communities.
2. Bhatia,R. and Ichhpujan,R.L (2004), Quality assurance in Microbiology, CBS Publishers and Distributors, New Delhi. 2004.
3. Bryan, F.L. (2007) Hazard Analysis Critical Control Point Evaluations A Guide to Identifying Hazards and Assessing Risks Associated with Food Preparation and Storage. World Health Organization, Geneva.
4. Early, R. (2006) Guide to Quality Management Systems for the Food Industry, Blackie,Academic and professional, London.
5. FAO (2006) Manuals of Food Quality Control. 2-Additives Contaminants Techniques,Rome.
6. Food and Agricultural Organization (1980): Manuals of Food Quality Control. 2 Additives Contaminants Techniques, Rome
7. Food safety and standards act 2006, Rules 2011, Regulations 2011, 10th Edition, ILBCOIndia, Indian Law Book Company, 2013.

E-LEARNING RESOURCES:

- http://www.fssai.gov.in/
- http://www.medindia.net
- http://www.foodsafety.unl.edu/

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	S	M	S
CO2	S	S	S	M	M	M	S	S	M	S
CO3	S	S	S	M	M	M	S	S	M	S
CO4	S	S	S	M	M	M	S	S	M	S
CO5	S	S	S	M	M	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER**:I**	PART **IV** **Skill Enhancement Course 1**			COURSE CODE: **U23SEN1**	
TITLE OF THE COURSE: **FUNDAMENTALS OF ART AND DESIGN**					
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. Understand the elements, principles of design and principles of housing.
2. Learn the concepts of colour and create colour schemes for interiors.
3. Learn the application of art principles, elements of design, colour schemes and housing principles in creating aesthetic interiors.

UNIT	CONTENT	HOURS
I	**Introduction to art and design -** Importance of design, Application of good taste and Role of good designer. Types of design- Structural and Decorative design. Classification of Decorative Design - Naturalistic, Stylized, Abstract and Geometrical Design.	**6**
II	**Elements of design -** Line and its types – horizontal, vertical, diagonal, curved, zigzag; Shape; Form – 2D&3D, Size, Texture- tactile and visual; light, pattern, Space- positive & negative and Colour- warm and cool. Application of elements to form design.	**6**
III	**Principles of Design -** Harmony – harmony of line, shape, size, texture and ideas. Balance – symmetrical, asymmetrical and radial. Proportion – proportional relationships, Greek oblong and Scale. Emphasis – emphasis through grouping of objects, use of contrast color, decoration, plain background space, unusual lines, shapes, and sizes. Rhythm – achieving rhythm through repetition of shapes, progression of size, continuous line movement, radiation, and gradation.	**6**
IV	**Colour -** Definition, Qualities of colour, Hue, Value, Intensity. Tints and Shades. The colour wheel/systems - Prang colour system, Physicist's Theory, Psychologist's Theory, Harmonies of related colors- Monochromatic, Analogous and Accented Neutral; Harmonies of contrasting colours – Direct, double, split and triad.	**6**
V	**Housing -** Selection of site and functions of house. Basic principles of planning a life space - Orientation, Grouping, Roominess, Lighting, Circulation, Storage Facilities and Privacy. Creating a life space- Factors in planning different rooms – Living Room, Bedroom, Dressing Room, Dining, Kitchen, Study Room, Store room, Bathroom, Utility space, Staircase and Verandah.	**6**

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

CO1	Classify design types like structural and decorative design
CO2	Explain the principles in planning a life space

CO3	Use different elements of design appropriately in creating design objects.
CO4	Apply the Art principles in Interior Design.
CO5	Apply colour harmonies in various rooms.

TEXTBOOK: Stella Soundararaj (2008) Text book of household arts, 4th Edition Orient Longman, Madras.

REFERENCES:

1. Andal. A and Parimalam.P, (2008), "A Text Book of Interior Decoration", Satish SerialPublishing House.
2. Chaudhari, S.N. (2006), "Interior Design", Aavishkar Publishers, Jaipur.
3. Goldstein, (1976), "Art in Every Day Life", Oxford and IBH Publishing House.
4. Kasu, A.A. 2005, "Interior Design", Ashish Book centre Delhi.
5. P.C. Varghese (2013), "Building Construction", PHI Learning Private Limited.
6. Premavathy Seetharaman and Parveen Pannu, (2009), "Interior Design and Decoration", CBSPublishers and Distributors Pvt Ltd. New Delhi.

E-LEARNING RESOURCES

- https://www.google.co.in/?gfe_rd=cr&ei=oJE8VvucFMOl8wfe0ZnICw#tbm=vid&q=principles+of+design+in+interior+design
- http://www.docstoc.com/docs/108663367/The-Munsell-and-Prang-Color-Systems
- https://www.decorilla.com/online-decorating/transitional-interior-design/

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	L	S	S	S	S	S	M	M	S	S
CO2	S	S	S	S	S	S	S	S	S	S
CO3	S	M	S	S	M	S	S	M	S	S
CO4	S	S	S	S	S	S	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **II**	PART **IV** **Skill Enhancement Course 2**			COURSE CODE: **U23SEN2**	
TITLE OF THE COURSE: **HOUSE KEEPING**					
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. Gain theoretical knowledge and practical applications of housekeeping
2. Learn the layout and functions of guest room.
3. Get acquainted with the attributes, qualities and skills required for proper functioning of the housekeeping department.

UNIT	CONTENT	HOURS
I	**Housekeeping Department -** Importance of housekeeping, Duties and Responsibilities of Housekeeping Department. Organizational Structure, types of lodging establishments. Job Description and Job Specification of staff in the department. Layout of the department, Personal Attributes. Qualities of the Housekeeping staff - skills of a good housekeeper.	**6**
II	**Housekeeping co-ordination and Procedures:** Briefing, Debriefing, Gate pass, **I**nter departmental Co-ordination with more emphasis on Front office and the Maintenance department. Indenting from stores- Inventory of Housekeeping Items, Housekeeping control desk, Importance, Role, Co-ordination, check list, key control, Handling Lost and Found, Forms, Formats and registers used in the Control Desk, Paging systems and methods, Handling of Guest queries, problem, request. General operations of control desk, Role of control desk during emergency.	**6**
III	**Hotel Guest room -** Importance of the Guestroom to a Guest, Types of guest rooms, Guest Supplies/Amenities in a guest room, Bed making procedures and types. **Different types and importance of keys** – section key, master key, floor key and grand master key. Key of executive offices and public areas and computerized key. **Pest control and eradication** – with special reference to rats, cockroaches, furniture beetle, clothes moth, etc. Dealing with emergency like fire, death, theft, accidents, safety security control.	**6**
IV	**Linen/ Uniform / Sewing Room:** Its importance in hotels, selection and buying of linen, inspecting, Storage Facilities, receiving used linen. Linen stock for any establishment, Layout, Types of Linen, sizes and Linenex change procedure, and conditions, Linen Inventory system. Uniform designing: Importance, selection, characteristics, and types.	**6**

V	**Housekeeping Inventories:** Introduction, Cleaning equipment – Selection of equipment. **Manual Equipment** - brooms and brushes, protective equipment, cloths used in cleaning and box sweeper. **Mechanical equipment** - electric equipment, vacuum cleaner, floor scrubbing and polishing machine, floor shampooing machine, containers trolley, chambermaid's trolley, etc. **Cleaning Agents** – Water, Detergents, Abrasives, Reagents, Organic Solvents, Disinfectants and Bleaches, Glass Cleaners, Laundry Aids, Toilet Cleaners, Polishes, Floor sealers and Carpet Cleaners, characteristics of a good cleaning agent. Selection, Storage and Issuing of Cleaning Agents.	**6**

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

CO1	Describe the Qualities, Skills, and responsibility of good housekeeper.
CO2	Explain the procedure and services provided by the housekeeping department.
CO3	Identify different types of guest rooms and list the common pest control methods used in hotels.
CO4	Choose appropriate storage procedures for linen and uniforms.
CO5	Evaluate suitability of cleaning agents to clean different surfaces.

TEXTBOOK: Kaushal, S.K. and Gautam, S.N. (2000) Accommodation Operations Management – A Textbook on Housekeeping, Frank Bros & Co., New Delhi.

REFERENCES:

1. Aleta Nitschke (2008) "Managing Housekeeping Operations" Educational Inst Of The Amer Hotel; Revised Edition, Isbn-13 **:** 978-0866123365
2. G. Raghubalan (2015) "Hotel Housekeeping: Operations and Management"3e Oxford University Press India, Isbn-13 978-0199451746
3. Jatashankar Tewari (2016), "Hotel Front Office 2E: Operations and Management" Oxford University Press; Third Edition
4. Nishant Pal (2022) "Accommodation Operations: Introduction to Housekeeping and Hotel Guest Room, Guest Services, HousekeepingControl Desk, Linen Room" Kindle Edition.
5. Reeta Pal and Nishant Pal (2022), Housekeeping - Housekeeping Procedures, Hotel Guest Room, Housekeeping Manpower Planning, Cleaning Science and Managing Quality Service, Kindle Edition.

E-LEARNING RESOURCES

- https://www.ihmnotes.in/assets/Docs/Books/9780199451746.pdf
- https://www.slideshare.net/SatyajitRoy21/personal-attributes-of- housekeeping-staff- 62900148
- https://www.slideshare.net/96vidya/duties-and-responsibilities-of-an- executive housekeeper
- https://www.ihmnotes.in/assets/Docs/Sem-3&4/Accomodation/Ch- 1,%20Linen%20Room.pdf
- http://kubershah.blogspot.com/2017/04/uniform-room.html

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	S	L	S	S	S	S
CO2	S	S	M	L	S	L	M	S	M	S
CO3	S	L	M	S	M	L	S	M	S	M
CO4	S	S	M	L	M	L	M	S	S	S
CO5	S	L	L	M	L	L	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	3	3	2
CO4	3	3	3	3	2
CO5	3	3	3	3	2
Weightage	15	14	15	15	12
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	2

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **II**	PART: **IV** **Skill Enhancement Course 3**	COURSE CODE: **U23SEN3**			
TITLE OF THE COURSE: **FRONT OFFICE MANAGEMENT**					
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. Understand the varied dimensions of the food service industry with special reference to front office
2. Study the concepts of organization, communication and operational procedures in front office
3. Develop skills to effectively manage the front department food service institutions

UNIT	CONTENT	HOURS
I	**Classification of hotels** Classification of hotels based on star category, size, ownership and other categories. Types of rooms	6
II	**Hotel organization and functions** Organization pattern in a large, medium and small sized hotel. Functions of receptionist, job description of front office manager, assistant front office manager, assistant manager, reservation manager, lobby manager, front office assistants, night manager, night clerk, bell captain and bellboy.	6
III	Tariff, basis of charging, tariff fixation, room tariff card- group rate, volume rate, executive business service rates, tour group wholesale rate, discounted rate, crib rate, extra bed rate, family rate, crew rate corporate rate and student faculty programme	6
IV	**Front office and guest handling** Stages of guest contact with the hotel-the guest arrival, preparing, and receiving, registration procedure-systems of registration, rooming of guest, group arrival, VVIP guest arrival and greeting. Activities of front desk during stay- mail and message handling, safe deposit boxes.	6
V	**Guest accounting** Basics of keeping accounts, guest ledger, city ledger- accounting entries, front office cashiering, guest accounting process, night auditing- night audit duties, night audit process, night audit report and departure procedure	6

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

CO1	Classify hotels and rooms based on star category, ownership, location etc.
CO2	Describe the organization chart of a front office department and duties and Functions of front office staff
CO3	Explain the basis of tariff fixation and guest registration process

CO4	Evaluate the role of front office in ensuring customer comfort and satisfaction from check -in to check out at the hotel
CO5	Summarize the role of the guest accounting process and each of the front office staff.

TEXTBOOK:

1. Ahmed Ismail (2004). Front office operations and management, Delmar Publications
2. Andrews.S (1982) , Hotel Front office training manual , Tata mc Graw Hill publishing company Ltd, New Delhi
3. Raghubalan G, Raghubalan .S(2001). Hotel housekeeping operations and management, Oxford University Press

REFERENCES:

1. Ahmed Ismail (2004). Front office operations and management, Delmar Publications
2. Andrews.S (1982) , Hotel Front office training manual , Tata mc Graw Hill publishing company Ltd, New Delhi
3. Chon K and Raymond. T S (2001) . Welcome to hospitality- An introduction- II nd Edition, Delamar publication
4. Raghubalan G, Raghubalan .S(2001). Hotel housekeeping operations and management, Oxford University Press

E-LEARNING RESOURCES

- http://paramjamwal.blogspot.in/2013/11/duties-and-responsibilities-of.html
- http://www.hotelhousekeeping.org/Hotel-Housekeeping-Duties.html
- http://hotel-industry.learnhub.com/lesson/7885-importance-of-housekeeping

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	M	M	L	M	M	M
CO2	S	S	S	M	M	M	M	M	S	M
CO3	S	S	S	M	M	M	M	M	M	M
CO4	S	S	S	S	M	M	M	M	M	M
CO5	S	S	S	M	M	M	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	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER:**III**	**PART IV** **Skill Enhancement Course 4**	COURSE CODE: **U23SEN4**
TITLE OF THE COURSE: **ENTREPRENEURSHIP DEVELOPMENT**		

HOURS OF INSTRUCTION PER WEEK: 1	CREDITS**: 1**	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. Get empowered to face the challenging world.
2. Gain working knowledge in entrepreneurship and become a successful entrepreneur.

UNIT	CONTENT	HOURS
I	Entrepreneurship – Meaning, importance. Types – Role of Entrepreneurs in Economic Development – Qualities of an Entrepreneur – Entrepreneurship as a career.	**3**
II	How to start Business? – Product selection – Form of ownership – Plant location – Land, Building, Water and Power – Raw materials – Machinery – Manpower – Other infra-structural facilities – Licensing registration and local bye laws.	**3**
III	Institutions for Entrepreneurship Development – Micro Small and Medium Enterprises, DIC, ITCOT, SIDCO, NSIC, SISI – Institutional Finance to Entrepreneurs – TIIC, SIDBI, Commercial banks – Incentives to small scale industries - Role of SHGs.	**3**
IV	Project proposal – proposal format and content – steps in project proposal preparation, feasibility testing, SWOT Analysis.	**3**
V	Case histories of successful entrepreneurs – Entrepreneurship Development in India; Women Entrepreneurship in India; Sickness in Small Scale Industries and their remedial measures.	**3**

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

CO1	Summarize the types and qualities of an entrepreneur.
CO2	Explain the procedure of starting a business.
CO3	Describe the role of financing institutions involved in entrepreneurship development.
CO4	Discuss the steps in preparation of project proposal.
CO5	Analyze the case histories of successful women entrepreneurs.

TEXTBOOK: Nandan, H (2007) Fundamentals of Entrepreneurship, Prentice – Hall of India Pvt. Ltd., New Delhi.

REFERENCES:

1. Radha, V. (2007) Entrepreneurial Development, Prasanna and Co., Chennai.
2. Sundaram, S.S.M and Muthupandi, M. (2002) Entrepreneurship Development, Iyyappan Print House, Madurai.

3. Sundarapandian, P (2004) Entrepreneurship Development, 2nd edition, M.M. Publishers, Virudhunagar.

E-LEARNING RESOURCES

- https://www.controlco.com.au/blog/2015/7/16/lighting-control-methods
- https://www.frankelbuildinggroup.com/resources/7-elements-of-interior-design/
- https://www.beautifulhomes.com/home-decor-ideas/interior-design/the-7-elements-of-design-and-how-to-use-them-in-your-home-interiors.html
- https://foyr.com/learn/accessories-in-interior-design/

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	L	M	L	S	L	L	S
CO2	S	L	L	S	S	L	L	M	L	S
CO3	S	L	L	S	S	L	L	M	L	S
CO4	S	L	M	S	S	S	M	L	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER: **III**	PART **IV** **Skill Enhancement Course 5(P)**			COURSE CODE: **U23SEN5P**	
TITLE OF THE COURSE: **BAKERY PRACTICAL**					
HOURS OF INSTRUCTION PER WEEK: **2**	CREDITS**: 2**	CIA: **25**	EXTERNAL MARKS: **75**	TOTAL: **100**	

NATURE OF THR 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 basic concepts of baking
2. Acquaint with the role of various major and minor ingredients in bakery products.

UNIT	CONTENT	HOURS
I	**BREAD MAKING:** Bread Making: Demonstration & Preparation of Plain, Milk, Masala and Fruit bread.	6
II	**PRODUCTION OF BREAKFAST ROLLS:** Demonstration & Preparation of Single Knot, Double Knot, Croissant, Pizza base and Bun.	6
III	**PREPARATION OF CAKES:** Demonstration & Preparation of Fat Spange, Fatless Sponge	6
IV	**PREPARATION OF ASSORTED PASTRIES:** Demonstration & preparation of various pastries, Short Crust, fresh cream pastry, black forest pastry, gateau and pineapple pastry.	6
V	**PREPARATION OF COLD AND HOT PUDDING:** Caramel custard, Bread and Butter pudding Queen of pudding. Preparation of cold pudding with base of custard (mousse)	6

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

CO1	To Know the essentials of basic bakery and confectionery knowledge
CO2	To identify the various commodities used in bakery and confectionery preparation.
CO3	To illustrate the methods of cooking in bakery and confectionery.
CO4	To differentiate the between selection and identification of raw materials used in bakery and confectionery.
CO5	To classify the cooking equipment used in bakery and confectionery.

TEXTBOOK:

1. Basic Baking Science and Craft by S.C. Dubey (S.C. Dubey F-10/5, Malaviya Nagar , New Delhi- 110 017), 2019,
2. Yogambal A (2006) Theory of Bakery and Confectionery, Visiga Publications, Singampunari, Tamil Nadu

REFERENCES:

1. Parvinder S. Bali, Food Production Operations, 11" Edition, Oxford University Press, New Delhi 2018
2. Kinton and Ceserani, The Theory of Catering, ELBS Publications, 2020.

3. Parvinder S. Bali, International Cuisine Food Production Management, 10 Edition, 2018.

E-LEARNING RESOURCES

- https://vou.ac.in/sites/default/files/sim/HM-302.pdf
- http://hmgwalior.blogspot.com/2012/10/bakery-theory-notes.html
- http://www. Ciilmuniversity.co.in/downloads/Bakery& confectionery. Pdf

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	S	S	S	S	S	S	S
CO2	S	S	S	S	S	M	S	S	S	S
CO3	M	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	M	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	2	3	3
CO2	2	3	3	3	3
CO3	3	2	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	2
Weightage	14	14	14	15	14
Weighted percentage (rounded off) of Course contribution to Pos	3	3	3	3	3

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER**:IV**	PART **IV** **Skill Enhancement Course 6**	COURSE CODE: **U23SEN6**
TITLE OF THE COURSE: **INTERIOR DECORATION**		

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. Develop innovative ideas in the use of interior accessories and flower arrangements.
2. Analyze and implement the appropriate furniture styles and lighting fixtures for interiors and exteriors.
3. Apply Decorative styles in interiors and exteriors.

UNIT	CONTENT	HOURS
I	**Accessories -** Definition, Types of accessories, Selection and arrangement of accessories in various areas – living room, Dining room,bedroom, study room with application of art principles and elements of design. **Pictures –** Concept, Selection of pictures, framing and mounting of pictures – glass, matbacking, frame, pictures. Types of picture frame – Shadow box, decorative, standard, floating and collage. Hanging law of margin in picture framing.	**6**
II	**Flower Arrangement -** Definition, importance of flower arrangement, Styles of flower arrangement – Traditional, Oriental/Japanese styles - Ikebana, Moribana, Nagarie, Shikibana, Morimono, Rikka, Ukibana and Modern. Selection of containers based upon styles of arrangement. Flowers – Names, its colours, textures and its visual perception in various indoor spaces.	**6**
III	**Furniture Arrangement -** Styles of furniture – traditional, contemporary and modern design. Furniture for different purpose, furniture materials. Selection and arrangement – Furniture for various rooms – Living, dining, bedroom, kitchen, study room, office. Furniture Dimensions, Care and maintenance.	**6**
IV	**Lighting -** Lighting requirements - Definition and Importance of lighting. Ideal light requirements, Types of lighting - General/ Ambient lighting, Task/Spot lighting, Architectural lighting - valance, soffit, bracket, cone, recessed, cornice. Lighting fixtures – Movable and immovable fixtures. Principles of home lighting, Glare - types and causes of glare. Suggestions for improving daylight illumination	**6**
V	**Decorative Styles -** Concept and Characteristic features of Contemporary, Modern, Traditional, Transitional and Eclectic styles. Wall decoration–Origin, Motifs, Styles and Technique of Madhubani, Warli, Pithora,Fresco and Tempera.	**6**

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

CO1	Select accessories and arrange pictures suited to the background of interiors
CO2	Creating innovative flower arrangements in accordance to the occasion and needs
CO3	Apply the principles of furniture arrangement in various areas of Interiors.
CO4	Apply proper lighting for efficient lighting in interiors and exteriors

CO5	Use decorative styles and wall decoration techniques appropriately in various rooms.

TEXTBOOK: Stella Soundararaj (2008) Text book of household arts, 4th Edition Orient Longman, Madras.

REFERENCES:

1. Andal and Parimalam (2015), "A Textbook of Interior Decoration", Satish Serial Publishing House, ISBN-13: 978-8189304508
2. Frida Ramstedt, (2020), "The Interior Design Handbook", Particular Books, ISBN-13: 978-0241438114
3. Gary Gordon (2015), "Interior Lighting for Designers", Wiley; 5th edition, ISBN-13:978- 0470114223
4. Grimley C and Mimi Love (2018), "The Interior Design Reference & specificationBook", Rockport Publishers, ISBN-13 978-1631593802:
5. Mark Karlen, Christina Spangler, et al (2017), "Lighting Design Basics", Wiley; 3rd edition, ISBN-13: 978-1119312277
6. Nikita Mittal (2021), "The Key of Interior Design (Illustration of Methods & Principles), STANDARD BOOK HOUSE; 1st edition, ISBN-13: 978-8194359753
7. Pratap Rao. M (2020), "Interior Design: Principles and Practice", Standard Publishers And Distributors Pvt Ltd, ISBN-13: 978-8180141560

E-LEARNING RESOURCES

- https://www.controlco.com.au/blog/2015/7/16/lighting-control-methods
- https://www.frankelbuildinggroup.com/resources/7-elements-of-interior-design/
- https://www.beautifulhomes.com/home-decor-ideas/interior-design/the-7-elements-of-design-and-how-to-use-them-in-your-home-interiors.html
- https://foyr.com/learn/accessories-in-interior-design/

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	L	M	L	S	L	L	S
CO2	S	L	L	S	S	L	L	M	L	S
CO3	S	L	L	S	S	L	L	M	L	S
CO4	S	L	M	S	S	S	M	L	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER:**IV**	PART **IV** **Skill Enhancement Course 7**			COURSE CODE: **U23SEN7**	
TITLE OF THE COURSE: **WOMEN'S HEALTH AND WELLNESS**					
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. Understand the diverse factors that have a bearing on women's health.
2. Highlight different aspects of health that contributes to a good lifestyle for women across the globe.

UNIT	CONTENT	HOURS
I	**Nutrition for Women -** Dietary Guidelines for a healthy lifestyle, Current concepts pertaining to Balanced Diets, Nutrient requirements for young and older women with special focus on Protein, Iron, Vitamin D and Calcium, Factors affecting nutrient intake in women- Socioeconomic, Environmental conditions, Health conditions; Consequences of Eating disorders in young women.	**6**
II	**Physical Health -** Significance of Body weight and Body composition parameters, Benefits of Aerobic, Flexibility and Strength training exercises- on General health, Bone health, and risks associated with NCDs.	**6**
III	**Reproductive Health -** Menstrual Health, Pregnancy and Lactation, Pre- and Post-Menopausal concerns- preventive measures, sexually transmitted diseases- an overview.	**6**
IV	**Mental Health -** Common mental health problems - Trends and issues relating to women, Depression, Anxiety and coping with Stress, Strategies to improve mental health- learning new skills and hobbies, Relaxation techniques such as yoga and meditation.	**6**
V	**Social Health -** Balancing home and career, strengthening relationships, enhancing communication skills and Personality Development, technological advancements and its impact, Dealing with domestic violence, and harassment issues.	**6**

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

CO1	Define terms related to nutrition, physical, reproductive, mental and social health.
CO2	Discuss the need for right nutrition, exercises and skills needed for the overall well- being of women.
CO3	Explain the significance of maintaining physical, reproductive, mental and social health for the overall well-being of women.
CO4	Devise strategies to improve women's health in a holistic manner.
CO5	Recommend simple measures for a healthy lifestyle.

TEXTBOOK: Minkin M. J. and Wright C. V. (2003) The Yale Guide to Women's Reproductive Health from menarche to menopause. Yale University Press, London

REFERENCES:

1. Lanza di Scalea T, Matthews KA, Avis NE, et al. (2012) Role stress, role reward, and mental health in a multiethnic sample of midlife women: results from the Study of Women's Health across the Nation (SWAN). J Women's Health; 21(5):481-489.
2. Mahan K and Sylvia E. Stump (2000) Krause's Food Nutrition and Diet Therapy, Saunders, USA
3. Minkin M. J. and Wright C. V. (2003) The Yale Guide to Women's Reproductive Health from menarche to menopause. Yale University Press, London
4. Sizer F. S. and Whitney E. (2014) Nutrition: Concepts & Controversies. 13th Ed., Wadsworth, Cengage Learning, USA.
5. Sperry L. (2016) Mental Health and Mental Disorders. ABC-Clio, California
6. Williams M.H., Anderson D.E., Rawson E.S. (2013) Nutrition for Health, Fitness and Sport. McGraw Hill, New York.
7. Wrzus C, Hänel M, Wagner J, Neyer FJ. (2013) Social network changes and life events across the life span: a meta-analysis. Psychol Bull;139(1):53-80.

E-LEARNING RESOURCES

- https://www.nhp.gov.in/social-health_pg
- https://ncert.nic.in/textbook/pdf/iehp113.pdf
- https://www.nih.gov/health-information/social-wellness-toolkit
- https://www.cdc.gov/reproductivehealth/womensrh/index.htm

MAPPING WITH PROGRAMME OUTCOMES

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	L	S	L	L	S
CO2	S	S	S	M	M	M	S	L	M	S
CO3	S	S	M	S	M	M	S	S	M	S
CO4	S	S	M	S	S	S	S	S	S	S
CO5	S	S	M	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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**		
SEMESTER**: I**	PART **IV** **Foundation Course**	COURSE CODE: **U23FN1**
TITLE OF THE COURSE**: INTRODUCTION TO HOME SCIENCE**		

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. Understand the concept, scope and philosophy of Home Science.
2. Appreciate the role of Home Science in family living.

UNIT	CONTENT	HOURS
I	**Home Science Education**: Meaning, Philosophy, Components, Career Perspectives- Its relation to other disciplines- Science and Humanities- Origin and Growth of Home Science Education in India-Home Science Association of India-History and Objectives-Achievements, **Introduction to Household Arts and Interior Decoration**: Objectives of Planning and Furnishing a home	**6**
II	**Food Science**-Definition, Functions of Food, Food in relation to Health, Objectives of Cooking, Preliminary treatment of Food-Advantages and Disadvantages, **History of Nutrition**: Nutrition Research in India	**6**
III	**Food Service**: Styles: Waiter, Self, Vending, Mobile Catering, Sanitation and Safety, Presentation and display of food- Principles and functions of Food Service Management, **Dietetics**: Food Guide, RDA for different age groups-Food Exchange List- Balanced Diet-Therapeutic Diets	**6**
IV	**Human Development:** Conception-Prenatal Development, Growth and Development during childhood and adolescence, Characteristics of adulthood and elderly, **Textiles:** Fibre - definition, identification, classification, Yarn- definition, types, Introduction of family clothing; principles of clothing, factors influencing selection of clothing for various age groups.	**6**
V	**Extension Education** – meaning, scope, characteristics, objectives, need, principles, process, models and philosophy- Emergence of Home Science Extension Education in India, Home Science Extension Service at various levels: Village, Block and District, **Home Management:** Concept, Meaning, Definition, Resources- Types, Characteristics, Family Housing: Importance, Salient features	**6**

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

CO1	Understand the meaning of Home Science, its components and the basics of Household Arts
CO2	Identify the relationship between food, nutrition and health
CO3	Distinguish the types of food service and comprehend food exchange lists
CO4	Explain the stages of Human Development and classification of textile fibre
CO5	Describe the scope of Extension Education and the concept of Home Management

TEXTBOOK: Mullick P, Textbook of Home Science, Kalyani Publications.

REFERENCES:

1. Srilakshmi, B. (2017) Nutrition Science, 5th Edition, New Age International (P) Ltd., Chennai.
2. Srilakshmi, B. (2018) Food Science, 7th Edition, New Age International (P) Ltd., Chennai.
3. Sethi M., Malhan S,(1997) Catering Management, 2nd Ed., New Age International Pvt. Ltd., New Delhi
4. Devadas, R.P. and Jaya, N. (1981) Textbook on child development, Macmillan and Co.,
5. Srilakshmi, B.(2014) Dietetics, Seventh Edition, New Age International (P) Ltd., Chennai.
6. Varghese, M.A., Ogale,N.N. & Srinivasan,K (2011) Home Management, New Age International Pvt. Ltd., New Delhi.
7. Serene Shekhar, (Gote) and Santosh Ahlawat, (2013). Text Book of Home Science Extension Education, Daya Publishing House, New Delhi
8. Dantayagi, S. (2015) Fundamentals of Textiles and their care, Orient Black Swan Private Limited. New Delhi.

E-LEARNING RESOURCES

- http://ecoursesonline.iasri.res.in/course/view.php?id=215
- http://ecoursesonline.iasri.res.in/course/view.php?id=184
- http://ecoursesonline.iasri.res.in/course/view.php?id=190
- http://ecoursesonline.iasri.res.in/course/view.php?id=201
- http://ecoursesonline.iasri.res.in/course/view.php?id=235

MAPPING WITH PROGRAMME OUTCOMES

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

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

MAPPING WITH PROGRAMME SPECIFIC OUTCOMES

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	3
CO2	3	3	2	3	3
CO3	3	3	2	3	3
CO4	3	2	2	2	2
CO5	3	2	2	2	2
Weightage	15	12	10	13	13
Weighted percentage (rounded off) of Course contribution to Pos	3	2.4	2	2.6	2.6

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**			
SEMESTER: **V**	**Part IV**	COURSE CODE : **U23SIN1**	
TITLE OF THE COURSE: **SUMMER INTERNSHIP**			
TOTAL HOURS: 30	CREDITS: **2**	EXTERNAL MARKS: **100**	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 :

The Internship is committed to preparing graduates in the B.Sc. Home Science (Nutrition, Food Service Management and Dietetics) Degree to join as entry level dietitians 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

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: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**				
SEMESTER: **VI**	PART **IV**	COURSE CODE:		
TITLE OF THE COURSE**: EXTENSION ACTIVITY**				
TOTAL HOURS: - **15** (OUT OF COLLEGE HOURS)	CREDITS**: 1**	**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

PROGRAMME: **B.Sc. HOME SCIENCE (NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS)**					
SEMESTER**: VI**	PART **IV** **Professional Competency Course**			COURSE CODE: **U23PCN1**	
TITLE OF THE COURSE**: LIFE SKILL STRATEGIES AND TECHNIQUES**					
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. Develop skills for a healthy personal and professional approach to life.
2. Gain competency and confidence through mastery of skills needed for holistic living

UNIT	CONTENT	HOURS
I	**Communication Skills** : Developing Listening, Speaking and Reading Skills, An introduction to Scientific Writing, Letter Writing, Usage of Non-verbal Communication. Writing for Grants-a brief Proposal, Statement of Purpose (SoP).Effective use of social media in communicating messages.	6
II	**Professional Skills:** Resume Writing, Interview Skills, Group Discussions, Presentation Skills. Work-Life Balance- Strategies to achieve them, Time Management.	6
III	**Leadership/Management Skills:** Leadership skills, Managerial skills, Team building, Entrepreneurial skills, Ethics and Integrity.	6
IV	**Basic Lifestyle-related Skills:** Healthy eating using simple cooking practices, Home makeover skills, Basics in Gardening, Stress Management- Yoga and Fitness practices-benefits for a Holistic Life, An introduction to Martial Arts as a protective strategy.	6
V	**Human Value Skills:** Strategies and techniques to promote Non-Violence, Service to the community, developing skills pertaining to administering First Aid.	6

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

CO1	Describe different skills and techniques needed to maintain a healthy personal and professional approach to life.
CO2	Identify skills needed for a healthy lifestyle.
CO3	Explain the need to develop various skillsets for a holistic life.
CO4	Develop confidence with respect to emotional competency, personal and professional life.
CO5	Recommend life skill strategies for the holistic development of the individual.

TEXTBOOK:

Kumar S., and Lata P. (2015). Communication Skills. 2nd ed. Oxford University Press, India.

REFERENCES:

1. Ashokan, M. S. (2015). Karmayogi: A biography of E. Sreedharan. Penguin, UK.
2. Hanson C. W. (2021). Resume Writing 2021: The ultimate guide to writing a resume that lands you the job. Independently Published, Kindle.
3. Jane E., Burt S., and Nudelman G. (2018). Professional Communication: Deliver effective written, spoken and visual messages. 4th ed. Juta and Company Pvt. Ltd., Cape Town, South Africa.
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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	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