B.SC.,
HOME SCIENCE

SYLLABUS

FROM THE ACADEMIC YEAR
2023-2024

TAMILNADU STATE COUNCIL FOR HIGHER EDUCATION,
CHENNAI – 600 005

Content

INTRODUCTION

Home Science is both multidisciplinary and interdisciplinary in its context encompassing five major disciplines which includes Family Resource Management, Foods and Nutrition, Textiles and Clothing, Human Development, and Extension Education. Each discipline has one or more specific areas of specialization. Each specialization under Home Science offers a wide array of courses that prepares students for employment or setting up an enterprise in a wide range of sectors such as healthcare, childcare, food and hospitality, textiles, home and office interiors. Further, all courses of the programme are designed to improve the lifestyle of the individual, family and society that could most certainly contribute to the holistic development of the community.

The course curriculum for this programme has been planned to improve the employability potential and increase the scope for higher education. Globalization has created a market for jobs with different skills in the areas of food and healthcare industries and can thus contribute to the professional growth of students enrolled in this programme. This programme facilitates action-based research in the various fields with the advantage of nurturing critical and analytical thinking that pave the way for innovation and entrepreneurship.

Nutrition professionals are in high demand due to the fast-paced lifestyle, and an increasing incidence of lifestyle related disorders affecting all sections of the population. With growing awareness to lead healthier lifestyles, courses relating to foods and nutrition can provide the framework for developing skills and knowledge to become a well-trained Nutritional professional. The programme can also contribute in designing community-based interventions for a healthier society. For a Home maker, this programme will give an insight into the management of different resources on a day to day basis, and keeping abreast with the challenges posed by modern day living.

LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORK GUIDELINES BASED REGULATIONS FOR UNDER GRADUATE PROGRAMME	
Programme:	**B.Sc. Home Science**
Programme Code:	
Duration:	**3 years [UG]**
Programme Outcomes:	**PO1: Disciplinary knowledge:** Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study **PO2: Communication Skills:** Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups. **PO3: Critical thinking:** Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. **PO4: Problem solving: Capacity** to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations. **PO5: Analytical reasoning**: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints. **PO6: Research-related skills**: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation **PO7: Cooperation/Team work:** Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team **PO8: Scientific reasoning**: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective. **PO9: Reflective thinking**: Critical sensibility to lived experiences, with self awareness and reflexivity of both self and society. **PO10 Information/digital literacy:** Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.

	PO 11 Self-directed learning: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion. **PO 12 Multicultural competence:** Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups. **PO 13: Moral and ethical awareness/reasoning**: Ability toembrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstratingthe ability to identify ethical issues related to one‟s work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work. **PO 14: Leadership readiness/qualities:** Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way. **PO 15: Lifelong learning:** Ability to acquire knowledge and skills, including „learning how to learn‟, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling.

Highlights of the Revamped Curriculum

- The curriculum focuses on meeting the demands of the Food and Hospitality industries, Healthcare, Childcare, Textiles, Home and Office interiors, and Social Welfare sectors.
- This student centric programme ensures knowledge and skill development by providing hands on training, on-the-job internships, projects, lab practices, experiential activities, exposure to entrepreneurial skills and training for competitive examinations.
- The course content is comparable to world class curriculum.
- The courses are updated to include recent developments in the field of Home Science.
- References are updated and web resources are cited.
- Each course in the curriculum carries either a practical/activity or experiential learningcomponent to ensure skill development along with acquiring knowledge in the subject.
- Potential for employability has been enhanced through mandatory internships.
- Digital literacy and competency is ensured using ICT enabled learning environment.

Value additions in the Revamped Curriculum:

Semester	Newly introduced Components	Outcome / Benefits
I	**Foundation Course** To ease the transition of learning from higher secondary to higher education, providing an overview of the pedagogy of learning Literature and analysing the world through the literary lens gives rise to a new perspective.	➢ Instill confidence among students ➢ Create interest for the subject
I, II, III, IV	**Skill Enhancement papers** (Discipline centric / Generic / Entrepreneurial)	➢ Industry ready graduates ➢ Skilled human resource ➢ Students are equipped with essential skills to make them employable
		➢ Training on language and communication skills enable the students gain knowledge and exposure in the competitive world.
		➢ Discipline centric skill will improve the Technical knowhow of solving real life problems.
III, IV, V & VI	Elective papers	➢ Strengthening the domain knowledge ➢ Introducing the stakeholders to the State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature ➢ Emerging topics in higher education/ industry/ communication network / health sector etc. are introduced with hands-on-training.

IV	Elective Papers	➢ Exposure to industry moulds students into solution providers ➢ Generates Industry ready graduates ➢ Employment opportunities enhanced
V Semester	Elective papers	➢ Self-learning is enhanced ➢ Application of the concept to real situation is conceived resulting in tangible outcome
VI Semester	Elective papers	➢ Enriches the study beyond the course. ➢ Developing a research framework and presenting their independent and intellectual ideas effectively.
Extra Credits: **For Advanced Learners / Honors degree**		➢ To cater to the needs of peer learners / research Aspirants
Skills acquired from the Courses	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill	

B.Sc. Home Science-Nutrition, Food Service Management and Dietetics/Clinical Nutrition/ ClinicalNutrition and Dietetics/Foods and Nutrition/Food Science and Nutrition/Interior Design and Decor

S.No.	Contents	SEM
	List of Mandatory Courses/ Core Courses/Allied Courses*	
1.	Food Science	I
2.	Basic Cookery Practical	I
3.	Human Physiology-Theory and Practical	II
4.	Basics of Food Microbiology -Theory and Practical	II
5.	Human Nutrition	III
6.	Nutrition Practical	III
7.	Nutritional Biochemistry-Theory and Practical	IV
8.	Human Development	IV
9.	Nutrition through the lifecycle-Theory and Practical	IV
10.	Public Health Nutrition	V
11.	Nutrition Education and Communication	V
12.	Fibre to Fabric	V
13.	Food Preservation-Theory and Practical	VI
14.	Food Safety and Quality control	VI
15.	Foundations of Entrepreneurship	V/VI
16.	Quantity Food Production and Service-Theory and Practical	V
17.	Dietetics	V/VI
18.	Dietetics Practical	V/VI
19.	Food Service Management	VI
20.	Sports Nutrition	VI

21.	Functional foods for Chronic Disease	VI
22.	Principles of Resource Management	II/III
23.	Interior Decoration	II/III
24.	Clinical Nutrition- Theory and Practical	VI
25.	*Allied Chemistry offered by Chemistry Department is mandatory	
	List of Elective/Non-Major Elective/ Skill EnhancementOptional Courses****	
1.	House Keeping	
2.	Food Product Development	
3.	Consumer Education	
4.	Life skill Strategies and Techniques	
5.	Landscape Design and Ornamental Gardening	
6.	Concepts in Apparel Designing	
7.	Introduction to Fashion Designing	
8.	Fundamentals of Art and Design	
9.	Womens Health and Wellness	
10.	Fundamentals of Research in Nutritional Sciences	
11.	Family Dynamics	
12.	Foundations of Baking and Confectionery	
13.	Changing trends in Extension Education	
14.	Front office Management	
15.	Nutritional Assessment and Diet Counselling	
16.	Pre-School and Crè+-che Management	
	**The elective courses listed above can also be considered for Skill Enhancement or Non-Major Elective and the credits and hours can be reduced accordingly.	
	Internship – Internship in Hospitals / Food industry / Catering establishment / Health care facility/Fitness centre/ NGO	
	List of Compulsory Skill Enhancement Courses to be offered	
1.	Computer Applications in Home Science SC7	IV
2.	Aptitude and Reasoning skills for Competitive Examinations SC8	VI

Choice Based Credit System (CBCS), Learning Outcomes Based Curriculum Framework (LOCF) Guideline Based Credit and Hours Distribution System for all UG courses including Lab Hours

First Year – Semester - I

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Course I – Basic Cookery	4	5
Part-4	Core Course II – Basic Cookery Practical	4	4
	Elective Course I – Fundamentals of Art and Design	3	3
	Elective Course – II Fundamentals of Art and Design Practical	2	2
	Skill Enhancement Course SEC-1 – House Keeping	2	2
	Foundation Course – Introduction to Home Science	2	2
		23	**30**

Semester - II

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Course III – Human Physiology	4	5
Part-4	Core Course IV – Human Development	4	4
	Elective Course III – Allied Theory	3	3
	Elective Course – IV – Allied Practicl	2	2
	Skill Enhancement Course SEC-2 Food Product Development	2	2
	Skill Enhancement Course SEC-3 Consumer Education	2	2
		23	**30**

Second Year – Semester - III

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Course V – Human Nutrition	4	5
Part-4	Core Course VI – Nutrition Practical	4	4
	Elective Course V – Basic Chemistry I	3	3
	Elective Course – VI – Basic Chemistry I Practical	2	2
	Skill Enhancement Course SEC- 4 Foundations of Baking and Confectionary	2	2
	Skill Enhancement Course SEC – 5 Life Skill Strategies and Techniques	2	2
		23	**30**

Semester – IV

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Course VII – Nutritional Biochemistry	4	4
Part-4	Core Course VIII – Nutritional Biochemistry Lab	4	4
	Elective Course VII – Basic Chemistry II	3	3
	Elective Course – VIII – Basic Chemistry II Practical	2	2
	Skill Enhancement Course SEC- 6 Women's Health and Wellness	2	2
	Skill Enhancement Course SEC – 7 Family Dynamics	2	2
		25	**30**

Semester - V

Part	List of Courses	Credit	No. of Hours
Part-3	Core Course IX – Dietetics	4	5
Part-3	Core Course X – Dietetics Practical	4	5
Part-3	Core Course XI – Fibre to Fabric	4	5
Part-3	Core Course XII – Basics of Food Microbiology	4	5

Part-3	DSE - I – Front Office Management	3	4
Part-3	DSE –II - Aptitude Reasoning Skill for Competitive Examinations	3	4
	Value Education	2	2
	Internship / Industrial Visit / Field Visit	2	-
		26	**30**

Semester-VI

Part	List of Courses	Credit	No. of Hours
Part-3	Core Course XIII – Food Service Management	4	6
Part-3	Core Course XIV – Food Preservation and Quality Control	4	6
Part-3	Core Course XV – Principles of Resource Management	4	6
Part-3	DSE - III – Internship in Hospitals	3	5
Part-3	DSE - IV – Community Nutrition and Extension Education	3	5
	Extension Activity	-	-
	Professional Competency Skill - Computer Application in Home Science	2	2
		20	**30**

Consolidated Semester wise and Component wise Credit distribution

Parts	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total Credits
Part I	3	3	3	3	-	-	12
Part II	3	3	3	3	-	-	12
Part III	13	13	13	13	22	18	92
Part IV	4	4	3	6	4	1	22
Part V	-	-	-	-	-	2	2
Total	23	23	22	25	26	20	**140**

***Part I. II, and Part III components will be separately taken into account for CGPA calculation and classification for the under graduate programme and the other components. IV, V have to be completed during the duration of the programme as per the norms, to be eligible for obtaining the UG degree.**

Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or Overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate	
	between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

ALAGAPPA UNIVERSITY, KARAIKUDI
NEW SYLLABUS UNDER CBCS PATTERN (w.e.f.2023-24)
UG–B.Sc., Home Science- PROGRAMME STRUCTURE

Sem.	Part	Course Code	Courses	Title of the Paper	T/P	Cr.	Hrs./ Week	Max. Marks		
								Int.	Ext.	Total
I	I	2311T	T/OL	தமிழ் இலக்கிய வரலாறு-I /Other Languages -I	T	3	6	25	75	100
	II	2312E	E	General English-I	T	3	6	25	75	100
	III	23BHF1C1	CC-I	Food Science	T	4	5	25	75	100
		23BHF1P1	CC-II	Basic Cookery Practical	P	4	4	25	75	100
		-	Generic Elective (Allied)	Chemistry/Zoology/Computer Science/Fashion Technology & Costume Designing	T	3	3	25	75	100
		-		Respective Allied Theory Practical	P	2	2	25	75	100
	IV	23BHF1S1	SEC -I	House Keeping	T	2	2	25	75	100
		23BHF1FC	Foundation Course	Introduction to Home Science	T	2	2	25	75	100
				Total		**23**	**30**	**200**	**600**	**800**
II	I	2321T	T/OL	தமிழ் இலக்கிய வரலாறு-2 /Other Languages-II	T	3	6	25	75	100
	II	2322E	E	General English-II	T	3	6	25	75	100
	III	23BHF2C1	CC-III	Human Physiology	T	4	5	25	75	100
		23BHF2C2	CC-IV	Human Development	T	4	4	25	75	100
		--	Generic Elective (Allied)	Chemistry/Zoology/Computer Science/Fashion Technology & Costume Designing	T	3	3	25	75	100
		--		Respective Allied Theory Practical	P	2	2	25	75	100
	IV	23BHF2S1	SEC -II	Food Product Development	T&P	2	2	25	75	100
		23BHF2S2	SEC-III	Consumer Education	T	2	2	25	75	100
		--		Naan Mudhalvan Course	T	2				
				Total		**23+2**	**30**	**200**	**600**	**800**
III	I	2331T	T/OL	**தமிழக வரலாறும் பண்பாடும்** /Other Languages-III	T	3	6	25	75	100
	II	2332E	E	General English-III	T	3	6	25	75	100
	III	23BHF3C1	CC-V	Human Nutrition	T	4	5	25	75	100
		23BHF3P1	CC-VI	Nutrition Practical	P	4	4	25	75	100
		--	Generic Elective (Allied)	Chemistry/Zoology/Computer Science/Fashion Technology & Costume Designing	T	3	3	25	75	100
		--		Respective Allied Theory Practical	P	2	2	25	75	100
		23BHF3S1	SEC-IV	Foundations of Baking and Confectionary	T	2	2	25	75	100
	IV	233AT/ 23BHF3S2	SEC-V	Adipadai Tamil 1/ Life Skill Strategies and Techniques	T	2	2	25	75	100
		-		Naan Mudhalvan Course	T	2				
				Total		**23+2**	**30**	**200**	**600**	**800**

IV	I	2341T	T/OL	**தமிழும் அறிவியலும்** /Other Languages -IV	T	3	6	25	75	100
	II	2342E	E	General English – IV	T	3	6	25	75	100
	III	23BHF4C1	CC-VII	Nutritional Biochemistry	T	4	4	25	75	100
		23BHF4P1	CC-VIII	Nutritional Biochemistry Lab	P	3	3	25	75	100
		--	Generic Elective (Allied)	Chemistry/Zoology/Computer Science/Fashion Technology & Costume Designing	T	3	3	25	75	100
		--		Respective Allied Theory Practical	P	2	2	25	75	100
	IV	23BHF4S1	SEC-VI	Women's Health and Wellness	T	2	2	25	75	100
		234AT/ 23BHF4S2	SEC-VII	Adipadai Tamil 2/ Family Dynamics	T	2	2	25	75	100
		23BES4	E.V.S	Environmental Studies	T	2	2	25	75	100
		--		Naan Mudhalvan Course	T	2				
				Total		**24+2**	**30**	**225**	**675**	**900**
V	III	23BHF5C1	CC-IX	Dietetics	T	4	5	25	75	100
		23BHF5P1	CC-X	Dietetics Practical	P	4	5	25	75	100
		23BHF5C2	CC-XI	Fibre to Fabric	T	4	5	25	75	100
		23BHF5C3	CC-XII	Basics of Food Microbiology	T	4	5	25	75	100
		23BHF5E1	DSE-I	Front Office Management	T	3	4	25	75	100
		23BHF5E2	DSE-II	Computer Application in Home Science	T	3	4	25	75	100
	IV	23BVE5		Value Education	T	2	2	25	75	100
		23BHF5SI/ 23BHF5IT		Summer Internship / Industrial Training	PR	2	-	25	75	100
		--		Naan Mudhalvan Course	T	2				
				Total		**26+2**	**30**	**200**	**600**	**800**
VI	III	23BHF6C1	CC-XIII	Food Service Management	T	4	6	25	75	100
		23BHF6C2	CC-XIV	Food Preservation and Quality Control	T	4	6	25	75	100
		23BHF6C3	CC-XV	Principles of Resource Management	T	4	6	25	75	100
		23BHF6I	DSE-III	Internship in Hospitals	PR	3	5	25	75	100
		23BHF6E1	DSE-IV	Community Nutrition and Extension Education	T	3	5	25	75	100
	IV	23BHF6S1		Aptitude and Reasoning Skill for Competitive Examinations	T	2	2	25	75	100
	V	23BEA6		Extension Activity	P	1	-	25	75	100
		--		Naan Mudhalvan Course		2				
				Total		**21+2**	**30**	**175**	**525**	**700**
				Grand Total		**140 +10**	**-**	**1200**	**3600**	**4800**

- TOL-Tamil/Other Languages,
- E – English
- CC-Core course
- Generic Elective (Allied)
- SEC-Skill Enhancement Course
- FC-Foundation Course
- DSE – Discipline Specific Elective

Title of the Course		FOOD SCIENCE								
Category	I Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Semester - I									
Core - 1	23BHF1C1	Y		Y		4	5	25	75	100

Learning Objectives

To enable the students to:

Understand the science of food and factors that affect its quality, Nutritive value and shelf life.

Understand the physical, biological and chemical characteristics of various foods and their uses.

Apply knowledge of foods in planning diets and preparing meals that are safe, nutritious and palatable.

UNIT	CONTENT	HOURS
UNIT 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.	10
UNIT II	**Cereals**, **Millets**, **Pulses, Legumes and Nuts -** Classification of Cereals, Structure, nutrient composition, storage, processing, milling, parboiling, Cooking of starches- Dextrinization and gelatinization, retrogradation and resistant starch. **Pulses and legumes** - Types, nutritive value, methods of cooking, effect of soaking and germination, judicious combination of cereals and pulses- complementary effect, soya beans, fava-beans and kesari dhal- methods to inactivate / remove toxins; storage. **Nuts** - types, composition, roasting, steaming of nuts, nuts butters; uses in sweets, baking, and confectionery; Storage. **Oilseeds** - types, methods of processing, uses and shelf life	10
UNIT III	**Vegetables and Fruits-** **Vegetables -** Classification, nutritive value, effect of cooking on colour, texture, flavour, appearance and nutritive value, Purchase - storage and preservation. **Fruits -** Classification, nutritive value, changes during ripening, enzymatic browning, uses, preservation.	10
UNIT IV	**Flesh foods, Eggs, and Milk** **Meats** – structure, nutritive value, selection of meat, postmortem changes in meat, ageing, 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.	15

	Eggs - Structure, nutritive value, methods of cooking, storage, preservation and uses in cookery; foam formation and factors affecting foam formation. **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. Storageand preservation.	
UNIT V	**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. **Food adjuncts and food additives -** Spices and condiments: classification, source, use in food preparation, Leavening agents, stabilizers, thickeners, anticaking agents, enzymes, shortenings, stabilizers, flavouring agents, colouring 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**
	PRACTICAL 1. Cereal and Pulse - Experimental Cookery, gelatinization, Dextrinisation 2. Vegetable and Fruit - Experimental Cookery, enzymatic browning. 3. Meat, Egg and Milk- Experimental Cookery; whipping quality of eggs 4. Study of the smoking temperature of Fats 5. Stages of Sugar cookery, factors affecting crystallization 6. Preparation of coffee and tea by different methods. 7. Preparation of one dish each applying the different cooking methods	**15**
	TOTAL	**75**

ACTIVITY

- A survey of processed forms of cereals, pulses, dairy/meat products available in themarket Comparison of convenience foods and natural/whole foods
- Market survey of processed beverages
- Identify common adulterants in foods

COURSE OUTCOMES

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

CO1. Identify foods based on food groups and list their uses.

CO2. Describe classification, nutritive value, storage and preservation of foods.

CO3. Explain changes in food due to cooking, processing and factors that affect palatability,acceptability, and nutritive value.

CO4. Compare different methods of cooking and select the methods best suited for cookingdifferent Foods.

CO5. Justify the selection, processing, storage, and cooking methods to preserve nutritive valuesof various foods and make them safe and acceptable.

References:

1. Manay, S. and Shadaksharaswamy, M. (1987). **Foods Facts and Principles.** New AgeInternational 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 RevisedEdition), Orient Black
6. Vaclavik, V.A. and Elizabeth, W.C. (2013). **Essentials of Food Science**. 2nd ed. Springer Publication, New Delhi

E-Learning resources

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

Mapping with Programme Outcomes

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

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	2	3	3
CO4	3	3	2	3	3
CO5	3	2	2	3	3
Weightage	15	14	10	15	15
Weighted percentage (rounded of)of Course Contribution to Pos	3	3	2	3	3

Title of the Course		BASIC COOKERY PRACTICAL								
Category	I Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Semester – I									
Core - 2	23BHF1P1			Y		4	4	25	75	100

Learning Objectives

To enable the students to :

Learn the principles and scientific methods of cooking

Learn the best methods of cooking foods to preserve its nutrient content and minimize cooking time.

Apply the principles of cookery to prepare tasty and nutritious food

UNIT	CONTENT	HOURS
UNIT I	**Introduction to Food Safety -** sanitation and hygiene in the kitchen, Safe practices inhandling knives, sharp instruments and materials at high temperature. **Methods of measuring and weighing** liquids and dry ingredients.The use and care of simple kitchen equipment. **Introduction to Basic Cooking Skills -** cooking terminology; equipment and techniques used for pre-preparation and for different cooking methods.	**10**
UNIT II	**Cereals, Millets and pulses** **Cereals and Millets:** Methods of combining fine and course cereal with Liquid (eg.Ragi porridge,rava upma) **Method of cooking cereal**s and factors influencing texture and nutritive value- cooking rice by boiling and straining, absorption method, steaming, pressure cooking, microwave cooking; Gelatinization and dextrinization **Preparation of recipes using rice**-puttu, dosai,idli/idiappam, lemon rice, curd rice, coconut rice, fried rice, tamarind rice, tomato rice, mint pulao- a few **Wheat and Millet preparations** - Kesari, Phulka, poori, paratha, naan, ragiadai, samai curdrice, thinai uppuma, -a few **Pulses -** Factors influencing texture, digestibility and nutritive value of whole gram/legumes andpulses -soaking, addition of soda bicarbonate, addition of salt, water quality- hard and softwater, pressure cooking, boiling andstraining. **Pulse preparations-** Sundal, sambhar, sprouted green gram patchadi, Vadai, pongal, ompodi, green gram payasam, masala vadai ,medhu vadai-a few	**15**

UNIT 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 colour and texture of vegetables and nutritive value due to different methodsof cooking, cooking medium and addition of acid/alkali. Vegetable preparations – Poriyal, Aloo methi curry, vegetable cutlet, thoran, vegetablekurma, avial, keerai maseal, vegetable salad, vegetable soup, vegetable sandwich, kootu,mint chutney and carrot halwa. **Fruits:** Enzymatic browning in fruits and methods to prevent it. Fruit preparations- stewed apple, banana fritters, fruit salad, fruit punch, fruit yoghurt andfruit smoothie, preserve/jam.	**20**
UNIT IV	**Eggs,milk and milk products ,meat and fish:** **Egg Cookery:** Boiling of eggs-hard and soft boiled eggs. Best method of boiling eggs. Prevention of Ferrous sulphide formation on the yolk. Poaching and frying. Coagulation of egg protein-stirred and baked custard Egg preparations - egg curry, omelet, French toast, caramel custard (steamed), scrambled eggs and fried eggs. **Milk and Milk Products** Curdling of milk using lime juice, butter milk, tomato juice, **Milk Preparations** Cream of tomato soup, paneer masala, payasam, patchadi, thayir vadai, morkulumbu, basundhi, lassi, spiced buttermilk and baked macaroni and cheese. **Meat and Fish** Methods of tenderizing meat-Pounding, mincing addition of acids like curd/limejuice in marinade, addition of proteolytic enzymes-raw papaya Effect of different methods of cooking on flavour, texture and appearanceof meatand fish. Meat preparations - mutton ball curry, mutton vindaloo, mutton keema, liver fry,chicken spring roll, chicken sweet corn soup, chicken biriyani. Sea food preparations- fish fry, fish moilee, fish cutlet, sweet and sour prawns.	**15**

UNIT V	**Sugar cookery, Fats and oils food additives and raising agents Sugar Cookery -** Stages of sugar cookery and uses. Preparations ofsweets using different stages of sugar cookery **Fats and oils -** Effect of temperature of oil on texture and palatabilityof foods- Frying pooris atdifferent temperatures Smoking point of oil - bread cube test. Emulsions- definition, Preparation of mayonnaise.	**15**
	TOTAL	**75**

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 inpreparing 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

References:

1. Martland, R.E. and Welsby, D.A. (1980). **Basic Cookery, Fundamental Recipes andVariations.** William Heinemann Ltd., London.
2. Krishna Arora (2008). **Theory of Cookery.** Frank Brothers & Co.,
3. Negi J (2013) Fundamentals of Culinary Art, S.Chand and Co.
4. Peckham,G .C .and Freeland- Graves,J.H. (1987). **Foundation of Food Preparation.** 4th ed.Macmillan Publishing co, New York
5. Penfield MP and Ada Marie C (2012). **Experimental Food Science.** Academic Press. San Diego.

E-Learning Resources:

- https://www.ihmnotes.in/assets/Docs/Books/Theory_of_Cookery.pdf
- http://staffnew.uny.ac.id/upload/132318572/pendidikan/buku-esp.pdf

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	L	S	M	S	L	L	S	S	S
CO2	S	L	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	PO1	PO2	PO3	PO4	PO5
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 of) of Course Contribution to Pos	3	3	1	3	3

Title of the Course		HOUSE KEEPING								
Category	I Year Semester – I	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC - 1	23BHF1S1	Y		Y		2	2	25	75	100

Learning Objectives
To enable the students to:
Gain theoretical knowledge and practical applications of housekeeping
Learn the layout and functions of guest room.
Get acquainted with the attributes, qualities and skills required for proper functioning of the housekeeping department.

UNIT	CONTENT	HOURS
UNIT I	**Housekeeping Department -** Importance of housekeeping, Duties and Responsibilities of House keepingDepartment. 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.	**8**
	Activity: Prepare working schedule for a hotel 10 suites.	**2**
UNIT 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 controldesk, 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.	**8**
	Activity: Maintaining various house keeping records and documents.	**2**
UNIT 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 andgrand master key. Key of executive offices and public areas and computerizedkey. **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.	**15**
	Activity: Prepare layout diagram containing furniture and decorative items arrangement in front office, restaurants and guestrooms.	**5**

UNIT IV	**Linen/ Uniform / Sewing Room** Its importance in hotels, selection and buying of linen, inspecting, StorageFacilities, receiving used linen. Linen stock for any establishment, Layout, Types of Linen, sizes and Linenexchange procedure, and conditions, Linen Inventory system. Uniform designing: Importance, selection, characteristics, and types.	**8**
	Activity: Practice of Ironing, storing, cleaning and discarding of linen.	**2**
UNIT V	**Housekeeping Inventories** Introduction, Cleaning equipment – Selection of equipment. **Manual Equipment** - brooms and brushes, protective equipment, cloths used incleaning 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.	**8**
	Activity: Demonstrate Cleaning and polishing of various surfaces, hardflooring, semi-hard floorings, and wooden flooring.	**2**
	Total	**60**

COURSE OUTCOME

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 house keeping department.

CO3. Identify different types of guest rooms and list the common pest control methods used inhotels.

CO4. Choose appropriate storage procedures for linen and uniforms.

CO5. Evaluate suitability of cleaning agents to clean different surfaces.

References:

1. Aleta Nitschke (2008). **Managing Housekeeping Operations.** Educational Inst Of The AmerHotel; Revised Edition, Isbn-13 **:** 978-0866123365
2. G. Raghubalan (2015). **Hotel Housekeeping: Operations and Management.** 3rd. edition. Oxford UniversityPress India, Isbn-13 978-0199451746
3. Jatashankar Tewari (2016). **Hotel Front Office : Operations and Management.** Oxford University Press; Third Edition

4. Nishant Pal (2022). **Accommodation Operations: Introduction to Housekeeping and Hotel Guest Room, Guest Services, House keeping Control Desk, Linen Room.** Kindle Edition.
5. Reeta Pal and Nishant Pal (2022). H**ousekeeping - 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

	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

Mapping with Programme Specific Outcomes

CO/PSO	**PSO1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**
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 of) of Course Contribution to Pos	3	3	3	3	2

Title of the Course		INTRODUCTON TO HOME SCIENCE								
Category	I Year Semester – I	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Foundation Course	23BHF1FC	Y		Y		2	2	25	75	100

Learning Objectives

The course is designed to enable the students to:-

1. Understand the concept, scope and philosophy of Home Science.
2. Appreciate the role of Home Science in Nation building.
3. Get acquainted with the attributes, qualities and skills required for proper functioning of the housekeeping department.
4. Cultivate human values through learning Home Science

UNIT	CONTENT	HOURS
UNIT I	**Basics of Home Science -** Definition, meaning, branches and scope of Home Science, History and Philosophy of Home Science. Development of Home Science as a discipline. Linkages of Home Science with other related subjects- Psychology, Sociology, Economics and Agriculture.	8
	Activity: Prepare a module for a branches and scope of Home Science	2
UNIT II	**Job Opportunities in Home Science -** Home Science Education at various levels-School/College/ University / Research. Job oriented courses: Nutrition, Dietetics, Food Preservation, Housing. Textiles and Clothing, Interior Design, Pre-School education and extension. Vocations in Non-Governmental Organisations. Qualities of a good Home Science student.	8
	Activity: A Report on visit to Preschools/Food Preservation Centers / Interior designers/NGO's /Dietitians /Fashion Houses & Women entrepreneurs.	2
UNIT III	**Managerial Activities in Home Science –** Concepts and perceptions - Goals, Values, Standards. Steps in Management Process. Resources – Human and Non-Human resources, Decision Making process, Study of Ergonomics. Stages of Life cycle.	15
	Activity: Visit to ICDS to know the services provided for the community.	5
UNIT IV	**Public Health Nutriltion – M**enu Planning ; Factors influencing menu planning, Functions of Macro and Micro Nutrients (Iron, Calcium, Vitamin A, Vitamin C and Vitamin D). Dietetics and Diet Diet Counseling ; Therapeutic diets, basic concepts of normal diet, Routine hospital diets, patient care and counseling. Properties of fibres ; processing and manufacturing fibres, yarn – weaving, finishing and dying, selection procedures of clothing, care and maintenance of Textiles. Community Development Programmes ; ICDS, TINP, ANP,	8

	IRDP, DWCRA and TRYSEM –objectives, beneficiaries and Activities.	
	Activity: Survey to know different marriage patterns in the Indian society.	**2**
UNIT V	**Introduction to Computers -** - Relevance of computers to Home Science - Basics of Computer, Model of computer, Characteristics of computer, problem solving using computers. Input/output units Description of computer input/output units, other input method, Computer output units. Security and safety of Data; Secondary storage devices. Computer Memory--computer languages. Introduction to operating system-MS Windows, exploring desktop, Windows, exploring desktop, accessories, control panel, managing documents and folders.	**8**
	Activity: Basics of computer operation and care.	**2**
	Total	**60**

COURSE OUTCOME

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 house keeping department.

CO3. Identify different types of guest rooms and list the common pest control methods used inhotels.

CO4. Choose appropriate storage procedures for linen and uniforms.

CO5. Evaluate suitability of cleaning agents to clean different surfaces.

Mapping with Programme Outcomes

	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

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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 of) of Course Contribution to Pos	3	3	3	3	2

REFERENCES:

1. Devdas, Rajmal, P. (1968). **Textbook of Home-Science.** Farm Information Unit, Directorate of Extension, Ministry of Agriculture, New Delhi.
2. Devdas, Rajmal, P. (1968). **The Meaning of Home Science.** Sri Avinashillingam Home-Science College, Coimbatore.
3. The Family and Integrated Rural Development, FAO, 1976.
4. Devdas, Rajmal, P. (1977). **Methods of Teaching Home Science.** National Council of Education Research and Training, Delhi.
5. Chandra A. Shah, A Joshi U. (1989). **Fundamental of Teaching Home Science.** Sterling Publishers, Private Limited.
6. Paraliker, Kalpana, R., (1990). **The Art of Teaching Home Science.** Evira Publication, Baroda.
7. Paralikar, Kalpana R., (1989). **What is Home Science.** Evira Publication, Baroda.
8. Raja Raman V., (1996). **Fundamentals of Computers.** Prentice Hall of India, New Delhi.
9. Subramenian, S. Introduction to Computers.
10. Nagpal, O.P Mastering M.S. Office 2000.
11. Chander A. (1995). **Introduction to Home Science.** Metropolitan, New Delhi.

Title of the Course		HUMAN PHYSIOLOGY						Course Code:23BHF2C1		
Category	I Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - III	Semester – II	Y		Y		4	5	25	75	100

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
UNIT I	**Cell and tissues -** Structure of Cell and functions of different 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 Humeral Immunity (in brief)	**12**
	Practical Microscopic study of different tissues: epithelial, connective, muscular and nervous tissue Blood Experiments- Blood Smear, Blood Count and Blood Grouping	**6**
UNIT II	**Nervous system** General anatomy of nervous system, functions of the different parts **Sense organs** Structure and functions of Eye, Ear, Skin. Physiology of Taste and Smell-in Brief	**12**
	Practical Study of the Structure of Brain using model/ specimen and structure of Eye and Ear using models/charts	**2**
UNIT 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.	**10**
	Practical Recording of Blood Pressure Study of the structure of Heart Lung using specimen, model/charts/ videos	**5**

UNIT 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	**12**
	Practical Study of the Structure of Liver, Pancreas, Stomach using model /charts /specimen/ videos	**2**
UNIT V	**Endocrine system** Functions of hormones secreted by Pancreas, Pituitary gland, thyroid, parathyroid and adrenal glands. Effects of hypo and hyper secretion of these glands. **Reproductive system** Anatomy of male and female reproductive organs, Ovarian and Uterine cycle, influence of hormones on pregnancy and lactation.	**12**
	Practical Microscopic study of tissues of the Pituitary, Thyroid, Ovary and Testis Study of the structure of the male and female reproductive organs using models/charts/videos	**2**
	TOTAL	**75**

COURSE OUTCOMES

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

CO1. Describe the structure and functions of a cell, various tissues, primary organs and systems in the body.

CO2. Explain the interrelationship between systems for maintenance of equilibrium. **CO3**. Evaluate the role of the nervous and endocrine system in regulating the activities of other systems.

CO4. 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.

CO5. Perform haematological study of blood such as blood smear, blood count and blood grouping, record pulse, blood pressure and interpret a normal ECG.

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,Philadelphia.
5. Subramaniam, S. and Madhavan Kutty, 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 Physiology in Health and Illness.**6th ed. ELBS, Churchill Livingstone, London.

E-learning resources

- https://youtu.be/uFf0zxQ3rBU
- http://epgp.inflibnet.ac.in/Home/Download

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		HUMAN DEVELOPMENT						Course Code:23BHF2C2		
Category	I Year	L	T	P	O	Credits	Inst. Hrs	Marks		
								CIA	External	Total
Core - IV	Semester - II	Y		Y		4	4	25	75	100

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
UNIT 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.	10
	Practical - preparation of case study - observing various development-physical, motor, cognitive, creative, social, emotional, and intellectual ofa particular child.	10
UNIT II	**Infancy and Childhood** Characteristics, physical, social, and emotional development, cognitiveand language development during infancy, early childhood, and late childhood. Children's play – meaning, types, importance stages. Parental disciplinary Techniques – merits and demerits	16
	Practical - Socio-metric study of early adolescents. Analysis of various play techniques.	4
UNIT 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	10
	Practical - A survey on Juvenile Delinquency prevalence.	5
UNIT 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	7

	Practical - Survey on problems of old age.	**3**
UNIT V	**Exceptional Children** Introduction to Children with Special Needs and identification & Educational Rehabilitation Gifted children, Orthopedically challenged, Mentally retarded, Hearing impaired, Visually impaired and Learning disability.	**7**
	Practical - Visit to an institution for exceptional children.	**3**
	TOTAL	**75**

COURSE OUTCOME

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

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.) NewYork: McGraw Hill Book Co.
3. Nanda V.K., (1998). **Principles of Child Development**. New Delhi: Anmol Publications Pvt. Ltd.
4. Rajammal P. Devadas and Jaya N. Muthu (2002). **A Textbook of Child Development**. NewDelhi: 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.

E-Learning Resources

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

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		FOOD PRODUCT DEVELOPMENT						Course Code:23BHF2S1		
Category	I Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC - II	Semester - II	Y		Y		2	2	25	75	100

Learning Objectives

To enable the students to :

1. Understand the steps involved in new food product development.
2. Learn about consumer preferences and market trends.
3. Understand concepts about subjective and objective evaluation of new product.

.UNIT	CONTENT	HOURS
UNIT I	**Introduction to New Food Product Development** Food products, definition, Classification, Characterization, Reasons for new food product development. Factors shaping new product development-Social concerns, health concerns, impact of technology and marketplace influence. Utilizing traditional foods, unconventional sources, functional, nutraceuticals foods for new product development. Market Survey to identify the new product.	7
UNIT II	**Product Development:** a) New Product Development Team b) Sources of New Product ideas c) Designing new product d) Stages of product development e) Causes of product failure/ success in product development	8
UNIT III	**Product Evaluation and Quality Control** Quality attributes – physical, chemical, nutritional, microbial, and sensory indicators. Principles and types of assessment of quality. Subjective and objective methods of evaluation of product quality. Role of sensory evaluation in consumer product acceptance; requirements for sensory analysis - Sensory panel **Evaluation of New Product:** Nutritional evaluation (estimation of relevant parameters) Evaluation of shelf-life of the product (testing for appropriate quality parameters- physical, chemical, microbiological and nutrient content, acceptability studies) **Food Safety Standards and Regulations:** Domestic regulations FSSAI, AGMARK, BIS Quality management systems in India; (ISO9001, ISO22000); Global Food safety Initiative; International food standards Various national and international organizations dealing with inspection, traceability and authentication, certification, and quality assurance.	15

UNIT IV	**Packaging and labeling** Packaging Material-types; factors affecting type of packaging material used; Aseptic packaging, modified atmosphere packaging, Controlled Atmosphere Packaging and active packaging. Packaging and Labeling of the product – Packaging design, graphics and labeling – FSSAI regulations for food labeling.	**10**
UNIT V	**Marketing the product** Product life cycle Costing the product and determining the sales priceAdvertising and test marketing the product	**10**
	PRACTICAL 1. Survey of types of convenience foods / novel foods in the market or Survey of markettrends and consumer behavior in the food sector. 2. Sensory analysis: conduct sensory tests for basic tastes and sensory attributes of products. 3. Basic evaluation of shelf -life acceptability and quality of a food product. 4. Evaluate consumer responses utilizing prepared food products, analyse and present dataon acceptability of product based on sensory evaluation or 5. Project Development of a new food product, standardization, selection of suitablepackaging and preparing label with product information.	**10**
	TOTAL	**60**

COURSE OUTCOME

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

CO1. Define the basic concepts in food product development, packaging, costing advertising and marketing.

CO2. Explain the need, characteristics and factors influencing the new product; test marketing, packaging and quality attributes.

CO3. Illustrate the quality attributes, food safety, packaging and labeling regulations, and marketing tools for a food product.

CO4. Analyse the significance of packaging, labelling, advertising, costing and quality concepts for the new food product

CO5. Develop a new food product and evaluate its quality and acceptability.

REFERENCES:

1. Earle M., Earle RL. and Anderson A. (2001) Food Product Development: Maximizing success, Wood head Publishing Ltd, Food Series, No. 64,2001.
2. Fuller, GW (2011). New food product development: From concept to marketplace.3rd. New York, NY: CRC Press
3. Lawless HT and Klein BP (1991) Sensory Science Theory and Applications inFoods. Marcel Dekker Inc.
4. Moskowitz HR, Saguy IS and Straus T (2009). An Integrated approach to NewFood Product Development. ed. New York, NY: CRC Press
5. Paine FA, Paine HY (Eds.) (1992) A handbook of Food Packaging (2nd ed.),Blackie Academic and Professional.
6. Sharma A (2018). Food product Development. CBS Publishers & Distributors Pvt. Ltd

E-Learning Resources:

- https://www.destechpub.com/wp-content/uploads/2015/01/Methods-for-Developing-New-Food-Products-preview.pdf
- https://www.youtube.com/watch?v=iL0iIGpa4vg
- https://www.youtube.com/watch?v=5kOXUH8kaCs

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	M	M	M	L	S	L	M	S
CO2	S	S	S	S	M	M	S	M	M	S
CO3	S	S	S	M	M	M	S	M	M	S
CO4	S	S	S	S	M	M	S	S	M	S
CO5	S	S	S	M	M	M	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	3	3	3
CO3	3	3	2	3	3
CO4	3	3	3	3	3
CO5	3	3	1	3	3
Weightage	15	15	10	15	15
Weighted percentage (rounded of) of Course Contribution to Pos	3	3	2	3	3

Title of the Course		CONSUMER EDUCATION						Course Code:23BHF2S2		
Category	I Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC -III	Semester-II	Y				2	2	25	75	100

Learning Objectives

To enable the students to:

1. Be familiar with the problems in buying and consumer legislations.
2. Become aware of marketing conditions and the means for problem redressal.
3. Create awareness on various consumer buying problems.

UNIT	CONTENT	HOURS
UNIT I	**Consumerism and consumer buying problem -** Definition and the concept of consumerism – consumer, producer and market. Characteristics of consumers, role of consumers in the Indian economy. Malpractices – Incorrect weights and measures. Misleading advertisement and misbranding.	8
	Activity: Preparation of poster and creating awareness on various consumer buying problems.	2
UNIT II	**Human wants, Demand and Supply -** Definition, classification of human wants –necessities, comfort andluxuries. Meaning of demand and supply. Relation between utility, demand and supply. Factors influencing demand and supply. **Types of income -** Real, money, psychic, relationship of GNP, national income, personal income, disposable income.	8
	Activity: Preparing guidelines for purchasing commonly used consumer goods and services.	2
UNIT III	**Markets and marketing -** Basic Concept, Classification and functions of Markets, Types of Market. Channels of Distribution: Meaning, types and their advantages and disadvantages. **Consumer in the market -** Consumer buying habits, buying motives and buying problems. **Consumer Aids** a. Brand – Different types and its importance. b. Labels – Importance, Merits and demerits. Importance ofPackaging and Advertising.	15
	Activity: Illustrate different types of consumer aids.	5

UNIT IV	**Quality Assessment of Products -** Definition – Standards and standardization and its Importance. Quality Seal – BIS, ISI,AGMARK, ISO, HALL MARK, BEELABEL and FPO	**8**
	Activity: Identify government agencies in protecting the consumer.	**2**
UNIT V	**Consumer decision making process -** Types of consumer decisions, process of decision making, factors determining and influencing consumer behavior, guidelines for wise buying practices. **Consumer Protective Services -** Consumer Protection Act, Food Adulteration Act – FSSAI. Quality control and inspection Act**.** Consumer Rights and consumer responsibilities.	**8**
	Activity: Identify a consumer problem and solve it using decision making steps.	**2**
	Total	**60**

COURSE OUTCOME

After successful completion of the course the student will be able **to:**

CO1. Identify the major influences on consumer behavior.
CO2. Analyze the implications of demand and supply.
CO3. Implement wise buying practices.
CO4. Explain consumer protection legislations and standards.
CO5. Assess the quality of a product based on the knowledge gained.

REFERENCES:

1. Gupta, C.B. and Nair, R.N (2004). **Marketing Management.** Sultan Chand and Sons,
2. Juliana, M (2011). **Green Consumerism**. United States: SAGE Publishers.
3. Kathiresan, S. Radha, V (2004). **Marketing.**: Chennai, Prasanna Publisher.
4. Kumar, N., (1999). **Consumer Protection in India.** Delhi, Himalaya Publishing House.
5. Pattanchetti, C.C. and Reddy, (2002). **Principles of Marketing.** Coimbatore: Rainbow Publishers, India.
6. Seetharaman, P. and Sethi, M. (2001). **Consumerism: Strategies and Tactics**, CBS Publishers and Distributors, New Delhi.
7. Steven, D.S, (2016). **Consumer Economics: A Practical Overview.** NewYork: RoutledgeTaylor and Francis group.
8. Suja Nair (2002). Consumer Behaviour: New Delhi. Sultan Chand and Sons.

E-Learning Resources:

- http://www.jagograhakjago.com/consumer-rights/
- https://consumeraffairs.nic.in/organisation-and-units/division/bureau-indian-standards
- https://www.consumer-voice.org/food/know-your-quality-marks/
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=120087
- http://ecoursesonline.iasri.res.in/mod/page/view.php?id=120086

- https://www.nios.ac.in/media/documents/srsec321newE/321-E-Lesson-17.pdf
- https://www.flexiprep.com/NIOS-Notes/Senior-Secondary/Home- Science/NIOS-Home-Family-and-Home-Science-Ch-16-Consumer- Education.html

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	L	S	S	S	S
CO2	S	S	S	S	S	M	M	S	S	S
CO3	S	S	S	S	M	M	S	S	S	M
CO4	S	S	M	M	S	M	S	S	M	S
CO5	S	S	S	S	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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		HUMAN NUTRITION						Course Code:23BHF3C1		
Category	II Year	L	T	P	O	Credits	Inst. Hrs	Marks		
								CIA	External	Total
Core – V	Semester-III	Y		Y		4	5	25	75	100

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
3. prevention of non-communicable diseases.

UNIT	CONTENT	HOURS
UNIT I	**Introduction to Nutrition** History of Nutrition – Development of Nutrition as a Science. Food as a source of nutrients, definition of nutrients, Balanced diets anddietary guidelines - current concepts. Signs and symptoms of adequate, optimum and good nutrition, malnutrition (Undernutrition, and over nutrition), Assessment of Nutritional status- Anthropometric, Biochemical, Clinicaland Dietary aspects.	7
	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.	3
UNIT II	**Carbohydrates** Classification, Food Sources, Requirements and Functions of carbohydrates in the body. Review of digestion, absorption and metabolism. Physiological significance of Monosaccharides, Disaccharides and Polysaccharides Glycemic Index, Glycemic load of Foods, and factors affecting it, Hormonal control of Blood sugar. Role of fibre in prevention of non - communicable diseases. **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 andMarasmus – 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	17
	Activity-List of foods based on their GI, and Protein supplements available in the market.	3
UNIT III	**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. **Energy** Determination of energy value of foods using Bomb calorimeter, Physiological value of foods, relation between oxygen used and calorific value.	17

	Direct and Indirect calorimetry direct calorimetry, Respiratory quotient Components of Energy expenditure- Basal metabolism, factors affectingBMR, Food related thermogenesis, Physical activity Energy requirements for different age groups, and for various types of activities.	
	Activity - List healthy and unhealthy sources of fats in one's diet. Learn to estimate BMR.	**3**
UNIT IV	**Fat Soluble Vitamins** Food sources, Requirements, Functions, Effects of deficiency or Toxicity (wherever applicable). **Water Soluble Vitamins** Food sources, Requirements, Functions, Effects of deficiency. Antioxidant role of certain Vitamins in Health promotion	**10**
UNIT 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**
	TOTAL	**75**

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.

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

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		NUTRITION PRACTICAL						Course Code:23BHF3P1		
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - VI	Semester-III			Y		4	4	25	75	100

Learning Objectives

To enable the students to :

1. Understand the various analytical techniques.
2. Develop analytical skills required for nutrition research.

UNIT	CONTENT	HOURS
UNIT I	Assessment of Nutritional Status - Body Composition parameters - Circumference measurements - Clinical signs - Dietary assessment Ashing of food and preparation of ash solution	15
UNIT II	Estimation of Iron in food Estimation of calcium in food Estimation of Vitamin C by Titrimetric method	10
UNIT III	Estimation of calorific value of food using the Bomb Calorimeter- Demonstration Estimation of protein content in food by the kjeldahl method- demonstration Estimation of moisture content of food using Infrared moisture balance- Demonstration	20
UNIT IV	Estimation of glucose in blood (colorimetric estimation and use of glucometer) Estimation of haemoglobin in blood	10
UNIT V	Determination of plasma cholesterol, Triglycerides, HDL and LDL cholesterol (with the use of the semi auto analyzer) Estimation of acid value in oil/fat Visit to a food analytical lab	20
	TOTAL	75

COURSE OUTCOME

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

CO1. Describe the principle and procedures for the various experiments.

CO2. Identify appropriate laboratory procedures suited for estimation of select nutrientsin food and body fluids.

CO3. Estimate select nutrients in food and metabolites in serum.

CO4. Compare the results with standard values and interpret the findings.

CO5. Develop skills to assess nutritional status of individuals and the community.

REFERENCES:

1. Oser,D.l.(1979). **Hawk's Physiological Chemistry.** Tata- McGraw Hill Publishing Co.,NewDelhi
2. Plummer, D.T. (1987). **Introduction to Practical Biochemistry.** Tata- McGraw Hill Publishing Co., New Delhi
3. Raghuramulu, N., Nair,K.M. and Kalyanasundaram, S. (1983). **A Manual of Laboratory**
4. Sharma, B.K. (1999). **Instrumental Methods of Chemical Analysis.** 8th ed. Gel Publishing House.
5. Srivastava, A.K and Jain, P.C. (1986). **Chemical Analysis: An Instrumental Approach.** 2nd Ed. S Chand and Company Ltd.
6. Techniques. NIN, Hyderabad
7. Varley, H.; Gowenlock, A.H. and Bell, M. (1980). **Practical Clinical Biochemistry.** 5th ed. Heinemann Medical Books Ltd.
8. Winton, A.L. and Winton, K.B. (1999). **Techniques of Food Analysis. Allied Scientific.**

E-Learning Resources:

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	L	S	M	S	L	M	L	S	S
CO2	S	L	S	M	S	L	M	L	M	S
CO3	S	L	S	S	S	L	L	M	M	S
CO4	S	L	S	M	S	L	L	M	M	S
CO5	S	L	S	S	S	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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		FOUNDATIONS OF BAKING AND CONFECTIONARY								
Course Code:23BHF3S1										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC - IV	Semester-III	Y				2	2	25	75	100

Learning Objectives

To enable the students to :

1. Gain insight into the planning and operation of bakery unit.
2. Familiarize with the equipments and tools, hygienic practices relating to baking
3. Understand the role of various ingredients used in the making of breads, cakes, cookies, pastries and various confectioneries
4. Acquire skills in baking and confectionery with an emphasis on special dietary needs.

UNIT	CONTENT	HOURS
UNIT I	**An Overview of Bakery Industry** Current status and growth of bakery industry in India. Baking – principles, process. Layout and organization of a bakery unit. Equipment and tools used in baking and confectionery. Bakery sanitation and personnel hygiene.	10
UNIT II	**Ingredients in Bakery and Confectionery** Ingredients - Flour, Sugar, Shortenings, Egg, Leavening agents-yeast, baking soda, baking powder, chocolates, cocoa powder. Other ingredients- salt, milk and milk derivatives, malt products, dough improver, oxidizing agents, flavours and colors, nuts, spices and condiments, preserved and candied fruit peels.	10
UNIT III	**Breads and Cakes** **Bread -** ingredients, types of breads, faults and its prevention **Cakes** – ingredients, types of cakes, **c**ake judging, faults and remedies. Different types and techniques of cake decoration -icings and fillings. **Related Experience** Preparation of buns, rolls, soup sticks, rusk and pizza base. Preparation of angel food cake, butter cake, sponge cake, chocolate cake, pound cake. Modified baked products - high fiber, low / alternate sugar, low fat, gluten free, and millet based bakery products for special nutritionalrequirements.	15
UNIT IV	**Pastries, Cookies and Biscuits** **Pastries-** types of pastries- puff pastry, short crust, phyllo pastry, flakypastry, choux pastry **Cookies & biscuits** – ingredients, types and processing. **Related experience** Preparation of biscuits, cookies. Preparation of pastries- Short crust pastry, flaky pastry, puff pastry,choux pastry.	15

UNIT V	**Confectionery and Marketing of Baked Products** Chocolates- production, types, chocolate decorations **S**ugar based confectionery – fudge, fondant, sugar candies. **Marketing and sales promotion**- costing, packaging and labeling. **Related experience** Preparation of plain chocolate, fudge, fondant.	**10**
	TOTAL	**60**

COURSE OUTCOMES

After successful completion of the course the student will be able to

CO1. Understand the principles and process of baking and confectionery.

CO2. Acquire knowledge on role of various ingredients used in baking and confectionery.

CO3. Develop skills to design baked goods using alternative healthy ingredients to cater to special dietary needs

CO4. Identify and control faults in baking.

CO5. Enhance entrepreneurial skills in bakery and confectionery to establish a bakery unit.

REFERENCES

1. John Kingslee (2006). **A Professional Text book to Bakery and Confectionary.** New Age International Pvt. Limited Publisher, New Delhi.
2. Uttam K. Singh (2011). **Theory of Bakery and Confectionary: An Operational Approach.** Kanishka Publishers and Distributors, New Delhi.
3. Yogamba lAshokkumar (2012). **Theory of Bakery and Confectionary,** PHI Publication.New Delhi.
4. Nicolello, I. and Foote, R. (2000). **Complete Confectionary Techniques.** Hodder and Solution, London.
5. **Bakers Hand Book on Practical Baking**. (2000) Published by U.S. Wheat Associates, NewDelhi.
6. Dubey. S.C. (2002). **Basic Baking.** 4th Edition. Published by the Society of Indian Bakers, New Delhi.
7. Sarah R. Lebensky, Pricilla et al., (2004). **Textbook of Baking and Pastry Fundamentals** 3rd edition, Pearson Education Ltd.
8. **The Culinary Institute of America, Baking & Pastry: Mastering the Art and Craft (**2009)., JohnWiley &Sons,Inc New Jersy.

E - LEARNING RESOURCES

- https://www.youtube.com/watch?v=dfvkplBBO2g
- https://www.lifestyleasia.com/ind/food-drink/dining/bookmark-the-best-baking-youtube-channels-to-bake-like-a-pro/
- www.bakels.in

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	S	M	M	M	S
CO2	S	S	S	S	M	M	S	M	M	S
CO3	S	S	S	S	S	S	S	M	S	S
CO4	S	S	S	M	M	M	L	L	M	S
CO5	S	S	S	S	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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		LIFE SKILL STRATEGIES AND TECHNIQUES								
Course Code:23BHF3S2										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC - V	Semester-III	Y				2	2	25	75	100

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 holist living

UNIT	CONTENT	HOURS
UNIT 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.	10
UNIT II	**Professional Skills** Resume Writing. Interview Skills. Group Discussions, Presentation Skills. Work-Life Balance- Strategies to achieve them, Time Management.	10
UNIT III	**Leadership/ Management Skills** Leadership skills, Managerial skills, Team building, Entrepreneurial skills, Ethics and Integrity.	10
UNIT 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.	10
UNIT V	**Human Value Skills** Strategies and techniques to promote Non-Violence, Service to the community, developing skills pertaining to administering First Aid.	10
	Practical 1. Workshops on Leadership/ Writing Skills, Yoga and Martial Arts. 2. Developing Listening and Speaking Skills. 3. Practical Demonstration on healthy recipes. 4. A practical exposure to administering First Aid.	10
	TOTAL	60

COURSE OUTCOME

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.

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.
4. Kelly T., and Kelly D. (2014). **Creative Confidence: Unleashing the Creative Potential Within Us All.** William Collins
5. Kumar S., and Lata P. (2015). **Communication Skills.** 2nd ed. Oxford University Press, India.
6. Kurien V., and Salve G. (2012). **I Too Had a Dream.** Roli Books PrivateLimited.
7. O'Toole J. (2019). **The Enlightened Capitalists: Cautionary Tales of Business Pioneers Who Tried to Do Well by Doing Good.** Harpercollins.
8. Sullivan D. R. E. (2022). **Effective Leadership Skills for Teachers of Young Children.** 3rd ed. Redleaf Press.

E - Learning Resources:

1. Fries, K. (2019). 8 Essential Qualities That Define Great Leadership. Forbes. Retrieved 2019- 02-15 from https://www.forbes.com/sites/kimberlyfries/2018/02/08/8-essential-qualities-that-define-great-leadership/#452ecc963b63
2. How to Build Your Creative Confidence, Ted Talk by David Kelly
   - https://www.ted.com/talks/david_kelley_how_to_build_your_creative_confidence
3. India's Hidden Hot Beds of Invention Ted Talk by Anil Gupta
   - https://www.ted.com/talks/anil_gupta_india_s_hidden_hotbeds_of_invention
4. Knowledge @ Wharton Interviews Former Indian President APJ Abdul Kalam - . "ALeaderShould Know How to Manage Failure" https://www.youtube.com/watch?v=laGZaS4sdeU
5. Martin, R. (2007). How Successful Leaders Think. Harvard Business Review, 85(6):60.
6. NPTEL Course on Leadership - https://nptel.ac.in/courses/122105021/9

Mapping with Programme Outcomes

	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

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 of) **of Course Contribution to Pos**	3	3	3	3	3

Title of the Course		NUTRITIONAL BIOCHEMISTRY								
Course Code:23BHF4C1										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - VII	Semester-IV	Y				4	4	25	75	100

Learning Objectives

To enable the students to:

1. Study the basic concepts of metabolism of proximate principles and others.
2. To learn the metabolic pathways of nutritional significance.

UNIT	CONTENT	HOURS
UNIT I	**Biological oxidation and Enzymes** Biological oxidation, Electron transport chain and Oxidative Phosphorylation. Enzymes – Definition, Types, Mechanism of action, Factors affecting enzyme activity, Coenzyme, Role of B vitamin as coenzyme. Free radicals – Definition, Formation in biological systems. Antioxidants – definition, Role of antioxidants in prevention of degenerative disorders	10
UNIT II	**Metabolism of Carbohydrates** Classification, Glycolysis, The Citric Acid Cycle Glycogenesis, Glycogenolysis, Gluconeogenesis, The Hexose Monophosphate Shunt and bioenergetics.	10
UNIT 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.	10
UNIT 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. Lipo proteins – classification and function. Biosynthesis of cholesterol.	15
UNIT 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. Recombinant DNA technology, Metabolism of Xenobiotics, Nutrigenomics	15

	Practical 1. Qualitative tests for sugars-glucose, fructose, lactose, maltose and glucose. 2. Quantitative estimation of reducing sugar. 3. Qualitative tests for proteins 4. Demonstration Experiments. 5. Estimation of total nitrogen in foods (Micro or Macrokjeldahl methods) 6. Determination of Iodine value 7. Determination of fat content in food using Soxhlet method.	**15**
	TOTAL	**75**

COURSE OUTCOME

After successful completion of the course the students will be able to

CO1. Describe the role of enzymes and co enzymes 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.

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., and 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). **Harpers Biochemistry.** 25th Ed. Macmillan worth publishers.

e- Shanmugham Ambika (1985). **Fundamentals of Bio-chemistry to Medical Students.** NVABharat 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

	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

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 of)of Course Contribution to Pos	3	3	3	3	3

Title of the Course		NUTRITIONAL BIOCHEMISTRY LAB								
Course Code:23BHF4P1										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - VIII	Semester-IV			Y		3	3	25	75	100

Learning Objectives

To enable the students to:

1. Study the basic concepts of metabolism of proximate principles and others.
2. To learn the metabolic pathways of nutritional significance.

UNIT	CONTENT	HOURS
UNIT I	**Carbohydrates** 1. Reaction of Mono, Di and Polysaccharides and their identification in unknown mixtures 2. Estimation of reducing and total sugars in foods 3. Estimation of lactose in milk	15
UNIT II	**Fats** 1. Reactions of fats and oils 2. Determination of Acid value, Saponification of oils	10
UNIT III	**Proteins** 1. Reactions of proteins in foods 2. Reactions of amino acids and their identification in unknown mixtures	15
UNIT IV	**Vitamins** 1. Estimation of ascorbic acid content of foods by titrimetric method / colorimetric method	10
UNIT V	**Minerals** 1. Estimation of calcium in foods by tritrimetric method 2. Estimation of chloride in table salt by titrimetric method 3. ***Estimation of phosphorus by Colorimetric method*** 4. Preparation of common laboratory media and special media for cultivation of bacteria, yeast and molds 5. Staining of Bacteria: Gram's staining, acid-fast, spore, capsule and flagella staining, motility of bacteria, staining of yeast and molds 6. Cultivation and identification of important molds and yeast (slides and mold culture) 7. Study of environment around us as sources of transmission of microorganisms in foods. Assessment of surface sanitation of food preparation Units; swab and rinse techniques 8. Isolation of microorganisms: Different methods and maintenance of cultures of microorganisms 9. Bacteriological analysis of foods: both processed and unprocessed like vegetable and fruits, cereals, spices and canned foods, using conventional methods, yeast and mold count in foods 10. Visits (at least two) to food processing Unit or any other organization dealing with advanced methods in food microbiology	25

	Practical 4. Qualitative tests for sugars-glucose, fructose, lactose, maltose and glucose. 5. Quantitative estimation of reducing sugar. 6. Qualitative tests for proteins 8. Demonstration Experiments. 9. Estimation of total nitrogen in foods (Micro or Macrokjeldahl methods) 10. Determination of Iodine value 11. Determination of fat content in food using Soxhlet method.	**15**
	TOTAL	**75**

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 healthfor 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.

REFERENCES :

Map with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		WOMENS' HEALTH AND WELLNESS								
Course Code:23BHF4S1										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC - VI	Semester-IV	Y				2	2	25	75	100

Learning Objectives

To enable the students to:

1. Understand the diverse factors that has 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
UNIT I	**Nutrition for Women -** Dietary Guidelines for a healthy lifestyle, Current concepts pertaining to BalancedDiets, 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.	15
UNIT 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 NCD's.	15
UNIT III	**Reproductive Health -** Menstrual Health, Pregnancy and Lactation, Pre- and Post-Menopausal concerns- preventive measures, sexually transmitted diseases - an overview.	10
UNIT 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.	10
UNIT 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.	10
	TOTAL	60

Activity:

- Preparation of simple healthy recipes, Planning Meals based on Balanced diets,
- Workshop on Fitness, Yoga and Meditation,
- Seminars pertaining to Reproductive Health, Communication Skills, Personality Development.

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 healthfor 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.

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/jehp112.pdf
- https://ncert.nic.in/textbook/pdf/iehp113.pdf
- https://ncert.nic.in/textbook/pdf/lebo104.pdf
- https://www.nih.gov/health-information/social-wellness-toolkit
- https://www.cdc.gov/reproductivehealth/womensrh/index.htm
- https://www.nimh.nih.gov/health/topics/caring-for-your-mental-health
- https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response
- https://www.cdc.gov/mentalhealth/learn/index.htm.

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		FAMILY DYNAMICS								
Course Code:23BHF4S2										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
SEC - VII	Semester-IV	Y				2	2	25	75	100

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
UNIT I	**Family** Meaning, family as the basic social institution, significance of family, Types and 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	8
	Practical - Analysis of various types of family	2
UNIT II	**Contemporary Alternative Family Patterns and Relationships** Family life cycle – stages and sub-stages Singlehood: Historical and contemporary perspectives, reasons, successful singles, loneliness, fulfillment. Cohabitation: Types, cohabitation and stability of relationship, legalissues 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 cycleWays of dealing with adjustment.	8
	Practical - Analysis of family life cycle, Analysis of various contemporary Family Patterns	2
UNIT III	**Marriage - Concepts of Marital Behavior** Selection of a life partner, Meaning, preparation, motives, functions, and types of marriageCharacteristics 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.	5

UNIT 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 theirchildren 9. Parental support, parental psychological and behavioral control 10. Autonomy granting	**8**
	Practical - Prepare case studies on parent – child relationships in concern withparenting style	**2**
UNIT 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 troublescope Needs and assessment Counselling – premarital and marital Help lines and welfare programs.	**8**
	Practical - Conduct counselling session for family issues and marital problems	**2**
	TOTAL	**60**

COURSE OUTCOME :

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

REFERENCES :

1. Bengston, V. L., Acock, A. C., Allen, K. R., Dilworth-Anderson, P., & Klein, D. M. (Eds.)(2005). **Sourcebook of Family Theory and 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 Sexualityin 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.
8. Kuczynski, L. (2002). **Handbook of Dynamics in Parent-Child Relations.** New York: Sage.
9. 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_Intergenerati onal_Relations_A_psycho-Social_Analysis
- http://www.familiesandsocieties.eu/wp-content/uploads/2014/12/WP04BernardiEtal2013.pdf

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	2	3	2	3	3

Title of the Course		DIETETICS						Course Code:23BHF5C1		
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - IX	**Semester-V**	Y				4	5	25	75	100

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
UNIT I	**Concept of Diet Therapy and Role of Dietitian** Principles of therapeutic diets, modification of normal diet, classification of therapeutic diets. Different feeding techniques - enteral and parenteral feeding. – Indications, contra indications and complications, Dietitian - Definition, role and code of ethics, classification of dieticians in nutritional care.	**20**
UNIT II	**Diseases of Gastrointestinal Tract** Etiology, symptoms, dietary management of: Diarrhoea, dysentery, and constipation, Peptic ulcer, irritable bowel syndrome & inflammatory bowel disease (ulcerativecolitis), Crohn's disease and celiac disease	**20**
UNIT III	**Diseases of Liver, Gall Bladder and Febrile Conditions** Etiology, symptoms, dietary management of: Disease of liver & Gall bladder- Hepatitis, cirrhosis, gall stones Febrile conditions - Acute & Chronic fevers (Typhoid, influenza, malaria,tuberculosis, COVID)	**10**
UNIT IV	**Metabolic Disorders -** Etiology, symptoms, and dietary management of: Obesity and PCOS, Diabetes mellitus- types, symptoms and metabolic changes, treatmentwith diet and insulin, GI, GL, carbohydrate counting, artificial sweeteners and complications Cardiovascular diseases – hypertension, atherosclerosis.	**10**
UNIT 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**
	SELF STUDY/EXPERIENTIAL LEARNING Conduct a group discussion to understand various diseases and presentation of case-studies. Planning of various low-cost recipes using locally available ingredients for dietetics practical Conducting a nutrition exhibition to display sample menus for various diseased conditions for different sections of society.	
	Suggested Activity - Internship in dietary unit of a hospital	
	TOTAL	**75**

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 foods 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 recommend dietary allowances.

REFERENCES :

1. Antia F. P. (2002). **Clinical Dietetics and Nutrition.** 4th edition, Oxford UniversityPress, Chennai.
2. Guthrie H. A, Picciano M. F. (1995). **Human Nutrition.** Mosby, St. Louis Missorie.
3. Joshi. S.A. (2005). **Nutrition and Dietetics.** Tata Mc Graw-Hill Publishing CompanyLimited, New Delhi
4. Passmore R. and Davidson S. (1986). **Human Nutrition and Dietetics.** Liming stonepublishers
5. Sharma.A. (2017). **Principles of Therapeutic Nutrition and Dietetics.** CBS Publishers & Distributors Pvt Ltd, New Delhi.
6. Srilakshmi B, (2019). **Dietetics.** 8th edition, New Age International Publishing Ltd, NewDelhi
7. 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%20and%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/article.html
- https://my.clevelandclinic.org/health/diseases/15587-inflammatory-bowel-disease-overview

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		DIETETICS PRACTICAL						Course Code:23BHF5P1		
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - X	Semester-V			Y		4	5	25	75	100

Learning Objectives

To enable the students to :

1. Gain knowledge and develop skills and techniques in planning and preparation of therapeuticdiets.
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
UNIT I	Planning, Calculation of nutrient content, Preparation and Service of diets for: Tube feeds for special conditions Fevers – Typhoid and Tuberculosis.	**20**
UNIT II	Planning, Calculation of nutrient content, Preparation and Service of diets for: Peptic Ulcer, Diarrhoea and Constipation	**10**
UNIT III	Planning, Calculation of nutrient content, Preparation and Service of diets for: Viral hepatitis, Cirrhosis of liver	**20**
UNIT IV	Planning, Calculation of nutrient content, Preparation and Service of diets for: Obesity, Diabetes Mellitus,Atherosclerosis	**10**
UNIT V	Planning, Calculation of nutrient content, Preparation and Service of diets for: Hypertension, Chronic Kidney Disease	**15**
	TOTAL	**75**

SELF STUDY / EXPERIENTIAL LEARNING

1. Initiate a diet counseling center in the institution for students, teaching, andnon-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.
4. 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 principlesof 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.

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 and Distributors Pvt. Ltd, New Delhi.
7. Bajaj .M (2019). **Diet Metrics: Handbook of Food Exchanges.** Norton Press, Chennai.

Mapping with Programme Outcomes

	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

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 of)of Course Contribution to Pos	3	3	3	3	3

Title of the Course		FIBRE TO FABRIC						Course Code:23BHF5C2		
Category	III Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - XI	Semester-V	Y				4	5	25	75	100

Learning Objectives

To enable the students to :

1. Understand the concepts in textiles, the properties of textile fibre, 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
UNIT I	**Introduction to Textile -** Introduction, Terms and definition related to textiles, importance of textiles.	10
UNIT II	**Textile Fibres** a) Properties of fibers- primary and secondary properties b) Classification of fibres – natural and man-made fibres. c) Manufacturing processes/Cultivation, properties and uses of Cotton, Silk, Wool, Polyester, Rayon and Nylon.	15
	Practical - Identification of fibres.	5
UNIT 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	10
	Practical - Identification of yarns	5
UNIT 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 plainweave, 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)	10
	Practical - Identification of weaves – Collection of samples for basic weaves.	5

UNIT 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 fabricconstruction process- Braided fabric, Net, Laces, Film fabric, tufted fabric.	**10**
	Practical - Field visits to various textiles units	**5**

COURSE OUTCOMES

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

CO1. Describe the essential properties of textile fibres, yarns and the basic fabric constructiontechniques

CO2. Explain the manufacturing process of man-made fibres, yarn construction and fabric construction.

CO3. Classify textile fibres, yarns and fabrics.

CO4. Categorize the fibres, yarns and fabrics for its appropriate end use.

CO5. Assess the sequence of developing fibres into yarns and fabric

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.** 9thed Prentice Hall, London.
5. Rastogi, D., and Chopra, S. (2017). **Textile Science.** India: Orient Blackswan Private Limited.
6. Robert, R. and Mather, R. H. (2015). **The Chemistry of Textile Fibers.** Cambridge: RSCPublishers.
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: AbhishekPublication.

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

	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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		BASICS OF FOOD MICROBIOLOGY								
Course Code:23BHF5C3										
Category	II Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core – XII	Semester-IV	Y				4	5	25	75	100

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
UNIT I	**Introduction to Microbes in Foods** History and Development of Food Microbiology Classification of microorganisms. General morphological characteristics of bacteria, yeast, algae. mold, virus. Characteristics of predominant microorganisms in food, sources of microorganisms in foods.	15
UNIT II	**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 and fish, milk and milk products.	15
UNIT III	**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.	10
UNIT IV	**Food Poisoning and Food Borne Disease** 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.	15
UNIT V	**Microorganisms found in water, soil, air and sewage**- List of microorganisms and diseases caused; Test for sanitary quality ofwater, 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, Modified Atmosphere, Reducing O-R Potential) Antimicrobial Preservatives and Bacteriophages Irradiation, Novel Processing Technologies, Combination of Methods (Hurdle Concept)	20
	TOTAL	75

COURSE OUTCOMES

After successful completion of the course the student will be able to

CO1. Comprehend the characteristics of microorganisms in food and its environment and applythe knowledge to control them.

CO2. Differentiate between organisms that are beneficial from those causing spoilage.

CO3. Explain the causes and prevention of food poisoning and food borne infections.

CO4. Identify the microscopic structure of algae, molds, yeast, virus and bacteria.

CO5. Perform appropriate tests to identify the size, shape, arrangement and motility of organisms.

REFERENCES :

1. Parija SC. (2012). **Textbook of Microbiology and Immunology.** 2nd edition, Elsevier India.
2. Garbutt J. (1997). **Essentials of Food Microbiology,** 2nd edition, Arnold publication, NewYork,1997
3. Adams M.R, Moss M.O and Peter M. (2016). **Food Microbiology.** 4th edition. Royal Society of Chemistry, United Kingdom.
4. Frazier W.C and Westhoff D.C. (1995). **Food Microbiology.** 5th edition. Tata Mc Graw Hill Publishing Company Ltd, New Delhi.
5. Jay J.M, Loessner MJ and Golden D.A. (2005). **Modern Food Microbiology.** 7th edition,CBS Publishers and Distributors, New Delhi.
6. Ananthanarayan and Paniker. (2017). **Text book of Microbiology.** Tenth Edition, OrientLongman Limited, Hyderabad.
7. Ramesh. V. (2007). **Food Microbiology**. MJP publishers, Chennai.
8. Gerald McDonell. (2020). **Block's Disinfection, Sterilization and Preservation.** 6th edition.Lippincott Williams and Wilkins, Philadelphia.

E-Learning Resources

- http://people.uleth.ca/~selibl/Biol3200/CourseNotes/MicroTaxonomyCh10.pdf
- https://www.cdc.gov/vaccines/hcp/conversations/downl oads/vacsafe-understand-color- office.pdf
- https://www.who.int/news-room/fact-sheets/detail/food-safety
- https//epi.dph.ncdhhs.gov/cd/diseases/food.html
- http://vikaspedia.in/health/nutrition/food-borne-diseases-or-food-poisoning
- https://www.microrao.com/micronotes/sterilization.pdf
- https://ehs.colorado.edu/resources/disinfectants-and-sterilization-methods.

PRACTICAL :

1. Study of different equipments in a microbiology lab.
2. Safety practices in microbiology laboratory.
3. Microscopy- principles, parts, function and operation.
4. Microscopic structure of algae, molds, yeast, virus and bacteria.

5. Examination of organisms using simple staining technique.
6. Examination of organisms using gram staining technique.
7. Examination of motility of bacteria using hanging drop technique.
8. Demonstration of sterilization of glassware using hot air oven, autoclave.
9. Demonstration of media preparation-Broth, deep, slant and plates.
10. Demonstration of culture techniques-streak, pour plate.
11. Visit (at least one) to food processing units or any other organization dealing withadvanced methods in food microbiology.

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		FRONT OFFICE MANAGEMENT						Course Code:23BHF5E1		
Category	III Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
DSE - I	Semester-V	Y				3	4	25	75	100

Learning Objectives

To enable the students to :

1. Understand the varied dimensions of the food service industry with specialreference to front Office
2. Study the concepts of organization, communication and operational procedures infront office
3. Develop skills to effectively manage the front department food serve institutions

UNIT	CONTENT	HOURS
UNIT I	**Classification of Hotels** Classification of hotels based on star category, size, ownership andother categories. Types of rooms	10
UNIT 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.	10
UNIT 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	15
UNIT 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.	15
UNIT 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	10
	Total	60

COURSE OUTCOMES

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

CO1 : Classify hotels and rooms based on star category, ownership, locationetc.

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 frontoffice staff.

REFERENCES:

1. Ahmed Ismail (2004). **Front Office Operations and Management.** Delmar Publications.
2. Andrews. S (1982). **Hotel Front Office Training Manual** , Tata McGraw Hill Publishing Company Ltd, New Delhi.
3. Chon K. and Raymond T.S. (2001). **Welcome to Hospitality - An Introduction.** 2nd Edition, Delamar Publications.
4. Raghubalan G. and 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

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

COURSE OUTCOMES

Weighted percentage (rounded of) of Course Contribution to Pos	2	3	3	3	3

Title of the Course		COMPUTER APPLICATION IN HOME SCIENCE								
Course Code:23BHF5E2										
Category	Year	L	T	P	O	Credits	InstHrs.	Marks		
								CIA	External	Total
Professional Competency Skill	Semester - VI				Y	2	2	25	75	100

Learning Objectives

To enable the students to:

1. Understand the application of computer in various disciplines of Home Science.
2. Know the features of AutoCAD software used in Textiles & Interior Design.
3. Explore the benefits of computer applications in the field of research.

UNIT	CONTENT	HOURS
UNIT I	**General commands -** Creating and opening a file, Steps in creating a folder and saving a file in the destined folder. **MS Office Package -** Software in MS Office package, creating a document using MS Word, preparing slide presentation using MS Power Point. Making Graphs and Charts using MS office.	5
UNIT II	**Computer Application in Space planning -** AutoCAD in Interior Design **-** Need, Purpose and merits. Application – Preparing Plan, Elevation and section drawings for interiors and exteriors. Need for rendered views in design. Creating 3D models and 3D views using Google Sketch up. Advantages of software in design field.	8
UNIT III	**Computer Application in Nutrition - S**oftware package in nutrition education and diet counselling - Patient's health record, Nutritive value of food items, Nutritional analysis, Meal planning and recipes, Types of nutrition Software – Nutrium, Nutrition maker, Nutritionist pro, Nutritics, Core plus. Benefits of Nutrition Software's to Nutritionists and Clients.	5
UNIT IV	**Computer Application in Textiles -** AutoCAD in Textile Designing – Definition, Concept, Application of CAD – Sketching, pattern making, grading patterns, Making markers, Apparel production. Types of Textile CAD software – Woven Textiles, Knitted Fabrics, Printed fabrics, Sketch Pad system, Texture mapping, Embroidery system, Apparel industry and computer. Advantages of Textile CAD.	7
UNIT V	**Computer Application in Research -** Data collection – creating online form using Google forms, Data entry in MS Excel and data analysis using SPSS – Frequency analysis, Cross Tabulation, Chi-Sqaure, T – test, ANOVA and Correlation Co-efficient. Export and saving results in Word document. Creating Tables.	5
	Total	30

COURSE OUTCOMES

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

CO1: Recall the features of MS Office package.

CO2: Understand the application of AutoCAD for design.

CO3: Explain computer applications in the field of Nutrition.

CO4: Create textile design patterns using Textile CAD.

CO5: Analyze research data using appropriate software and interpret results.

REFERENCES :

1. AutoCAD 2018 for Novices (Learn By Doing), CAD Soft Technologies.
2. CAD Practical Skills in Textile Technology and Design (TTD), Patience Chitura , 2020.
3. Microsoft Office 365 for Beginners 2022: [8 in 1] The Most Updated All-in-One Guide from Beginner to Advanced | Including Excel, Word, PowerPoint, OneNote, OneDrive,Outlook, Teams and Access, James Holler.
4. SPSS Statistics for Data Analysis and Visualization, Jesus Salcedo, Wiley Publishers, 2017.

E - Learning Resources:

- https://www.tutorialspoint.com/word/index.htm
- https://www.vmaker.com/tutorial-video-hub/microsoft-tutorial-videos/microsoft- office-tutorial/
- https://www.thesourcecad.com/autocad-tutorials/
- https://nutrium.com/blog/why-should-you-choose-a-nutrition-software- over-an-excel-word/

Mapping with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	S	M	L	S	S	S	M	M	S
CO2	S	S	S	S	M	S	L	M	M	S
CO3	S	M	S	S	M	S	M	S	M	S
CO4	S	M	S	S	M	S	S	S	S	S
CO5	S	S	S	S	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	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 of) of Course Contribution to Pos	3	3	3	3	2

Title of the Course		FOOD SERVICE MANAGEMENT						Course Code:23BHF6C1		
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core - XIII	Semester -VI	Y				4	6	25	75	100

Learning Objectives

To enable the 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
UNIT 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
UNIT 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, terminationand dismissal of employees. Labor laws pertaining to the food service establishment.	15
UNIT III	**Food Management** **Food purchase** – purchasing process, functions of food buyer, methods of buying openmarket, 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, goodsreceived book, stock book, bin card, stores ledger.	15
UNIT 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 disposalmethod. **Safety** in food service institution - Accidents - causes and prevention. **Equipment** in food service - Classification of equipment, factors affecting selection of equipment.	15

UNIT 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, labour, 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**
	Total	**75**

SELF STUDY/ EXPERIENTIAL LEARNING :

1. Group discussion and power point presentation, job descriptions, recruitment advertisements in print media / online sites.
2. Prepare resumes for job interview and conducing of mock interview.
3. Role plays of different leadership skills.

COURSE OUTCOMES

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

CO1 : Apply the principles, tools of management to ensure for effective functioning oforganization.

CO2 : Develop the managerial skills to select, train, appraise human resources.

CO3 : Recognize the use and operation of equipment and acquire skills in the selection of equipment, sketch sample lay out of the food service units.

CO4 : Evaluate and implement food safety and environmental sanitation in the workspace.

CO5: Use the basic concept of bookkeeping and elements of cost to assess the financial viability of the organization.

REFERENCES:

1. Andrews and Sudhir. (2000). Introduction to Hospitality Industry, Tata-McGraw Hill Pub. Co., New Delhi.
2. Dhawan and Vijay. (2001). Food and Beverage Service, Frank Boss and Co, NewDelhi.
3. Foskett David. (2011). The Theory of Hospitality and Catering, Hodder Education, London.
4. Lillicarp, 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

Mapping with Programme Outcomes

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		FOOD PRESERVATION AND QUALITY CONTROL								
Course Code:23BHF6C2										
Category	Year	L	T	P	O	Credits	InstHrs	Marks		
								CIA	External	Total
Core - XIV	Semester -VI	Y				4	6	25	75	100

Learning Objectives

To enable the students to :

1. Gain knowledge on principles of food preservation
2. Understand the techniques used in processing foods to preserve their shelf life
3. Gain knowledge on food safety and food laws.
4. Study about quality control and common food standards.

UNIT	CONTENT	HOURS
UNIT I	**Food Preservation** - Definition, principles and importance, classification – bactericidal and bacterio static methods. **Processing by High Temperature** Processing and preservation by high temperature: blanching, pasteurization, sterilization, canning, Dehydration. **Processing by Low Temperature** Processing and preservation by low temperature – refrigeration, freezing, dehydro-freezing.	15
UNIT II	**Preservation by Drying** Processing and preservation by drying – sun drying, tray or tunnel drying, spray drying, drum drying freeze drying advantages anddisadvantages. **Preservation by Non-thermal Treatments and Food Packaging** Processing and preservation by non – thermal methods: salt, sugar, chemicals, smoking. Irradiation.	15
UNIT III	**Food packaging** - Recent trends in Packaging and labeling, its types and uses. **Food Adulterator :** Adulteration of food - common adulterants and tests detect common adulterants.	10
UNIT IV	**Food Hazards :** Physical, Chemical, Biological hazards associated with food types. Effect of processing and storage on microbial safety. **HACCP :** Principles, benefits and limitation. Consumer Protection Act (CPA).	15
UNIT V	**Quality Control:** Objectives, Importance, functions of quality control, stages of quality control in food industry. **Government Regulations In Quality Control :** FAO, WHO codex Alimentarious commission, PFA, AGMARK, BIS, FPO, fair average quality (FAQ) specification for food grains, ISO 9000 series.	20
	TOTAL	60

COURSE OUTCOMES

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

CO1. Define and explain the principles of food preservation and apply the various techniques of food preservation to increase the shelf life of foods.

CO2. Compare the principles and techniques of various food preservation methods.

CO3. Apply the Food packaging and labelling various methods. Recent trends in Packaging and labelling.

CO4. Define and explain the objectives, Importance, functions of quality control, stages of quality control in food industry. Learn principles, benefits and limitation of HACCP.

CO5. Importance of Food Quality and safety for developing countries. Learn various food quality standards used in food industry.

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 andprofessional. London.
4. Rahman M S., (2020). **Handbook of Food Preservation**. CRC Press, USA.
5. Srilakshmi B. (2017). Food Science. Nw Age International Publications, New Delhi.
6. Suganthi.V and Subaratinam R., (2021). **Textbook on Food Preservation.** DiptiPress (OPC) Pvt. Ltd, Chennai.
7. Sivasankar B. (2013). **Food Processing and Preservation**. 2nd edition, prentice Hall, Pvt, Ltd.
8. Srilakshmi B. (2002). **Food Science.** New Age International Private Ltd., New Delhi.
9. Swaminathan M., (2004). **Food Science - Chemistry and Experimental Foods.** Bappco Publishers, Bangalore.
10. Chandrasekhar U. (2002). **Food Science and Applications in Indian Cookery**. Phoenix Publishing House Private Ltd., New Delhi.
11. Adams M.R. and Moss M.O., (2005). **Food Microbiology**. New Age International (P) Ltd., New Delhi.
12. Fellow P., (2000). **Food Processing Technology – Principles and Practices.** 2nd Edition, CRC Press Woodland Publishers, England, 2000.
13. Sommers, C.H. and Xveteng Fan, (2006). **Food Irradiation Research and Technology.** Blackwell Publishing, 2006.

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

	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

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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course Course code: 23BHF6C3		PRINCIPLES OF RESOURCE MANAGEMENT								
Category	**Year**	**L**	**T**	**P**	**O**	**Credits**	**InstHrs.**	**Marks**		
								CIA	**External**	**Total**
Core-XV	**Semester-VI**	Y				4	6	25	75	100

Learning Objectives

To enable 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
UNIT 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.	
UNIT 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.	**10**
	Activity: List out the resources optimizing the goal.	
UNIT 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.	**10**
	Activity: Preparation of a time schedule and Evaluate time schedule using Gantt chart.	
UNIT 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 ofMomentum. **Fatigue -** Concepts, Types - Physiological and Psychological fatigue and Managerial processapplied to energy.	**17**

	Activity: Study on work heights based on anthropometric measurement on vertical andhorizontal planes.	**3**
UNIT 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.	**5**
	Total	**75**

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.

REFERENCES :

1. Bela Bhargava (2005). **Family Resource Management & Interior Decoration.** University Book house Pvt. ltd, ISBN-13: 978-8187339229
2. Marion Giordan (2016). **Consumer Education: A handbook for Teachers**. Routledge. 1st edition, ISBN-13: 978-1138839151
3. Nickell and Dorsey (2002). **Management in Family Living**. CBS; 4th edition, ISBN-13:978-8123908519
4. Pushpa Chakravorty (2007). **Home Management**. New Delhi:Pointer Publishers.
5. Rao (2020). **Taxmann's Human Resource Management.** Taxmann Publications Pvt.Ltd.; 2nd edition, ISBN-13: 978-9390128396
6. Ready GB (2021). **EBC Consumer Protection Act**., LAW BOOKS, ASIN:B097TQ64QV
7. Steven D.S., (2016). **Consumer Economics: A Practical Overview. .** NewYork:Routledge Taylor and Francis group.
8. Sudhir Dixit (2018). **Time Management**. Manjul Publishing House, ISBN-13: 978-9388241106

E - Learning Resources:

- http://www.yourarticlelibrary.com/decision-making/decision-making-in-management-
- definition-and-features-explained/25657/
- http://www.familyresourcemanagement.org/services/goals/
- http://www.familyresourcemanagement.org/services/standards/
- http://www.nios.ac.in/media/documents/sechmscicour/english/home%20science %20(eng)%20ch-15.pdf
- https://books.google.co.in/books?id=NJkrzK3CgisC&pg=PA149&lpg=PA149&dq=ti
- me,+energy,+money+as+resource+in+management&source=bl&ots=xmSp-
- LDkia&sig=57qLKHx2UX3sznBIJhm

Mapping with Programme Outcomes

	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

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		INTERNSHIP IN HOSPITALS					Course Code:23BHF6I			
Category	Year	L	T	P	O	Credits	InstHrs.	Marks		
								CIA	External	Total
DSE- III	**Semester - VI**				Y	3	5	25	75	100

**The students are expected to undergo an internship for a minimum of 15 days at any one of the following: Hospital / Health care facility / Fitness Centre / Food Industry / Catering Establishment / NGO / Interior Design Firm.

Learning Objectives
To enable the students to :
1. The internship is committed to preparing graduates in Home Science to join as entry level Dietitians/Nutritionists/Food Analysts/ Catering Staff/ Interior Designer

EXPECTED OUTCOME OF INTERNSHIP AT HOSPITAL / HEALTH CAREFACILITY/ FITNESS CENTRE

On completing the internship, the student:

- Learns the functions of the Dietary Department / Health care facility/ Fitness Centre
- Gets acquainted with the role and responsibilities of a Dietitian/ Nutritionistin the respective facility
- Develops skills in nutrition screening and assessment of patient/ client
- Acquires training in nutritional diagnoses of each patient/client
- Demonstrates the ability to implement nutrition care plans; document nutrition care provided, maintain internship logbook and monitor outcomes of the nutrition plan.

EXPECTED OUTCOME OF INTERNSHIP AT CATERING ESTABLISHMENT

On completing the internship, the student:

- Gains knowledge about the functions and operations of a catering establishment
- Develops managerial skills in the areas of managing kitchen, organizing stock,cooking schedules and customer service.
- Learns the strategies used in cost control
- Is trained in menu management and recipe development
- Learns the culinary art of planning, preparing and serving food that is deliciousand appealing.
- Is familiar with the standards of safety and hygiene followed in the industry/company.

EXPECTED OUTCOME OF INTERNSHIP AT FOODINDUSTRY/NUTRACEUTICAL COMPANY

On completing the internship, the student:

- Learns the organizational setup and the process flow in manufacturing goods/ delivering services
- Gets hands on experience in serving in the various departments fromprocurement to end delivery of finished product

- Develops managerial skills to maintain stock, ensure smooth flow in production/services rendered
- Acquires the ability to work in a team
- Learns the quality standards laid by the industry/company and efforts taken to meet these standards

EXPECTED OUTCOME OF THE INTERNSHIP AT INTERIOR DESIGN FIRM

On completing the internship, the student:

- Gains knowledge about industry/company process.
- Develops skills in 2D and 3D software.
- Analyze cost estimation of building materials and finishes.
- Learns the methods and strategies used in cost control.
- Develops managerial skills in the areas of managing works required by the client.
- Adapts to working in a team and contributes to needs as they arise.
- Demonstrates competency in professional presentation, communication andwriting skills.

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	S	S	S	S	S
CO2	S	S	S	M	S	S	S	S	S	S
CO3	S	S	S	M	S	S	S	S	S	S
CO4	S	S	S	M	S	S	S	S	S	S
CO5	S	S	S	M	S	S	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 of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		COMMUNITY NUTRITION AND EXTENSION EDUCATION								
Course Code: 23BHF6E1										
Category	III Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
DSE - IV	Semester - VI	Y				3	5	25	75	100

Learning Objectives

To enable the students to:

1. To understand the malnutrition problems and prevalence in India.
2. To provide knowledge on the national effort in combating malnutrition and
3. To impart knowledge on national and International contributor towards national improvement in alleviating nutrition problems.

UNIT	CONTENT	HOURS
UNIT I	**Nutritional problems affecting the Community -** Nutrition and Malnutrition - Etiology, symptoms and prevalence. Under nutrition and Over nutrition, PEM – classification : kwashiorkar and Marasmus, Anaemia, IDD and Vitamin A deficiency, Obesity - Prevalence, - etiology, symptoms and Preventive measures.	15
UNIT II	**Nutritional Assessment Methods -** Direct Assessment - anthropometry, clinical and biochemical estimation and Diet survey. Indirect Assessment - Food balance sheet. Role of National and International organizations - ICDS, Noon Meal Programme, FAO, WHO, UNICEF, CARE, ICMR, ICAR, CSIR, NIN, CFTRI, National Nutrition Policy, NGO.	15
UNIT III	Introduction to extension education and Community development, Philosophy and Principle of extension education. Origin, History, Organization and functions of community development and Extension service in India. Home Science Extension- concept, philosophy, objectives. Home science extension Workers - qualities and activities, Nutrition Extension Unit - origin and activities. Communication – it's meaning, needs, types and problems in communication.	15
UNIT IV	**Principles and Methods of Extension Work** a. The learning and teaching process–effective teaching through different methods – individual, group and mass approach. b. Audio visual aids in extension work – motion pictures, radios, slides, flannel graphs, flash cards, graphs and puppet shows. c. Program planning - Meaning and importance, steps involved in programme planning. Welfare programmes for women and children : IRDP, ANP, ICDS, TRYSEM, DWCRA, NAEP. d. Group organization and leadership in rural areas – social groups – classification, leadership – classification, role and training of a good leader.	15

UNIT V	**Introduction to Communication** - Concept, Elements of Communication, Models of Communication. Expanding scope of Nutrition Practice. **Communication Systems** - Nature, characteristics, and types - Formal and Informal communication, Verbal and Non-verbal Communication, Approaches of Communication - One way-two way, Upward-downward, Horizontal - vertical and Interpersonal Communication - Concept, types and functions of interpersonal communication, Barriers of Communication.	**15**
	Total	**75**

COURSE OUTCOME

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

CO1 : Identify nutritional problems affecting the community.

CO2 : Develop skills pertaining to nutritional assessment meethods.

CO3 : Describe the meaning origin and history of Extension education and Community development

CO4 : Understand the extension work and extension teaching methods.

CO5 : Display good communication skills needed for the conduct of the Nutrition education programs.

REFERENCES :

1. Jellife D.B., Jellife ERP, Zerfas A. and Neumann C.G., (1989).. **Community Nutritional Assessment with Special Reference to less Technically Developed Countries.** Oxford University Press. Oxford.
2. Park K. (2011).. **Park's Textbook of Preventive and Social Medicine,** 21st Edition.M/s Banarasidas Bhanot Publishers, Jabalpur, India.
3. Suryatapa Das (2016). **Textbook of Community Nutrition.** Academic Publishers, Kolkata.
4. Wadhwa A. and Sharma S. (2003). **Nutrition in the Community- A Textbook.** Elite Publishing House Pvt. Ltd. New Delhi.
5. 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/).
6. Albrecsht, H. et al., (1989). **Rural Development Series, Agricultural Extension.** Vol I & II, Basicconcepts and methods, Wiley Eastern Limited, New Delhi.
7. Chaubey, B.K. (1979). **A Hand Book of Education Extension.** Jyoti Prakashan, Allahabad.
8. **Extension Education in Community Development** (1981). Ministry of Food and Agriculture,Government of India, New Delhi.

9. Pankajam, G. (2000). **Extension – Third Dimension of Education.** Gyan Publishing House,New Delhi.
10. Reddy, A. (1999). **Extension Education.** Sree Lakshmi Press, Bapatla.
11. Waghmare, S.K. (1989). **Exploring of Extension Excellence.** Multi Tech. Pub. Company.

E - Learning Resources

- https://books.google.co.in/books?id=o5CxDAAAQBAJ&printsec=frontcover#v=onepage&q&f=false
- https://nces.ed.gov/pubs/96852.pdf-
- http://www.fao.org/docrep/017/i3235e/i3235e.pdf
- http://www.fns.usda.gov/sites/default/files/NutritionEdRTC.pdf
- http://frac.org/wp- content/uploads/2010/10/providing_nutrition_education_afterschool.pdf
- http://ecoursesonline.iasri.res.in/course/view.php?id=243
- https://onlinecourses.swayam2.ac.in/cec19_mg32/preview

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	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	14	15	15	15
Weighted percentage (rounded of) of Course Contribution to Pos	3	3	3	3	3

Title of the Course		APTITUDE AND REASONING SKILL FOR COMPETITIVE EXAMINATIONS								
Course Code:23BHF6S1										
Category	III Year	L	T	P	O	Credits	InstHrs	Marks		
								CIA	External	Total
SEC		Y	Y			3	4	25	75	100

Learning Objectives

To enable the students to:

1. To acquaint the students in quantitative aptitude and logical reasoning required for various competitive examinations.
2. Gain knowledge and recognize the importance of aptitude and reasoning skill to excel in campus interviews.

UNIT	CONTENT	HOURS
UNIT I	**Quantitative Ability (Basic Mathematics)** Number Systems, LCM and HCF, Simplification, Square Roots and Cube Roots, Average, Problems on Ages, Percentages, Problems on Numbers.	5
UNIT II	**Quantitative Ability (Advanced Mathematics)** Probability, Profit and Loss, Simple and Compound Interest, Time, Speed and Distance, Time & Work, Ratio and Proportion.	5
UNIT III	**Data Interpretation** Tables, Column Graphs, Bar Graphs, Line Charts, Pie Chart, Venn Diagrams	5
UNIT IV	**Verbal and Non-Verbal reasoning** Analogy, Blood Relation, Directional Sense, Number and Letter Series, Coding – Decoding, Calendars, Clocks, Venn Diagrams, Mathematical Operations, logical sequence of work, Mirror-image, Water-image, Completion of incomplete pattern, Grouping of identical figures	10
UNIT V	**Logical Reasoning** Statement – Argument, Statement Assumptions, Statement – Course of action, Statement and Conclusions, Cause and Effect reasoning, Deriving conclusion from passages, Theme detection.	5
	Total	30

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

CO1 : Understand the basic concepts of quantitative aptitude.

CO2.: Gain in depth knowledge on various concepts of logical reasoning skills.

CO3 : Excel and able to solve aptitude and reasoning papers in campus interview.

CO4 : Acquire satisfactory competency in use of reasoning.

CO5 : Compete efficiently in national and international level competitive exams.

REFERENCES

1. Aggarwal, R. S. (2000). **A Modern Approach to Verbal & Non Verbal Reasoning.** S. Chand.
2. Sijwali, B. S and Indu Sijwali (2014). **Analytical and Logical Reasoning.** Arihant Publications.
3. Guha A. (2020). **Quantitative Aptitude by Competitive Examinations,** 7th Edition, McGraw Hill Education Publication.
4. Rajgotra, A. and Pradhan P. (2020). **Wileys Exam Xpert A Simpler Approach to LogicalReasoning,** Willey Publications

E - LEARNING RESOURCES

1. https://prepinsta.com/
2. https://www.indiabix.com/
3. https://www.javatpoint.com

Mapping with Programme Outcomes

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

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	2	3	3	3	3
CO2	2	3	3	3	3
CO3	2	3	3	3	3
CO4	2	3	3	3	3
CO5	2	3	3	3	3
Weightage	10	15	15	15	15