B.Sc., FOODSCIENCE AND NUTRITION

Syllabus

(With effect from 2025-2026 batches onwards)

Program Code: 22N

DEPARTMENT OF FOOD SCIENCE AND NUTRITION
Bharathiar University
(A State University, Accredited with "A"Grade by NAAC and
13th Rank among Indian Universities by MHRD-NIRF)
Coimbatore 641 046, INDIA

BHARATHIAR UNIVERSITY: COIMBATORE 641046

DEPARTMENT OF FOOD SCIENCE AND NUTRITION

MISSION

Food Science and Nutrition promotion is to advance an integrative approach to foods, nutrition and health by innovative research and progressive education of undergraduate students and to educate the public through creative outreach.

Currently in Food Industry, where Industry 4.0 focusing more on nutrient composition of the products such as calories, percentage of macronutrients, nutraceutical properties etc. Hence it is essential that Food Science and Nutrition is offered at various levels of education in general and masters in particular.

Job opportunities are wide in the field of nutrition both in public and private sector. Professionals can work at hospitals, fitness centers, food industries, self-employment (small scale industries), entrepreneurship, research and development etc.

Program Educational Objectives (PEOs)	
The **B.Sc., Food Science And Nutrition** program describe accomplishments that graduates are expected to attain within five to seven years after graduation	
PEO1	Our graduates will have successful Professional carriers in Food Industry, Hospital Sector, Govt sector and also academicians.
PEO2	Our graduates will be active members ready to serve the society locally and Nationally
PEO3	Being a dietitians graduates involved in social work helps the people to recognize the importance of food and teach them to take the diet foods to get the nutritive value of food
PEO4	Our graduates will continue to learn and do researches through the advanced Technologies
PEO5	Graduates are trained to demonstrate creatively develop innovative ideas and to work in teams to accomplish a common goal

Program Specific Outcomes (PSOs)

Program Specific Outcomes (PSOs)	
After the successful completion of B.Sc., Food Science and Nutrition program, the students are expected to	
PSO1	Identify and explain nutrients in foods and the specific functions in maintaining health.
PSO2	Know the chemistry underlying the properties and reactions of various foods Components
PSO3	Use the nutrition care process to make decisions, to identify nutrition related problems and determine and evaluate nutrition interventions.
PSO4	Identify equipment required for basic sewing skills.
PSO5	Explain the spoilage and deterioration mechanisms in foods and methods to control deterioration and spoilage.
PSO6	Explain the principles and current practise of processing techniques and the effects of processing parameters on productquality.
PSO7	Discuss basic principles of common food preservation methods.
PSO8	Explain the properties and uses of various packaging material.
PSO9	Apply knowledge of biochemistry and physiology to human nutrition metabolism.
PSO10	Apply the principles of human resource management to different situations.

Program Outcomes (POs)	
On successful completion of the B. Sc. Food Science and Nutrition program	
PO1	**Academic Excellence:** Develop Professional skills in food, nutrition, textiles, product making and human development
PO2	**Scientific Knowledge:** Utilize knowledge from the physical and biological sciences as a basis for understanding the role of food and nutrients in health and disease process
PO3	**Understand:** Understand and appreciate the role of interdisciplinary sciences in the development and well being of individuals, families and communities
PO4	**Thinking Skills:** Ability to critically think, analyze, evaluate and create new knowledge and skills both in the chosen discipline and across other fields like Food Processing and Preservation, Food Packaging, Community nutrition
PO5	**Modern Tool Usage:** Create, Select and apply appropriate techniques resources and modern technology using industry 4.0
PO6	**Communicative Skills:** Communicative effectively on Food Science & Technology activities with society at large and able to write effective reports and documentation and also to participate in public discourse on varied themes.
PO7	**Life Long Learning:** Recognize the need and ability to learn and relearn knowledge in the context of technological change
PO8	**Civic and Social Responsibility:** Ability to function as a matured democratic citizen as a dietitian to formulate their own personalized product, As a public educator and also as a freelancer
PO9	**Professional Development:** The programme provides basic understanding of the correlation between food and health and also understanding the role of food under specific diseased conditions.
PO10	**Quality Research:** Ability to design and carryout independent research, to update oneself with current research trends and to evaluate research contibution

BHARATHIAR UNIVERSITY: COIMBATORE 641 046
B.Sc., FOOD SCIENCE AND NUTRITION Revised Curriculum
(For the students admitted during the academic year 2025– 26 onwards)

Course code	code	Title of the Course			Practical Hours/ week	Hours		Maximum Marks		
						Theory	Practical	CIA	ESE	Total Marks
	FIRST SEMESTER									
I	**11T**	Language – I	4	6	-	3	-	25	75	100
II	**12E**	English – I	4	6	-	3	-	25	75	100
III	**13A**	Core paper – I Food Science	4	4	-	3	-	25	75	100
	13B	Core paper – II Chemistry of Foods	4	3	-	3	-	25	75	100
	13P	Core practical – I Food Science Practical	2	-	3	-	3	20	30	50
	13A	Allied A: Chemistry I	3	4	-	3	-	20	55	75
		Allied Practical – Chemistry		-	2	-	-	-	-	-
IV	**2FA**	Environmental Studies *	2	2	-	3	-	-	50	50
		Total	**23**	**25**	**5**	**18**	**3**	**140**	**435**	**575**
	SECOND SEMESTER									
I	**21T**	Language – II	4	6	-	3	-	25	75	100
II	**22E**	English – II	2	4	-	3	-	25	25[@]	50
	2NM	Language Proficiency for Employability	2	2	-	-	-	25	25	50#
		http://kb.naanmudhalvan.in/Special:Filepath/Cambridge_Course_Details.pdf								
III	**23A**	Core paper – III Human Physiology	4	4	-	3	-	25	75	100
	23P	Core practical – II Human Physiology Practical	2	-	2	-	3	20	30	50
	23B	Core paper – IV Principles of Nutrition	4	4	-	3	-	25	75	100
	2AH	Allied A: Chemistry II	3	4	-	3	-	20	55	75
	2PH	Allied Practical – Chemistry	2	-	2	-	3	20	30	50
IV	**2FB**	Value Education – Human Rights*	2	2	-	3	-	-	50	50
		Total	**25**	**26**	**4**	**18**	**6**	**185**	**440**	**625**

	THIRD SEMESTER									
I	**31 T**	Language – III	4	6	-	3	-	25	75	100
II	**32 E**	English – III	4	6	-	3	-	25	75	100
III	**33A**	Core paper – V Nutrition in Health	4	4	-	3	-	25	75	100
	33P	Core practical – III Family Meal Management	2	-	2	-	3	20	30	50
	3AC	Allied B: Bio Chemistry I	3	3	-	3	-	20	55	75
		Allied Practical - Bio Chemistry	-		2	-	-	-	-	-
IV	**3ZA**	Skill based subject 1- Textile Science and Basic sewing	2	2	-	3	-	20	30@	50 @
	3NM	NAAN MUTHALVAN- Digital Skills for Employability – Office Fundamentals	2	2	-	-		25	25	50* **
		Health and Wellness	1	-	1			25	-	25
	3FD	Tamil @/Advanced Tamil# (OR) Non-major elective - 1(Yoga for Human Excellence)#/Women's Rights#	2	2	-	3	-	-	50	50
		Total	**24**	**25**	**5**	**18**	**3**	**185**	**415**	**600**
I	**41T**	Language – IV	4	6		3	-	25	75	100
II	**42E**	English – IV	4	6		3	-	25	75	100
III	**43A**	Core Paper VI – Clinical Nutrition and Dietetics	4	4		3	-	25	75	100
	43P	Core Practical – IV Dietetics Practical	2	-	3	-	3	20	30	50
	4AC	Allied B: Paper II-Bio-Chemistry –II	3	3		3	-	20	55	75
	43Q	Allied Practical – Bio-Chemistry	2	-	2	-	3	20	30	50
IV	**4ZB**	Skill based Subject 2 - Interior Design	2	2		3	-	20	30@	50
	4NM	Office Fundamentals -Digital Skills for Employability – http://kb.naanmudhalvan.in/Special:Filepath/Microsoft_Course_Details.xlsx	2	2		-	-	20	30	50 #
	4FE	Tamil @/Advanced Tamil*(OR) Non-major elective –II (General Awareness)	2	2		3	-	-	50	50
		Total	**25**	**25**	**5**	**18**	**6**	**175**	**450**	**625**
	Semester V									
III	**53A**	Core Paper VII Food Microbiology	4	6	-	3	-	25	75	100
	53B	Core Paper VIII Post Harvest Technology	4	6	-	3	-	25	75	100

	53C	Core Paper IX Community Nutrition	4	6	-	3	-	25	75	100
	53P	Practical V- Nutrition Practical	2	-	3	-	3	20	30	50
	53Q	Practical VI - Computerized Database Management In Home Science	1	-	2	-	3	10	15	25
	5EA/ 5EB	Elective I	3	5	-	3	-	20	55	75
	5NM	Skill based - Food and Agri Business Management for Employability	2	2	-	3	-	25	25	50
		Total	**20**	**25**	**5**	**15**	**6**	**150**	**350**	**500**
	Semester VI									
III	**63A**	Core Paper X – Food Processing and quality control	4	5	-	3	-	25	75	100
	63B	Core Paper XI – Food Preservation and food safety	4	5	-	3	-	25	75	100
	6EA/ 6EB	Elective – II	3	6	-	3	-	20	55	75
	6EC/ 6ED	Elective – III	3	6	-	3	-	20	55	75
	63P	Practical VII: Food Preservation and Quality Control	2	-	3	-	3	20	30	50
IV	**6ZD**	Skill Based Subject 4- Health Fitness and Sports Nutrition	2	3	-	3	-	20	30	50
	6ZV	Skill Based Subject 5- Dietary Internship report and viva**	2	-	-		-	50	-	50^ **
	6NM	Skill based - Food and Agri Business Management for Employability	2	2	-	-	-	-	-	50
V	**67A**	Extension Activities**	1	-	-	-	-	25	-	25**
		Total	**23**	**27**	**3**	**15**	**3**	**205**	**320**	**575**
		Grand Total	**140**	**153**	**27**	**102**	**27**	**1040**	**2410**	**3500**

^ Fifteen days internship in Dietary Department in the summer vacation after II year of study.

For Viva: 10 marks and report: 40 marks.

** No University Examinations. Only Continuous Internal Assessment (CIA)

* No Continuous Internal Assessment (CIA). Only University Examinations.

@ University examination will be conducted for 50 marks(As per existing pattern of Examination) and it will be converted to 20 marks.

#skill course – external 25 marks will be assessed by industry and internal will be conducted by the respective course teacher.

List of Elective papers (Colleges can choose any one of the paper as electives)		
Elective-I	**A**	Bakery * and entrepreneurship development
	B	Food Packaging and Labeling
Elective-II	**A**	Food Service Management and Physical Facilities
	B	Family Resource Management
Elective-III	**A**	Human Development
	B	Food Product Development and Packaging

***Training in a Bakery for 15 days in semester break of V semester compulsory to earn 3 credits.**

Minimum ten practical exercises per paper per semester

U**nit VI, included all the papers, will not come under question paper setting**

Add on courses to be undertaken by the students in V and VI semesters (2 credits allotted)

1. Food Processing Techniques III Semester
2. Marketing strategies / Diet counseling V Semester

SEMESTER I

Course code	13A	TITLE OF THE COURSE	L	T	P	C
Core I		FOOD SCIENCE	60 hrs			4
Pre-requisite			Syllabus Version			2025 -26

Course Objectives:

The main objectives of this course are to:

1. Obtain knowledge of different food groups and their nutritive value and role in day's diet.
2. Understand the principles underlying Food Preparation.
3. Develop skill and techniques in Food Preparation with conservation of nutrients and Palatability using cooking methods generally employed.

Expected Course Outcomes:

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

1	To gain knowledge on food groups and its function, food pyramid and understanding cooking methods and evaluate sugar cookery.	K2
2	To gain knowledge on nutritive value, understand the cookery concepts involved in cereals and pulses.	K2
3	To get clear ideas about nutritional classification and understand the changes in pigments of fruits and vegetables apply knowledge on preparation of beverages.	K3
4	To have an overview of the composition, nutritive value and develop skills in the preparation of milk and egg product and determine the smoking point of any cooking oil	K5
5	To understand the structure, nutritive value, selection and apply knowledge on methods of cooking fleshy foods and evaluate the uses and abuses of spices and condiments.	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION TO FOODS	10hours

Food group: Basic 4, 5and7 food groups; functional food groups-energy yielding, body building and protective foods (only sources and not properties and functions), food pyramid.
Study of various cooking methods - Boiling, steaming, stewing, frying, baking, roasting, broiling, cooking under pressure.
Sugar Cookery: Stages of sugar cookery, crystallization and factors affecting crystallization.

Unit:2	CEREALS AND PULSES	12 hours

Cereals– Cereals - composition of rice, wheat, effects of cooking on parboiled and raw rice, principles of starch cookery, gelatinization.
Pulses-Varieties of pulses and grams, composition, nutritive value, cooking quality of

pulses, germination and its effect.		
Unit:3	**VEGETABLES, FRUITS AND BEVERAGES**	**12 hours**
Vegetables - Classification, composition, nutritive value, selection and preparation for cooking, methods and principles involved in cooking. **Fruits** -Composition, nutritive value, changes during ripening, methods and effects of cooking, enzymatic browning. **Beverages** - Classification, nutritive value, milk based beverages- methods of preparing tea and coffee, fruit based beverages and preparation of carbonated non – alcoholic beverages.		
Unit:4	**MILK AND EGG PRODUCTS, FATS AND OILS**	**12 hours**
Milk - Composition, nutritive value, kinds of milk, pasteurization and homogenization of milk, changes in milk during heat processing, preparation of cheese and milk powder **Egg** - Structure, composition, selection, nutritive value, uses of egg in cookery, methods of cooking, foam formation and factors affecting foamformation. **Fats and Oils** - Types of oils, function of fats and oils, shortening effects of oil, smoking point of oil, effect of heat on oil absorption and factors affecting absorption of oil.		
Unit:5	**MEAT AND MEAT PRODUCTS, POULTRY ,SPICES AND CONDIMENTS**	**12 hours**
Meat and meat products -Structure, composition, nutritive value, selection of meat, post mortem changes in meat, aging, tenderness, methods of cooking meat and their effects. **Poultry** – Types, composition, nutritive value, selection, methods of cooking Fish - Structure, composition, nutritive value, selection of fish, methods of cooking and effects. **Spices and Condiments** - Uses and abuses.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on milk and dairy products processing with some brief introduction on meat Processing		
	Total Lecture hours	**60hours**
Text Book(s)		
1	Srilakshmi, B., Food Science, (2016), 5th edition, New Age Publishers, India, New Delhi.	
2	Many, S and Shadaksharaswami, M. (2008) Food: Facts and Principles, 3rd edition, New Age Publishers	
Reference Books		
1	Swaminathan, M., (2012) Food science, Chemistry and Experimental foods, Bangalore Printing and Publishing Company.	
2	Potter M,N. and Hotchkiss, J.H. (1998) Food Science 5th edition, CBS Publications and Distributors, Daryaganji, New Delhi.	
3	Philip, T., Modern Cookery for teaching and trade, volume I and II, Orient Longmans Ltd.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	www.nal.vsda.gov/fnic/foodcomp	
2	www.fda.gov-vegetables	

3	http://www.eatforhealth.gov.au-fleshfoods,egg&milk
4	https://www.business.qld.gov.av-sensoryanalysis of food products
5	https://youtu.be/oE8YV2zlO8M
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	S	M	M	S	M	M	S	S
CO2	S	S	M	S	M	S	M	M	M	S
CO3	S	M	M	M	M	S	M	M	M	S
CO4	S	M	S	S	M	S	M	M	M	S
CO5	S	M	S	S	M	S	M	M	M	S

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

Course code	**13B**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core – II		**CHEMISTRY OF FOODS**	**45**			**4**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

1. Understand relationship between the structure and functional properties of food
2. Improve the nutritional, safety and organoleptic aspects of food
3. Types of colloids and their nature and properties of water

Expected Course Outcomes:

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

1	Understand the physical and chemical properties and reactions in food	K2
2	To gain knowledge on colloidal systems in food and properties of sols and gels and apply knowledge on gel formation	K3
3	To have a clear idea on meaning , types and analyze properties of emulsion and foams	K4
4	To have an overview on water and its properties	K1
5	Apply knowledge on various methods of heat transfer mechanisms used in cooking.	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**INTRODUCTION TO FOOD COMPONENTS**	**9 hours**

Food components Food**,** nutrients principle components of foods, functions of foods, classification of foods, properties of foods, physical, chemical, functional and kinetic properties. Enzymatic and non-enzymatic browning reactions in foods, rancidity – types and prevention.

Unit:2	COLLOIDAL SYSTEM	7 hours
Colloidal system in foods – meaning, types, properties. Sols – meaning, types, properties: gels – meaning, type, properties, theory of gel formation, factors influencing gel formation.		
Unit:3	**EMULSION AND FOAM**	**10 hours**
.Food Emulsion – meaning, types, properties, emulsifying agents, natural and synthetic emulsifier, functions of emulsifying agent, Foam: properties – factors influencing foam formation, factors affecting stability of foam.		
Unit:4	**PROPERTIES OF WATER**	**10 hours**
Properties of Water – forms and types of water, water and ice properties, functions of water in food, intermediate moisture foods, water activity – definition, measurement and control of water activity, estimation of moisture in foods.		
Unit:5	**HEAT TRANSFER IN FOOD**	**7 hours**
Heat transfer operation in foods – conduction, convection, and radiation, principles of microwave cooking and baking - advantages and disadvantages.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Seminars and presentations on properties of foods.		
	Total Lecture hours	**45 hours**

Text Book(s)

1	Srilakshmi, B. (2016) Food Science, 7 th edition, New Age Publisher.
2	Many, S and Shadaksharaswami, M. (2015) Food: Facts and Principles, 3rd edition, New Age Publishers.

Reference Books

1	Swaminathan, M. (2012) Food science, Chemistry and Experimental foods Bangalore printing and publishing company.
2	Potter, N.N. and Hotchkiss, J.H. (1998) Food Science 5th edition, CBS Publications and Distributors, Daryaganji, New Delhi.
3	Chandrasekhar,U.(2002) Food Science and Application in Indian Cookery, Phoenix Publishing House P. Ltd., New Delhi.
4	Vaclacik, Vickie, Christian, Elizabeth W, Essentials of Food Science (2014) 4th Edition, Springer Publication.
5	Chopra H.K, Panesar, P.S, Food Chemistry (2010) Narosa Publishing House, New Delh.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://www.rsc.org
2	www.frontiersin.org
3	https://theconversation.com
4	https://youtu.be/yPFpJC_DxJk
	Course Modified By: Dr. G.Suba

Mapping with Programme Outcomes										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	M	M	M	S	S	M	M	M
CO2	S	M	M	M	M	S	M	M	M	M
CO3	S	M	M	M	M	S	M	M	M	S
CO4	S	M	M	M	M	S	M	M	M	M
CO5	S	M	M	M	M	S	M	M	M	M

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

Course code	**13P**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Practical – I		**FOODSCIENCE PRACTICAL**			**45**	**2**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

1. Understand the measuring techniques
2. Understand the changes during cookery.
3. Enable ways to prevent nutrient losses during cookery.

Expected Course Outcomes:

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

1	Apply the scientific principles in food preparation	K3
2	Demonstrate the different methods of cooking	K4
3	Understand the desirable and undesirable changes taken place during cooking of foods	K2
4	Evaluate the basic methods and principles involved in cooking	K5
5	Evaluate the change of pigments during cooking	K5

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents:		**45hours**

1. Food group- Grouping of foods, discussion on nutritive value
2. Measuring ingredients Methods of measuring different types of foods – grains, flours and liquids
3. Edible portion Determination of edible portion percentage.
4. Cooking methods Moist heat methods – boiling, simmering, steaming

and pressure cooking. Dry heat methods – baking,

5. Fat as a medium for cooking-shallow and deep fat frying.
6. Cereals - Methods of cooking fine and coarse cereals. Examination of starch.
7. Pulses Cooking of soaked and un soaked pulses. Common preparation with pulses.
8. Vegetables Experimental cookery using vegetables of different colours and textures. Preparation of soups and salads. Common preparation with vegetables.
9. Fruits Prevention of darkening in fruits and vegetables. Fruit salad.
10. Milk and milk products Experimental cookery – cream of tomato soup, cheese curry and cooking vegetables in milk. Common preparation with milk, cheese and curd.
11. Fleshy foods Fish, meat and poultry-preparations.
12. Egg Experimental cookery- boiled egg, poached egg. Common preparations with egg.
13. Beverages Preparation of hot beverages- coffee, tea. Preparation of cold beverages- fruit drinks and milkshake.
14. Evaluation Development of scorecard.
15. Developing value added foods (cereal, millet, pulse and vegetable based) any Four.

SEMESTER II

Course code	**23A**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core – III		**HUMAN PHYSIOLOGY**	**60 hrs**			**4**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

1. Enable students to understand the structure and functions of various systems in ourbody.
2. Enable student to understand the function of different organs and system in thehuman body
3. Obtain a better understanding of the principles of nutrition through the study ofphysiology

Expected Course Outcomes:

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

1	To review the structure and functions of cell organelles tissue and gain knowledge on blood and its components and understand about sense organs	K4

2	Understand the structure and functions of digestive system, digestion, absorption and assimilation of food	K2
3	To gain knowledge on circulatory system understands the basic anatomy of respiration and transport of gases.	K2
4	Understand about the reproductive organs and menstrual cycle, structure functions of endocrine glands	K2
5	Obtain a better understanding of excretory system, physiology of muscular action, and about physiology of central nervous system.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**CELL, TISSUES,BLOOD AND SENSE ORGANS**	**13hours**

Cell - Structure and functions and Tissues - Structure and functions
Blood, RBC,WBC, Platelets and Lymph. Blood coagulation, blood grouping and Rh factor. Sense organs - Structure and function of eye, ear and skin.

Unit:2	**DIGESTIVE SYSTEM**	**9hours**

Digestive system - Anatomical consideration – structure and functions, Brief study of the organization of the digestion, absorption and assimilation of food.

Unit:3	**CIRCULATORY SYSTEM AND RESPIRATORYSYSTEM**	**12hours**

Circulatory system - Heart structure and functions - cardiac cycle. Respiratory system - Basic anatomy of the respiratory system, process of respiration, transport and exchange of oxygen and carbon di oxide in the body.

Unit:4	**REPRODUCTIVE SYSTEM AND ENDOCRINE GLAND**	**12hours**

Reproductive system - Anatomy of the male and female reproductive organs. Menstrual cycle. Endocrine glands - Structure and function of pituitary, thyroid, islets of langerhans and adrenal gland.

Unit:5	**EXCRETORY SYSTEM**	**12hours**

Excretory system - Excretory organs - structure of kidney and functions, formation of urine,compositionofurine.Muscles-physiologyofmuscularaction.Centralnervous system - Physiology of the nerve cell, parts of the central nervous system and function.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Presentations on human physiology and its relation to nutrition.

	Total Lecture hours	**60 hours**

Text Book(s)

1	Chatterjee C.C (2016), Human Physiology 11th Edition, Medical Allied Agency, Kolkata.
2	Sembulingam, K. (2012) Essentials of Medical Physiology, 6 th Edition, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi.

Reference Books

1	Best and Taylor, (2011) 13th Edition The Physiological Basis of Medical Practice, Saunders Company.
2	Chaudhri, K. (2016) Concise Medical Physiology, 7th Edition, New Central Book Agency (Parentral) Ltd., Calcutta Fox.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	microbenotes.com/category/human-physiology
2	www.longdom.org/scholarly/human-physiology...
3	https://youtu.be/IYQsinv938g
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	S	M	M	M	M	M	S	M
CO3	S	S	S	M	M	M	M	M	S	M
CO3	S	S	S	M	M	M	M	M	S	M
CO4	S	S	S	M	M	M	M	M	S	M
CO5	S	S	S	M	M	M	M	M	S	M

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

Course code	**23P**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Practical II		**HUMAN PHYSIOLOGY PRACTICAL**			**30 hrs**	**2**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

Identify different types of tissue and calculate BMI of individuals and measurements of blood Components.

Expected Course Outcomes:

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

1	Identify the different types of tissues	K4
2	Determine the bleeding time and clotting time	K5
3	Identify the blood grouping of the individuals	K4
4	Measure the hemoglobin level, the blood pressure and calculate the pulse rate.	K4

5	Measure the height and weight and calculate the BMI of individuals and to do the physical fitness tests and grade the level of fitness	K5

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents:	**30 hours**

1. Identification oftissues
2. Bleedingtime
3. Clottingtime
4. Blood groups –identification
5. Measurement ofHemoglobin
6. Measuring PulseRate
7. Measuring BloodPressure
8. Measurement of height, weight and calculation of BMI

Course code	**23B**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core – IV		**PRINCIPLES OF NUTRITION**	**60 hrs**			**4**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

1. Function, sources, metabolism and effects of deficiency of nutrition.
2. Understand the vital link between nutrition and health.

Expected Course Outcomes:

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

1	To know the history of nutrition and gain idea on energy and carbohydrates.	K1
2	Understand the role of food and nutrients in health and disease prevention	K2
3	Evaluation nutrition information based on scientific reasoning for clinical and community application	K5
4	To analyze conceptualize, implement and evaluate the functions, metabolism, requirements and effects of deficiency of nutrients.	K4

5	To apply knowledge on functions, distribution of water and regulation of water balance and acid base and electrolyte balance.	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**INTRODUCTION TO NUTRITION**	**12 hours**

Introduction to Nutrition - General introduction, history of Nutrition. Energy - Definition of Kilocalories, Joule, energy value of foods, determination, physiological fuel values, SDA of foods, basal metabolic rate- definition, factors influencing BMR. Recommended Dietary Allowances for energy. Carbohydrates - Classification, functions, source, digestion, absorption and utilization, dietary fibre and health.

Unit:2	**PROTEIN, FATS AND LIPIDS**	**12 hours**

Protein - Classification, functions, sources and requirements, digestion, absorption and utilization, Protein quality – PER, BV, NPU, digestibility coefficient, -definition and calculation Reference protein, essential amino acids and mutual supplementation of dietary protein .Fats and Lipids - Classification, functions, sources, requirement, importance of essential fatty acids, their requirements and deficiency.

Unit:3	**VITAMINS**	**12 hours**

Vitamins – Fat soluble vitamins –A, D, E and K- functions, source, requirements, deficiency disorders. Water soluble vitamins –The B-complex vitamins – Thiamine, Riboflavin, Niacin, Folic acid, Biotin, Pantothenic acid and Vitamin C - functions, source, requirements and deficiency disorders.

Unit:4	**MINERALS**	**12hours**

Minerals - General functions in the body, classification- macro and micro minerals. Micro minerals – Iron, Fluorine, Zinc, copper, Iodine -functions, absorption, utilization, requirements, deficiency and toxicity. Macro minerals – Calcium and phosphorus - functions, absorption and utilization of iron requirements, deficiency and toxicity.

Unit:5	**WATER BALANCE**	**10hours**

Water Balance – Functions of water, water distribution, maintenance of water and regulation of acid-base balance in the body. Electrolyte balance.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Vitamin D Nutrition Biochemistry

	Total Lecture hours	**60 hours**

Text Book(s)

1	Srilakshmi, B. (2017) Nutrition Science, New Age International (P) Ltd., New Delhi.
2	Mahtab, S, Bamji, Kamala Krishnasamy, G.N.V. Brahmam (2015) Text Book of Human Nutrition, Third Edition, Oxford and IBH Publishing Co. P. Ltd., NewDelhi.
3	Swaminathan, M. (2012) Advanced Textbook on Food and Nutrition, Vol. 1, Second Edition, Bangalore Printing and Publishing Co. Ltd., Bangalore.

Reference Books	
1	Dietary Guidelines for Indians, ICMR (2013) National Institute of Nutrition, Hyderabad.
2	Gordon M. Wardlaw, Paul M.Insel. (2015) Perspectives in nutrition, 3rd Edition, MosbyyearBook,Inc.St.Louis,Missouri.
3	Krause, M.V. and Hunesher, M.A. (2013) Food, Nutrition and Diet Therapy, 14th Edition, W.B. Saunders Company, Philadelphia, London.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	study.com/…/basic-principles-of-nutrition.html
2	ocw.jhsph.edu/index.cfm/go/viewCourse/course/..
3	www.britannica.com/science/human-nutrition
4	https://youtu.be/ljbBjlw0Xis
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	M	M	M	S	M	S	S	M
CO3	S	S	S	S	M	S	S	S	S	M
CO3	S	S	S	S	M	S	S	S	S	S
CO4	S	S	S	S	M	S	S	S	S	S
CO5	S	S	S	S	M	S	S	S	S	S

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

SEMESTER III

Course code	**33A**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core – V		**NUTRITION IN HEALTH**	**75 hrs**			**4**
Pre-requisite			**Syllabus Version**		**2025-26**	

Course Objectives:

The main objectives of this course are to:

1. Gain knowledge on the nutritional needs of individuals at different age level.
2. Gain expertise in planning and preparing normal diets.
3. Understand the required dietary allowances of an individual.

Expected Course Outcomes:

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

1	Understand the dietary guidelines in meal planning and acquainted with meal planning for all age groups.	K2
2	Evaluate the nutrition demands in various stages of life cycle.	K5

3	Analyze and explain the physiological changes taking place in pregnancy, lactation and old age.	K4
4	Discuss the impact of socioeconomic, cultural and physiological factors on food habits of school going children.	K1
5	Identify socioeconomic and cultural barriers to meat nutrient needs of adolescence and adults.	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**MEAL PLANNING**	**12hours**

Basic Principles of Meal Planning –Basic Principles and factors to be consider while planning menu for different age groups Recommended allowance-RDA for Indians, basis for requirement, energy allowance for different growth pattern of children, energy allowance for various activities.

Unit:2	**PREGNANCY AND LACTATION**	**16 hours**

Nutritional needs during Pregnancy – Stages of pregnancy Normal growth and weight change, complications, Nutritional requirements, and meal planning Nutrition during Lactation - physiology of lactation, hormonal control and relaxation, nutritional componentsofcolostrumandmaturemilk.Nutritionalrequirementsoflactatingwomen.
Meal planning. Role of IYCF on child health.

Unit:3	**INFANCY, PRESCHOOL AND SCHOOL GOING CHILDREN**	**15hours**

Nutrition during Infancy - Growth and development- advantages of breast feeding, factors to be considered in bottle feeding. Weaning foods. Growth chart, Problems of feeding in normal and premature infants. Nutritional needs of toddlers (1-5 year) and School going children - Nutritional requirements of toddlers.

Unit:4	**NUTRITION DURING ADOLESCENT**	**15 hours**

Factors to be considered while planning meals for going children. Eating problems of children and their management, packed lunch. Nutrition during Adolescence - Physical Growth- changes, Nutritional requirements and problems in adolescence- anemia, obesity, anorexia nervosa and bulimia nervosa.

Unit:5	**NUTRITIONAL NEEDS OF ADULT AND OLD AGE**	**15 hours**

Nutritional needs of adults (men and women) – In relation to occupation, Nutrition in Menopausal women, hormonal changes, Low cost balanced food. Nutrition during Old Age -Physiologicalchangesinageing-psycho-socialandeconomicfactorsaffectingeating behaviour. Nutritional problems of aged and their management.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Webinar on Covid-19 and world Breastfeeding week, Health of pregnant women & Children, eating disorders and childhood obesity
Webinar on WHO Theme Support Breast feeding for healthier Planet on 0408

	Total Lecture hours	**75 hours**

Text Book(s)

1	Manay,S. and Shadaksharaswamy. M (2017) Foods, Facts and Principles, New Age, 2nd Edition, International Pvt Ltd Publishers.
2	Srilakshmi,B. (2016) Dietetics, New Age International Pvt. Ltd.
3	Swaminathan, M. (2015) Food Science, Chemistry and Experimental Foods, Bangalore Publishers, Bangalore.
Reference Books	
1	Vinodhini Reddy, Prahlad Rao, Govmth Sastry and Kashinath (1993) Nutrition Trends in India, NIN, Hyderabad.
2	Shills, E.M. Olson, A.J. and Shike, Lea and Febiger (2001) Modern Nutrition in Health and Diseases, 9th Edition,
3	Chandrasekhar, U. (2002) Food Science and applications in Indian Cookery Phoenix Publishing House, New Delhi
4	Krause, M.V. and Hunesher, M.A. (2013) Food, Nutrition and Diet Therapy, 14th Edition, W.B. Saunders Company, Philadelphia, London.
5	Davidson S Passmore R, Brock JP (1999) Human Nutrition and Dietetics-, 10th Edition, ELBS and Churchill, Livingstone.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	www.four-h.purdue.edu/foods/Nutrition through the...
2	https://main.icmr.nic.in/guidelines
3	https://www.nutrtion.org.uk- pregnancy
4	https://www.who.int- infants nutrition
5	https://youtu.be/ZF4aNuttc3g
6	https://youtu.be?S0_ZipHXW1A
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	S	S	M	S	S	S	S	S
CO3	S	S	S	S	M	S	S	S	S	S
CO3	S	S	S	S	M	S	S	S	S	S
CO4	S	S	S	S	M	S	S	S	S	S
CO5	S	S	S	S	M	S	S	S	S	S

Course code	**33P**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Practical- III		**FAMILY MEAL MANAGEMENT**			**45 hrs**	**2**
Pre-requisite			**Syllabus Version**		**2025-26**	
Course Objectives:						

The main objectives of this course are to:

Menu planning, preparation and nutrient calculation during different stages of life

Expected Course Outcomes:

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

1	Prepare and serve the planned menu	K3
2	Explain the need for including each food group in the menu	K3
3	Determine the nutrient content of the menu per meal and per portion	K5
4	Analyze the menu planning for infants, preschool children, school going children and adolescent	K4
5	Express on the planning and preparing of low, medium, and high cost food items for sedentary, Moderate and heavy worker adults. Plan and justify the planned menu for elderly.	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents: **45 hours**

1. Food groups

2. Planning a menu for a pregnant mother and display prepared items

3. Planning a menu for a lactating mother and display prepared items and calculate nutritive value for the prepared menu.

4. Preparation of low cost supplementary and weaning foods

5. Planning and preparing diet for infants and preschool children

6. Planning and preparing diet for school going children and adolescent girls and boys

7. Planning and preparing diet for low, medium, high income groups and based on sedentary, moderate and heavy workers – Adult (Men and Women).

8. Planning and preparing diet for old age.

Course code	3ZA	TITLE OF THE COURSE	L	T	P	C
SBS-I		TEXTILE SCIENCE AND BASIC SEWING	45 hrs			3
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to:

1. Gain knowledge on fibre and itsproperties
2. Enable skills in sewingtechniques

Expected Course Outcomes:

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

1	Acquire knowledge about fundamentals of fibre.	K1
2	Understand the basics of fabrication.	K2
3	Apply knowledge on dyeing and printing techniques.	K3
4	Gain knowledge about the basics of sewing techniques.	K2
5	Understand the garment construction process.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	FIBRE	9hours

Fibre – Fibre classification – Natural fibres – vegetable fibres – cotton and jute, animal fibres- wool and silk, mineral fibres- Asbestores.

Unit:2	FABRICATION	9 hours

Fabrication methods – Woven fabrics- Parts and functions of loom, basic weaves – plain, jwill and satin weaves, knitted fabrics- definition and types –wrap knits and neft knits.

Unit:3	DYING AND PRINTING	9 hours

.Dyeing and printing – dyeing – meaning and classification- direct dyes, reactive dyes, vat dyes, sulphur dyes and natural dyes. Printing - meaning, methods - block printing, roller printing, stencil printing and screen printing.

Unit:4	BASICS OF SEWING	8 hours

Basics of sewing – sewing machine, parts and functions. Basic stitches - functional and Decorativestitches.

Unit:5	SEAMS	8 hours

Seams – types, plain, flat feel, slot, welt, piped and flapped. Fullness- pleats and gathers.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on Impact of Covid-19 on the Indian and International Home Textile Markets		
	Total Lecture hours	**45hours**

Text Book(s)	
1	Deepali Rastogi and Sheetal Chopra (2017) Textils Science, Direct Black swan private lte, Hydrabad.
2	CorbmanB.P and Potter.M.D. (1983) Textiles fiber to fabric, , International Edition, McGraw-hill book Co, New York.
3	Chakarborty, J.N. (2010) Fundamentals and practices in colouration of Textiles, Wood head publishing India, pvt. Ltd. New Delhi.
Reference Books	
1	E.P.G. Gohl and L.D. vilensky, Textile Science, 1983, 2nd Ed., Publishers, New Delhi.
2	Spencer, D.J. (2005) Knitting Technology, : A comprehensive text book and practical guide, 4th Edition, Wood head, Cambridge.
3	W.D. Klein , A Practical Guide to Ring Spinning Textile Institute, Manchester.
4	Mark and Robinson, Principles of weaving, Textile institute Manchester
5	N.N. Banner.J.I, Mechanism of Weaving, Vol – I and II, Textile Institute
6	Joseph J Pretal, Fabric Science, 1990, 5thedition , Fairchild Publications Newyork.
7	Practical Clothing Construction – Part I and II, Mary Mathews, Cosmic Press, Chennai (1986)
8	Sewing and Knitting – A Readers Digest, step- by – step guide, Readers Digest Pvt Ltd, Australia.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://www.hindawi.com
2	Natural dyes- nptelhrd
3	Introduction to textile materials and different types of seams- Vidya-mitra
4	https://youtu.be/w2W6XYYPFao
Course Designed By: Dr.G.Suba	

APPAREL DESIGNING AND TEXTILE SCIENCE PRACTICAL(No practical exam)

1. Types of embroidery and surface ornamentation

   - Hand embroidery
   - Machine embroidery
   - Applique (machine / hand)
   - Bead Work
   - Mirror work –Shapes (Round, square, diamond)
   - Fixing the stones.

2. Planning and preparation of colour charts
3. Different types of dying
4. Different types of fullness
5. Identification of fibres
6. Flower arrangement

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	M	M	M	M	M	M	M	M
CO3	S	S	M	M	M	M	M	M	M	M
CO3	S	S	S	S	S	M	S	M	M	S
CO4	S	S	M	M	M	M	M	M	M	M
CO5	S	S	M	S	M	M	M	M	M	M

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

SEMESTER - IV

Course code	43A	TITLE OF THE COURSE	L	T	P	C
Core –VI		CLINICAL NUTRITION AND DIETETICS	60 hrs			4
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to:

1. Obtain knowledge on role of diet in disease conditions.
2. Gain experience in planning, preparing and serving therapeutic diet.

Expected Course Outcomes:

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

1	Gain knowledge about principles of diets therapy and different therapeutic diets.	K2
2	Develop aptitude for taking up dietetics as a profession.	K3
3	Understand the pathology of diseases and apply nutritional principles to discuss dietary management.	K3
4	Gain knowledge on the ethiological factor and treatment and dietary modification of obesity, underweight, disease of liver and gall bladder.	K2
5	Learn about the causes, types, biochemical changes, glycemic index of diabetes and disease of kidney.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	OBJECTIVES OF DIET THERAPY	10 hours

Objectives of diet therapy - Role of a dietician. Principles of diet preparation and counseling.
Routine diet in the hospitals –, liquid ,semi liquid, light , soft diet, bland diet and regular diet
Different types of Feeding - Basic concepts of oral feeding, tube feeding,
IV feeding, gastrostomy feeding.
Diet in febrile conditions - Short duration -Typhoid, Long duration- Tuberculosis.

Unit:2	THERAPEUTIC DIETS	11hours

Therapeutic diets for the following disorders- Under weight - definition, etiology, treatment
Obesity - definition, etiology, treatment. Diseases of the gastro intestinal tract- ulcer, constipation and diarrhoea. Diverticular Diseases, Crohn's Disease and Ulcerative Colitis

Unit:3	DISEASE OF LIVER.GALL BLADDER AND HEART	12hours

Diseases of the liver and gall bladder (risk factors and diet therapy) jaundice, hepatitis, cirrhosis,fattyliverandDietTherapy.
Diseasesofthecardiovascularsystem(riskfactorsand diet therapy), atherosclerosis, arteriosclerosis, hypertension and congestive heart failure.

Unit:4	**DIABETES MELLITUS AND RENAL DISEASES**	**12hours**

Diabetes mellitus – Types, causes, symptoms, bio-chemical changes, insulin, hypo-glycemicdrugs, types only, food exchange list, dietary management

Diseases of the kidney and urinary tract - Acute and chronic nephritis, Nephrotic syndrome, Renal failure, Urinarycalculi Causes and dietary treatment of kidney diseases and dialysis.

Unit:5	**DIET IN ALLERGY, FEBRILE CODITIONS, STRESS & CANCER AND AIDS**	**13 hours**

Diet in Allergy - Definition, classification, common food allergy, test of allergy, diet therapy.

Metabolic stress and cancer - Metabolic and clinical aberrations, diagnosis, complications, treatment, MNT and dietary counseling in Metabolic Stress -Surgery, Burns, Sepsis and Trauma Critical care, Cancer- General and Specific cancers, Effect of Cancer therapy onMNT, Diet in AIDS.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Nutritional Management Of Pediatric Crohn's Disease

	Total Lecture hours	**60 hours**

Text Book(s)

1	Srilakshmi, B (2002) Dietetics, IVth Edition. New Age International (P) Limited, Publishers, New Delhi
2	Joshi, S.J. (2002) Nutrition and dietetics, Tata Mc Graw- Hill publishing company limited, New Delhi.
3	Srilakshmi (2017) Nutrition science, New age international (P) limited, New Delhi.

Reference Books

1	Krause, M.V. and Hunesher, M.A. (2013) Food, Nutrition and Diet Therapy, 14th Edition, W.B. Saunders Company, Philadelphia, London.
2	Davidson S Passmore R, Brock JP (1999) Human Nutrition and Dietetics-, 10th Edition, ELBS and Churchill, Livingstone.
3	ICMR (2010) Nutrient Requirements and recommended dietary allowances for Indians.
4	Antia FP (1987) Clinical Dietetics and Nutriton, Oxford University Press, New Delhi
5	Sue rod Williams, Nutrition and diet Therapy, Times Mirror Mosby College publishing,Boston, 1989.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://www.rdehospital.nhs.uk/docs/trust/foi/foi_responses/2015/december/Enteral_feeding_guideline~version_Jan_201411.pdf
2	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5038894/
3	https://www.kidney.org/sites/default/files/11-50-0114_docsnutrikidfail_stage1-4.pdf

4	http://youtu.be/GBKu3_8Rkcw
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	S	S	M	S	S	S	S	S
CO3	S	S	S	S	M	S	S	S	S	S
CO3	S	S	S	S	M	S	S	S	S	S
CO4	S	S	S	S	M	S	S	S	S	S
CO5	S	S	S	S	M	S	S	S	S	S

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

Course code	**43P**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Practical: IV		**DIETETICS PRACTICAL**			**45hrs**	**2**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

Apply principles of diet therapy in planning, preparation and nutrient calculation of hospital diets, therapeutic diets for various diseases like disease of liver and gall bladder, cardiovascular system, kidney and diabetes mellitus.

Expected Course Outcomes:

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

1	Plan, prepare and serve different therapeutic diets.	K3
2	Assess the nutritive value of the diets.	K5
3	Discuss on the foods to be included and avoided in various disease conditions with reason	K4
4	Select specific foods for the management for obesity and underweight	K4
5	Identify the relationship between diet and cardiovascular disease	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents		--hours

1. Weights and measures of foods.
2. Menu planning, prescription and preparation of

a. Normal diet, regular diet, light diet, soft diet, full liquid diet, clear liquid diet and bland diet.
b. Diet for obesity
c. Diet for under weight
d. Diet for anaemia
e. Diet for diseases of the GI tract – peptic ulcer, diarrhoea, constipation.
f. Diet for Cardio-vascular diseases- atherosclerosis ,hypertension.
g. Diet for diseases of the kidney – nephritic and nephrotic syndrome.
Diet before and after dialysis.
h. Diet for diabetes – Type I and II, Diabetes with CVD disease.
i. Diet in febrile conditions- Short duration – typhoid; long duration –tuberculosis
j. Diet in liver diseases – Viral hepatitis and cirrhosis

3. Observation of a dietary department in a hospital.

4. Preparation of power point presentations on diet and disease

Course code	4ZB	TITLE OF THE COURSE	L	T	P	C
SBS: II		INTERIOR DESIGN	30hrs			2
Pre-requisite			Syllabus Version			2025 -26

Course Objectives:

The main objectives of this course are to:

Gain understanding of the basic art principles.
Develop ability to apply the above knowledge to create interesting and beautiful Interiors for varied purposes.

Expected Course Outcomes:

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

1	Develop skills in using the elements and principles of art and design.	K3
2	Apply the theoretical knowledge in colour and light to practical situation in interior design.	K3
3	Gain knowledge in selection, use and care of furniture, furnishing material and accessories.	K2
4	Identify and evaluate the technical aspects of interior design.	K5

5	Demonstrate basic flower arrangement techniques and styles.	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**Introduction to Interior Design**	**8hours**

Concept of Interior Design-Meaning of Interior Design and Interior Decoration.
Design – Definition, Meaning, Purpose. Types- structural and decorative design, elements and principles of design.

Unit:2	**Colour**	**8hours**

Concept of colour. Dimensions of colour – Hue, value and intensity, Colour system- prang and Munsell colour system, Colour harmonies – related and contrasting colourhormonies, Application of elements and principles of colour n interiors.

Unit:3	**Lighting**	**9 hours**

Importance of lighting. Sources, Types, Glare- its types, causes and prevention.
Accessories-Meaning, Types-functional, decorative, both functional and decorative.
Lighting accessories- fixtures, Lighting for areas and specific activities. Picture mounting, wall hangings

Unit:4	**Furniture**	**9hours**

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.

Unit:5	**Use of Furniture and Flower Arrangement**	**9 hours**

Selection, Use and Care of furnishing materials. draperies, curtains,draperies, carpetsrugs.
Use of flowers and containers for flower arrangement- importance, basic materials needed, basic shapes, types and styles in flower arrangement - Japanese arrangements – IKEBANA

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Webinar on Interior Space and Furniture design

	Total Lecture hours	**45 hours**

Text Book(s)

1	Chaudhri. S.N. (2005) Interior Design, Aavishkar publication, Jaipur, India.
2	Mullik, P. (2007) A text Book of Home Science, Kalyani Publications, New Delhi.

Reference Books

1	The making of interiors – An introduction- Allen Tate- Harper and Row Publishers, New York, 1987.
2	Interior Design and Decoration, Fourth Edition, Sherrill Whiton- Prentice Hall, 1974.
3	Interior lighting for Designers, Third edition – Gary Gordon andJamco L. Nuckolls – John Wiley and Sons, New York, 1995.
4	The Encyclopaedia of Decorative Styles – William Hardy and Steve Adams – New Burlington books, London, 1988.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	KEVINRIGDONElementsandPrincipalsof Design.pdf

2	https://www.researchgate.net/publication/290591878 - Factors influential in Consumers' Furniture selection and their Preferences regarding Product Features
3	https://www.researchgate.net/publication/320800578 _Interior_Finishing_Materials
4	https://www.researchgate.net/publication/315835473 _Interior_Decoration
5	http://anj.co.in/idea-at-anj/ importance-of-lighting
6	https://youtu.be/yrhbTDoi1KY
Course Designed By: Dr.G.Suba	

Observation Visit: A visit to hotel or industry for interior design training.

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	M	M	M	S	S	M	S	M	M	M
CO3	M	M	S	S	S	M	S	M	M	S
CO3	M	M	M	S	S	M	S	M	M	M
CO4	M	M	S	S	S	M	S	M	M	S
CO5	M	M	M	S	M	S	S	M	M	M

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

SEMESTER-V

Course code	**53A**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Paper: VII		**FOOD MICROBIOLOGY**	**90 hrs**			**4**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

1. Provide knowledge of microorganisms associated with food spoilage and food borne diseases
2. Determine the presence, growth and survival of microorganism in food

Expected Course Outcomes:

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

1	Understand different terminology related to microorganism	K2
2	Understand the different factors responsible for the microbial growth	K2
3	Analyze and describe the characteristics of important pathogens and spoilage in food	K4
4	Acquire, discover and understand the theories and principles of food microbiology	K2
5	Apply the importance of personal hygiene for food and food service personnel	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	Different Terminology, Food Spoilage & Prevention	15 hours
Different terminology – Heterotrophic nutrition, autotrophic nutrition, saprophytic, holozoic, host, culture, parasite. General principles underlying spoilage-causes for spoilage,factorsaffectingkindsandnumberofmicroorganismsinfood.Preventionand control of spoilage. Food poisoning, and food borne diseases.		
Unit:2	**Morphology of Bacteria, Mold, Yeast and Algae**	**19hours**
Bacteria and Mold- Nomenclature, genera of bacteria and mold, morphology, growth curve, importance in food microbiology. Observation of motility of bacteria in milk, demonstrationofmoldgrowthinbread.Yeast-Morphology,classification,importanceof yeast in food. Observation of yeast cells. Algae – Morphology and importance of algae.		
Unit:3	**Contamination of Cereals , Fruits and Vegetables and Fleshy Foods**	**18 hours**
Contamination and kinds of micro organisms causing spoilage of cereal products grains, flour, baked products and cake. Fruits and vegetables and their products- fruit juice,pickles. Fleshy foods - meats, poultry and fish.		
Unit:4	**Contamination of Egg, Milk & Milk Product, Beverages, Fats and Oils**	**17hours**
Contamination and kinds of micro organisms causing spoilage of eggs, milk and milk products- cream, milk frozen desserts and butter. Fats and oils, bottled beverages, spices and condiments. Observation or demonstration of microbial count in bottled beverages and water.		
Unit:5	**Microorganisms in Water**	**19 hours**
Micro-organisms in Water - sources, bacteriological examinations, total count, test of E.Coli, purification of water, water borne diseases. Micro organisms in sewage and sewage disposal Destruction of bacteria- sterilization, physical agents, light, desiccators, electricity, heat and chemical agents. Importance of sanitation and hygiene in relation with spreading of microorganisms. AI tools used in Food Microbiology.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on Microbiology testing for food products and their permissible limits		
	Total Lecture hours	**90 hours**

Text Book(s)

1	Frazier, W.C. (2014) Food Microbiology, Tata McGraw Hills Publishing Company Limited, Chennai.
2	Adams, MR and Moss, MO (2015) Food Microbiology, New Age International (P) Ltd., New Delhi.

Reference Books

1	Jay M.J (2015) Modern Food Microbiology, Fourth Edition, CBS Publishers and Distributors, New Delhi.
2	Sullia SB and S Shantharam- (1998) “General Microbiology” Oxford and IBH Publishing Ltd.

3	Ramesh, K.V (2012) Food Microbiology, MJP Publishers, Chennai.
4	Tamine, A (2015) Probiotic Dairy Products, Blackwell Publishing, USA
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://swayam.gov.in/nd1_noc19_ago7
2	http://nptel.iitm.ac.in
3	https://youtu.be/x8rkY-7B-8c
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	M	S	S	S	M	S	S	M	M	S
CO3	M	M	S	S	M	M	S	M	M	S
CO3	M	M	M	S	M	M	S	M	M	S
CO4	M	M	S	S	M	S	S	M	M	S
CO5	M	S	S	S	M	S	S	M	M	S

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

Course code	**53B**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Paper: VIII		**POSTHARVEST TECHNOLOGY**	**75hrs**			**4**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

Gain knowledge about postharvest technology which enables storage of food grains and explain the causes of postharvest food losses and the preventive measures

Expected Course Outcomes:

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

1	Understand the safety control measures in handling foods from harvest to consumption and agencies of control.	K2
2	Understand the types of food losses and the agents causing food loss.	K2
3	Gain knowledge about food processing methods.	K1
4	Apply physical and chemical methods to control spoilage agents.	K3
5	Analyze the importance of storage of grains.	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION TO POST HARVEST TECHNOLOGY	16hours
Introduction to Post Harvest Technology - Definition, importance and problem encountered. Buffer stock – definition, quantity of stores available. Governmental measures to augment food production- need for food conservation. Food loss in the post harvest period, extent of losses, loss in the field, threshing yard, storage,marketing loss. Role of Post Harvest Technology in combating malnutrition in India.		
Unit:2	**AGENTS CAUSING FOOD LOSSES**	**16hours**
Agents Causing Food Losses - Physical agents, (moisture, temperature), Chemical losses, biological losses- insects- insects attacking food grains - types and life cycle, damage caused to food grains and detection of insect infestation, rats and rodents, birds, animals- Nature of damage, identification.		
Unit:3	**CONTROL OF SPOILAGE AGENTS**	**16hours**
. Control of Spoilage Agents - Importance and methods of sanitary handling, physical, chemical, biological and other means of control of insects, rats and rodents and birds. Insect control methods- Physical methods and chemical methods including fumigation techniques. Handling and Transport of Food Commodities - Traditional andimproved methods. Nutrient losses in spoiled grains and National program to save grains.		
Unit:4	**STORAGES OF GRAINS AND AGENCIES CONTROLLING FOOD LOSSES**	**14 hours**
Storage of Grains - Importance of storage structures- requirements, traditional and modern and underground and above ground storage and their improvements, FCI godowns. PDS. Agencies Controlling Food Losses - Role of SGC, FCI, CWC, SWC, IGSI in controlling food losses.		
Unit:5	**POSTHARVEST TECHNOLOGY OF FRUITS AND VEGETABLES**	**11 hours**
Importance of PHT for fruits and vegetables- objectives, post harvest injuries, transport , storage, special treatments to improve shelf life.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on Post harvest food loss and waste monitoring protocol		
	Total Lecture hours	**75hours**
Related Experiences: 1. Visit toFCI 2. Visit to Processing Mill (Cereal andPulse)		
Text Book(s)		
1	Chakravarthi, A., Mujumdar, A.S., Raghavan, G.S.V and ramasami, H. S. (2003) Handbook of Post Harvest Technology, Marcel Dekker Inc., New York.	

2	Handling and storage of food grains in tropical and subtropical areas- D W Hall, FAD, Rome, 1970.
Reference Books	
1	Handling and storage of food grains- S V Pingale ICAR, New Delhi, 1976.
2	Food Technology, Prescott and Proctor.B.B.Mc Graw Hill Book Co., New York, 1937.
3	Gordon G Birth, Food science, Pub in New York. 6. Robins M Philip Convenience food- Recent Technology 1976.
4	Technology of cereals by NL Kent and JAD Evers.
5	Food protection technology by Charles W., Felix Havis Pub.1987.
6	John A Troller, 1983, Sanitation in food processing, Academic press.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://biologyreader.com
2	www.fao.org
3	http://agritech.tnau.ac.in-agriculturalproducts
4	https://youtu.be/3GsSx9LCIZ4
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	M	S	S	S	M	S	S	M	M	S
CO3	M	M	S	S	M	S	S	M	M	S
CO3	S	M	S	S	M	S	S	M	M	S
CO4	M	M	S	S	M	S	S	M	M	S
CO5	S	M	S	S	M	S	S	M	M	S

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

Course code	**53C**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Paper: IX		**COMMUNITY NUTRITION**	**75hrs**			**4**
Pre-requisite			**Syllabus Version**	**2025 -26**		

Course Objectives:

The main objectives of this course are to:

Understand the Malnutrition problems and prevalence in India. Gain knowledge on the National effort in combating malnutrition. Appreciate the National and International contributor towards National improvement in alleviating nutrition problems.

Expected Course Outcomes:

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

1	Understand the factors influencing health of a community	K2
2	Analyze nutritional problems, policies, programs and agencies involved in combating malnutrition	K4
3	Organizing nutrition education programs for the community	K3
4	Evaluate nutritional status of the community	K5
5	Outline the various agencies in combating malnutrition	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**Introduction to Public Nutrition**	**15hours**

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 problem and deficiency disorders- Protein energy malnutrition, Obesity, Nutritional anemia, Vitamin A deficiency, Iodine deficiency disorders, Fluorosis, dental health and dental care.

Unit:2	**Assessment of nutritional Status**	**12 hours**

Assessment of nutritional status- Objectives and importance, Methods of assessment: Direct (Clinical signs, nutritional anthropometry, biochemical tests, biophysical tests); Indirect (Diet surveys, vital statistics).

Unit:3	**Nutrition Education and health communication**	**12 hours**

Nutrition education- Objectives, principles, scope and methods of nutrition and health education and promotion.

Unit:4	**Nutrition Policy and Programs**	**17 hours**

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.

Unit:5	**National and International Agencies**	**17 hours**

National and International agencies in combating malnutrition- International: WHO, FAO, UNICEF; National: FSSAI, ICAR, ICMR, NIN, FNB, CFTRI, and NNMB.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Nutritional Problems and Nutritional Programmes in India, AI tools used in Community Nutrition.

	Total Lecture hours	**75hours**

PRACTICAL (No Examination)

1. Planning of low cost nutritious recipes for infants, preschoolers, pregnant/ lactating mothers for nutrition education.

2. 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
3. Visit to an ongoing nutrition and health promotion program
4. Conducting a survey in a community and planning an appropriate and effective programme for the needed group of the community

Text Book(s)

1	Wadhwa A and Sharma S (2003). Nutrition in the Community- A textbook. Elite Publishing House Pvt. Ltd. New Delhi.
2	Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s BanarasidasBhanot Publishers, Jabalpur, India
3	Mahtab, S, Bamji, Kamala Krishnasamy, G.N.V. Brahmam (2015) Text Book of Human Nutrition, Third Edition, Oxford and IBH Publishing Co. P. Ltd., New Delhi.

Reference Books

1	Brahman, G.N.V., Lakshmaiah, A., Rao, M. and Reddy, G.(2005) Methodology on Assessment of Diet and nutritional Status of Community, National Institute of nutrition, Hyderabad.
2	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.
3	Reports of National Family Health Survey, International Institute for Population Science, Mumbai.
4	WHO (2006). Child Growth Standards: Methods and development: height-for-age, weight-for-age, weight-for-length, weight-for-height andbody mass index-for-age (http://www.who.int/childgrowth/standards/en/).

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://www.ncbi.nlm.nih.gov-nutritionalassessment
2	https://www.medicalnewstoday.com-anemia
3	https://www.nhp.gov.in/national-vitamin-a-prophylaxis-program-pg
4	https://www.dshs.wa.gov/altsa/program-services /nutrition-education
5	https://youtu.be/KySquUSrBhM

Course Modified By: Dr. G.Suba

Mapping with Programme Outcomes

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

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

Course code	53P	TITLE OF THE COURSE	L	T	P	C
Core Practical: V		NUTRITION PRACTICAL			45hrs	2
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to: Determine the nutrient content present in foods

Expected Course Outcomes:

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

1	Understand the principles and procedure of determination of nutrients	K2
2	Gain knowledge about analysis of nutrients	K4
3	Develop skills in analyzing the nutrient content in various food items	K4
4	Evaluate the standard experimental techniques.	K5
5	Understand basic principles of food analytical procedures.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents: **45 hours**

1. Determination of Gluten content inwheat.
2. Estimation of Acidity in tomatojuice.
3. Estimation of Fibre content in any onefood.
4. Determination of acid number ofoils.
5. Determination of iodine number ofoils.
6. Estimation of ash content in any onefood.
7. Determination of Calcium content inmilk.
8. Estimation of Iron content in any onefood.
9. Estimation of Phosphorous content in any onefood.
10. Demonstration of Protein content infoods.
11. Estimation of Ascorbic Acid content in Citrus fruitjuice.

Course code	53Q	TITLE OF THE COURSE	L	T	P	C
Core Practical : VI		COMPUTERISED DATABASE MANAGEMENT IN HOME SCIENCE			30 hrs	2
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to:

Gain knowledge on computer operations and applications to use existing health and nutrition based software.

Expected Course Outcomes:

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

1	Understand the coding, entry of data in MS office.	K2
2	Gain knowledge about preparation of various types of AV aids	K2
3	Develop skills in calculation of mean, median, mode, standard deviation, correlation.	K5
4	Develop skills in graphical presentation of data using MS Office	K5
5	Develop skills in preparation of models for interior design	K3

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents:		30 hours

1. Database management of Anthropometric indices (Height, Weight, BMI)
2. Database management of Biochemical indices (Haemoglobin, Blood Pressure)
3. Preparation of Visual Aids for a Health Education programme.
4. Preparation of Interior Designing models.
5. Calculation of Mean.
6. Calculation of Median.
7. Calculation of Mode.
8. Calculation of Standard Deviation.
9. Determination of Correlation between the given set of data.
10. Graphical presentation of Data.

SEMESTER- VI

Course code	63A	TITLE OF THE COURSE	L	T	P	C
Core Paper: X		FOOD PROCESSING AND QUALITY CONTROL	90hrs			4
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to: understand the principles of food processing, controlling in food service institution. Develop skills in meal planning to catering institution

Expected Course Outcomes:

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

1	Understand the principles of processing different food items	K2
2	Develop skills in preparing new processed foods.	K3
3	Evaluate the principles of various food processing methods	K5
4	Apply the principles and techniques of effective preparation of processed foods	K3
5	Analyze the effect of food processing on quality of food	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION	19hours

Cereal Processing- Rice- pre processing, parboiling, milling, by products of rice milling;
Wheat- preprocessing, milling, by products of wheat milling; malting, manufacture of breakfast cereals, extruded products, puffed and flaked cereals. Processing of millets – finger millet and jowar.
Pulse/legume Processing – milling and germination.

Unit:2		20 hours

Fruits and vegetables Processing–pre processing, drying and dehydration, juices extraction, concentrates preparation, Minimal processing and Hurdle technology.
Sugar – Manufacturing of sugar from sugarcane and palm, sugar cubes and powdered sugar.
Spices Technology - Extraction of essential oils - oleoresin and colors.
AI tools used in food processing industry.
Oil Seeds Processing– pre processing, milling, extraction of oil and it's processing, production of meal concentrates and isolates, specialty fats from non-traditional oilseeds, modification of fat, fat substitutes and replacers and fat mimetics.

Unit:3	PROCESSING OF ANIMAL FOODS	16 hours

Milk Processing –pre processing, Separation, standardization, pasteurization, homogenization, sterilization, evaporation, drying, condensation, membrane fractionation, milk products -butter, ghee, cream, paneer, yoghurt and cheese.
Egg Processing – manufacturing of egg powder.
Fleshy food Processing – pre processing, canning, dehydro freezing, dehydration of meat, poultry and fish, smoking and curing of meat, fish oil extraction

Unit:4	PRINCIPLES OF QUALITY CONTROL	16 hours

Principles of Quality control of food –Raw material, processed and finished product inspection. Leavening agents - classification, uses and optimum levels. Food additives - Preservatives, colouring, flavouring, sequestering agents, emulsifiers and antioxidants.

Unit:5	METHODS OF DETERMINING QUALITY	17 hours
Methods for determining quality - Subjective and objective methods. Sensory assessment of food quality-appearance, colour, flavour, texture and taste, different methods of sensory analysis, preparation of score card, panel criteria, sensory evaluation room		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on career opportunities in department of Food Processing		
	Total Lecture hours	**90hours**

Text Book(s)

1	Rick Parkar, Introduction to Food Science, Library of Congress Cataloging-in- Publication Data, First Edition, 2002.
2	Suman Bhatti & Uma Varma, Fruit & Vegetable Processing Organizations and Institutions, CBS Publishers and Distributors, New Delhi, Reprint 2003.
3	Thoms Richardson and Johan W. Finley, Chemical Changes in Food during Processing, CBS Publishers and Distributors, New Delhi, 2003.
4	Yeshajahu Pomeranz Clifton E.Meloan, Food Analysis theory and Practice, CBS Publishers and Distributors, New Delhi Third Edition, 2004.
5	.Miridula Mirajkar, Sreelatamenon, Food Science and Processing Technology, Volume-II Commercial Processing and Packaging, Kanishka Publishers & Distributors, New Delhi, 2005.

Reference Books

1	Chandrasekhar, U (2012) Food Science and Applications in Indian Cookery, Phoenix Publishing House Private Ltd., New Delhi
2	Fellow, P., (2010) Food Processing Technology – Principles and Practices, 3rd Edition, CRC Press Woodland Publishers, England.
3	Sommers, C.H. and Xveteng Fan (2016) Food Irradiation Research and Technology, Blackwell Publishing.
4	Chandrasekhar, U (2012) Food Science and Applications in Indian Cookery, Phoenix Publishing House Private Ltd., New Delhi

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://edblog.hkedcity.netpdf- food preservation and method
2	www.betterhealth.vic.gov.au- preservation by food additives
3	https://www.eufic.org/en/whats- in- food/article

Course Modified By: Dr. G.Suba

Mapping with Programme Outcomes

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

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

Course code	63B	TITLE OF THE COURSE	L	T	P	C
Core Paper: XI		FOOD PRESERVATION	90 Hrs			4
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to: learn different food processing and preservation techniques.

Expected Course Outcomes:

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

1	Understand the principles of various methods of food preservation	K2
2	Knowledge about some ready to eat food items	K2
3	Explain the principles of different methods of storage and processing	K3
4	Evaluate the novel technologies in food preservation	K5
5	Utilize the possible, recent preservation methods in the food processing sector.	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION	20hours

Food preservation - Definition, General Principles and Methods of Food Preservation- Classification of foods for processing. Preservation by addition of sugar- General principles and methods of preparation of jams, jellies and Marmalades, theory of gel formation. Preparation of preserves, squashes and syrups. Preservation by addition of salt- Pickling.PreparationofIndianPickles,Sauerkraut.Statusandscopeoffoodprocessing industry in India in developing Entrepreneur.

Unit:2	PRESERVATION BY USING HIGH AND LOW TEMPERATURE	20hours

Preservation by Use of High Temperature - Pasteurization, Sterilization and their types. Thermal death curve/Thermal Death time, methods of heat transfer. Canning - steps, types of cans, advantages, disadvantages. Bottling - steps, advantages, disadvantages. Food dehydration - concept of dehydration and sun drying. Types of driers their advantages and disadvantages. Principle of dehydration-heat and mass transfer.

Preservation by use of Low Temperature, Types - Common types of cold storage, refrigeration- requirement of refrigerated storage, characteristic of refrigerant, refrigeration during transport, defects in cold storage. Freezing - Principles and methods of freezing, Freeze drying. Advantages and disadvantages.

Unit:3	PRESERVATION WITH CHEMICALS, RADIATION, IMFs	17 hours
Preservation with chemicals a. Mechanism of microbial inhibition, mechanism and action of preservatives in processed food (Inorganic and Organic preservatives, Antibiotics, Mold inhibitors, Antioxidants and its role). Radiation of Foods - Sources of radiation, units of radiation , Preservation of Semi moist foods. Intermediate moisture foods and their role in food industry.		
Unit:4	STANDARDIZATION SYSTEMS FOE QUALITY CONTROL	**17 hours**
Standardization systems for quality control of foods-National and International standardization system, Food grades, Food laws-compulsory and voluntary standards. Food adulteration - Common adulterants in foods and tests to detect common adulterants.		
Unit:5	FOOD SAFETY, RISKS AND HAZARDS	**14 hours**
Food safety, Risks and hazards: Food related hazards, Microbial consideration in food safety, HACCP-principles and structured approach. Chemical hazards associated with foods. FSSAI		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on Food preservation		
	Total Lecture hours	**90hours**

Text Book(s)

1	Sivasankar, B. (2013) Food Processing and preservation 2 nd edition, prentice Hall, Pvt, Ltd.
2	Srilakshmi, B. (2016) 6th Edition, Food Science, New Age International Private Ltd., New Delhi, 2002.
3	Swaminathan, M. (2014) Food Science, Chemistry and Experimental Foods, Bappco Publishers, Bangalore.
4	Adams, M.R. and Moss, M.O. (2015) Food Microbiology, New Age International (P) Ltd., New Delhi.

Reference Books

1	Chandrasekhar, U (2012) Food Science and Applications in Indian Cookery, Phoenix Publishing House Private Ltd., New Delhi
2	Fellow, P., (2010) Food Processing Technology – Principles and Practices, 3rd Edition, CRC Press Woodland Publishers, England.
3	Sommers, C.H. and Xveteng Fan (2016) Food Irradiation Research and Technology, Blackwell Publishing.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://edblog.hkedcity.netpdf- food preservation and method
2	www.betterhealth.vic.gov.au- preservation by food additives
3	https://www.eufic.org/en/whats- in- food/article

4	https://youtu.be/-F311eYU5QI
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	M	M	S	M	S	S	M	M	S
CO3	S	M	S	S	M	S	S	M	M	S
CO3	S	M	M	S	M	S	S	M	M	S
CO4	S	M	M	S	S	S	S	M	M	S
CO5	S	M	M	S	M	S	S	M	M	S

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

Course code	**63P**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Core Practical: VII		**FOOD PRESERVATION AND QUALITY CONTROL**			**45hrs**	**3**
Pre-requisite			**Syllabus Version**		**2025-26**	

Course Objectives:

The main objectives of this course are to: Includes a variety of techniques that allow food to be kept for extended periods of time and avoiding the growth of unwanted microorganisms

Expected Course Outcomes:

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

1	Apply the principles of various methods of food preservation	K3
2	Increase the shelf-life of food products	K4
3	To make it attractive for the consumers.	K3
4	Analyze food adulteration test for common foods	K4
5	Evaluate the prepared products by using sensory analysis	K5

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Contents: **45hours**

1. Methods of Food Preservation using salt andsugar.
2. Drying andDehydration
3. Food Adulteration tests for some commonfoods.
4. Preservation and bottling of fruit and vegetableproducts.
5. Preservation by usingchemicals
6. Sensory analysis of preserved and processedfoods
7. preparation of health mix and bars using vegetables and fruits

Course code	6ZD	TITLE OF THE COURSE	L	T	P	C
SBS:IV		HEALTH,FITNESS AND SPORTS NUTRITION	30 hrs			2
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to:

Understand the importance of health for quality living and acquire knowledge about the role of food and exercise for sound health

Expected Course Outcomes:

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

1	Understand the importance of health for quality living.	K2
2	Acquire knowledge about the role of food and exercise for sound health	K2
3	Analyze the importance of nutrition for sports personnel	K4
4	Evaluate the effect of exercise on health	K5
5	Discuss the techniques used in weight management	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION	7 hours

Health – Definition, concept/ meaning of health and factors affecting health. Health hazards – environment, population explosion, explosives, adulteration, dampness and measures to prevent health hazard. Health insurance schemes (ESI, Mediclaim)

Unit:2	FUNCTIONAL FOODS AND NEUTRACEUTICALS	5 hours

Meaning, types, active principles and their functions.
Role of functional foods and neutraceuticals in human health,

Unit:3	PHYSICAL EDUCATION	6 hours

Physical education – Meaning and scope, role of gymnastic exercises and yoga in improving health. Difference between yoga and other gymnastic exercises. Health club equipments and activities – Tread mill, hammer strength, steppers, cycles, body sculpting, kick boxing, Reebok ridge rocker, hanging, hand grips, swing, climbing and lifting weight.

Unit:4	SPORTS NUTRITION AND WEIGHT MANAGEMENT	5 hours

Sports nutrition –Introduction to kinanthropometry, Requirements during training and

performance for athletes and endurance games, aerobic and anaerobic exercise, fuel for exercise, glycogen load. Exercise to maintain fitness. Nutrition for special population: child athlete, ageing athlete, and athletic diabetes, vegetarian and disabled athlete Weight Management - Ideal body weight, weight loss – making weight and rapid weight loss strategies,.		
Unit:5	**NUTRITION IN SPECIAL NEEDS**	**5 hours**
Physiological changes and nutritional requirements in army, navy, air and space travel personnel.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar for Sports, Nutrition and Immunity: A sustainable lifestyle		
	Total Lecture hours	**30 hours**
Practicals:(No Examination) 1. Food intake during cultural festivals. 2. Visit to a health club / fitness centre 3. Assessment of fitness – simple test, Stepper technique 4. Guest lecture on health insurance schemes. 5. Observation of / Compulsory yoga and exercise. 6. planning and preparing a typical food item for arm, navy, air travel or space travel personnel		

Text Book(s)	
1	Werner W. K Hoejer (1989), Life time Physical Fitness and Wellness, Morton Publishing Company, Colorado.
2	Mishra, S. C (2005) Physiology in Sports. Sports Publication, New Delhi
3	Greenberg, S. J and Pargman, D (1989) Physical Fitness – A Wellness Approach Prentice Hall International (UK) Limited, London
4	Swaminathan M. (2008) Essentials of Food and Nutrition Bangalore Printing Publishing Co.
Reference Books	
1	McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch (1996)Exercise Nutrition: Energy Nutrition and Human Performance. William & Wilkin PublishingUSA.
2	Mahan, K and Stump, E. S (1996) Krause Food and Nutrition and Diet Therapy W.B Saunders Company, USA.
3	McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch (2010) Essentials of Exercise Physiology, 7th edition. William & Wilkin Publishing USA.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://www.sciencedaily.com
2	https://www.nutritionist-resource.org

3	https://youtu.be/NqJQ7iCepOg
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	S	S	M	S	S	M	M	S
CO3	S	S	S	S	M	S	S	M	M	S
CO3	S	S	S	S	M	S	S	M	M	S
CO4	S	S	S	S	M	S	S	M	M	S
CO5	S	S	S	S	M	S	S	M	M	S

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

Course code	**5EA**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Elective Paper: I A		**BAKERY AND ENTREPRENEURSHIP DEVELOPMENT**	**75 hrs**			**3**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to: Understand the Role of automation, RPA, science and technology in bakery industry. Develop skills in planning and maintenance of a bakery institution.

Expected Course Outcomes:

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

1	Understand the use of robotic process automation in bakery industry	K2
2	Understand the science and technology of baking	K2
3	Understand the role of different ingredients in baking	K2
4	Develop skills in planning and maintenance of a bakery institution	K3
5	Understand the packaging materials used in bakery industry	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**INTRODUCTION TO BAKERY**	**14 hours**

Baking - Definition, Principles of baking, classification of baked foods. Automation in food industry & uniqueness, Tools of Automation in food industry. Baking unit/ plant layout and design of a baking unit sanitation and hygiene.

Unit:2	**BAKING EQUIPMENTS**	**13 hours**

Types of equipments in baking industry, cleaning and sanitizing methods of baking equipments, baking temperature of different products, operation techniques of different baking equipments.

Unit:3	**INGREGIENTS & THEIR ROLE IN BAKING AND DECORATION AND OF BAKED FOODS**	**16hours**

Ingredients and Their Role in Baking - Flour, Yeast, sugar, egg, butter, salt, baking powder, colouring, flavouring agents. List of standard colouring and flavouring agents. Preparation of baked foods - Quick breads, cakes, different types of biscuits, cookies and pastries.
Decoration of baked foods - Icing- Types of Icing used in different bakery product.

Unit:4	**FOOD PRODUCT DEVELOPMENT AND ENTREPRENEURSHIP**	**15 hours**

Designing new products and new food product development (NPD) process, activities , use of traditional recipes and modification, recent developments.
Importance of entrepreneurship and its relevance in carrier growth. Entrepreneur, entrepreneurship and enterprise, concept and development and characteristics of an entrepreneur. Types of enterprises and ownership, employment, self-employment and entrepreneurship.

Unit:5	**PROCESS AUTOMATION IN BAKERY**	**15 hours**

Types of packaging materials used for bakery products, method of Packaging.
Automation in food industry, tools of automation in food industry. Advantages and Disadvantages of Automation in food Industry. Reason for automation process. Robotics in Packaging. AI tools used in bakery.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Taste the future of bakery, Mithai & Namkeen Industry

	Total Lecture hours	**75hours**

PRACTICALS: (To gain knowledge about bakery- No exmination)

1. **Breads**
2. **Cakes**
3. **Biscuits and cookies**
4. **Pastries**
5. **Icing**
6. **New product development**

Text Book(s)

1	Potter M,N. and Hotchkiss, J.H. (1998) Food Science 5th edition, CBS Publications and Distributors, Daryaganji, New Delhi.
2	Dubey, SC, (1979) Basic Baking Science and Craft, Jwalmukhi Job Press, Bangalore

Reference Books

1	Baker‟s Handbook on practical Baking . Wheat Associates, USA, New Delhi.
2	Modern Pastry Chab, Vol.I and II, A VI Publishing Co., Inc., West Port, Connecticut, 1977.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://www.uipath.com/landing/academic-studio-download
2	https://www.uipath.com/rpa/robotic-process-automation
3	https://www.uipath.com/rpa/academy
4	https://youtu.be/Cd3ELHVCJJo

Course Modified By:Ms.K.SubaLatha

Mapping with Programme Outcomes										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	M	M	S	S	S	S	M	M	S
CO3	S	M	M	S	S	S	S	M	M	S
CO3	S	M	M	S	S	S	S	M	M	S
CO4	S	M	S	S	S	S	S	M	M	S
CO5	S	M	S	S	S	S	S	M	M	S

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

Course code	**5EB**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Elective Paper: II B		**FOOD PACKAGING AND LABELLING**	**75 hrs**			**3**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to: Introduce artificial intelligence for food packaging. understand the need for food packaging and recent trends in packaging material

Expected Course Outcomes:

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

1	Understand the need for food packaging	K2
2	Know the recent trends in packaging materials and labeling	K2
3	Learn and gain knowledge on food packaging and applications during Transportation	K3
4	Compile about the different packaging materials	K4
5	Understand the uses of robots in packaging	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	**INTRODUCTION TO FOOD PACKAGING**	**14 hours**

Food packaging - Definition, objectives and functions. classification of packaging- primary, secondary and tertiary packaging.
packaging materials for different foods, characteristics of packaging material.
Food packages – bags, pouches, wrappers, tetra packs- applications.

Unit:2	**FOOD PACKAGING MATERIALS**	**13hours**

Packaging materials - Introduction, purpose, requirements, types of containers.
Modern packaging materials and forms-Glass containers, metal cans, composite containers, aerosolcontainers, rigid plastic packages, semi rigid packaging, flexible packaging.

Unit:3	PACKAGES OF DEHYDRATED PRODUCTS AND AI	16 hours
Packages of dehydrated products Orientation, metallization, co-extrusion of multilayer films, stretch, package forms and techniques. Automation of packaging, Robots in food packaging.		
Unit:4	**MODERN PACKAGING METHODS**	**15 hours**
. Aspectic packaging, retortable containers, modified and controlled atmosphere packaging, skin, strink and cling film packaging, micro-ovenable containers, other package forms and components of plastics.		
Unit:5	**FOOD LABELLING**	**15 hours**
Importance, principles and requirements. Types of Labels – information in labels, guidelines to use labeling. AI tools used in food packaging and labelling.		

Mapping with Programme Outcomes

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

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

Course code	6EA	TITLE OF THE COURSE	L	T	P	C
Elective Paper: II A		**FOOD SERVICE MANAGEMENT AND PHYSICAL FACILITIES**	**90hrs**			**3**
Pre-requisite			**Syllabus Version**	**2025 -26**		

Course Objectives:

The main objectives of this course are to: understand the principles of planning, organizing and controlling in food service institution. Develop skills in meal planning to catering institution

Expected Course Outcomes:

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

1	Understand the principles of planning, organizing and controlling in food service	K2
2	Develop skills in meal planning to catering institutions.	K3
3	Evaluate the principles of sanitation and hygiene	K5
4	Apply the principles and techniques of effective management	K3
5	Analyze the cost control and its important	K4

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION	19hours

Different types of catering institutions and services – Hotel, Motel, Restaurant , Cafieteria and chain hotels.
Classifications of food service institutions according to Function and Method of processing: Conventional systems, Commissary system, fast food service system.
Types of food services: Air, rail sea and space.

Unit:2	ORGANISATION &PERSONNEL MANAGEMENT	20 hours

Organisation - Types and principles, organizational structure for catering institutions. Management - Definition, principles and techniques of effective management, leadership and managerial abilities. Tools of management-organisational chart, work study and work improvement.
Personnel Management - Methods of selection, orientation, training, supervision and motivation of employees, importance of good human relations, legal aspects of catering.

Unit:3	KITCHEN LAYOUT AND EQUIPMENT	16 hours

Floor plan and layout, working height and dimensions of work area, lighting facilities, Kitchen area- design, size, type, ventilation, lighting, flooring, carpets, wall covering and sample layout of kitchen, Equipments- major and minor

Unit:4	MEAL PLANNING AND QUANTITY FOOD PREPARATION	16 hours

Meal planning, principles and types of menu.
Quantity food preparation – selection, purchasing, storage of foods, standardization of recipes, portion control, utilization of leftover foods.

Unit:5	FRONT OFFICE & FINANCIAL MANAGEMENT	17 hours

Front Office organisation, layout, planning, communication between the Front Office and the other departments. Cost control - Principles and methods of food cost control. Financial management –Factors affecting food, labour, operating and overhead cost, budget, inventories. AI tools used in Food Service Management.

Unit: 6	CONTEMPORARY ISSUES	2 hours

Webinar on career opportunities in front office department of hospitality &business Management

	Total Lecture hours	90hours

Text Book(s)

1	West ,BB, Wood (1998)"Food service in Institutions" ,Johnwiley and Sons,New York.
2	Sethi and Mahan S. (2015) Catering Management an integrated approach, John wiley Eastern Limited, New Delhi.
3	Sethi and Mahan S.(2016) Institution Management, John wiley Eastern Limited, New Delhi.
4	Khan MA (1987) "Food service operations", AVI publishing Company Inc. ND.

Reference Books

1	Kotas R and Davis B "food cost control" Billing and Sons Ltd, Great Britian ,1976
2	Dr. B.K. Chakravati, " A Technical guide to Hotel operation" , Metropolitan, New

	Delhi India.
3	Earl R. Palan and Judity A. Stadler (1986) Preparing for the food service Industry, AVI – Publishingand co
4	Mickey Warner (1989) Recreatoinal food service Management Van Nostrand Reinhold, Newyork.
5.	Dr. Sumathi Food Service Management
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	http://www.ihmbbs.org/upload/CHAPTER-0(THE%20HOTEL%20&%20CATERING%20INDUSTRY).pdf
2	https://www.dodea.edu/edSpecs/upload/Food-Service-15-Nov-11.pdf
3	https://ncert.nic.in/textbook/pdf/lehe104.pdf
4	https://youtu.be/uHB3Hg9nWV8
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	M	M	S	M	S	M	M	M	M
CO3	S	S	S	S	M	S	S	M	M	M
CO3	S	M	M	S	M	S	M	M	M	S
CO4	S	M	M	S	M	S	S	M	M	S
CO5	S	M	M	S	M	S	M	M	M	S

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

Course code	**6EB**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Elective Paper : II B		**FAMILY RESOURCE MANAGEMENT**	**90hrs**			**3**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

The main objectives of this course are to:

Understand concepts & principles of resource Management & its functions. Understand the significance of management in changing environment .Help students to learn to use resources Effectively.

Expected Course Outcomes:

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

1	The significance of management applicable to families.	K2
2	Recognize the importance of wise use of resources to achieve one's goals.	K3
3	Become a good home maker	K4

4	Gain knowledge in various aspects in home economics	K2
5	Understand the use of IOT in home automation.	K2
K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;		

Unit:1	PRINCIPLES OF MANAGEMENT	14hours
Management – Definition, Principles and elements involved in management, Process – planning, controlling and evaluation. Motivation in management.(Introduction to values, goals and standards)		
Unit:2	**MANAGEMENT AND ITS CONCEPTS**	**20hours**
Management Concepts - Goals and Values – their relationship to decision-making Standard of Living – Definition, constituents – Means for raising the standard of living of families.		
Unit:3	**DECISION MAKING AND RESOURCES**	**18 hours**
Decision Making – steps, importance, types of decisions, Habitual versus Conscious decision making. Individual and group decisions, resolving conflicts in group decisions. Resources – Human and non-human resources. Characteristics of Resources-utilized to achieve family goals.		
Unit:4	**FAMILY AND ENERGY MANAGEMENT**	**18 hours**
Family - Concept, Role, life cycle changes and stages of family life cycle. Work simplification – Definition, importance, Mundel's classes of change Time Management – Time Demands during different stages of the family life cycle, Time cost, Factors to be consider in making time and activities plans. Energy Management – Relation of energy to the stages of the family life cycle, Fatigue – Forms and effects of fatigue.		
Unit:5	**FAMILY INCOME**	**18 hours**
Family Income – Definition, Types - Money, Real and Psychic income, various ways of improving the income of the family, Family finance management, family, Budget – Definition and meaning, importance of budgeting, steps, factors affecting the budget. Engles's Law of Consumption. Savings – Meaning, objectives, Needs for savings in the family, types of savings institutions and schemes. Consumer – Meaning and definition of consumer, consumer rights. Problems faced by the consumer. IoT definition, characteristics and use in home automation		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Webinar on Living with COVID-19: Biochemical and physiological Considerations for Family		
	Total Lecture hours	**90hours**

Text Book(s)

1	Varghese,M.A et al. – "Home Management", (Second Edition), New Age International (P) Limited, Publishers, 7/30 A, Daryaganj, New Delhi – 110002.
2	Asay, S.M. and Moore, T.J. (2016) Family Resource Management, Third Edition,.

Reference Books	
1	Nickell.P. and Dorsey. J.M. – "Management in Family Living", John Wiley and Sons, Inc, New York, 1960.
2	SingalSavita Prof. and GandotraVeena Prof. Family Resource Management. Historical and contemporary Developments, Dominant Publishers and Distributors, New Delhi – 110002.
3	NeeruGargSushma Gupta, Textbook of Family Resource Management, 9th Edition 2008.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	http://download.nos.org/srsec321newE/321-E- Lesson-10.pdf
2	http://cmsnew.pdst.ie/sites/default/files/Resource%20Mgt.pdf
3	http://ecoursesonline.iasri.res.in/mod/page/view.php?id=122107
4	http://shodhganga.inflibnet.ac.in/jspui/bitstream/10603/129462/8/08_chapter3.pdf
5	http://www.yourarticlelibrary.com/home-management/home-science-work-simplificationmethods-with-diagram/47806
6	https://youtu.be/g6P-OpXuMN4
Course Modified By: Ms.K.SubaLatha	

Mapping with Programme Outcomes										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	M	M	M	S	S	S	S	M	M	S
CO3	M	M	S	S	S	S	S	M	M	M
CO3	M	M	M	S	S	S	S	M	M	M
CO4	S	M	S	S	S	S	S	M	M	M
CO5	S	M	S	S	S	S	S	M	M	M

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

Course code	6EC	TITLE OF THE COURSE	L	T	P	C
Elective Paper: IIIA		HUMAN DEVELOPMENT	90 hrs			3
Pre-requisite			Syllabus Version		2025 -26	

Course Objectives:

The main objectives of this course are to:

Develop an understanding of an individual from infancy to adolescence so that they Can be guided effectively. Develop an awareness of the problems of children and adolescents and old age. Learn about exceptional children and address their needs

Expected Course Outcomes:

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

1	Familiarize with the growth process from conception to confinement	K2
2	Understand the physical, psychological and social development of the individual from infancy to old age.	K2
3	Understand the human development in contemporary society	K2
4	Develop an awareness of the problems of children and adolescents and old age.	K3
5	Learn about exceptional children and address their needs	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION	16hours

Introduction to Human Development- Definition, History, Multidisciplinary and Scientific nature. Scope of Human Development in contemporary society. Domains and Stages of Human Development. Principles of growth and development.

Unit:2	PRENATAL DEVELOPMENT	20hours

Prenatal Development and Post natal Care- Birth and the Neonate (newborn) - Reproductive health, planning and preparing for parenthood. Conception – signs and symptoms of pregnancy, prenatal development – stages of development, factors affecting development, birth process – signs of labour, stages, birth injuries, postnatal care – adjustment of the newborn. Infancy and - Development during infancy – Physical, social, emotional, cognitive and language. Infant care and hygiene – immunization schedule,habit formation. Minor ailments and preventive measures.

Unit:3	EARLY AND LATE CHILDHOOD	19 hours

Early and late childhood– Physiological and psychological. Role of Child care centres. Physical,motor,emotional,language,moral,socialandintellectualdevelopment.Child and family member relationship. Habit formation. Behaviour problems – causes,

prevention and treatment. Preschool education – importance, objectives, programmes.Play – definition, types, characteristics and play hazards. Children with special needs – definition,classificationofeachexceptionalchildren,characteristicsandrehabilitationof children with special needs.

Unit:4	**ADOLESCENCE**	**18 hours**

Adolescence **–** definition, physical, emotional, intellectual and motor development, personal adjustment and maladjustment. Delinquency – causes, prevention and rehabilitation. Role of Parents and Society. Factors influencing PersonalityDevelopment,
Drug addiction and alcoholism – rehabilitation.

Unit:5	**ADULTHOOD AND OLD AGE**	**15hours**

1. Adulthood – characteristics and developmental tasks, problems in middleage.
2. Old Age – physical and psychological changes, problems of the aged, familyattitude towards aged, place of the aged in IndianSociety.

Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**

Webinar on Managing Common Pain and Movement problems in Elderly

	Total Lecture hours	**90hours**

Text Book(s)

1	Charles, S.P. (1983). Adolescent Psychology, New Delhi: Vikas House.
2	Duvall,M.E., (1972). Marriage and Family Development, New York: J.P. Lippincott Co.
3	Rajammal P. Devadas and Jaya N. Muthu (2002). A Text Book of Child Development, New Delhi: Macmillan Publishers.
4	Nanda V.K., (1998): Principles of Child Development, New Delhi: Anmol

Reference Books

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	Mussenetal.(1990). Child Development and Personality, New York: Harper and Row publishers.
4	Sapra, R. (2007): Integrated Approach to Human Development. New Delhi Vishwabharathi.
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.

Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]

1	https://my.clevelandclinic.org- prenatal development

2	https://www.tuv.edu- child rearing practices
3	https://library.ccis.edu- exceptional children
4	https://www.childtrends.org- adulthood characteristics
5	https://www.ncbi.nlm.nih.gov- old age problems social
6	https://youtu.be/CNAUQj1Dg40
Course Modified By: Dr. G.Suba	

Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	S	S	M	M	S	S	M	M	S
CO3	S	M	S	M	M	S	M	M	M	S
CO3	S	M	S	S	M	S	S	M	M	S
CO4	S	M	S	S	M	S	S	M	M	S
CO5	S	M	S	S	M	S	S	M	M	S

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

Course code	**6ED**	**TITLE OF THE COURSE**	**L**	**T**	**P**	**C**
Elective Paper: III B		**FOOD PRODUCT DEVELOPMENT AND PACKAGING**	**90 hrs**			**3**
Pre-requisite			**Syllabus Version**		**2025 -26**	

Course Objectives:

Themainobjectivesofthiscourseareto: focusing on creating or improved food products.
Develop innovative and health foodproducts.

Expected Course Outcomes:

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

1	Select ingredients needed for formulation of a new product	K3
2	Understand the importance of evaluation techniques for new products	K2
3	Develop new products based on the needs of customer	K3
4	Apply Automation and uses of Computer in food analysis	K4
5	Gain knowledge about entrepreneurship and its relevance in carrier growth.	K2

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate;

Unit:1	INTRODUCTION	20 hours
Definition and classification, characterization and factors shaping new product development. Food needs and consumer preference: market survey and its importance. Advantages of processed foods in urbanized modern society.		
Unit:2	**SHELF LIFE REQUIREMENTS**	**20 hours**
Shelf life requirements and factors affecting shelf life. Evaluation of shelf life, sensory attributes and effects of environmental conditions;accelerated shelf life determination; sensory attributes and effects of environmental conditions; accelerated shelf life determination selection and training of judges, development of score card analysis of data.		
Unit:3	**NEW PRODUCT DEVELOPMENT**	**17 hours**
Designing new products and new food product development (NPD) process and activities, use of traditional recipe and modification, recent development.		
Unit:4	**PACKAGING**	**18 hours**
Food packaging - Definition, functions of packaging materials for different foods, characteristics of packaging material. Food packages – bags, pouches, wrappers, tetra packs- applications. Specialized packaging methods- Aspectic packaging, retortable containers, modified and controlled atmosphere packaging, skin, shrink and cling film packaging,		
Unit:5	**AUTOMATION AND USES OF COMPUTER IN FOOD ANALYSIS:**	**13hours**
Tools of automation, automation in food industries and its example,Computer in food analysis and its application:Bar code technology.		
Unit: 6	**CONTEMPORARY ISSUES**	**2 hours**
Value addition in coconut International webinar		
	Total Lecture hours	**90 hours**

Practical : Formulation of new food products for(No Examination)

1. **Infants**
2. **PreschoolChildren**
3. **Adolescents**
4. **Pregnant and nursingmothers**
5. **Oldage**
6. **Sportsperson**

Text Book(s)

1	Sudhir Gupta (2017) Handbook of Packaging Technology, Engineers India Research Institute, New Delhi
2	Daise, Frank, A. (Ed.) 2015, Modern Processing, Packaging and Distribution System for Food, Blackie, Glasgow and London.
3	Suja, R. Nair(2014) Consumer Behaviour and Marketing Research, 1st Edition,

	Himalaya Publishers.
Reference Books	
1	Food Packaging Technology Handbook, 2013, NIIR Board of Consultants and Engineers, National Institute of Research, New Delhi.
2	Modern Packaging Industries, 2014, NIIR Board of Consultants and Engineers, National Institute of Industrial Research, New Delhi.
3	Potter, N.M., Food Science, The AVI Publishing Company Inc., West Post, Connecticut, USA 2015,
4	Khanaka, S.S. (2016) Entrepreneurial Development, S. Chand and Company Ltd, New Delhi.
	Hmacfie (2017) Consumer led Food Product Development, Weedhead Publishing Ltd., UK .
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	http://mek.oszk.hu/11400/11406/11406.pdf
2	http://entrepreneuriat.inforoutefpt.org/documents/ang_nc-4328_projet.pdf
3	www.destechpub.com › wp-content › uploads › 2015/01
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Mapping with Programme Outcomes										
COs	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	M	S	S	S	S	S	M	M	S
CO3	S	M	M	S	S	S	S	M	M	S
CO3	S	M	S	S	S	S	S	M	M	S
CO4	M	M	M	M	S	S	S	M	M	S
CO5	S	M	M	S	S	S	S	M	M	S

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

	• Guide students to assess their well-being in various life dimensions through exercises on various aspects of well-being, and explain the benefits of applying wellness wheel. • Introduce Tech Tools: • explore the use of technology to support well-being. • Introduce students to apps for meditation, sleep tracking, or healthy recipe inspiration.	
3	**Breaking Bad Habits (Overall Analysis)** • Open a discussion on bad habits and their harmful effects. • Provide a worksheet to the students to identify their personal bad habits. • Discuss the trigger, cause, consequence and solution with examples. • Guide them to replace the bad habits with good ones through worksheets.	
4	**Physical Well-being** **1. Fitness** Introduce the different types of fitness activities such as basic exercises, cardiovascular exercises, strength training exercises, flexibility exercises, so on and so forth. (Include theoretical explanations and outdoor activity). **2. Nutrition** Facilitate students to reflect on their eating habits, their body type, and to test their knowledge on nutrition, its sources and the benefits. **3. Yoga & Meditation** Discuss the benefits of Yoga and Meditation for one's overall health. Demonstrate different yoga postures and their benefits on the body through visuals (pictures or videos)	