B.SC.,
HOME SCIENCE

MODEL SYLLABUS

AUGUST- 2022

TAMILNADU STATE COUNCIL FOR HIGHER EDUCATION, CHENNAI – 600 005

OUTLINE OF THE CURRICULUM AND TEMPLATE FOR COURSE SYLLABUS

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Under-Graduate ProgrammeTemplate

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.

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

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

Highlights of the Revamped Curriculum

- The curriculum focusses 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 learning component 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.

TEACHING METHODOLOGIES

Teaching methods : Chalk and Board, Experiential learning, Student centric learning and Small projects and Practical assignments; Virtual Classroom, LCD projector, Smart Class, Video Conference and Guest Lectures by eminent people.

Training students to engage in self-study without relying on faculty (for example – library and internet search, manual and handbook usage, etc.)

Library, Net Surfing, Manuals, NPTEL, Naan Mudhalvan Courses Other university websites.

TEMPLATE FOR CURRICULUM DESIGN FOR UG DEGREE PROGRAMME

Credit Distribution for UG Degree Programme

First Year
Semester-I

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language	3	6
Part-II	English	3	4
Part-III	Core Courses 2 (CC1, CC2)	8	10
	Elective Course 1 (Chemistry)EC1	3	4
Part-IV	Skill Enhancement Course SEC-1 (Non Major Elective)	2	2
	Foundation Course FC	2	2
	Ability Enhancement Compulsory Course(AECC 1) Soft Skill-1	2	2
		23	**30**
	Remark :Softskill I- 2 hours handled by English: Totally 4+2=6		

Semester-II

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language	3	6
Part-II	English	3	4
Part-III	Core Courses 2 (CC3, CC4)	8	10
	Elective Course 1 (Chemistry / Discipline Specific) EC2	3	4
Part-IV	Skill Enhancement Course -SEC-2 (Non-Major Elective)	2	2
	Skill Enhancement Course -SEC-3 (Discipline Specific / Generic)	2	2
	Ability Enhancement Compulsory Course(AECC 2) Soft Skill-2	2	2
	Remark :Softskill II- 2 hours handled by English: Totally 4+2=6	**23**	**30**

Second Year
Semester-III

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language	3	6
Part-II	English	3	4
Part-III	Core Courses 2 (CC5, CC6)	8	10
	Elective Course 1 (Generic / Discipline Specific)EC3	3	4
Part-IV	Skill Enhancement Course -SEC-4 (Entrepreneurial Based)	1	1
	Skill Enhancement Course -SEC-5 (Discipline Specific/ Generic)	2	2
	Ability Enhancement Compulsory Course(AECC 3) Soft Skill-3	2	2
	Environmental studies	-	1
		22	**30**
	Remark :Softskill III- 2 hours handled by English: Totally 4+2=6		

Semester-IV

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-I	Language	3	6
Part-II	English	3	4
Part-III	Core Courses 2 (CC7, CC8)	8	8
	Elective Course 1 (Generic / Discipline Specific)EC4	3	4
Part-IV	Skill Enhancement Course –SEC6	2	2
	Skill Enhancement Course -SEC-7(Computer Applications in Home Science)	2	2
	Ability Enhancement Compulsory Course(AECC 4) Soft Skill-4	2	2
	Environmental Studies	2	2
		25	**30**
	Remark :Softskill IV- 2 hours handled by English: Totally 4+2=6		

Third Year

Semester-V

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-III	Core Courses 3(CC9, CC10, CC11)	12	15
	Elective Courses 2 (Generic / Discipline Specific) EC5, EC6	6	10
	Core /Project with Viva voce CC12	4	4
Part-IV	Value Education		1
	Internship / Industrial Training (Carried out in II Year Summer vacation) (30 hours)	2	
		24	**30**

Semester-VI

Part	List of Courses	Credit	Hours per week (L/T/P)
Part-III	Core Courses 3 (CC13, CC14, CC15)	12	15
	Elective Courses 2 (Generic / Discipline Specific) EC7, EC8	6	10
Part IV	Professional Competency Skill Enhancement Course SE8 (Aptitude and reasoning skills for competitive examinations)	2	4
	Value Education	2	1
Part-V	Extension Activity (Outside college hours)	1	-
		23	**30**

Total Credits: 140

6. CREDIT DISTRIBUTION FOR UG PROGRAMME

Sem I	Credit	Sem II	Credit	Sem III	Credit	Sem IV	Credit	Sem V	Credit	Sem VI	Credit
1.1. Language	3	2.1. Language	3	3.1. Language	3	4.1. Language	3	5.1 Core Course – \CC IX	4	6.1 Core Course – CC XIII	4
1.2 English	3	2.2 English	3	3.2 English	3	4.2 English	3	5.2 Core Course – CC X	4	6.2 Core Course – CC XIV	4
1.3 Core Course – CC I	4	2.3 Core Course – CC III	4	3.3 Core Course – CC V	4	4.3 Core Course – CC VII Core Industry Module	4	5. 3.Core Course CC -XI	4	6.3 Core Course – CC XV	4
1.4 Core Course – CC II	4	2.4 Core Course – CC IV	4	3.4 Core Course – CC VI	4	4.4 Core Course – CC VIII	4	5. 3.Core Course –/ Project with viva- voce CC -XII	4	6.4 Elective - VII Generic/ Discipline Specific	3
1.5 Elective I Generic/ Discipline Specific	3	2.5 Elective II Generic/ Discipline Specific	3	3.5 Elective III Generic/ Discipline Specific	3	4.5 Elective IV Generic/ Discipline Specific	3	5.4 Elective V Generic/ Discipline Specific	3	6.5 Elective VIII Generic/ Discipline Specific	3
1.6 Skill Enhancement Course SEC-1 (NME)	2	2.6 Skill Enhancement Course SEC-2 (NME)	2	3.6 Skill Enhancement Course SEC-4, (Entrepreneurial Skill)	1	4.6 Skill Enhancement Course SEC-6	2	5.5 Elective VI Generic/ Discipline Specific	3	6.6 Extension Activity	1
		2.7 Skill Enhancement Course –SEC-3	2	3.7 Skill Enhancement Course SEC-5	2	4.7 Skill Enhancement Course SEC-7	2	5.6 Value Education	2	6.7 Professional Competency Skill	2
1.7Ability Enhancement Compulsory Course (AECC) Soft Skill-1	2	2.8 Ability Enhancement Compulsory Course (AECC) Soft Skill-2	2	3.7 Ability Enhancement Compulsory Course (AECC) Soft Skill-3	2	4.7 7Ability Enhancement Compulsory Course (AECC) Soft Skill-4	2	5.5 Summer Internship /Industrial Training	2		
1.8 Skill Enhancement - (Foundation Course)	2			3.8 E.V.S	1	4.8 E.V.S	1				
	23		**23**		**23**		**24**		**26**		**21**
	Total Credit Points										**140**

7. 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	11	11	11	11	22	18	84
Part IV	6	6	5	8	2	4	31
Part V	-	-	-	-	-	1	1
Total	23	23	22	25	24	23	**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 Theory and Practical		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Model examination	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	**100 Marks**

B.Sc. Home Science-Nutrition, Food Service Management and Dietetics/Clinical Nutrition/ Clinical Nutrition 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 Enhancement Optional 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 Crèche 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

Title of the Course		FOOD SCIENCE								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		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 andshelf life.
Understand the physical, biological and chemical characteristics of various foods andtheir 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, scientific methods of preparation and cooking, acceptability and palatability of rice, wheat, maize and millets 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, market forms, 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. Storage and 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 the market Comparison of convenience foods and natural/whole foods
- Market survey of processed beverages
- Identify common adulterants in foods

C**OURSE 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 cooking different Foods.

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

References:

1. Manay, S. and Shadaksharaswamy, M. (1987) Foods Facts and Principles. New Age International Publishers, New Delhi.
2. Peckham, G.C. and Freeland-Graves, J.H. (1979) Foundations of Food Preparation, 4th edition, Macmillan Publishing Co. Inc., New York**.**
3. Shewfelt R.L. (2015) Introducing Food Science. CRC Press, Taylor and Francis Group. Boca Raton
4. Srilakshmi B (2019) Food Science, (7^{th} Ed.) New Age International Publishers
5. Thangam E.Philip, Modern Cookery for Teaching and the Trade Volume - 1&2 (6th Revised Edition), Orient Black
6. Vaclavik, V.A. and Elizabeth, W.C. (2013) Essentials of Food Science.2^{nd} 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	3	3	3	1	3	2	3	2	2	3
CO2	3	3	3	1	3	2	3	2	2	S
CO3	3	3	3	1	3	2	3	2	2	3
CO4	3	3	3	1	3	2	3	2	2	3
CO5	3	3	3	1	3	2	3	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		BASIC COOKERY PRACTICAL								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core				Y		4	5	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 Basic Cooking Skills** Introduction to different cooking methods, cooking terminology; equipment and techniques used for pre-preparation and for different cooking methods. Methods of measuring and weighing liquids and dry ingredients.The use and care of simple kitchen equipment. Introduction to food safety, sanitation and hygiene in the kitchen, Safe practices inhandling knives, sharp instruments and materials at high temperature.	**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 cereals 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, ragi adai, 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 and straining. 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,	**20**

	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.	
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- a few Factors affecting whipping quality of egg white – effect of salt, sugar, vinegar, fatand milk, type of container used and beaters, Stages of foam formation in whipped egg whites and their uses in cookery. **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 appearance of 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 of sweets using different stages of sugar cookery **Fats and oils -** Effect of temperature of oil on texture and palatability of foods- Frying pooris atdifferent temperatures Smoking point of oil - bread cube test. Emulsions- definition, Preparation of mayonnaise **Food additives and Raising agents** Role of MSG, sodium benzoate and KMS in food preparation and preservation.,Natural versus synthetic preservatives, -Advantages and limitations Use of baking soda, baking powder, yeast in baking and food preparation- Prepare one dish with each of these Uses of herbs and spices to enhance flavour.	**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 forcooking different foods.

CO2. Select suitable methods for cooking cereals, pulses, vegetables, meat, fish andPoultry.

CO3. Apply the principles of cookery, cooking techniques and suitable ingredients in preparing dishes.

CO4. Explain the reasons behind the changes that occur during food preparation.

CO5. Justify the best preparation and cooking methods for acceptability and retentionof nutrients in different dishes

References:

1. Martland, R.E. and Welsby, D.A. (1980) Basic Cookery, Fundamental Recipes and Variations. 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,,SanDiego

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	3	1	3	2	3	1	1	3	3	3
CO2	3	1	3	3	3	2	3	3	2	3
CO3	3	2	3	3	3	2	3	2	2	3
CO4	3	3	3	3	3	2	3	2	2	3
CO5	3	3	3	3	3	1	3	3	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		HUMAN PHYSIOLOGY								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Gain basic understanding of human anatomy and physiology
Learn the integrated functioning of cells, tissues, organs and systems.
Apply the principles of nutrition and dietetics on the basis of thorough understandingof 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 Humoral Immunity (in brief)	**12**
	Practical Microscopic study of different tissues: epithelial, connective, muscular and nervoustissue 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 Earusing 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 andtissues, 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 andadrenal glands. Effects of hypo and hypersecretion of these glands. **Reproductive system** Anatomy of male and female reproductive organs, Ovarian and Uterine cycle,influence of hormones on pregnancy and lactation.	**12**
	Practical Microscopic study of tissues of the Pituitary, Thyroid, Ovary and Testis Study of the structure of the male and female reproductive organs usingmodels/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.

Reference:

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 ofPublishing, 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 inHealth 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	3	3	3	2	2	2	1	2	2	3
CO2	3	3	3	2	2	2	1	2	2	3
CO3	3	3	3	2	2	2	1	2	2	3
CO4	3	3	3	2	2	2	1	2	2	3
CO5	3	3	3	2	2	2	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		BASICS OF FOOD MICROBIOLOGY								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Gain knowledge on the characteristics of micro-organisms in food and environment.
Understand the role of microorganisms in food spoilage, health and illness.
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 of water, Purification of water **Control of Microorganisms in food** Control of Access of Microorganisms: sanitation, sterilization and disinfection Control by Heat (Thermal Processing), Low Temperature, Reduced Water Activity and Drying, Low pH and Organic Acids, 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 apply the 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, New York,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, Orient Longman 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/downloads/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 with advanced methods in food microbiology.

Mapping with Programme Outcomes

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	3	3	3	3	2	3	2	2	3
CO2	3	3	3	3	1	3	2	2	2	3
CO3	3	3	3	3	2	3	2	2	2	3
CO4	3	3	3	3	2	3	2	2	2	3
CO5	3	3	3	3	M	2	2	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		HUMAN NUTRITION								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Understand the importance of various macronutrients in relation to health.
Highlight dietary guidelines for various nutrients and contribute towards a better lifestyle for 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 and dietaryguidelines- current concepts Signs and symptoms of adequate, optimum and good nutrition, malnutrition (Undernutrition, and over nutrition), Assessment of Nutritional status- Anthropometric, Biochemical, Clinical and Dietaryaspects.	**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 ofBlood 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 and Marasmus –etiology, clinical features, treatment and prevention Evaluation of protein quality- PER, BV, NPU and NPR, chemical score. Protein Supplements and Novel Protein sources- Benefits and Health concerns	**17**
	Activity-List 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 andits relation to cardiovascular diseases. **Energy** Determination of energy value of foods using Bomb calorimeter, Physiological valueof foods, relation between oxygen used and calorific	**17**

	value. Direct and Indirect calorimetry direct calorimetry, Respiratory quotient Components of Energy expenditure- Basal metabolism, factors affecting BMR, Foodrelated 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 (whereverapplicable). **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 deficiencyand toxicity. **Micro/Trace minerals** Iron, Zinc, Iodine, Selenium, Manganese, Chromium, Fluoride and Copper Distribution in the body; functions, effects of deficiency, food sources andrequirements, Role of Antioxidant minerals **Water** As a nutrient, functions, sources, requirements. Distribution of water in thebody, 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, andwater.

CO5. Evaluate the role of macronutrients, micronutrients, and water in health and disease.

Reference:

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.andRolfes 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	3	3	3	2	2	2	1	1	2	3
CO2	3	3	3	2	2	2	1	1	2	3
CO3	3	3	3	3	2	2	3	2	2	3
CO4	3	3	3	2	2	2	1	2	2	3
CO5	3	3	3	3	2	2	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		NUTRITION PRACTICAL								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core				Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Understand the various analytical techniques.
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 (withthe use of the semi auto analyser) 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 nutrients in 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). 8thEd. Instrumental Methods of Chemical Analysis.Gel Publishing House.
5. Srivastava, A.K and Jain, P.C. (1986). 2nd, Ed.Chemical Analysis: An Instrumental Approach. S Chand and Company Ltd.
6. Techniques. NIN, Hyderabad
7. Varley, H.; Gowenlock, A.H. and Bell, M. (1980). 5thed. Practical Clinical Biochemistry. 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	3	1	3	2	3	1	2	1	3	3
CO2	3	1	3	2	3	1	2	1	2	3
CO3	3	1	3	3	3	1	1	2	2	3
CO4	3	1	3	2	3	1	1	2	2	3
CO5	3	1	3	3	3	1	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		NUTRITIONAL BIOCHEMISTRY								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to:
Study the basic concepts of metabolism of proximate principles and others.
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 fattyacids, 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 andfunctions. Recombinant DNA technology, Metabolism of Xenobiotics, Nutrigenomics	**15**
	Practicals 1. Qualitative tests for sugars-glucose, fructose, lactose, maltose and glucose. 2. Quantitative estimation of reducing sugar. 3. Qualitative tests for proteins	**15**

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

e- LEARNING RESOURCES:

- https://www.udemy.com/share/1027yA/
- https://www.classcentral.com/course/swayam-biochemistry-5229
- https://www.classcentral.com/course/edx-biochemistry-biomolecules-methods-and- mechanisms-12585
- https://www.classcentral.com/course/swayam-experimental-biochemistry-12909
- https://youtu.be/y6YGZfcAegw

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	2	1	1	2	3
CO2	3	3	3	2	2	2	1	1	2	3
CO3	3	3	3	3	2	2	3	2	2	3
CO4	3	3	3	3	2	2	1	2	2	3
CO5	3	3	3	3	2	2	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		HUMAN DEVELOPMENT								
Category	**Year**	**L**	**T**	**P**	**O**	**Credits**	**Inst. Hrs**	**Marks**		
	Sem							**CIA**	**External**	**Total**
Core		Y		Y		5	6	25	75	100

Learning Objectives
To enable the students to :
Familiarize with the growth process from conception to confinement.
Know the development of an individual from infancy to old age.
Understand the physical, psychological, and social development of the individual from infancy to old age.
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 of a particular child.	**10**
UNIT II	**Infancy and Childhood** Characteristics, physical, social, and emotional development, cognitive and language development during infancy, early childhood, and late childhood. Children's play – meaning, types, importance stages. Parental disciplinary Techniques – merits and demerits	**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 handicapped — Learning disability	**7**
	Practical - Visit to an institution for exceptional children.	**3**
	TOTAL	**75**

CCOURSE 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.) New York: 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, New Delhi: Macmillan Publishers.
5. Singh, A. (2015). Foundations of Human Development: A Life Span Approach. New Delhi: Orient Black Swan.
6. Suriakanthi A., (1997). Child Development – An Introduction, Tamil Nadu: Kavitha Publishers.

7. Swaminathan, M (1998). The First Five Years: A Critical Perspective on Early Childhood Care and Education in India. New Delhi: Sage Publications.
8. Suriakanthi, A., (2009). Child Development. Kavitha publications, Tamil

e- Learning Resources

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	2	3	3	2	3
CO2	3	3	3	2	3	2	3	3	2	3
CO3	3	3	3	2	3	2	3	3	2	3
CO4	3	3	3	2	3	2	3	3	3	3
CO5	3	3	3	2	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		NUTRITION THROUGH LIFECYCLE								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Understand the role of nutrition in the growth and development through the lifecycle.
Gain insight into the principles of effective meal planning.
Understand the nutritional needs of various age groups
Acquire skills to plan diets for various age groups across the lifecycle.

UNIT	CONTENT	HOURS
UNIT I	**Introduction to meal planning -** Balanced diet, food groups, Food Guide Pyramid (ICMR), Food plate, RDA, factors affecting RDA. Principles of meal planning – steps involved in planning a diet. **Nutrition for Adult -** nutritional requirements, planning balanced diets for adult men and women, promoting healthy lifestyle through holistic approach.	**10**
UNIT II	**Nutrition during pregnancy**- Physiological demands of pregnancy, nutritional needs, effect of nutrition on pregnancy outcome, optimal weight gain, nutrition related problems in pregnancy, complications of pregnancy. **Nutrition during lactation**- Physiology of lactation, nutritional requirements, concerns of breast-feeding mother.	**15**
UNIT III	**Nutrition during infancy**- Growth and development, growth standards, food and nutritional requirements, breast feeding, artificial feeding, low birth weight babies, complementary feeds. **Nutrition for preschool children**- Growth and development, food and nutritional requirements, eating habits and food behaviors, nutrition related problems- PEM, VAD and their dietary interventions.	**15**
UNIT IV	**Nutrition for school children**- Growth pattern, nutritional requirement, importance of healthy snacks, factors affecting eating habits, school lunch. **Nutrition during adolescence-** Growth and development, nutritional requirements, food habits, nutritional problems – obesity, underweight, anaemia and eating disorders.	**15**

UNIT V	**Nutrition for old age-** Physiological changes in elderly, food and nutritional requirements, nutritional and health concerns in old age, healthy lifestyle.	**5**
	PRACTICAL 1. Preparation of Complementary feed. 2. Planning and preparation of diets for different activity levels and income group. a. Pre-school child b. School going children c. Adolescents d. Adult e. Expectant mother f. Nursing mother g. Old age 3. Planning and preparation of diets (low and medium cost) for deficiency diseases- a. PEM b. Vitamin A deficiency c. Nutritional anemia 4. Packed lunch for school	**15**
	TOTAL	**75**

COURSE OUTCOMES

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

CO1. Explain the physiological basis for nutritional needs through the human lifecycle

CO2. Identify nutrition related concerns and deficiency disorders at every stage of lifecycle

CO3. Discuss appropriate dietary guidelines for various age groups

CO4. Develop indigenous, value added and low cost complementary feeds.

CO5. Demonstrate skills to plan and prepare appropriate and sustainable diets for deficiency diseases

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

7. Groff JL, Gropper SS, Advanced Nutrition and Human Metabolism.(2000) 3rd edition, West / Wadsworth, United Kingdom.
8. Cataldo, DeBruyne and Whitney, Nutrition and Diet therapy– Principles and Practice.(1999) 5th edition, West/ Wadsworth, London.

e-LEARNING RESOURCES

- http://vikaspedia.in/health/nutrition/dietary-guidelines-1/dietary-guideline-1
- https://www.nhp.gov.in/healthlyliving/healthy-diet
- https://motherchildnutrition.org/india/complementary-feeding-guidelines.html
- http://vikaspedia.in/health/nutrition/dietary-guidelines-1/diet-for-children-and-adolescents
- https://motherchildnutrition.org/india/complementary-feeding-guidelines.html
- https://sol.du.ac.in/mod/book/view.php?id=1422&chapterid=1288

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	2	3	2	3	3
CO2	3	3	3	3	3	3	3	2	3	3
CO3	3	3	3	3	3	3	3	2	3	3
CO4	3	3	3	3	3	3	3	2	3	3
CO5	3	3	3	3	3	3	3	2	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		PUBLIC HEALTH NUTRITION								
Category	**Year**	**L**	**T**	**P**	**O**	**Credits**	**Inst Hrs**	**Marks**		
								CIA	**External**	**Total**
	Sem									
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Gain knowledge about nutritional policies, programs and agencies involved in combating malnutrition.
Acquire knowledge and skills in assessment of nutritional status.
Create awareness on improving health and nutrition of the community

UNIT	CONTENT	HOURS
UNIT I	**Concept and scope of public nutrition** Definition, concept, scope and multidisciplinary nature of public nutrition **Nutritional problems affecting the community.** Etiology, prevalence, clinical features and preventive strategies for malnutrition related problems and deficiency disorders - Under nutrition (Protein energy malnutrition, Wasting, Stunting), Over nutrition (obesity and related risks), Nutritional anemia, Vitamin A deficiency, Iodine deficiency disorders, Fluorosis.	**15**
UNIT II	**Assessment of nutritional status** Objectives and importance, Methods of assessment: Direct (Clinical signs, Anthropometry, Biochemical tests); Indirect (Diet surveys, vital statistics)	**10**
UNIT III	**Nutrition policy and programs** National nutritional policy**;** Integrated child development scheme (ICDS), Midday Meal Program-State and National (Poshan Abhyan), National programs for the prevention of anemia, Vitamin A deficiency, Iodine deficiency disorders, Fortification of Foods and Public Distribution System as a preventive approach.	**15**
UNIT IV	**Nutrition education** Objectives, principles and scope of nutrition and health education, creatingawareness on current public health issues and devising strategies forprevention and management.	**10**

UNIT V	**Role of National and International agencies in combating malnutrition** WHO, FAO, UNICEF; National: FSSAI, ICAR, ICMR, NIN, FNB, CFTRI, NNMB- Role, Target groups (if specified), Policies and Programs.	**10**
Practical	**Practical/experiential learning** Planning low- c o s t nutritious recipes for infants, pre-schoolers, pregnant/lactating mothers for nutrition education. Assessment of nutritional status - Anthropometry: Weight and height measurements - Plotting and interpretation of growth charts for children below 5years - Identification of clinical signs of common nutritional disorders - Dietary assessment: 24-hour recall, Food Frequency Questionnaire, Diet Diversity Score Planning a Nutrition Education Program, and imparting nutrition education to the community	**15**
	TOTAL	**75**

COURSE OUTCOME

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

CO1. Define terms related to Public Health nutrition.

CO2. Describe the nutritional problems prevalent in the community.

CO3. Explain the significance of assessment of nutritional status.

CO4. Assess the role of various organizations in combating nutritional problems.

CO5. Conduct nutrition education programs to create awareness on improving health andnutrition of the community at large.

Reference:

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

Web References:

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	1	1	1	3	1	1	3
CO2	3	3	3	3	2	3	3	3	2	3
CO3	3	3	S	3	2	3	3	3	2	3
CO4	3	3	3	3	2	2	3	3	2	3
CO5	3	3	3	3	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
CO1	3	2	3	1	3
CO2	3	3	3	3	3
CO3	3	3	2	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	14	14	13	15
Weighted percentage (rounded of) of Course Contribution to Pos	3	3	3	3	3

Strong 3 Medium 2 Low 1

Title of the Course		NUTRITION EDUCATION AND COMMUNICATION								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to:
Gain knowledge about nutritional policies, programs and agenciesinvolved in combating malnutrition.
Organize Nutrition education programs for the community.
Develop communication strategies to promote positive behaviours needed for ahealthy lifestyle.

UNIT	CONTENT	HOURS
UNIT I	**Nutrition Education** - Importance of Nutrition education, objectives, principles and scope of nutrition and health education and promotion. **Concept and Scope of Public Nutrition** - Definition, concept, scope and multidisciplinary nature of public nutrition. Principles of nutrition education.	8
	Practical Calculating nutritive value of school children	2
UNIT II	**Nutritional problems affecting the community** - Etiology, prevalence, clinical features and preventive strategies for malnutrition related problem and Nutrient deficiency control programmes - Protein energy malnutrition, Obesity, Nutritional anemia, Vitamin A deficiency, Iodine deficiency disorders, Fluorosis.	8
	Practical Visit to an ongoing nutrition and health promotion program Visit to community health centres.	2
UNIT III	**Assessment of Nutritional Status** - Objectives and importance, Methods of assessment: Direct (Clinical signs, nutritional anthropometry, biochemical tests, biophysical tests); Indirect (Diet surveys, vital statistics) and Indirect assessment methods of nutritional status. Nutritional Anthropometry. Classified list of signs used in NutritionalAssessment.	8

	Practical **Assessment of nutritional status:** - Anthropometry: Weight and height measurements - Plotting and interpretation of growth charts for children below 5years - Identification of clinical signs of common nutritional disorders - Dietary assessment: FFQ and 24 hours recall	**4**
UNIT IV	**Nutrition Policy and Programs -** National nutritional policy**;** Integrated child development scheme (ICDS), Midday Meal Program, National programs for the prevention of anemia, Vitamin A deficiency, Iodine deficiency disorders. Implementation of Nutrition Education Program. National organizations and agencies - FSSAI, ICMR, CFTRI, NSI, FNB, NIN. International organizations and agencies - FAO, WHO, UNICEF.	**10**
	Practical Planning of low-cost nutritious recipes for infants, pre-schoolers, pregnant/lactating mothers for nutrition education.	**8**
UNIT V	**Community -** Characteristics of rural and urban community, types of community, community nutrition, community health, Factors affecting community health. **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**
	Practical Preparing Project report in community nutrition Preparing/ creating a new fortified food menu	**10**
	Total	**75**

COURSE OUTCOMES

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

CO1 Identify nutritional problems affecting the community.

CO2 Describe objectives of public health policies and programs offered by variousagencies.

CO3: Display good communication skills needed for the conduct of the Nutritioneducation programs.

CO4 Develop skills pertaining to assessment of the nutritional status.

CO5 Plan nutrition education programs relevant to specific target groups.

Reference

1. Jellife DB, Jellife ERP, Zerfas A and Neumann CG (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
2. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21stEdition. 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- Atextbook. 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/).

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	1	3	3	1	3	3	3	3
CO2	3	3	3	3	2	1	3	3	3	3
CO3	3	3	3	2	1	3	3	3	3	3
CO4	3	3	3	1	1	3	3	3	3	3
CO5	3	3	3	3	1	2	3	3	3	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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

Strong 3 Medium 2 Low 1

Title of the Course		FIBRE TO FABRIC								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Understand the concepts in textiles, the properties of textile fibre, yarn and fabric.
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 plain weave, Twill weave, variations in Twill weave, Satin weave and Sateen weave) Decorative weaves (Dobby weave, Jacquard weave, Leno weave, Surface figure weave, Pile, Double weave)	**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 fabric construction process- Braided fabric, Net, Laces, Film fabric, tufted fabric.	**10**
	Practical - Field visits to various textiles units	**5**
	Total	**75**

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 construction techniques

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

Reference:

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., & Chopra, S. (2017). Textile Science. India: Orient Blackswan Private Limited.
6. Robert, R. & Mather, R. H. (2015). The Chemistry of Textile Fibers. Cambridge: RSC Publishers.
7. Sekhri, S. (2011) Textbook of Fabric Science: Fundamentals to Finishing. India: PHI Learning Pvt. Ltd.
8. Smith, J.L. (2015).Textile Processing: Printing Dyeing Finishing. Chandigarh: Abhishek Publication.

e-learning Resources:

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	1	1	2	2	3
CO2	3	3	3	2	2	1	1	2	2	3
CO3	3	3	3	2	2	1	1	2	2	3
CO4	3	3	3	2	2	1	1	2	2	3
CO5	3	3	3	2	2	1	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FOOD PRESERVATION AND PROCESSING								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Gain knowledge on principles of food preservation of foods
Understand the techniques used in processing foods to preserve their shelf life
Apply skills learnt to develop preserved food product

UNIT	CONTENT	HOURS
UNIT I	**Food Spoilage** - Definition, causes, microorganisms involved in spoilage of bread,fruits and vegetables, meat, fish, egg, milk, juices and pickles. **Food preservation** - Definition, principles and importance, classification – bactericidal and bacteriostatic methods.	13
UNIT II	**Processing by high temperature** Processing and preservation by high temperature: blanching, pasteurization, sterilization and UHT processing, canning, extraction cooking, dielectric heating, Dehydration.	12
UNIT III	**Processing by low temperature** Processing and preservation by low temperature – refrigeration, freezing, dehydro-freezing.	10
UNIT IV	**Preservation by drying** Processing and preservation by drying, concentration and evaporation: various methodssun – drying, tray or tunnel drying, spray drying, drum drying freeze drying, fluidized bed drying, advantages and disadvantages.	10
UNIT V	**Preservation by non - thermal treatments and food packaging** Processing and preservation by non – thermal methods: salt, sugar, chemicals, smoking.Irradiation Food additives: Definition, types and functions, permissible limits and safety aspects. Food packaging- its types and uses	20
	Practical - Preparation of jams, jellies and squashes using seasonal fruits and vegetables. Preparation of pickles using fruits and vegetables. Preparation of sauce and ketchup.	10
	TOTAL	75

COURSE OUTCOMES

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

CO1. Define and explain the principles of food preservation and relate the role of microorganisms in food spoilage.

CO2. Explain the causes of food spoilage, need and principles of food preservation.

CO3. Apply the various techniques of food preservation to preserve different foods so as to increase the shelf life of foods.

CO4. compare the principles and techniques of various food preservation methods and explain the role of packaging in food processing.

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

Reference:

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, secondedition, 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, New Age International Publications, New Delhi.
6. Suganthi.V and Subaratinam.R (2021) Textbook on Food preservation, Dipti Press(OPC) Pvt. Ltd, Chennai.

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	3	2	3	2	2	2	1	2	2	3
CO2	3	3	3	2	2	2	2	2	2	3
CO3	3	3	2	3	2	2	2	2	2	3
CO4	3	3	3	2	2	2	2	2	2	3
CO5	3	3	2	2	2	2	3	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FOOD SAFETY AND QUALITY CONTROL									
Category	Year		L	T	P	O	Credits	Inst Hrs	Marks		
									CIA	External	Total
	Sem										
Core			Y				4	5	25	75	100

Learning Objectives
To enable the students to :
Learn the importance of food safety, quality control, food laws and regulations infood industry.
Get acquainted with the existing food safety quality management system.
Acquire basic understanding of quality concepts and practice in food companies.
Gain familiarity with the standards and specifications.

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

UNIT IV	**Food safety regulation in India -** An overview of Food Regulation in India; Food Laws and Regulations; Structure, organization and duties of regulatory system; Duties and responsibilities of food business operator; Registration and Licensing process and requirements; Labeling of Food Products; Traceability; Import and Export of Foods; Liability for Defective Products; Food safety management systems and certifications. **Activity -** Assignment to prepare a PPT to educate the food business operator about FSSAIlicensing of their outlet	**15**
UNIT V	**Standard operating procedure and checklist -** Preparing scope, quality policy and quality objectives of food processing company, Defining Standard operating procedure. SOP for purchasing raw materials, receiving raw materials, storage, cleaning, holding, cooling, freezing, thawing, reheating, personal hygiene, facility and equipments. Preparation of HACCP based SOP checklist - personal hygiene, food preparation, hot holding, cold holding, refrigerator, freezer andmilk cooler, food storage and dry storage, cleaning and sanitizing, utensils and equipments, large equipments, garbage storage and disposal and pest control. **Activity -** Prepare Audit Checklist for various food industries.	**15**
	TOTAL	**75**

COURSE OUTCOMES

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

CO1. Explain the areas in food systems that come under the purview of Food Safety & Quality Assurance.
CO2. Cite Indian and international food laws and food safety programs
CO3. Demonstrate familiarity with FSSAI regulations and Licensing
CO4. Acquire skills to prepare manual and SOP for food industry
CO5. Demonstrate the ability to detect common adulterants in food

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1. AOAC International. (2005) Official methods of analysis of AOAC International. 17thEd., current through 1st revision. Gaithersburg, MD, USA, Association of Analytical Communities.
2. Bhatia,R. and Ichhpujan,R.L (2004), Quality assurance in Microbiology, CBS Publishers and Distributors, New Delhi. 2004.
3. Bryan, F.L. (2007) Hazard Analysis Critical Control Point Evaluations A Guide to Identifying Hazards and Assessing Risks Associated with Food Preparation and Storage. World Health Organization, Geneva.
4. Early, R. (2006) Guide to Quality Management Systems for the Food Industry, Blackie,Academic and professional, London.

5. FAO (2006) Manuals of Food Quality Control. 2-Additives Contaminants Techniques,Rome.
6. Food and Agricultural Organization (1980): Manuals of Food Quality Control. 2 Additives Contaminants Techniques, Rome
7. Food safety and standards act 2006, Rules 2011, Regulations 2011, 10th Edition, ILBCOIndia, Indian Law Book Company, 2013.

e-learning resources

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	2	3	3	2	3
CO2	3	3	3	2	2	2	3	3	2	3
CO3	3	3	3	2	2	2	3	3	2	3
CO4	3	3	3	2	2	2	3	3	2	3
CO5	3	3	3	2	2	2	3	3	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FOUNDATIONS OF ENTREPRENEURSHIP								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y				4	5	25	75	100

Learning Objectives
To enable the students to:
Understand the meaning and importance of entrepreneurship.
Gain awareness about existing entrepreneurial development programmes.
Know the government financial schemes available for entrepreneurship.

UNIT	CONTENT	HOURS
UNIT I	**Entrepreneurship -** Introduction, Concept of Entrepreneur, Entrepreneurship and Enterprise, Definition of Entrepreneurship, Objectives of Entrepreneurship Development, Phases of Entrepreneurship Development, Role of Entrepreneurship, Characteristics of Entrepreneurship, Traits of Entrepreneurship.	**15**
	Activity: Understanding the application process of financial services in Governmentsectors/MSME.	**5**
UNIT II	**Entrepreneur -** Meaning, Functions of Entrepreneur, types of entrepreneurs, stages of entrepreneurial process, role of entrepreneur in economic development.	**8**
	Activity: Categorize the stages of entrepreneurial process.	**2**
UNIT III	**Women entrepreneurship -** Concept, functions, growth, problems, functions, development. Rural entrepreneurship – meaning – need – problems – how to develop rural entrepreneurs – Role of NGOs and SHGs in rural entrepreneurship.	**8**
	Activity: List out the self-help group activities**.**	**2**
UNIT IV	**Government Development Schemes -** Prime minister employment generation programme (PMEGP), stand up India, Pradan Mantri Mudra Yojana (PMMY), Prime Minister Rural Development Fellows Scheme,Entrepreneurship and skill development programmes (ESDP) and state development schemes.	**8**
	Activity: Preparing/Submission of Project Proposal for Start Up/Business models	**2**
UNIT V	**Institutions providing financial assistance -** Loan schemes offered by SIDBI, SIDC's, SIIC's, NSIC and NABARD- Difficulties in procuring Institutional finance Agencies for Urban and Rural Development – Government, District Rural Developmental Agencies (DRDA).	**20**
	Activity: Visit to SSI Units. Availing Seed fund from SIDBI/ Angel Investors.	**5**
	Total	**75**

COURSE OUTCOME

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

CO1: Describing the concept of entrepreneurship.

CO2: Analyze the types of entrepreneurs and understand their roles

CO3: Identify the financial institutions and apply for loan schemes for starting a business

CO4: Assess the problems of women and rural entrepreneurs.

CO5: Prepare a proposal for entrepreneurship utilizing government financial schemes

References:

1. Dr.Jayshree Suresh (2012) Entrepreneurial Development, Margham Publications
2. Dutta and Sundaram, Indian Economy, S Chand Publications, New Delhi,2013.
3. Rakesh Saxena (2020) Government Schemes, missions, campaigns and programmes in India, Prabhat Prakashan.
4. S S Khanka (2011) Entrepreneurial development, S Chand, and company
5. S.K.Singh, Rural Development Policies and Programmes, Northern book centre New Delhi, 2002.
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- https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_Entrepreneurial_Development_NOTES.pdf
- https://www.yourarticlelibrary.com/women/women-entrepreneurship/women-entrepreneurship/99813
- https://ccsuniversity.ac.in/bridge-library/pdf/DHA-MHA-403_Unit3.pdf
- https://www.creditmantri.com/article-top-10-government-schemes-to-support-startups-promote-the-spirit-of-entrepreneurship/

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	3	1	3	2	3	3
CO2	3	1	3	3	2	1	2	3	3	1
CO3	3	3	2	3	3	1	3	1	2	2
CO4	3	3	3	3	2	2	3	3	3	3
CO5	3	3	3	3	2	1	3	2	2	3

Strong 3 Medium 2 Low 1

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	2	3
CO3	2	3	3	3	3
CO4	3	3	2	3	3
CO5	3	2	3	3	3
Weightage	14	14	14	14	15
Weighted percentage (rounded of) of Course Contribution to Pos	3	3	3	3	3

Strong 3 Medium 2 Low 1

Title of the Course		QUANTITY FOOD PRODUCTION AND SERVICE								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Acquaint with the type and operation of food service establishments.
Familiarise with the different types of menus and styles of service.
Foster entrepreneurship skills.

UNIT	CONTENT	HOURS
UNIT I	**Food Service Industry** History of development of food service institution in India. **Classification of food service establishments** – Commercial -Transport catering, Hotels, Restaurants, Outdoor catering and Non-commercial / Welfare - Hospital, Institutional -School / College, Orphanage / Old age homes, prisons, Industrial catering. **Food Service systems** - conventional, ready–prepared, commissary, assembly-serve.	**10**
UNIT II	**Quantity food production** Production forecasting, planning, production scheduling; Standardization of recipes definition, need, uses, methods of enlargement of recipes. Portion control, effective use of left-overs.	**10**
UNIT III	**Menu Planning** **Menu** – origin, definition and functions of menu, importance of planning menus, factors affecting menu planning, French classical menu. Types of menu - A la carte, Table d' hote, Du jour, static, cyclic, single use, construction and writing menu, menu display. **Basic terminologies** in food service relating to stocks, soups, sauces, salads and beverages - alcoholic and non-alcoholic.	**10**
UNIT IV	**Food and Beverage Service** Table Setting - Mise-en-scene, Mise-en-place, Basic rules for laying a table, Cover – definition, A la Carte cover and Table d' hote cover. **Food service personnel:** basic technical skills, inter-personal skills, attributes of food and beverage personnel. Duties of a waiter- before guests arrive, when guests arrive, during the meal and after guests leave, rules for waiting at table. **Styles of Service** - Table Service - Waiter – Silver / English, Family, American, French, Russian, Gueridon; Bar Counter, Assisted- Carvery, Buffet, Self-service-Cafeteria - Counter, Free-flow, Echelon, Supermarket, Single-point Service- Takeaway, Drive-thru, Fast food;	15

	Vending; Kiosks; Food court , In- situ Service- Tray, Trolley, Home delivery, Lounge, Room, Drive-in.	
UNIT V	**Entrepreneurship in catering** Entrepreneurship–concept and significance Entrepreneur-definition, characteristics and classification. Food start up, Start -up process, steps, opportunities and challenges, problems faced by women entrepreneurs.	**10**
	PRACTICAL 1. Plan menu for different types of food service institutions- commercial and non- commercial food service institution 2. Preparation of menus for different types of events. 3. Preparation and standardisation of dishes of different cuisines (one portion). 4. Quantity production and service of meals - stepping up of recipe to 50 portions. 5. Table Setting – Cover- A la carte and Table d' hote covers. 6. Napkin folding. 7. Visit to food service units – commercial and non- commercial. 8. Organise food sales. 9. Internship in food service establishment for a month.	**20**
	TOTAL	**75**

COURSE OUTCOMES

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

CO1. Identify and differentiate the types of food service sectors.
CO2. Develop skills to formulate and standardize recipes from various cuisines.
CO3. Demonstrate skills in quantity food production.
CO4. Distinguish various styles of service and identify the basic technical skills, and interpersonal skills required for food service.
CO5. Identify the entrepreneurial ventures in food production and service.

References

1. Sethi, Mohini, Malhan, Surjeet. (2015). Catering Management – An Integrated Approach, 3rd ed, New Age International Publishers, New Delhi.
2. June Payne-Palacio, Monica Theis, Introduction to Foodservice (2009), 11th illustrated, Published by Pearson/Prentice Hall.
3. Dhawan and Vijay. (2001). Food and Beverage Service, Frank Boss and Co, New Delhi.
4. Suganthi, V and Premakumari, C. (2017). Food Service Management, Dipti Press (OPC) Pvt. Ltd, Chennai.
5. Andrews and Sudhir. (2000). Introduction to Hospitality Industry, Tata-McGraw Hill Pub. Co., New Delhi.
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- https://sirvo.com/
- https://www.yaaka.cc/unit/types-of-catering-establishment/
- https://www.scribd.com/doc/24003230/Unit-1-Food-and-Beverage-Service-Management
- https://www.universalclass.com/.../types-of-service-and-table-settings-in-waiter

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	2	3	2	2	3
CO2	3	3	3	3	3	2	3	3	3	3
CO3	3	3	3	3	3	2	3	2	2	3
CO4	3	3	3	2	3	2	3	2	2	3
CO5	3	3	3	3	3	2	2	2	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		DIETETICS								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y				4	5	25	75	100

Learning Objectives
To enable the students to :
Understand the causes and symptoms and dietary management of various disease conditions.
Gain comprehensive knowledge on principles and planning of therapeutic diets
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 oftherapeutic diets. Different feeding techniques -enteral and parenteral feeding. – Indications,contraindications 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 & 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, treatment with 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 dieteticspractical Conducting a nutrition exhibition to display sample menus for various diseasedconditions 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 foodsand 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, Dietetics (2019),8th edition, New Age International Publishing Ltd, NewDelhi
7. Williams S.R, (2000) Basic Nutrition and Diet Therapy, Mosby publication.

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- 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	3	3	2	1	1	2	2	2	1	3
CO2	3	2	3	2	1	3	2	3	2	3
CO3	3	3	3	2	1	3	2	3	1	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	2	2	3	3	2	3	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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

Strong 3 Medium 2 Low 1

Title of the Course		DIETETICS PRACTICAL								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core				Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Gain knowledge and develop skills and techniques in planning and preparation of therapeutic diets.
Plan diets based on the medical history of the patients and nutritional assessments – anthropometric measurements
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, and non-teaching faculty.
2. Conduct exhibitions to display diets for various disease conditions.

3. Prepare pamphlet indicating foods to be included / avoided/ restricted in differentdisease 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 principles of dietary management for various conditions.

CO2. Calculate the nutrient content of the diet for various conditions and compare it. with the recommended allowances

CO3. Apply the principles of dietary management in planning diets for various conditions.

CO4. Justify choice of foods, preparation methods, content, and consistency for different disease conditions

CO5. Plan and prepare diets for various disease conditions.

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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.
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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	3	3	3	1	1	1	2	1	1	3
CO2	3	3	3	3	3	3	2	2	2	3
CO3	3	3	3	3	3	3	3	3	1	3
CO4	3	3	3	3	2	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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

Strong 3 Medium 2 Low 1

Title of the Course		FOOD SERVICE MANAGEMENT								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Gain basic understanding of organizing and managing a food service institution.
Impart knowledge regarding purchase and storage of food to ensure quality service.
Familiarize with the layout of food service outlet and food service equipment.

UNIT	CONTENT	HOURS
UNIT I	**Organisation Management** Types of Organisation, Management - definition, principles, functions and toolsof 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, termination and 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 disposal method. **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), methodsof costing (Dish, meal, menu costing & costing for events), cost control, concept ofbreak-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 of organization.

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

CO3. Recognize the use and operation of equipment and acquire skills in the selectionof 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 financialviability 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.
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6. Suganthi, V and Premakumari, C. (2017). Food Service Management, Dipti Press (OPC) Pvt. Ltd, Chennai.
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- 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	3	3	3	2	3	2	2	2	2	3
CO2	3	3	3	3	3	2	3	3	3	3
CO3	3	3	3	3	3	2	3	3	3	3
CO4	3	3	3	3	3	2	3	2	2	3
CO5	3	3	3	3	3	2	2	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		SPORTS NUTRITION								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to:
Understand the basic concepts of nutrition for physical fitness and sports.
Enumerate ~~on~~ the special nutritional requirements for athletes.

UNIT	CONTENT	HOURS
UNIT I	**Introduction to Physical Fitness** Components of fitness, Health and Sports related fitness, Description of Aerobic and anaerobic sports-Types and Benefits Body weight and composition for health and sport, Strategies for weight management	10
UNIT II	**Energy systems for Exercise** Types of muscle fibres, Fuel sources and energy systems for exercise, energy pathways, regulation of energy metabolism-metabolic response to exercise and metabolic adaptationto exercise training	10
UNIT III	**Role of Macronutrients in Physical Fitness** Carbohydrates – Utilization of carbohydrate before, during and after exercise, importanceof glycogen loading. Proteins – role of proteins for exercise, requirements before, during and after exercise. Fats – role of fats in exercise, requirements before, during and after exercise, Fat loading-effects on exercise performance. Macronutrients Requirements for Power, endurance sports and strength trainingActivities.	15
UNIT IV	**Role of Micronutrients and Water for Exercise** Role of vitamins and minerals for exercise, Role of Antioxidant nutrients for exercise,Relative energy deficiency. Water, electrolyte and temperature regulation. Effect of dehydration and hyperhydrationon performance.	15

	Fluid guidelines before, during and after exercise.	
UNIT V	**Nutrition for Athletes** Importance of pre-event, during and post-event meals, preparing for competition, dealingwith cramps, GI distress, electrolyte balance-sports drinks. Role of Sports supplements, Ergogenic aids to improve performance. Nutrient requirements for children, adults and elderly involved in different sports.Eating disorders – types, prevalence, risk factors, effect on sports performance, treatment and prevention.	**15**
	Practical/ Project component: Planning of diets for athletes (for all age groups) involved indifferent sports. **Industrial Tie-up**- With Sports Organizations, Fitness Centre's	**10**
	TOTAL	**75**

COURSE OUTCOMES

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

CO1. Define terms related to physical fitness, nutrients and supplements for exercise.

CO2. Discuss the benefits of different exercise, significance of body weight and composition parameters, fuel system, nutrients, supplements and ergogenic aidsfor exercise.

CO3. Explain the significance of body composition parameters, fuel systems, energy pathways and utilization of nutrients, sports supplements and ergogenic aids for exercise.

CO4. Analyze the role of energy pathways, macro and micronutrients, sports supplements and ergogenic aids used by athletes to improve performance.

CO5. Assess the functions of nutrients before, during and after exercise, and recommendmeal plans for athletes involved in different sports.

References:

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2. Mahan K and Sylvia E. Stump (2000) Krause's Food Nutrition and Diet Therapy,Saunders, USA.
3. McArdle .W.D., Frank. I. Katch, Victor L Katch (2005) Sports and Exercise Nutrition.Lippincott, Williams and Wilkins, Philadelphia
4. Sharkey B.J. (2002) Fitness and Health: Human Kinetics, Hong Kong
5. Williams M.H., Anderson D.E., Rawson E.S. (2013) Nutrition for Health, Fitness andSport. McGraw Hill, New York.

e-Learning Resources:

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	2	1	1	2	3
CO2	3	3	3	2	2	2	1	2	2	3
CO3	3	3	3	3	2	2	3	2	2	3
CO4	3	3	3	3	2	2	2	2	2	3
CO5	3	3	3	3	2	2	2	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FUNCTIONAL FOODS AND CHRONIC DISEASES								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		Y				4	5	25	75	100

Learning Objectives
To enable the students to :
Gain a basic understanding of functional foods and their use in managing chronic diseases.
Understand the properties and functions of active compounds in functional foods.
Identify the potential sources of functional foods that could be beneficial in the management of specific chronic diseases.

UNIT	CONTENT	HOURS
UNIT I	**Introduction** Functional foods - Definition, History, types and classification of functional foods,Relation of functional foods (FF) to chronic diseases. **Food sources** Functional foods in different foods: cereal products (oats, wheat bran, rice bran, etc.), fruits and vegetables, milk and milk products, legumes, nuts, oil seeds and sea foods, herbs, spices and medicinal plants. Coffee, tea and other beverages as functional foods/drinks and their protective effects.	**15**
UNIT II	**Antioxidants** Concept of free radicals and antioxidants, antioxidant role as functional foods.Antioxidant and chronic diseases. **Properties and functions of various functional food ingredients** Protein, complex carbohydrates (dietary fiber) as functional food ingredients; probiotic,prebiotics and symbiotic foods, and their functional role. Sources and role of isoprenoids, isoflavones, flavonoids, carotenoids, tocotrienols, chlorophyll, polyunsaturated fatty acids, lecithin, choline, terpenoids, Glucosamine, lycopene, proanthocyanins.	**15**
UNIT III	**Functional foods and cardiovascular diseases (CVD)** Epidemiology of cardiovascular diseases, Biomarkers of different cardiovascular diseases, effect of functional foods on biomarkers of CVD, Effect of functional foodslike green tea, grapes, oats, soybean, sunflower seeds or pumpkin seeds on CVD	**15**
UNIT IV	**Functional foods and cancer** Functional Food Components in Cancer Disease, Effect of functional foods likecruciferous vegetables, green tea, garlic, walnuts, berries on cancer. **Functional foods and renal diseases** Epidemiology of kidney disease, functional foods for	**15**

	kidney diseases, Effect offunctional foods like garlic, buckwheat on kidney.	
UNIT V	**Functional foods and obesity** Functional foods and obesity, biomarkers of obesity, bioactive compounds in functional foods to manage healthy weight. Effect of functional foods like dietary fibres, psyllium husk, apple on obesity. **Functional foods and diabetes** Epidemiology of Diabetes, Functional Foods for Type 2 diabetes, effect offunctional foods like turmeric, garlic, green tea, dietary fibre on diabetes.	**15**
	Total	**75**

Activity

- Prepare a list of functional foods and its benefits.
- Make a Power point presentation of Biomarkers for obesity, CVD, cancer,diabetes, kidney failure.
- Group discussion on Bioactive compounds and its functions that are beneficialfor chronic diseases.

COURSE OUTCOMES

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

CO1. Define functional foods and recall the components of functional foods and their health Benefits.

CO2. List out different functional foods, properties, and their functions.

CO3. Explain the impact of functional foods in the prevention and management of CVD and kidney diseases.

CO4. Evaluate the role of functional foods in the prevention and management of cancer.

CO5. Summarize the role of functional foods in the prevention and management of obesity and type 2 diabetes mellitus.

Reference:

1. Cho S. S. and Dreher, M.L. (2001): Handbook Dietary Fibre, Marcel Dekker Inc.,New York.
2. Gibson, G.R. and C.M.Willams (2000), "Functional Foods : Concept to Product".Woodhead.
3. Giuseppe Mazza (1998), "Functional Foods: Biochemical and ProcessingAspects", Volume 1; CRC Press
4. Goldberg, I. Ed (1994): Functional Foods: Designer Foods, Pharma Foods, Nutraceuticals, Chapman & Hall, New York.
5. Ikan, Raphael (2005), "Natural Products: A Laboratory Guide", 2nd Edition,

Academic Press / Elsevier.
6. Webb, P P (2006), "Dietary Supplements and Functional Foods". Blackwell.
7. Wildman, Robert E.C (2006), "Handbook of Nutraceuticals and Functional Foods".CRC.

e- learning resources

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

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	2	1	2	2	3
CO2	3	3	3	2	2	2	1	2	2	3
CO3	3	3	3	2	2	2	1	2	2	3
CO4	3	3	3	2	2	2	1	2	2	3
CO5	3	3	3	2	2	2	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		PRINCIPLES OF RESOURCE MANAGEMENT								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y				4	5	25	75	100

Learning Objectives
To enable students to:
Recognize and use appropriate resources to achieve one's goal.
Develop skills in utilizing the available resources in day-to-day life.
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 ofresolving 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: Identifyand 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 availableincome and to maintain accounts.

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2. Marion Giordan (2016), "Consumer Education: A handbook for Teachers", Routledge;1st edition, ISBN-13: 978-1138839151
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- 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=time,+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	3	2	3	3	3	1	2	3	3	2
CO2	3	1	3	3	2	1	1	2	3	3
CO3	3	2	3	3	3	1	3	3	3	2
CO4	3	3	3	3	3	1	2	3	3	2
CO5	3	3	3	3	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		INTERIOR DECORATION								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to:
Develop innovative ideas in the use of interior accessories and flower arrangements.
Analyze and implement the appropriate furniture styles and lighting fixtures for interiors and exteriors.
Apply Decorative styles in interiors and exteriors.

UNIT	CONTENT	HOURS
UNIT I	**Accessories -** Definition, Types of accessories, Selection and arrangement of accessories in various areas – living room, Dining room,bedroom, study room with application of art principles and elements of design. **Pictures –** Concept, Selection of pictures, framing and mounting of pictures – glass, matbacking, frame, pictures. Types of picture frame – Shadow box, decorative, standard, floating and collage.Hanging law of margin in picture framing.	**10**
	Practical: Creating hand-made accessories using waste materials and pictures frames in different styles.	**5**
UNIT II	**Flower Arrangement -** Definition, importance of flower arrangement, Styles of flower arrangement – Traditional, Oriental/Japanese styles - Ikebana, Moribana, Nagarie, Shikibana, Morimono, Rikka, Ukibana and Modern. Selection of containers based upon styles of arrangement. Flowers – Names, its colours, textures and its visual perception in various indoorspaces.	**10**
	Practical: Creating different shapes and types of flower arrangement.	**5**
UNIT III	**Furniture Arrangement -** Styles of furniture – traditional, contemporary and modern design. Furniture for different purpose, furniture materials. Selection and arrangement – Furniture for various rooms – Living, dining, bedroom,kitchen, study room, office. Furniture Dimensions, Care and maintenance.	**10**
	Practical: Planning layout showing furniture arrangement for various areas of interiors.	**5**
UNIT IV	**Lighting -** Lighting requirements - Definition and Importance of lighting. Ideal light requirements,Types of lighting - General/ Ambient lighting,	**10**

	Task/Spot lighting, Architectural lighting - valance, soffit, bracket, cone, recessed, cornice.Lighting fixtures – Movable and immovable fixtures. Principles of home lighting, Glare - types and causes of glare. Suggestions forimproving daylight illumination.	
	Practical: Draw lighting layout and Market survey on light and lighting fixtures.	**5**
UNIT V	**Decorative Styles -** Concept and Characteristic features of Contemporary, Modern, Traditional, Transitional and Eclectic styles. Wall decoration–Origin, Motifs, Styles and Technique of Madhubhani, Warli, Pithora,Fresco and Tempera.	**10**
	Practical: Designing wall by Warli art.	**5**
	Total	**75**

COURSE OUTCOMES

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

CO1: Select accessories and arrange pictures suited to the background ofinteriors.

CO2: Creating innovative flower arrangements in accordance to the occasionand needs.

CO3: Apply the principles of furniture arrangement in various areas of Interiors.

CO4: Apply proper lighting for efficient lighting in interiors and exteriors.

CO5: Use decorative styles and wall decoration techniques appropriately in variousrooms.

References:

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4. Grimley C and Mimi Love (2018), "The Interior Design Reference & specificationBook", Rockport Publishers, ISBN-13 978-1631593802:
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- Greg Batten (2015), "Lighting Control Methods", https://www.controlco.com.au/blog/2015/7/16/lighting-control-methods
- Frankel Building Group (2021), "7 Elements of Interior Design", https://www.frankelbuildinggroup.com/resources/7-elements-of-interior-design/
- Prerna Makhija (2022), "The 7 Elements of Design – and how to use them in your home interiors", https://www.beautifulhomes.com/home-decor-ideas/interior- design/the-7-elements-of-design-and-how-to-use-them-in-your-home-interiors.html
- Foyr (2020), "Importance of Accessories in Interior Design", https://foyr.com/learn/accessories-in-interior-design/
- Hamstech (2021), "Selection of Accessories in Interior Designing", https://www.hamstech.com/selection-of-accessories-in-interior-designing

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	2	1	2	1	3	1	1	3
CO2	3	1	1	3	3	1	1	2	1	3
CO3	3	1	1	3	3	1	1	2	1	3
CO4	3	1	2	3	3	3	2	1	2	3
CO5	3	3	3	3	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		CLINICAL NUTRITION								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Core		Y		Y		4	5	25	75	100

Learning Objectives
To enable the students to :
Understand the aetiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
Understand the biochemical changes of the disorder and to learn the clinical significance of biochemical findings.
Be familiar with recent advances in the medical nutritional management of various diseases

UNIT	CONTENT	HOURS
UNIT I	**Biochemical changes due to disorders of metabolism** Metabolic and Nutritional implications in Diabetes mellitus, Inborn errors of metabolism – Gout, phenylketonuria, Galactosemia, Lactose intolerance, Ageing – physiological changes with ageing. Cellular adaptations to stress	15
UNIT II	**Cardiovascular Disorders** Metabolic and Nutritional implications of Myocardial infarction, atherosclerosis hyperlipidaemia, hypertension, metabolic syndrome, Role of lipids in cardiovascular disease and Recent advances.	10
UNIT III	**Digestive System, Liver and Pancreatic Disorders** Metabolic and Nutritional implications of Diarrhoea, constipation. Gastritis, ulcers, colitis, malabsorption syndrome, celiac disease, Inflammatory bowel disease, Irritable bowel syndrome, Diet and gut microflora. Recent advances. Metabolic and nutritional implications of Hepatitis. Cirrhosis of liver, Hepatic coma, Pancreatitis, Cholecystitis and Cholelithiasis. Recent advances	10
UNIT IV	**Renal Disorders** Metabolic and nutritional implications of Nephritis, Nephrotic syndrome, Renal Transplant, Nephrolithiasis and Dialysis. Role of kidney in Water and Electrolyte Balance and Imbalance.	15

UNIT V	**Carcinogenesis** Carcinogens in Food, Types of cancer, Causes, pathogenesis, cancer cachexia, Effect of cancer on metabolism and nutritional status, Recent developments in nutrition and cancer.	**10**
	PRACTICAL 1. Analysis of urine 2. Collection of blood and separation of plasma and serum 3. Estimation of blood glucose 4. Estimation of total protein 5. Determination of A/G ratio 6. Estimation of serum urea 7. Estimation of serum creatinine 8. Estimation of cholesterol 9. Estimation of Bilirubin	**15**
	Total	**75**

COURSE OUTCOMES

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

CO1. Describe the biochemical changes due to disorders of metabolism

CO2. Comprehend the metabolic and nutritional intervention of various disorders.

CO3. Evaluate and formulate dietary recommendations and customized diet plans based on clinical condition.

CO4. Illustrate the etiology, manifestation and assessment of diseases of the heart, liver, gallbladder, kidneys and gastrointestinal tract.

CO5. Exhibit skills in qualitative and quantitative estimation of blood and urine samples.

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E - LEARNING REFERENCES

- https://www.nutrition.gov/
- https://nutrition.org/
- Nutrition Resources for Online Learning (healthyeating.org)

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	3	1	1	2	3
CO2	3	3	3	2	2	3	1	1	2	3
CO3	3	3	3	2	2	3	1	1	2	3
CO4	3	3	3	2	2	3	1	1	2	3
CO5	3	3	3	2	2	3	1	1	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		HOUSE KEEPING								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Elective / SEC		Y		Y		3	4	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 properfunctioning of the housekeeping department.

UNIT	CONTENT	HOURS
UNIT I	**Housekeeping Department -** Importance of housekeeping, Duties and Responsibilities of HousekeepingDepartment. 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 housekeepingdepartment.

CO3. Identify different types of guest rooms and list the common pest controlmethods used in hotels.

CO4. Choose appropriate storage procedures for linen and uniforms.

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

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3. Jatashankar Tewari (2016), "Hotel Front Office 2E: Operations and Management" Oxford

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- 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	3	3	2	2	3	1	3	3	3	3
CO2	3	3	2	1	3	1	2	3	2	3
CO3	3	1	2	3	2	1	3	2	3	2
CO4	3	3	2	1	3	1	2	3	3	3
CO5	3	1	1	2	1	1	3	2	2	2

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FOOD PRODUCT DEVELOPMENT								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to :
Understand the steps involved in new food product development.
Learn about consumer preferences and market trends.
Understand concepts about subjective and objective evaluation of new product.

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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,	15

	ISO22000); Global Food safety Initiative; International food standards Various national and international organizations dealing with inspection, traceability and authentication, certification, and quality assurance.	
UNIT IV	**Packaging and labelling** Packaging Material-types; factors affecting type of packaging material used; Aseptic packaging, modified atmosphere packaging, Controlled Atmosphere Packaging and active packaging. Packaging and Labelling of the product – Packaging design, graphics and labelling – FSSAI regulations for food labelling.	**10**
UNIT V	**Marketing the product** Product life cycle Costing the product and determining the sales price Advertising 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 OUTCOMES

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; testmarketing, packaging and quality attributes.

CO3. Illustrate the quality attributes, food safety, packaging and labelling 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: Maximizingsuccess, Woodhead Publishing Ltd, Food Series, No. 64,2001.
2. Fuller, GW (2011). New food product development: From concept to marketplace. 3rded. New York, NY: CRC Press
3. Lawless HT and Klein BP (1991) Sensory Science Theory and Applications in Foods.Marcel Dekker Inc.
4. Moskowitz HR, Saguy IS and Straus T (2009). An Integrated approach to New FoodProduct Development. ed. New York, NY: CRC Press
5. Paine FA, Paine HY (Eds.) (1992) A handbook of Food Packaging (2nd ed.), BlackieAcademic 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	3	3	2	2	2	1	3	1	2	3
CO2	3	3	3	3	2	2	3	2	2	3
CO3	3	3	3	2	2	2	3	2	2	3
CO4	3	3	3	3	2	2	3	3	2	3
CO5	3	3	3	2	2	2	3	3	2	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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

Strong 3 Medium 2 Low 1

Title of the Course		CONSUMER EDUCATION								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to:
Be familiar with the problems in buying and consumer legislations.
Become aware of marketing conditions and the means for problem redressal.
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 variousconsumer 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, personalincome, disposable income.	8
	Activity: Preparing guidelines for purchasing commonly usedconsumer goods and services.	2
UNIT III	**Markets and marketing -** Basic Concept, Classification and functions of Markets, Types ofMarket. Channels of Distribution: Meaning, types and their advantages anddisadvantages. **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 Chandand 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 PublishingHouse.
5. Pattanchetti, C.C. and Reddy, 2002). Principles of Marketing,Coimbatore: RainbowPublishers,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: Routledge Taylor and Francisgroup.
8. Suja Nair (2002). Consumer Behaviour: New Delhi. Sultan Chand and Sons.

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- 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	3	3	3	3	3	1	3	3	3	3
CO2	3	3	3	3	3	2	2	3	3	3
CO3	3	3	3	3	2	2	3	3	3	2
CO4	3	3	2	2	3	2	3	3	2	3
CO5	3	3	3	3	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		LIFE SKILL STRATEGIES AND TECHNIQUES								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to:
Develop skills for a healthy personal and professional approach to life.
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 ScientificWriting, 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, Ethicsand 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.

Reference:

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 Private Limited
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.

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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 - . "ALeader Should 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	3	3	3	3	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	3	3	3	3	3	3	3	3	3
CO4	3	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		LANDSCAPE DESIGN AND ORNAMENTAL GARDEN								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to:
Acquire skill in identifying the ornamental flowers, shrubs and trees.
Develop a conceptual understanding of landscape design principles and gardening components for various built forms.
Create designs in integrating landscape and ornamental gardening with builtenvironment.

UNIT	CONTENT	HOURS
UNIT I	**Landscape Design -** Definition, Importance and Principles of Design in Landscaping. Requirements in Landscape Area- Site & Location, Site Evaluation, Soil Properties, Water Systems, Climatic Conditions and Lighting. Public and Private Garden. Importance of Kitchen Garden.	8
	Practicals: Identifying and Selection of ornamental plants.	2
UNIT II	**Ornamental Garden -** Definition, Components of Garden- Arboretum. Shrubbery, Fernery, Arches and Pergolas, Edges and Hedges. Integral Elements of Garden- Climbers and Creepers, Cacti & Succulents, Herbs, Annuals & Perennials, Flower Borders & Beds. Supplementary Elements of Garden- Ground Covers, Carpet Beds, Bamboo Grooves, Topiary and Garden Adornments.	8
	Practicals: Practices in preparing home garden designs	2
UNIT III	**Styles and Types of Landscape Garden -** Garden Styles: Formal, Informal and Freestyle, Wild Gardening, Types of Gardens:Persian, Mughal, Japanese, English, Italian, Buddha and Spanish garden.	15
	Practicals: Practices in preparing any one style of garden design.	5
UNIT IV	**Special Types of Gardens -** Vertical Garden, Roof Garden, Bog Garden, Sunken Garden, Rock Garden, Clock Garden, Bonsai Gardens, Temple Garden & Sacred Groves.	8
	Practicals: Project on landscaping	2
UNIT V	**Indoor-Outdoor Plants -** Kinds and Classification, Factors Influencing Growth of Plants. Planning and Executionof Landscape Design Based on the Styles and Kinds of Plants.	8
	Practicals: Visit to parks and botanical gardens.	2
	Total	60

COURSE OUTCOME

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

CO1: Classify different kinds of indoor and outdoor plants.
CO2: Apply principles of design to create best suited design in landscaping
CO3: Evaluate the integral and supplementaryelements for creating ornamental gardendesign
CO4: Assess, understand, and evaluate the different styles and kinds of garden.
CO5: Create designs in urban landscape applying various styles

References:

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2. Alka singh (2015) A colour handbook: Landscape gardening, NIPA publisher
3. Desh raj (2017) Floriculture at a glance, Kalyani publishers
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- http://ncert.nic.in/vocational/pdf/kegr101.pdf
- http://agritech.tnau.ac.in/horticulture/horti_Landscaping_freshflower.html
- https://www.basicsofgardening.com/types-of-garden
- https://www.designcad.com.au/wp/Docs/Landscape%20Design%20and%20CA D.pdf

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	3	2	2	3	2	3	2	2
CO2	3	2	2	1	3	1	3	2	1	3
CO3	3	1	3	3	3	2	3	1	2	3
CO4	3	1	3	3	3	3	3	3	3	3
CO5	3	3	3	2	2	3	3	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		CONCEPTS IN APPAREL DESIGNING								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to :
Understand the essential tools used for apparel designing
Acquire knowledge on the basic construction techniques

UNIT	CONTENT	HOURS
UNIT I	**Introduction and basic hand stitches** a) Parts, functions, attachments and use and care of a Sewing machine. Minor troubles and solutions encountered while sewing. b) Tools used for clothing construction– cutting tools, measuring tools, marking tools, general tools, pressing tools. c) Basic hand stitches- temporary and permanent stitches. d) Hems – types, different stitches used.	**8**
	Practicals 1. Preparation of samples for Basic hand stitches. 2. Preparation of samples for Hems	**2**
UNIT II	**Basic construction techniques- seams and fullness** a) Seams and seam finishes – types, working of seams and seam finishes. b) Fullness- definition, types- darts, tucks, pleats, flares and godets, gathers and shirrs, frills or ruffles, flounces	**8**
	Practical 1. Preparation of samples for seam -Plain, Top Stitched, Flat fell, Piped seam. 2. Preparation of samples for seam finishes - Overcast, Hem, Edge stitched, Bound. 3. Preparation of samples for fullness - Darts, Tucks -pin, cross, group tucking with scalloped effect, Pleats (any 3)-knife, box, kick, gathering by machine, elastic. Ruffles- single, double.	**2**
UNIT III	**Basic construction techniques- Plackets and Fasteners** a) Plackets – definition, characteristics of a good placket, types – inconspicuous placket and conspicuous plackets. Method of constructing the same.	**15**

	b) Fasteners – conspicuous (Button and button-holes, button loops, button with holes, shank buttons, eyelets and cords). Inconspicuous (press buttons, hooks and eyes, zips).	
	Practical Preparation of samples for Plackets and Fasteners-continuous, bound, faced and zipper plackets, Tailored Placket, button and buttonhole, press button, hook and eye.	**5**
UNIT IV	**Basic construction techniques-sleeves and neckline** a) Sleeves – definition, types, set-in-sleeves – plain sleeve, puff sleeve, bishop sleeve, bell, circular, cap sleeve and magyar sleeve. b) Sleeve and bodice combined – raglan, kimono and dolman. c) Modified armhole – squared armhole. d) Collars – definitions, types of collars- peter pan, scalloped, puritan, sailor, square, rippled, full shirt collar, open collar, chinese, turtleneck, shawl collar e) Yokes – types, simple yoke, yoke with fullness within the yoke, yoke supporting/ releasing fullness	**8**
	Practical 1.Preparation of samples for Sleeves- plain sleeve, puff sleeve and Raglan or cap sleeve. 2.Preparation of samples with Yoke –simple yoke and yoke supporting fullness. 3.Preparation of samples for Collar - peter pan collar and shirt collar	**2**
UNIT V	**Basic construction techniques-Pockets, Facing and Binding** a) Pockets – definition, types of pockets – patch pocket, bound pocket, pocket in a seam, front hip pocket. b) Facings – bias facing, shaped facing and decorative facing and Binding – single bias binding, double bias binding.	**8**
	Practical 1. Preparation of samples for Pocket- Patch pocket 2. Preparation of samples for Facing and Binding-bias facing, shaped facing, binding	**2**
	Total	**60**

COURSE OUTCOMES

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

CO1. Identify the right choice of sewing tools, sewing machine, hand stitches, sleeves, pockets, collars, plackets and fullness.

CO2. Describe the concepts related to the basic construction techniques for garment construction.

CO3. Demonstrate the steps to be followed in designing an apparel considering the overall appearance of the garment

CO4. Explain the functions and the role of sewing machine, basic hand stitches, fullness, plackets, pockets, sleeves, yoke and collars used in apparel construction.
CO5. Construct garments in various styles from the knowledge gained

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3. Matthews J (2018) Pattern Design: Fundamentals: Construction and Pattern Making for Fashion Design. Fairbanks Publishing,USA
4. Adele M (2019) The Dressmaking Book: A Simplified Guide for Beginners. Echo Point Books and Media, USA

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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	1	1	2	2	3
CO2	3	3	3	2	2	1	1	2	2	3
CO3	3	3	3	2	2	1	1	2	2	3
CO4	3	3	3	2	2	1	1	2	2	3
CO5	3	3	3	2	2	1	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		INTRODUCTION TO FASHION DESIGNING								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to :
Understand the basic concepts of fashion design clothing psychology and wardrobe planning.
Acquire knowledge on design elements and colour psychology.

UNIT	CONTENT	HOURS
UNIT I	**Introduction to fashion designing** Terms related to the fashion industry – fashion, style, fad, classic, and collection, chic, Custom made, mannequin, fashion show, trend, forecasting, high fashion, fashion cycle, haute couture, fashion director, fashion editor, line, knock-off, avant-garde, bridge, buying house, apparel, fashion merchandising, pret – a – porter.	**8**
UNIT II	**Design** a) Design- definition and types – structural and decorative design, requirements of a good structural and decorative design. Application of structural and decorative design in a dress, selection and application of trimmings and decorations. b) Elements of design – line, shape or form, colour, size and texture. c) Principles of design- balance – formal and informal, rhythm- through repetition, radiation and gradation, emphasis, harmony and proportion. Application of principles of design in a dress..	**10**
	Practical 1. Application of structural and decorative design in a dress. 2. Application of elements of design in apparel. 3. Application of Principles of design in apparel.	**8**
UNIT III	**Colour** a) Colour- definition, colour theories- prang colour chart and Munsell colour system, b) Dimensions of colour- hue, value, and intensity. c) Colour harmonies- types and its application in dress design.	**7**
	Practical 1. Colour theories- prang colour chart and Munsell colour system. 2. Application of colour harmonies in apparel designing.	**5**

UNIT IV	**Figure drawing and analysis** a) Basic human proportions, Anatomy and model drawing 8, 10, 12 head theory, Straight, flesh, motion posture. b) Figure analysis and designing dresses for stout figure, thin figure, slender figure, narrow shoulders, broad shoulders, round shoulders, large bust, flat chest, large hip, large abdomen, round face, large face, small face, prominent chin and jaw, prominent forehead.	**8**
	Practical - Model drawing 8 and 10 head figure	**6**
UNIT V	**Wardrobe planning** c) Wardrobe planning for different age groups, factors influencing wardrobe selection, Fashion and season, d) Designing dresses based on different occasions – business meetings, parties/ dinners, evenings/leisure hours, wedding, functions, sports, uniforms for civil service, airhostess, hoteliers, schools – girls and boys.	**8**
	Total	**60**

COURSE OUTCOME

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

CO1. Identify the right choice of colour, design used in apparel designing
CO2. Explain the concepts related to the design and colour in apparel designing
CO3. Demonstrate the methodology to be followed in effectively using the principles of design, elements of design and colour harmonies while designing a garment.
CO4. Identify suitable designs according to the figure of the wearer and the occasion intended.
CO5. Develop skills to draw designs suitable according to the body type and plan wardrobe.

Reference:

1. Sumathi, G.J. (2002) Elements of Fashion and Apparel Design. New Age International Publishers, New Delhi.
2. Gini Stephens Frings (1999) Fashion – From Concept to Consumer . 6th edition, Prentice Hall.
3. Gerry Cooklin (2003) Pattern grading for women's clothes, the technology of sizing, Black well science Ltd, USA
4. Kaur N (2010) Comdex Fashion Design: Fashion Concepts - Vol. 1, Dream tech Press, Delhi

e-learning Resources:

1. https://purushu.com/2010/08/elements-of-design-in-fashion.html
2. https://vanseodesign.com/web-design/color-meaning/
3. http://bieap.gov.in/Pdf/FGMPaperI.pdf
4. http://textilelearner.blogspot.com/2015/07/drafting-procedures-of-line-frock.html
5. http://textilelearner.blogspot.com/2015/06/drafting-procedures-of-ladies-kurti.html

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	2	1	1	2	2	3
CO2	3	3	3	2	2	1	1	2	2	3
CO3	3	3	3	2	2	1	1	2	2	3
CO4	3	3	3	2	2	1	1	2	2	3
CO5	3	3	3	2	2	1	1	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FUNDAMENTALS OF ART AND DESIGN								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to:
Understand the elements, principles of design and principles of housing.
Learn the concepts of colour and create colour scheme for interiors.
Learn the application of art principles, elements of design, colour schemes andhousing principles in creating aesthetic interiors.

UNIT	CONTENT	HOURS
UNIT I	**Introduction to art and design -** Importance of design, Application of good taste and Role of good designer.Types of design- Structural and Decorative design. Classification of Decorative Design - Naturalistic, Stylized, Abstract and GeometricalDesign.	8
	Practical: Sketching different types of designs.	2
UNIT II	**Elements of design -** Line and its types – horizontal, vertical, diagonal, curved, zigzag; Shape; Form – 2D&3D, Size, Texture- tactile and visual; light, pattern, Space- positive & negative andColour-warm and cool. Application of elements to form design.	8
	Practical: Creating Optical illusion in Interiors.	2
UNIT III	**Principles of Design -** Harmony – harmony of line, shape, size, texture and ideas.Balance – symmetrical, asymmetrical and radial. Proportion – proportional relationships, Greek oblong and Scale. Emphasis – emphasis through grouping of objects, use of contrast color, decoration,plain background space, unusual lines, shapes, and sizes. Rhythm – achieving rhythm through repetition of shapes, progression of size,continuous line movement, radiation, and gradation.	15
	Practical: Application of Art Principles in arranging areas in interiors	5
UNIT IV	**Colour -** Definition, Qualities of colour, Hue, Value, Intensity. Tints and Shades. The colour wheel/systems - Prang colour system, Physicist's Theory, Psychologist's Theory, Harmonies of related colors- Monochromatic, Analogous and Accented Neutral; Harmonies of contrasting colours – Direct, double, split and triad.	8

	Practical: Painting different rooms with various colour harmonies.	**2**
UNIT V	**Housing -** Selection of site and functions of house. Basic principles of planning a life space - Orientation, Grouping, Roominess, Lighting, Circulation, Storage Facilities and Privacy. Creating a life space- Factors in planning different rooms – Living Room, Bedroom, Dressing Room, Dining, Kitchen, Study Room, Store room, Bathroom, Utility space, Staircase and Verandah.	**8**
	Practical: Planning layout for different areas in interiors.	**2**
	Total	**60**

COURSE OUTCOMES

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

CO1: Classify design types like structural and decorative design

CO5: Explain the principles in planning a life space

CO2: Use different elements of design appropriately in creating design objects.

CO3: Apply the Art principles in Interior Design.

CO4: Apply colour harmonies in various rooms.

References:

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

e-Learning Resources:

- https://www.google.co.in/?gfe_rd=cr&ei=oJE8VvucFMOl8wfe0ZnICw#tbm=vid &q= prin ciples+of+design+in+interior+design
- http://www.docstoc.com/docs/108663367/The-Munsell-and-Prang-Color-Systems
- https://www.decorilla.com/online-decorating/transitional-interior-design/
- https://www.apartmenttherapy.com/modern-vs-contemporary-vs-minimalist-design- 261783

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	1	3	3	3	3	3	2	2	3	3
CO2	3	3	3	3	3	3	3	3	3	3
CO3	3	2	3	3	2	3	3	2	3	3
CO4	3	3	3	3	3	3	2	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		WOMENS HEALTH AND WELLNESS								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y				3	4	25	75	100

Learning Objectives
To enable the students to:
Understand the diverse factors that has a bearing on women's health.
Highlight different aspects of health that contributes to a good lifestyle for womenacross 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 risksassociated 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 socialhealth for the overall well-being of women.
CO4. Devise strategies to improve women's health in a holistic manner.
CO5. Recommend simple measures for a healthy lifestyle.

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, Californi
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 lifeevents 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	3	3	2	2	2	1	3	1	1	3
CO2	3	3	3	2	2	2	3	1	2	3
CO3	3	3	2	3	2	2	3	3	2	3
CO4	3	3	2	3	3	3	3	3	3	3
CO5	3	3	2	2	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FUNDAMENTALS OF RESEARCH IN NUTRITIONAL SCIENCES								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y				3	4	25	75	100

Learning Objectives
To enable the students to :
Understand basic concepts of research methodology.
Use simple statistical methods for analysis of data.
Develop skills to carry out a project and present a report

UNIT	CONTENT	HOURS
UNIT I	**Introduction to research** Research- Meaning, objectives, significance. Research problem- Definition and selection of research problem. Research design –Types of research design Method of sampling - probability and non-probability sampling – Merits and demeritsDetermining sample size	15
UNIT II	**Data Collection** Primary and secondary data, selection of appropriate method for data collection. Tools used for data collection- Questionnaire and Interview schedule.	10
UNIT III	**Coding and tabulation of data** Data entry and computation, Tabulation of data – parts of the table Presentation of data- use of bar graph and pie chart	10
UNIT IV	**Basic statistical tools for analysis and interpretation** Measures of central tendency – Mean, Median, Mode. Variations-the range and standard deviation Correlation –Karl Pearson's coefficient of correlationTest of significance-Student's t test	15
UNIT V	**Report writing** Steps in report writing, Layout of a report. Bibliography-citing references-any one style.	10
	EXPERIENTIAL LEARNING Carry out a small survey, code and tabulate data and present data using tables and graphs. Interpret data using simple statistical tools and present report following rules for report writing.	
	TOTAL	60

COURSE OUTCOMES

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

CO1. Define terms associated with conduct of research.

CO2. Explain research design, methods of research, collection, tabulation and presentation of data.

CO3. Choose a sampling method and identify the appropriate statistical methods.

CO4. Analyze the data and draw conclusions.

CO5. Evaluate data, draw inferences and prepare a report**.**

References:

1. Goode, WJ and Hatt, PK (1981) Methods in Social Research, McGrawHill International Editions, Sociology Series.
2. Gupta, S.P. (2019) Statistical methods. 46th ed. Sultan Chand and Co, New Delhi.
3. Kerlinger F. N. and Lee, H.B. (2000) Foundations of Behavioura Research 4th Ed. Harcourt College Publishers.
4. Kothari, C.R. (2019). Research methodology methods and techniques,New Age International publishers, New Delhi.
5. Kumar, R. (2005) Research Methodology: A Step-by-Step Guide for Beginners.Sage Publications, New Delhi.

e-Learning Resources:

- http://www.socialresearchmethods.net/tutorial/mugo/tutorial.htm
- https://ebooks.lpude.in/library_and_info_sciences/MLIS/year_1/DLIS401_METHO DO LOGY_OF_RESEARCH_AND_STATISTICAL_TECHNIQUES.pdf
- https://mfs.mkcl.org/images/ebook/Fundamental%20of%20Research%20Methodology %20and%20Statistics%20by%20Yogesh%20Kumar%20Singh.pdf

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	2	3	2	2	2	3	2	2	2	3
CO2	3	3	3	3	2	3	1	3	2	3
CO3	3	3	3	3	2	2	3	3	2	3
CO4	3	3	3	3	2	2	1	2	2	3
CO5	3	3	3	3	3	3	3	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FAMILY DYNAMICS								
Category	Year	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
	Sem									
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to:
To acquaint the students with the dynamics of contemporary marriage and it alternates.
To sensitization the students to dynamics of family systems in India.
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, 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, fulfilment Cohabitation: Types, cohabitation and stability of relationship, legal issues The Child-Free family: Voluntary childlessness Single-parent Families: Divorce, binuclear family, custody of children (mothers, fathers, split, joint) Stepfamilies: Phases Individual roles, rights, and responsibilities within the family Areas of adjustment within the family at different stages of life cycle Ways of dealing with adjustment.	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 marriage Characteristics of high-quality marital relationships Factors affecting marriage relationship – religion, socio economic status, careers, Social and emotional issues, financial concerns Marital adjustments – physiological, domestic, social, in- laws relationship, Marital satisfaction and marital stability Changes and challenges in marriage	**15**
	Practical A survey on preferences of adolescents in choosing a life partner.	**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 their children 9. Parental support, parental psychological and behavioral control 10. autonomy granting	**8**
	Practical Prepare case studies on parent – child relationships in concern with parenting 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 trouble scope 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 & 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.
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4. Cole M & Cole. S (1993) The development of children. New York: Scientific American Books.
5. DeLamater, J., & Hyde, J. (2004). Conceptual and theoretical issues in studying sexuality in close relationships.
6. Erlbaum Heath, P. (2005). Parent-child relations: History, theory, research, and context. New Jersey: Prentice-Hall.
7. Ingoldsby, B. B., Smith, S., & Miller, J. E. (2004). Exploring family theories. Los Angeles: Roxbury. Kuczynski, L. (2002). Handbook of dynamics in parent-child relations. New York: Sage.
8. G.W. Peterson & K.R. Bush (eds). Handbook of marriage and the family (pp 423-447). New York, NY: Springer.

e- Learning Resources

- https://us.sagepub.com/sites/default/files/upm-assets/109149_book_item_109149.pdf
- https://www.npaonline.org/sites/default/files/6.%20NPA%20Family%20Dynamics%20The%20Good%20The%20Bad%20The%20Ugly_DePasquale.pdf
- https://www.researchgate.net/publication/327078511_Family_Dynamics_and_Intergenerational_Relations_A_psycho-Social_Analysis
- http://www.familiesandsocieties.eu/wp-content/uploads/2014/12/WP04BernardiEtal2013.pdf

Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	2	3	3	2	3
CO2	3	3	3	2	3	2	3	3	2	3
CO3	3	3	3	2	3	3	3	3	2	3
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	2	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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

Strong 3 Medium 2 Low 1

Title of the Course		FOUNDATIONS OF BAKING AND CONFECTIONERY								
Category	**Year** / **Sem**	**L**	**T**	**P**	**O**	**Credits**	**Inst Hrs**	**Marks**		
								CIA	**External**	**Total**
Elective / SEC		Y				3	4	25	75	100

Learning Objectives
To enable the students to :
Gain insight into the planning and operation of bakery unit.
Familiarize with the equipments and tools, hygienic practices relating to baking
Understand the role of various ingredients used in the making of breads, cakes, cookies, pastries and various confectioneries
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,	**15**
	chocolate cake, pound cake. Modified baked products - high fiber, low / alternate sugar, low fat, glutenfree, and millet based bakery products for special nutritional requirements.	
UNIT IV	**Pastries, Cookies and Biscuits** **Pastries-** types of pastries- puff pastry, short crust, phyllo pastry, flaky pastry, 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 labelling. **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

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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	2	3	2	2	2	3
CO2	3	3	3	3	2	2	3	2	2	3
CO3	3	3	3	3	3	3	3	2	3	3
CO4	3	3	3	2	2	2	1	1	2	3
CO5	3	3	3	3	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		CHANGING TRENDS IN EXTENSION EDUCATION								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To impart knowledge to the students on concept, objectives, philosophy and principles of extension education as well as pioneering extension efforts and analysis of the extension system of ICAR and SAU. Course also gives exposure to the student on current approaches in extension as well as various development programmes
To understand the changing concept of extension
To get acquainted with the trends in extension approaches and models
To identify the support system development for extension education.

UNIT	CONTENT	HOURS
UNIT I	**Home Science Extension Education** Extension education – meaning, scope, characteristics, objectives, need, principles, process, models and philosophy Emergence of Home Science Extension Education in India Extension Education as a profession – adult education and distance education. Leadership – role, styles and management grid, Qualities of a goad extension manager: Changing role of extension managers caused by globalization in Home Science.	**8**
	Practical - Exercises on presentation skills, listening skills, writing skills, exercises on distortion of communication message.	**2**
UNIT II	**Diffusion and Adoption of Innovations** Predicting innovativeness: Simulation of innovation, innovation decision process - Types of innovation decision, consequence on innovations, desirable or undesirable, direct or indirect anticipated or unanticipated consequence. Concept of homophily and heterophony and their influence on flow of innovation, Concept of Diffusion and its elements. Adoption Process - concept of stage, shade of agreement, neglected element. Adopter categories - Innovativeness and adopter categories, adopter categories as idea types, characteristics of adopter categories. Diffusion - perceived attributes of innovation and their rate of adoption.	**15**

	Practical Designing and Preparation of low-cost charts, posters, flash cards, pamphlet, leaflet etc	**2**
UNIT III	**Communication process** Communication process – concept, elements and their characteristics Models and theories of communication communication skills – fidelity of communication, communication competence and empathy, communication effectiveness and credibility, feedback in communication, social networks and Development communication – Barriers in communication Message – Meaning, dimensions of a message, characteristics of a good message, Massage treatment and effectiveness, distortion of message.	**8**
	Practical - Generating computer-aided presentation	**5**
UNIT IV	**Teaching and Learning** Concept of teaching and learning Classification of Extension teaching methods Various extension teaching aids – selection of appropriate methods, features, advantage, limitation of various methods of teaching (mass, group, individual) Audio visual aids – planning, selection and types of visual, audio and audio – visual aids Contribution of AV Aids in Extension education.	**8**
	Practical Report writing and Analysis of (Any 2) - ● Choose any one programme like Pulse Polio Immunization (PPI) or Kanyashree Prakalpa or Swachh Bharat Mission to write a report on their agencies of implementation, purpose, target group and their probable effectiveness in a particular chosen area or population. ● A survey report on any one rural institution: village school, mahila mandal, youth clubs, NGO/Co-operative/ Mahila Mandal/ Health-Centre in mass media, Poverty alleviation programmes, employment generating programmes of GOI. ● Critical analysis report of any one development programmes for women or children in India.	**2**

UNIT V	**Current approaches in extension education** Farming situation-based extension, market – led – extension, farm field school, ATIC, Kissan Call Centers, and NAIP. Problems in Rural Development. Need for Volunteerism in Rural Development, Role of NGO's Assistance available to Voluntary agencies from different ministries/Departments of Govt. of India. - Details of function in to Central/State Social Welfare Board and CAPART Employments Generation Programmes – NREGP, Women Development Programmes – ICDS, Self Help Groups, MSY, RMK	**8**
	Practical Applications of Extension education –Methods and Techniques(Any - 3) ● Design and conduct of training modules for target groups and follow up of training conducted. Preparation of a suitable Audio-visual aid for community extension work. ● Visit training and development institutions (KVKs, FTCs, TICs EEls, MANAGE, MAARM etc.) to share their experience on different aspects of training. ● Visit to Gram Panchayat to study on-going rural development programmes, visit to KVK, NGO and extension centers of State Agricultural University and State Departments, bottom-up planning, report preparation and presentations. ● Conducting socio-economic diet survey. ● Preparation of plans, projects programme proposals. Exercises on participatory methods - RRA,PRA, PLA etc. evaluation of plans, Exercises of PERT, Visit to development organizations and NGOs	**2**
	TOTAL	**60**

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

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

References

1. Albrecsht, H. et al (1989): Rural Development Series, Agricultural Extension, Vol I & II, Basic concepts and methods, Wiley Eastern Limited, New Delhi.
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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	2	3	3	2	3
CO2	3	3	3	2	3	2	3	3	2	3
CO3	3	3	3	2	3	3	3	3	2	3
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	2	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		FRONT OFFICE MANAGEMENT								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		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 and other 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, location etc.

CO2. Describe the organization chart of a front office department and duties and Functions of front office staff

CO3. Explain the basis of tariff fixation and guest registration process

CO4. Evaluate the role of front office in ensuring customer comfort and satisfaction from check -in to check out at the hotel

CO5. Summarize the role of the guest accounting process and each of the front officestaff.

Reference:

1. Ahmed Ismail (2004). Front office operations and management, Delmar Publications
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3. Chon K and Raymond. T S (2001) . Welcome to hospitality- An introduction- II nd Edition, Delamar publication
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- http://www.hotelhousekeeping.org/Hotel-Housekeeping-Duties.html
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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	2	2	2	1	2	2	2
CO2	3	3	3	2	2	2	2	2	3	2
CO3	3	3	3	2	2	2	2	2	2	2
CO4	3	3	3	3	2	2	2	2	2	2
CO5	3	3	3	2	2	2	3	2	2	2

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		NUTRITIONAL ASSESSMENTAND DIET COUNSELING PRACTICAL								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC			Y			3	4	25	75	100

Learning Objectives
To enable the students to :
Learn the different methods and techniques available to assess nutritional status.
Use age and gender specific techniques to assess nutritional status.
Learn the significance of assessment parameters in conditions of health and disease.

UNIT	CONTENT	HOURS
UNIT I	**Nutritional screening** Nutritional assessment and Identification of at-risk groups using SGA/ MNA Estimation of total energy requirement using factorial method Plotting growth chart for infants and identifying growth faltering, suggesting suitable nutritional remedies	10
UNIT II	**Anthropometric assessment** Measurements of height, weight, mid arm circumference, waist circumference Measurement of Body fat using skin fold calipers, body fat analyser etc., Conduct anthropometric assessment and nutritional diagnosis on a select group of subjects	10
UNIT III	**Clinical and Biochemical assessment** Use clinical examination schedule and conduct clinical examination under theguidance of medical supervisor to identify nutrient deficiencies (preferably preschool children) Learn the biochemical tests to be conducted to analyse nutritional deficiencies; analyse available biochemical reports for nutritional adequacy	15
UNIT IV	**Dietary assessment** Estimate nutrient intake using 24-hour recall, food frequency questionnaire. Estimate nutrient intake using appropriate software. Conduct diet survey and suggest alterations in food intake to improve nutrient adequacy	15

UNIT V	**Diet counseling** Preparing a nutritional assessment sheet for the given patient Planning a diet counselling program with components such as assessment ofneeds, education of the patient, follow up and establishing rapport with the patient and family member.	**10**
	TOTAL	**60**

COURSE OUTCOMES

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

CO1. Screen the nutritional status of subjects using appropriate tools.

CO2. Use anthropometric methods of assessment to classify subjects a belonging to normal, under nutrition, overweight or obesity.

CO3. Evaluate micronutrient adequacy using clinical and biochemical assessment techniques.

CO4. Determine adequacy of nutrient intake employing suitable dietary assessment Techniques.

CO5. Acquire skills in diet counselling using nutritional techniques.

References

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2. Gibney, M.J., Margetts, B.M., Kearney, J.M. and Arab, L. (2013). Public HealthNutrition. John Wiley & Sons Inc., New Delhi.
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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	3	2	3	3	2	2	3
CO2	3	3	3	3	2	3	3	2	2	3
CO3	3	3	3	3	2	3	3	2	2	3
CO4	3	3	3	3	2	3	3	2	2	3
CO5	3	3	3	3	2	3	3	2	2	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		PRE-SCHOOL AND CRECHE MANAGEMENT								
Category	Year / Sem	L	T	P	O	Credits	Inst Hrs	Marks		
								CIA	External	Total
Elective / SEC		Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to :
To familiarize the students with the significance of managing the crèche and preschool
Understand the elements involved in organization and management of creche and Preschool.
Create awareness of functions of various authorities dealing with crèche and preschool.

UNIT	CONTENT	HOURS
UNIT I	**Concept and organization of Creche and Preschool** Crèche and preschool -Meaning, types of preschools, need, importance of organization, Elements of organization and administration. Difference between crèche and preschool, Preschool Programme - Principles of preschool programme, Framing of preschool curriculum – types of curriculum, planning activities for children, audio-visual aids for children and its importance, Activities for children: Audio-visual aid for children and its importance.	**8**
	Practical - Planning the layout of Creche and Preschool, Planning cyclic menu for a preschool and crèche	**2**
UNIT II	**Resource Management** Location, site and building, Types of rooms, Storage facilities, arrangement of room (activity centers), ventilation, lighting and safety, Provision of safe drinking water and sanitary facilities, Playground and safety aspects – indoor and outdoor games, Play equipment – types, criteria for selection, Maintenance of building-store, furniture, equipment Suggestive Low-Cost Educational Material - Teaching Aids	**8**
	Practical - Analyzing the availability and suitability of play materials Preparation of First Aid Box**.**	**2**
UNIT III	**Records and registers** Need, importance and maintenance of records and registers. Types of records (Important records) – Admission, Progress, Financial, Equipment, Correspondence, Health - sickness of child and immunization. Types of register - Attendance (Staff, children), Accounts, Stock, Staff Profile, services for children and daily diary. Methods of maintaining record of children – Cumulative and Anecdotal.	**12**

	Practical - Case study of a child-Socio-economic profile, Demographic details, Maintaining an activity dairy, Diet-meal pattern, health status Preparation and maintaining a health record file.	**5**
UNIT IV	**Planning of Preschool Education Activities** Skills & qualities of preschool children Introductory Games/activities for Rapport Building with Children **Physical & Motor Development** Gross Motor & Fine Motor Skills Essentials of Optimum Physical Development Activities /Games for Gross and Fine Motor Skills **Cognitive Development** Essentials for Cognitive Development Development of Basic Skills - Activities for Sensory Development, Mental Skills and Concept Development **Language Development –** Essentials for Language Development Games/Exercises for Language Development Activities for Language Development - Listening Skills, Reading Skills and Writing Skills **Development of Science Experience & Creative Expression** Areas of Creative Expression Science Experience Activities **Social & Emotional Development** Essentials for Social & Emotional Development Activities and games for Social-Emotional Development Games for Socio-Emotional Development	**15**
	Practical - Planning activities for children based on the curriculum of the preschool and crèche	**2**
UNIT V	**Personnel Management** Role and qualities of teacher and care - taker and other staff involved in welfare and care of children, Teacher-child ratio, Need for and importance of in-service training	**4**
	Practical - Organization chart for Creche and Preschool, Collection of different records and registers to be maintained in a preschool and crèche	**2**
	TOTAL	**60**

COURSE OUTCOME

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

CO1. Describe key Concept and organization of Creche and Preschool

CO2. Explain Resource Management for creche and pre schools

CO3. Understand the criteria for Records and registers maintenance

CO4. Identify importance and Planning of Preschool Education Activities

CO5. Introduction to Personnel Management required for creche and pre schools

Reference

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Mapping with Programme Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	3	3	2	3	2	3	3	2	3
CO2	3	3	3	2	3	2	3	3	2	3
CO3	3	3	3	2	3	2	3	3	2	3
CO4	3	3	3	2	3	2	3	3	3	3
CO5	3	3	3	2	3	2	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		INTERNSHIP IN HOSPITALS/FOOD INDUSTRY/CATERING ESTABLISHMENT/HEALTH CARE FACILITY/FITNESS CENTRE/NGO/INTERIOR DESIGN FIRM								
Category	**Year**	**L**	**T**	**P**	**O**	**Credits**	**Inst Hrs**	**Marks**		
								CIA	**External**	**Total**
	Sem									
Internship					Y	3		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 :
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/ Nutritionist in therespective 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 careprovided, 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, cookingschedules 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 delicious andappealing.
- Is familiar with the standards of safety and hygiene followed in the industry/company

EXPECTED OUTCOME OF INTERNSHIP AT FOOD INDUSTRY/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 from procurement toend 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 meetthese 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 and writing skills.

Mapping with Programme Outcomes

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	3	3	3	2	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	3	3	3	3
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	2	3	3	3	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		COMPUTER APPLICATION IN HOME SCIENCE									
Category	**Year**	**II**	**L**	**T**	**P**	**O**	**Credits**	**Inst Hrs**	**Marks**		
									CIA	**External**	**Total**
	Sem	**IV**									
Skill Enhancement Course			Y		Y		3	4	25	75	100

Learning Objectives
To enable the students to:
Understand the application of computer in various disciplines of Home Science.
Know the features of AutoCAD software used in Textiles & Interior Design.
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 destinedfolder. **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 Sketchup. 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 Softwares – 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 anddata 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	2	3	2	1	3	3	3	2	2	3
CO2	3	3	3	3	2	3	1	2	2	3
CO3	3	2	3	3	2	3	2	3	2	3
CO4	3	2	3	3	2	3	3	3	3	3
CO5	3	3	3	3	3	3	2	3	3	3

Strong 3 Medium 2 Low 1

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

Strong 3 Medium 2 Low 1

Title of the Course		APTITUDE AND REASONING SKILL FOR COMPETITIVE EXAMINATIONS									
Category	**Year**	**III**	**L**	**T**	**P**	**O**	**Credits**	**Inst Hrs**	**Marks**		
									CIA	**External**	**Total**
	Sem	**VI**									
Professional Competency Skill			Y	Y			2	2	25	75	100

Learning Objectives
To enable the students to:
To acquaint the students in quantitative aptitude and logical reasoning required for various competitive examinations.
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**

COURSE OUTCOMES

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 Vernbal & 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,7 th Edition, Mcgraw Hill Education Publication.
4. Rajgotra, A. & Pradhan P (2020). Wileys Exam Xpert A simpler Approach to Logical Reasoning, 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	2	3	3	3	2	3	1	2	3	3
CO2	2	3	3	3	2	3	1	2	3	3
CO3	2	3	3	3	2	3	1	2	3	3
CO4	2	3	3	3	2	3	1	2	3	3
CO5	2	3	3	3	2	3	1	2	3	3

Strong 3 Medium 2 Low 1

Mapping with Programme Specific Outcomes

CO/PSO	PSO1	PSO 2	PSO 3	PSO 4	PSO 5
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
Weighted percentage (rounded of) of Course Contribution to Pos	2	3	3	3	3

Strong 3 Medium 2 Low 1