

**DEPARTMENT OF NUTRITION, FOOD SERVICE MANAGEMENT AND  
DIETETICS (UG) WITH EFFECT FROM 2021-2022  
CBCS PATTERN  
THE COURSE OF STUDY AND SCHEME OF EXAMINATIONS**

S.No.	Part	Study components		Ins. Hrs/ Week	Credits	Title of the paper	Maximum marks		
		Course Title					CIA	Sem., Exam	Total
<b>SEMESTER I</b>									
1	I	Language	Paper I	6	4	Tamil paper -I	25	75	100
2	II	English	Paper I	6	4	English paper -I	25	75	100
3	III	Core	Paper I	6	4	Food Science - I	25	75	100
4	III	Core	Practical I	3	0	Food Science Practical	-	-	-
5	III	Allied	Paper I	4	4	Chemistry - I	25	75	100
6	III	Allied	Practical I	3	0	Chemistry	-	-	-
7	IV	Environmental studies		2	2	Environmental Studies	25	75	100
		<b>SUB TOTAL</b>		<b>30</b>	<b>18</b>		<b>125</b>	<b>375</b>	<b>500</b>
<b>SEMESTER II</b>									
8	I	Language	Paper II	6	4	Tamil paper - II	25	75	100
9	II	English	Paper II	4	4	English paper - II	25	75	100
10	III	Core	Paper II	5	4	Food Science - II	25	75	100
11	III	Core	Practical I	3	3	Food science Practical	40	60	100
12	III	Allied	Paper II	4	4	Chemistry - II	25	75	100
13	III	Allied	Practical II	3	2	Chemistry - II	40	60	100
14	IV	Value Education		3	2	Value Education	-	50	50
15	IV	Soft Skill		2	1	Soft Skill	-	50	50
		<b>SUB TOTAL</b>		<b>30</b>	<b>24</b>		<b>180</b>	<b>520</b>	<b>700</b>
<b>SEMESTER III</b>									
16	I	Language	Paper III	6	4	Tamil paper -III	25	75	100
17	II	English	Paper III	6	4	English paper - III	25	75	100
18	III	Core	Paper III	4	4	Human Physiology	25	75	100
19	III	Core	Practical II	3	0	Human Physiology and Nutrition Through Life Span Practical	-	-	-

20	III	Allied	Paper III	4	3	Food Microbiology	25	75	100
21	III	Allied Practical	Practical II	3	2	Food Microbiology Practical	40	60	100
22	IV	Skill based Subject	Paper I	2	2	Housing and Interior Decoration	-	50	50
23	IV	Non major Elective	Paper I	2	2	Home Scale Food Preservation	-	50	50
		<b>SUB TOTAL</b>		<b>30</b>	<b>21</b>		<b>140</b>	<b>460</b>	<b>600</b>

#### SEMESTER IV

24	I	Language	Paper IV	6	4	Tamil paper -IV	25	75	100
25	II	English	Paper IV	6	4	English paper - IV	25	75	100
26	III	Core	Paper IV	4	4	Nutrition Through Life Span	25	75	100
27	III	Core	Practical II	3	3	Human Physiology and Nutrition Through Life Span Practical	40	60	100
28	III	Allied	Paper IV	4	3	Biochemistry	25	75	100
29	III	Allied	Practical III	3	2	Biochemistry Practical	40	60	100
30	IV	Skill based Subject	Paper II	2	2	Post Harvest Technology	-	50	50
31	IV	Non major Elective	Paper II	2	2	Health and Fitness	-	50	50
		<b>SUB TOTAL</b>		<b>30</b>	<b>24</b>		<b>180</b>	<b>520</b>	<b>700</b>

\* Summer internship programme at the end of IV semester (Optional) – Extra credit-1 to 3

#### SEMESTER V

32	III	Core	Paper V	6	5	Dietetics –I	25	75	100
33	III	Core	Paper VI	6	4	Principles of Human nutrition	25	75	100
34	III	Core	Practical III	5	3	Dietetics Practical-I	40	60	100
35	III	Core	Practical IV	5	3	Principles of Human nutrition practical	40	60	100
36	III	Elective	Paper I	3	3	Food Adulteration and Toxicology	25	75	100

37	III	Elective	Paper II	3	3	Human Development	25	75	100
38	IV	Skill Based Subject	Paper III	2	2	Basics of Research in Nutrition	-	50	50
			<b>SUB TOTAL</b>	<b>30</b>	<b>23</b>		<b>180</b>	<b>470</b>	<b>650</b>
<b>SEMESTER VI</b>									
39	III	Core	Paper VII	5	5	Dietetics – II	25	75	100
40	III	Core	Paper VIII	5	4	Food Service Management	25	75	100
41	III	Core	Paper IX	4	4	Community Nutrition and Extension Education	25	75	100
42	III	Core	Practical V	4	3	Practical: Dietetics-II	40	60	100
43	III	Core	Practical VI	4	3	Food Service Management Practical	40	60	100
43	III	Elective	Paper III	3	3	Textile and Clothing	25	75	100
44	III	Elective	Paper IV	3	3	Functional Foods and Nutraceuticals	25	75	100
45	IV	Skill Based	PaperIV	2	2	Entrepreneurship Development	-	50	50
46	V	Extension Activity		-	3		<b>100</b>		<b>100</b>
			<b>SUB TOTAL</b>	<b>30</b>	<b>30</b>				<b>850</b>
			<b>TOTAL</b>	<b>180</b>	<b>140</b>		<b>305</b>	<b>545</b>	<b>4000</b>
* Mini project in the VI-Semester (optional) – Extra Credit 1 to 3									

<b>PART</b>	<b>SUBJECT</b>	<b>PAPERS</b>	<b>CREDITS</b>	<b>TOTAL CREDITS</b>	<b>MARKS</b>	<b>TOTAL MARKS</b>
I	Language	4	4	16	100	400
II	English	4	4	16	100	400
III	Allied Theory					
	Chemistry	2	4			
	Food Microbiology	1	3	14	100	400
	Biochemistry	1	3			
III	Allied Practical	3	2	6	100	300
III	Elective	4	3	12	100	400
III	Core Theory	9	7*4= 28 2*5 = 10	38	100	900
III	Core Practicals	6	3	18	100	600
IV	EVS	1	2	2	100	100
IV	Value Education	1	2	2	50	50
IV	Skill Based	4	2	8	50	200
IV	Non - Major	2	2	4	50	100
IV	Soft Skill	1	1	1	50	50
V	Extension Activity	-	3	3	100	100
<b>TOTAL</b>				<b>140</b>		<b>4000</b>

**PROGRAM EDUCATIONAL OBJECTIVES (PEO):**

**PEO 1:** To introduce the students to the fundamentals of Nutrition, food and health

**PEO 2:** To familiarize them with importance of nutrition during various stages of life.

**PROGRAM OUTCOMES (PO):**

**PO 1:** To impart knowledge regarding aetiology and management of nutritional disorders ranging from nutritional deficiencies to life style disorders.

**PO 2:** To emphasize on the importance of food safety, food quality, food laws and regulations, ongoing national programmes as well as imparting entrepreneurship skill for job enhancement.

**PO 3:** To impart knowledge and develop capacities of the students in the area of Clinical Nutrition.

**PO 4:** To impart knowledge and develop capacities of the students through state-of-the-art higher education in the area of Medical Nutrition Management

**PO 5:** To gain knowledge of principles of various techniques used in the prevention and control of the microorganisms in foods

**PO 6:** To learn basic statistical procedures for Nutritional research.

## FOOD SCIENCE - I

Sem	Subject Code	Category	Lecture		Theory		Practical	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
I	22CNF1A	Core paper I					----	4
			90	6	90	6		

### COURSE OBJECTIVES

The students will be able to

1. Obtain knowledge of different food groups based on their classification and nutritive value
2. Understand the scientific principles underlying food preparation and different methods of cooking foods.
3. Develop skill and techniques in food preparation with conservation of nutrients and palatability using cooking methods generally employed.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Understanding the basic food groups and its nutrients	K1-K2
CO2	Learning the different methods of cooking on acceptability and Palatability	K1-K2
CO3	Learning composition and nutritive value of cereal and its Products	K1-K2
CO4	Understanding the composition and nutritive value of Pulses and Nuts	K1-K2
CO5	Understanding the composition and nutritive value of Vegetables and Fruits.To become proficient for specialization in nutrition	K1-K4

Knowledge level: K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	M
CO2	S	S	S	M	M
CO3	S	S	S	M	M
CO4	M	M	M	M	M
CO5	M	S	M	S	S

S – Strong, M – Medium, L – Low

**UNIT I****18 Hours**

**Definition** of Food and Food Science. Functions of food in relation to health – classification of foods based on nutrients. **Food groups** – Basic Four, Basic Five and Basic seven.

**UNIT II****18 Hours**

Preliminary preparation of foods prior to cooking with special reference to conservation of nutrients and palatability. Objectives of Cooking. **Cooking Methods** - Dry methods – frying, boiling, parching, and baking. Moist heat methods – Boiling, stewing, cooking under pressure. Combination methods. Microwave cooking – advantages and disadvantages.

**UNIT III****18 Hours**

**Cereal and cereal products** – Microscopic structure of various starch granules – Nutritive value of Rice, Wheat and locally available millets. Effect of cooking on the nutritive value of cereals. Gelatinization, Dextrinization, gluten formation.

**UNIT IV****18 Hours**

**Pulses and nuts** – composition, Nutritive value of grams, dhal – some common nuts-meat substitutes – soya products. Textured Vegetable Protein (TVP). Effect of cooking on pulses.

**UNIT V****18 Hours**

**Vegetables and Fruits** – Classification, composition and Nutritive value – methods of minimize the loss of nutrients, color, texture, flavor, Browning reaction – changes during cooking.

**TEXT BOOKS:**

S.No.	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
	B.Srilakshmi	Food Science	New Age International Private Ltd.,	2002
2.	Swaminathan	HandBook of Food Science and Experimental Foods	Bappco, Bangalore	1992
3.	N. ShakuntalaManay, M. Shadaksharaswamy	Foods and Principles	New Age International Publishers	2001
4.	Mudambi, S.R. Rao, S.M	Food Science	Wiley Eastern Ltd, New Delhi	1986

5.	Potter, N. and Hotch Kiss, J.H.	Food Science	CBS Publishers and Distributors, New Delhi	1996
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**REFERENCE BOOKS:**

S.No.	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Helen Charley	Food Science	Wiley Eastern Ltd, New Delhi	1986
2.	A.G. Peckam	Foundation of Food Preparation	CBS Publishers and Distributors, New Delhi	1996
3.	Manay. N.S	Foods – facts and principles	New age International Pvt. Ltd. Publishers, Newdelhi	1996
4.	Swaminathan. M	Food Science and Experimental Foods	Ganesh and Co, Chennai,	1988
5.	Sharma.A	Text book of Food Science & Technology, 1st edition	International Book Distributing Co.,	2006
6.	Roday.R	Food Science & Nutrition	Oxford University Press	1999
7.	Jan. S	Elements of Food Science	New India Publishing Agency, New Delhi-88	-

**WEB SOURCES:**

1. <https://www.cbsenetonline.in/updated-cbse-ugc-net-syllabus-for-home-science>

## FOOD SCIENCE - II

Sem	Subject Code	Category	Lecture		Theory		Practical		Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week	
II	22CNF2A	Core paper II	75	5	75	5	-	-	4

### COURSE OBJECTIVES

The students will be able to

1. To know the basic concepts about different foods and nutrients.
2. To develop the scientific attitude of the students towards the principle of food science.
3. To obtain the knowledge of composition and nutritive value of different foods.
4. To know the impact of cooking on various foods.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1 – K4)
CO1	Understanding the composition and nutritive value of Milk and Milk Products	K1-K2
CO2	Understanding the composition and nutritive value of Fleshy foods	K1-K2
CO3	Understanding the composition and nutritive value of Eggs, Fats and Oils	K1-K2
CO4	Understanding the composition and nutritive value of Sugar and its Products, Spices and Condiments	K1-K2
CO5	Understanding the composition and nutritive value of Beverages. To become proficient for specialization in nutrition	K3-K4

Knowledge level: K – Remember, K2 – Understand, K3 – Apply, K4 – Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	M
CO2	S	S	S	M	M
CO3	S	S	S	M	M
CO4	M	M	M	M	M
CO5	M	S	M	S	S

S – Strong, M – Medium, L – Low

**UNIT I****15 Hours**

**Milk and milk products** – Composition and nutritive value, Principles of milk cookery, Milk protein, coagulation, problems in milk cookery. Effect of cooking and processing on milk. Milk products- Non fermented and fermented products (does not include preparation); Role of milk in cookery.

**UNIT II****15 Hours**

**Meat** – Nutritive values, methods of cooking – Post mortem changes in meat, factors affecting tenderness – organ meat.

- a) **Fish** – classification, Nutritive value – selection, methods of cooking
- b) **Poultry** –Classification,Composition and Nutritive value.

**UNIT III****15 Hours**

- a) **Eggs** – Structure, composition, Nutritive value, selection, uses of eggs in cookery, methods of cooking eggs.
- b) **Fats and oils** – Types – Saturated, MUFA, PUFA, Hydrogenation – Invisible fats – smoking point – Rancidity.

**UNIT IV****15 Hours**

**Sugar and sugar related products** – Jaggery - Nutritive value, characteristics and uses of various types of sugars; Sugar cookery- Crystallization and factors affecting crystallization; Stages of sugar cookery; Role of sugar in cookery.

- a) **Spices and Condiments** – Role of spices in cookery and its medicinal Uses.

**UNIT V****15**

**HoursBeverages** – Beverages: Classification; Coffee beverage- Constituents and method of preparation; Tea-Types, preparation; Cocoa- Composition, nutritive value and preparation of cocoa beverage; Fruit beverages Types; Introduction to vegetable juices, milk based beverages, malted beverages, carbonated non alcoholic beverages and alcoholic beverages.

**TEXT BOOKS:**

S.No.	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
	B.Srilakshmi	Food Science	New Age International Private Ltd.,	2002
2.	Swaminathan	HandBook of Food Science and Experimental Foods	Bappco, Bangalore	1992
3.	N. ShakuntalaManay, M. Shadaksharaswamy	Foods and Principles	New Age International Publishers	2001

4.	Mudambi, S.R. Rao, S.M	Food Science	Wiley Eastern Ltd, New Delhi	1986
5.	Potter, N. and Hotch Kiss, J.H.	Food Science	CBS Publishers and Distributors, New Delhi	1996

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S.No.	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Helen Charley	Food Science	Wiley Eastern Ltd, New Delhi	1986
2.	A.G. Peckam	Foundation of Food Preparation	CBS Publishers and Distributors, New Delhi	1996
3.	NIIR Board	Handbook on Fruits, vegetables & Food processing with canning & preservation, 2nd edition,	Asia pacific business press inc., Delhi-7.	-
4.	Mudambi, R.S. and Rajagopal, M.Y	Fundamentals of Food and Nutrition	Wiley Eastern Limited New Delhi	1991
5.	Potter. N.M.and Birch, G.G	Food Science, 5th edition	CBS Publishers and Distributors, New Delhi	2007

**WEB SOURCES:**

1. <https://www.cbsenetonline.in/updated-cbse-ugc-net-syllabus-for-home-science>

## FOOD SCIENCE PRACTICAL

Sem	Subject Code	Category	Lecture		Theory	Practical		Credits
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
	22CNF21	Core practical I	-	-	-----	45	3	3

### EXPERIMENTAL FOODS PRACTICAL-FOOD GROUP I

1. Grouping of food – Discussion of nutritive value
2. Technique in measurement of food stuff-use of standard measuring cups and spoons.
3. Cereals Microscopic study of different starches
4. Methods of combining starch and boiling water
5. Gluten formation
6. Pulses – Effect of hard and soft water, alkali, cooking time of grams and dhals.
7. Vegetables – Effect of acids, alkali, covering, steaming and pressure cooking on the different pigments and acceptability of vegetables.
8. Fruits – Study of different methods of preventing enzymatic browning of cut fruits, pectin content of fruits.
9. Different recipes from cereals, pulses, vegetables and fruits

### EXPERIMENTAL FOODS PRACTICAL – FOOD GROUP II

1. Eggs – Coagulation of egg protein – factor. Egg white foam – effect of beating, sugar, acid and temperature
2. Milk cookery – coagulation of milk protein, paneer
3. Fats and oils – Comparison of smoking temperature of some fats and oils
4. Sugar and Jaggery – different stages of crystallization of sugar
5. Different recipes from fleshy food, egg, milk and milk products
6. Beverages – preparation of stimulating, nourishing and refreshing beverages.
7. Fats and oils – Preparation of shallow and deep fried foods.
8. Sugar Cookery – Preparing recipes at different stages of sugar cookery

### TEACHING METHODOLOGY

- Chalk and Board teaching
- Assignments
- Group Discussions
- PPT
- Seminars
- Other Group Activity

### SYLLABUS DESIGNER:

- Mrs. K. GOWTHAMI, Head and Assistant Professor, Department of Foods and Nutrition

## HUMAN PHYSIOLOGY

Sem	Subject Code	Category	Lecture		Theory		Credits
			Total	Per week	Total	Per week	
III	22CNF3A	Core paper III					4
			60	4	60	4	

### Course Outcomes

On the successful completion of the course, students will be able to\_\_\_\_\_

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	The various physiological systems in the human body	K1
CO2	The functional anatomy of different organs in each system.	K2
CO3	The complex mechanisms of the processes of digestion, absorption, excretion, gas exchange, reproduction and neuromuscular coordination.	K2
CO4	Integrated System physiology that will enable understanding of the biochemical basis of disease.	K2
CO5	To understand the internal structure of various parts in human body.	K1,K2

**\*CO – Course Outcomes\*\* (Each unit of the syllabus should have one course outcome statement)**

**Knowledge level:** K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

**PO5-** Become a successful entrepreneur, professional and pursue higher education

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	M
CO2	S	M	M	M	M
CO3	M	S	M	M	M
CO4	M	S	M	M	M
CO5	M	M	S	S	S

S-Strong; M-Medium, L- Low

## OBJECTIVE

The students will be able to

1. To acquire knowledge of the various physiological systems and organs in the human body
2. To understand the functioning of the various human body systems

### UNIT I

12Hours

#### DIGESTIVE AND EXCRETORY SYSTEM

Functional anatomy of digestive tract, functions of salivary gland, stomach, small intestine, large intestine, liver and pancreas. Digestion and absorption of carbohydrates, proteins and lipids Structure of kidney, mechanism of urine formation. Role of kidney in maintaining acid-base balance. Micturition

### UNIT II

12Hours

#### CARDIOVASCULAR SYSTEM

Blood- properties, composition and functions of blood and blood elements, erythropoiesis, blood groups, blood transfusion, blood coagulation. Heart- Structure and functions of heart, cardiac output, blood pressure and blood circulation-systemic and pulmonary. Factors affecting blood pressure. Cardiac cycle and electrocardiogram

### UNIT III

12Hours

#### RESPIRATORY SYSTEM

Functional anatomy of respiratory system, mechanics of respiration, diffusion of gases - mechanism of respiration, regulation of respiration, hypoxia

### UNIT IV

12Hours

#### MUSCULAR SYSTEM

Classification – structure of skeletal and smooth muscles. Mechanism of muscle contraction and relaxation. Disorders of skeletal muscles.

**Nervous system-** divisions, structure and functions of brain, spinal cord and neuron, transmission of nerve impulse. Autonomic nervous system. Cerebrospinal fluid and its functions

### UNIT V 12Hours

**REPRODUCTIVE SYSTEM** Development of gonads and genitalia, testis and spermatogenesis, female reproductive system-oogenesis, physiological changes and hormones during menstruation, pregnancy, parturition and lactation.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

## REFERENCES

### TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Guyton, A.C. and Hall, J.E	Textbook of Medical Physiology, Twelfth Edition	Saunders Company Publishers, New York.	2010

2	Sembulingam, K. and Sembulingam, P	Essentials of Medical Physiology, Fifth Edition	J.P. Medical Publishers (P) Ltd, New Delhi	2010
3	Tortora, G.J. and Graabowski, S.R	Principles of Anatomy and Physiology, Twelfth Edition	John Wiley & Sons, New York	2009

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Chandramouli, R	Textbook of Physiology, Third Edition	Jaypee Brothers Medical Publishers (P) Ltd. New Delhi.r	2010
2	Fox, S	Human Physiology, Twelfth Edition	WCB McGraw-Hill Publications, New York.	2010
3	Davies, A., Blackely, A.G.H. and Kidd, C,	Human Physiology	Churchill Livingstone, Toranto, Harcourt Publishers Ltd, New York.	2001.

**Web Sources:**

1. Link: Wikibooks' *AnimalBehavior/Neurophysiology*: "Neurons", "Neurophysiology", and "Resting Potential" (HTML)
2. Link: Wikibooks' *Structural Biochemistry*: "Cell Signaling Pathways" (HTML)
3. Link: Wikibooks' *Human Physiology*: "The Nervous System" (HTML)
4. Link: Wikibooks' *Cellular Neurobiology*: "Neurotransmitter" (HTML)

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Assignments
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## FOOD MICROBIOLOGY

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
III	22CANF3A	Allied I	60	4	60	4	-----	3

### COURSE OBJECTIVE:

1. To gain deeper knowledge of role of microorganism in humans and environment
2. To understand the role of microbes in food, health and disease.
3. To understand criteria for microbiological safety in various foods operations to avoid public health hazards due to food contamination

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To learn the basics of Microbiology	K1, k2
CO2	To understand about Food Spoilage and fermented foods	K2, K3
CO3	Learning about various food borne diseases and its ill effects to humankind	K1, K2
CO4	Learn to analyse the Microbes in food products by using different techniques	K2, K3, K4
CO5	To understand how to control the invasion of microbes to maintain the quality of food products	K2, K3

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	S
CO2	M	S	M	S	S
CO3	M	S	M	S	S
CO4	M	S	M	S	S
CO5	M	S	M	S	S

S-Strong; M-Medium, L- Low

## **UNIT I**

**12Hours**

### **INTRODUCTION TO MICROBIOLOGY**

- A) History and development of Microbiology; Definition, Scope of Food Microbiology; Classification of Microorganisms; Bacteria, Yeast, Mould, Algae, Protozoa, Virus – Morphology, classification and its Reproduction.
- B) Importance and significance of microorganisms in food science. Factors affecting the growth of microorganisms in food – Intrinsic and Extrinsic parameters.

## **UNIT II**

**12Hours**

### **FOOD SPOILAGE AND FERMENTED FOODS**

- A) Perishable and non-perishable foods- Contamination, preservation and spoilage of cereal and cereal products-flour, bread, pasta and prepared dough Vegetables and fruit products-contamination, preservation and spoilage of dehydrated, canned fruits and vegetables.
- B) Meat and meat products- Contamination, preservation and spoilage of meat and meat products-sausages and dried beef,ham,poultry,meatpickles,sea foods(pickling of fish). Milk and milk products-butter,cheese,evaporated and condensed milk,curd;
- C) Production of fermented foods-production of wine,vinegar,beer,soy-based products and cereal based fermentedproducts-idli,dhokla,bread. Traditional Indian fermented foods and their health benefits.

## **UNIT III**

**12Hours**

### **FOOD BORNE DISEASES**

- A) Bacterial food borne diseases (Staphylococcal intoxication, Botulism, Salmonellosis, Shigellosis, Enteropathogenic Escherichia Coli Diarrhoea,Clostridium Perfringens gastroenteritis, Bacillus cereus Gastroenteritis)
- B) Food Borne Viral Pathogens (Norwalk virus, Norovirus, Reovirus, Rotavirus, Astrovirus, Adenovirus, Parvovirus, Hepatitis A Virus)
- C) Food Borne Animal Parasites Protozoa –Giardiasis, Amebiasis, Toxoplasmosis, Sarcocystosis, Cryptosporidiosis. Cysticercosis /Taeniasis. Roundworm – Trichinosis, Anisakiasis.
- D) Mycotoxins: Aflatoxicosis, Deoxynivalenol Mycotoxicosis, Ergotism.

## **UNIT IV**

**12Hours**

### **ANALYSIS OF MICROBES IN FOOD**

- A) Physical and chemical means used in destruction of microbes: Definition of sterilization and disinfection, role of heat, filtration and radiation in sterilization, use of chemical agents-alcohol, halogens and detergents
- B) Determination of microorganisms and their products in food: Sampling, sample collection, transport and storage, sample preparation for analysis. Microscopic and culture dependent methods- Direct microscopic observation, culture, enumeration and isolation methods; Chemical and Physical methods-Chemical, immunological and nucleic acid based methods; Culture independent techniques – PCR Based, DGGE,

Metagenomics, etc.; Analytical methods for microbial metabolites- microbial toxins and metabolites.

## UNIT V

**12Hours**

### CONTROL OF MICROORGANISMS

- A) Protection and preservation of Foods: Chemical, Modified atmosphere, Radiation in foods from the microbiological angle. Indicators of water and food safety and quality: Microbiological criteria of foods and their Significance. The HACCP and ISO systems for food safety.
- B) Assessing the microbiological quality of food: indicator organisms, microbiological standards, principles of GMP & HACCP in food processing. Safety management at household and industrial level.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

### TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Anna k. Joshua	Microbiology	Popular Book Depot.Chennai-15	2001
2	Ray, B.	Fundamental Food Microbiology, 2 <sup>nd</sup> Ed	CRC press, Boca raton F.	2001
3	Joshi V K & Pandey	Biotechnology: food, fermentation, microbiology, biochemistry and technology, vol I & II	Educational publishers and distributors, New Delhi.	2004
4	Crueger W and Crueger A	Biotechnology: A textbook of Industrial Microbiology 2 <sup>nd</sup> Edition	Panama Publishing Corpoartion, New Delhi.	2003
5	Prescott LM Harley JP and Klein DA	Microbiology (7 <sup>th</sup> edition)	McGraw Hill, Newyork.	2006
6	Arun, K Bhunia.	Food borne microbial pathogens: Mechanisms and pathogenesis	Springer	2008
7	Dubey, R.C. and Maheswari, D.K.	Text book of Microbiology.	S Chand Publishing.	2008

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Frazier W.C and Westhoff D.C.	Food Microbiology	Tata McGraw Hill Publishing Co., Ltd. New Delhi.	1992
2	Gutierrez-Lopez GF and Barbosa-Canovas GV (Eds)	Food Science and Food Biotechnolgy	CRC press,USA	2003
3	M.P. Doyle, L.R. Beuchat and Thoma J. Montville,	Food Microbiology: Fundamentals and frontiers, 2 <sup>nd</sup> edition	ASM press, USA.	2001
4	Frazier, W.C.	Food Microbiology, 4 <sup>th</sup> Edition.	Mc Graw Hill Inc.	1988
5	Vijaya Ramesh,K.	Food Microbiology.	MJP publishers, 2007	2007
6	Yasmine Motarjemi and Martin Adams.	Emerging Food borne pathogen	Wood Head Publishing England.	2006
7	Thomas J. Montville, Karl R. Matthews, Kalmia E. Kniel	Food Microbiology: An Introduction	American Society for Microbiology	2012
8	Banwart GJ.	Basic Food Microbiology	CBS Publishers and Distributors	1987
9	Garbutt John	Essentials of Food Microbiology.	Arnold London.	1997
10	Jay JM, Loessner DA, Martin J.	Modern Food Microbiology. 7 <sup>th</sup> ed.	Springer	2005
11	Pelczar MJ, Chan ECS, Krieg N.	Microbiology. 5 <sup>th</sup> ed.	Tata McGraw-Hill Publishing Co. Ltd.	1993
12	Prescott LM, Harley JP, Klein DA.	Microbiology. 6 <sup>th</sup> ed	WMC Brown Publishers	2008

**WEB SOURCES:**

1. [https://www1.agric.gov.ab.ca/\\$Department/deptdocs.nsf/all/afs12301/\\$FILE/appendix\\_c\\_basic-micro.pdf](https://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/afs12301/$FILE/appendix_c_basic-micro.pdf)
2. [www.cfsan.fda.gov/~mow/aap3.html](http://www.cfsan.fda.gov/~mow/aap3.html).
3. [www.ces.Ncsu.edu/depts/foodsci/ext/pubs/microbiologybasic.html](http://www.ces.Ncsu.edu/depts/foodsci/ext/pubs/microbiologybasic.html).
4. [www.kcom.edu/faculty/chamberlain/Website/Foodborne.htm](http://www.kcom.edu/faculty/chamberlain/Website/Foodborne.htm).
5. <http://nuristianah.lecture.ub.ac.id/files/2014/09/fundamental-food-microbiology.pdf>

## FOOD MICROBIOLOGY PRACTICAL

Sem	Subject Code	Category	Lecture		Theory	Practical		Credits
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
III	22CANF31	Allied practical I			-----			2
			-	-		45	3	

1. Identification of different slides – Bacteria, Yeast, Mould, Algae, Protozoa.
2. Preparation of common laboratory media and special media.
3. Isolation of microorganisms by Pure Culture Technique and Microbial count by Standard Plate Count Method.
4. Staining: Gram's staining, acid-fast, spore, capsule and flagellar staining, Motility of bacteria, Staining of yeast and molds.
5. Microbiological analysis of Water, Milk, Canned product, Fruit juices and Street foods.
6. Microbiology of hand and effect of sanitation on the hand microbiology in a small food joint.
7. Assessment of surface sanitation of food preparation units swab and rinse techniques
8. Visits (at least two) to food processing unit or any other organization dealing with advanced methods in food microbiology.

**Distribution of Marks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### TEACHING METHODOLOGY

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

### SYLLABUS DESIGNER:

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## HOUSING AND INTERIOR DECORATION

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
III	22SNF3A	Skill Based Subject-I	30	2	30	2	-	2

### COURSE OBJECTIVE:

To enable students to

1. To understand the elements and principles of design and their applications in the interiors
2. To develop the Interior Design concepts and to learn to apply colour in the interiors.
3. To learn the importance of accessories and lighting

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to family housing	K1, K2
CO2	Learning about different designs and colours	K2, K3
CO3	Understanding the furniture and furnishing	K2, K3
CO4	Learning about the accessories	K2, K3, K4
CO5	Understanding about the lighting	K2. K3. K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	S
CO2	S	M	S	S	S
CO3	S	M	S	S	S
CO4	S	S	M	S	S
CO5	S	S	M	S	S

S-Strong; M-Medium, L- Low

**UNIT – I** **6Hours**

**HOUSING**

Art in daily living – importance of good taste, objectives of interior design. Family Housing – Introduction, selection of site, ventilation and lighting.

**UNIT – II** **6Hours**

**DESIGN**

Design – Elements of design – line, shape, size; space, texture, pattern, colour and light, types and characteristics of design, principles of design – Harmony, Balance Rhythm, proportion, Emphasis.

Colour – Qualities of colour-Hue, value and intensity, colour harmony, developing colour schemes for different rooms.

**UNIT – III** **6Hours**

**FURNITURE AND FURNISHINGS**

Selection and arrangement of furniture in different rooms. Different types of furnishing materials – Factors considered in their selection. Floor coverings, curtains, draperies, window treatment

**UNIT – IV** **6Hours**

**ACCESSORIES**

Selection, use and care of accessories, Types-traditional and modern – art objects, pictures, flower arrangement

**UNIT – V** **6Hours**

**LIGHTING**

Importance of lighting – Principles and types of lighting, lighting needs for various activities.

**Distribution of Marks:** Theory –50 (univ. exam) = 50 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Alexander M.j.	Design Interior Environment	Harcourt Brace, Havana	1972
2	Goldstein and goldsterin	Act in everyday life	Macmillan Co Newyork.	1960

3	John Lester and Steven violet	The world of house plants and flower arranging	Galahod Book, New York	1975
4	Jean, T.	Flower Arranging	Mac Donald Guidelines London	1980
5	Coe stella and Lkebana	A practical and philosophical guide to Japanese flower arrangement	Centry Publishing Co. Limited, London	1984

### REFERENCE BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	M.A. Varghese.	Home management	New age international publishers	2001

### WEB SOURCES:

1. <https://study.com/academy/lesson/interior-decorating-definition-styles-tips.html#:~:text=Interior%20decorating%20is%20the%20art,pleasing%20and%20budget%2Dfriendly%20design.>
2. <https://books.google.co.in/books?id=K89sxpEAQPIC&printsec=frontcover&dq=housing+and+interior+decoration&hl=en&sa=X&ved=2ahUKEwji3NmFu8LqAhUzguYKHe8-DsAQ6AEwA3oECAIQAg&authuser=1#v=onepage&q=housing%20and%20interior%20decoration&f=false>

### TEACHING METHODOLOGY

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

### SYLLABUS DESIGNER:

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## HOME SCALE FOOD PRESERVATION

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
III	22NNF3A	Non Major Elective-I	30	2	30	2	-----	2

### COURSE OBJECTIVES

To enable the students to

1. Understand the principles of preservation.
2. Understand the type of spoilages and the various methods of preventing spoilage.
3. Learn about the methods of preservation

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to Food preservation	K1,K2,K3
CO2	Preservation by temperature	K2, K3, K4
CO3	Preservation using Chemicals and osmotic pressure	K2, K3, K4
CO4	Food spoilage and Shelf life	K1,K2,K3
CO5	Food standards, Food Marketing, Packaging and Labelling	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	M	S
CO2	M	S	S	M	S
CO3	M	S	S	M	S
CO4	M	S	S	M	S
CO5	M	S	S	M	S

S-Strong; M-Medium, L- Low

**UNIT-I****6 Hours**

Food Preservation –Definition, History of Food preservation, Principles of food preservation, Recent trends and technologies used in Food preservation,

**UNIT-II****6Hours**

Preservation by use of high temperature -sterilization, Canning, pasteurization., preservation by use of low temperature -Refrigeration ,freezing,

Dehydration-Principles and methods of drying.

**UNIT-III****6 Hours**

Preservation using Chemical preservatives- Squashes,Ketchup and Marmalade

Preservation by high osmotic pressure:

- a. High Concentration of Sugar-jams and Jellies
- b. High Concentration of Salt- Pickling and Curing of meat.

**UNIT-IV****6Hours****Food spoilage and Shelf life**

Types of spoilage, Physical,Chemical and Biological Hazards in food spoilage, Prevention of food spoilage, shelf life of food products, Factors affecting shelf life.

**UNIT-V****6 Hours**

Food standards- ISO,FSSAI. Food Marketing,Packaging and Labelling.

**Distribution of Marks:** Theory –50 (univ. exam) = 50 Marks

**TEXT BOOKS:**

<b>S.NO</b>	<b>AUTHORS</b>	<b>TITLE</b>	<b>PUBLISHERS</b>	<b>YEAR OF PUBLICATION</b>
1	Subbulakshmi. G and Shobha. A.U	Food processing and preservation	New Age International Publishers	2014
2	B. Srilakshmi	Food Science, 6th edition	New Age International Publishers	2015

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Shakunthala Manay. N Shadakshara Swamy.M	Foods Facts and Principles, 3rd edition,	New Age International (P) Limited Publishers,	2014
2	Lillian Hoagland Meyer,	Food chemistry,	CBS Publishers and Distributors,	2004.
3	Norman. N Potter, Joseph H. Hotchkiss,	Food Science, 5th edition,	CBS Publishers and Distributors,	1996.
4	Sivasankar. B	Food Processing and Preservation	PHI Learning Private Limited,	2011
5	Subbulakshmi. G and Shobha. A.U	Food processing and preservation	New Age International Publishers	2014
6	B. Srilakshmi	Food Science, 6th edition	New Age International Publishers	2015

**WEB SOURCES:**

**Link:**[https://www.ugc.ac.in/pdfnews/3014918\\_B.A.-Food\\_Technology.pdf](https://www.ugc.ac.in/pdfnews/3014918_B.A.-Food_Technology.pdf)

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## NUTRITION THROUGH LIFE SPAN

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
IV	22CNF4A	Core Paper IV					-----	4
			60	4	60	4		

### Objectives:

1. To know the computation of allowances.
2. To impart knowledge on the importance of nutrition during life span.
3. To enlighten on the dietary modifications.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	General concepts about growth and development through different stages of life	K1,K2, K3, K4
CO2	Nutrition in Pregnancy, complications	K2, K3, K4
CO3	Nutrition during Lactation, Nutrition in Infancy, Nutrition in Pre-school	K2, K3, K4
CO4	Nutrition in school children and Adolescence	K2, K3, K4
CO5	Nutrition in Adult and Elderly	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	M	S
CO2	S	M	M	M	S
CO3	S	M	M	M	S
CO4	S	M	M	M	S
CO5	S	M	M	M	S

S-Strong; M-Medium, L- Low

**UNIT-I****12Hours**

Recommended allowances–RDA for Indians 2020, basis for requirement, computation of allowance based on energy expenditure, components of energy expenditure. General concepts about growth and development through different stages of life.

**UNIT-II****12Hours**

Nutrition in Pregnancy -Stages of gestation, maternal weight gain, complications of pregnancy, maternal physiological adjustments, nutritional problems and dietary management, importance of nutrition during and prior to pregnancy, teenage pregnancy – nutritional problems and dietary management, planning a menu.

**UNIT-III****12Hours**

Nutrition during Lactation -Physiology of lactation, hormonal control and reflex action, efficiency of milk production, problems of breast feeding, nutritional composition of breast milk, nutritional concerns during lactation, special foods during lactation, dietary modification, planning a menu.

Nutrition in Infancy- Infant feeding, nutritional needs, premature infant and their feeding, weaning foods. Feeding problems, infant formulae lactose intolerance, planning menu. Nutrition in Pre-school – Physiological development related to nutrition, feeding problems, behavioural characteristics, nutritional requirement and planning diet.

**UNIT-IV****12Hours**

Nutrition in school children – feeding school children and factors to be considered. Planning a menu, feeding problems, packed lunch. Nutrition during Adolescence – changes in growth and development, hormonal influences, Age at menarche – factors affecting age at menarche, psychological problems, body image, disordered eating behaviour, nutritional problems, planning a menu.

**UNIT-V****12Hours**

Nutrition in Adult and Elderly Nutrition and work efficiency, Menopausal and post menopausal women, hormonal changes, nutritional requirement, planning a menu. Physiological changes in aging – Psycho-social and economical factors affecting eating behaviour, social situation, knowledge and belief, institutionalization, common health problems, nutritional requirement, modification in diet, feeding old people.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S	Textbook of Nutrition and Dietetics.	Phoenix Publishing House Pvt. Ltd	2013
2	Mahan L K and Escott Stump S	Krause's Food & Nutrition Therapy, 13 <sup>th</sup> ed.	Saunders-Elsevier	2013

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Stacy Nix	William's Basic Nutrition and Diet Therapy, 13 <sup>th</sup> Edition.	Elsevier Mosby	2009
2	Antia F.P. And Philip Abraham	Clinical Nutrition and Dietetics	Oxford Publishing Company.	2001
3	Parikh, S; Sudarshan.R	Human Development and Structural Adjustment	UNPP	1993
4	Suriakanthi, A	A Handbook on Human Development	Kavitha Publications	2005
5	Hurlock,E.B.	Developmental Psychology-A life span approach, 5 <sup>th</sup> Edition,	McGraw Hill Book Co.	1995

**WEB SOURCES:**

Link:<https://www.hkr.se/en/course/NL401G/course-syllabus>

## HUMAN PHYSIOLOGY AND NUTRITION THROUGH LIFE SPAN PRACTICAL

Sem	Subject Code	Category	Lecture		Theory	Practical		Credits
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
III	22CNF41	Core practical II	-	-	-----	45	3	3

### HUMAN PHYSIOLOGY

1. Microscopic study of tissues- epithelial, connective and muscular.
2. Estimation of hemoglobin- Sahli's Acid hematin method.
3. Determination of blood group
4. Determination of bleeding time (Duke method) and coagulation time (Capillary tube method).
5. Measurement of blood pressure (Sphygmomanometry).
6. Microscopic structure of heart, digestive system and kidney
7. Microscopic structure of reproductive organs- ovary, uterus, mammary glands and testis.
8. Microscopic structure of endocrine glands- thyroid, pituitary and adrenal.

**Distribution of Marks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### NUTRITION THROUGH LIFE SPAN

1. Introduction to meal planning
2. Use of food exchange list
3. Planning and preparation of diets and dishes for
  - A. Young adult
  - B. Pregnant and Lactating woman
  - C. Preschool child
  - D. School age child and adolescents
  - E. Elderly
4. Planning complementary foods for Infants
5. Planning and Nutritive value calculation and preparation of macro nutrient rich dishes
  - A. Carbohydrate- Starch, Fibre
  - Protein

B. Fat

6.Planning and Nutritive value calculation and preparation of micro nutrient rich dishes

A. Vitamins- Vitamin A, Vitamin C, Thiamine, Riboflavin and Niacin

B. Minerals- Calcium, Iron, Zinc, Phosphorus, potassium

**Distribution of Marks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### **TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

### **SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## POST HARVEST TECHNOLOGY

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
IV	22SNF4A	Skill Based Subject-II	30	2	30	2	-----	2

### COURSE OBJECTIVE:

To enable the students to

- 1.Acquire knowledge regarding principles and methods of processing
- 2.To learn the process of harvest and to control the food spoilage
- 3.To apply the post harvest technology to foods

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction of post harvest technology	K1, K2
CO2	To understand about the processing of cereals and pulses	K2, K3
CO3	Learning about the processing of oil seeds and beverages	K2, K3
CO4	Learn to cultivation of algae and mushroom	K2, K3, K4
CO5	To understand how to control the food spoilage	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	S
CO2	S	S	M	S	S
CO3	S	S	M	S	S
CO4	S	S	S	S	S
CO5	S	S	S	S	S

S-Strong; M-Medium, L- Low

**UNIT – I****6 Hours****POST HARVEST TECHNOLOGY**

Definition, Importance and problems encountered, Importance of various factors on maintain the quality of grains.

**UNIT-II****6 Hours****PROCESSING OF CEREALS AND PULSES**

Cereals Processing – Rice and wheat only. Importance of breakfast cereals, Use of by products of rice and wheat milling  
Pulse processing – Traditional and modern methods.

**UNIT – III****6 Hours****OIL SEED AND BEVERAGES PROCESSING**

Soyabean, peanut, sesame, steps in preparation of protein concentrate and Isolates  
Processing of coffee, tea, cocoa and sugar

**UNIT-IV****6 Hours****ALGAE AND MUSHROOM CULTIVATION**

Algae cultivation, Occurrence, Sources of toxicity  
Mushroom cultivation, occurrence, sources of toxicity.

**UNIT-V****6 Hours****FOOD SPOILAGE**

Insects attacking food grains- Types only, Insect control methods – Physical and chemical methods, Damage due to rodents.

**Distribution of Marks:** Theory – 50 (univ. exam) = 50 Marks

**TEXT BOOKS:**

<b>S.NO</b>	<b>AUTHORS</b>	<b>TITLE</b>	<b>PUBLISHERS</b>	<b>YEAR OF PUBLICATION</b>
<b>1</b>	Harry	Outlines of food technology	updeshpurohut for Agrobios	2001
<b>2</b>	T. Richardson	Chemical changes in Food during processing	CBS Publishes and distributors.	1997

**REFERENCE BOOKS:**

<b>S.NO</b>	<b>AUTHORS</b>	<b>TITLE</b>	<b>PUBLISHERS</b>	<b>YEAR OF PUBLICATION</b>
<b>1</b>	Vijaya Khader	Text Book of Food Science and Technology	Indian council of Agricultural research	2001

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## HEALTH AND FITNESS

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
IV	22NNF4A	Non Major Elective - II	30	2	30	2	-----	2

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to health and wellness	K1,K2,K3
CO2	physical fitness	K2, K3, K4
CO3	Fundamentals of Nutrition	K2, K3, K4
CO4	Aerobic and Anaerobic exercise	K1,K2,K3, K4
CO5	YOGA	K1,K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	S	S	S
CO2	M	S	S	S	S
CO3	M	S	S	S	S
CO4	M	S	S	S	S
CO5	M	S	S	S	S

S-Strong; M-Medium, L- Low

## **UNIT-I**

### **HEALTH**

**6 Hours**

Definition of health and wellness – Factors affecting health and wellness, Factors influencing health and wellness, Physiological, psychological and social health.

## **UNIT-II**

### **FITNESS**

**6 Hours**

Definition, parameters of fitness, cardiovascular endurance, muscular strength, muscular endurance, physical fitness tests- for flexibility.

## **UNIT-III**

### **NUTRITION**

**6 Hours**

Basic Five Food groups, RDA, BMI, BMR, Food plate, Functional foods, Role of balanced diet in maintaining health, Eating disorders.

## **UNIT-IV**

### **EXERCISES**

**6 Hours**

Aerobic and Anaerobic exercise. Role of Exercise in preventing lifestyle Diseases- Obesity, CVD, Diabetes and Cancer.

## **UNIT-V**

### **YOGA**

**6 Hours**

Origin and History of yoga. Principles of yoga therapy, social skills and living value based education. Types of Asanas ,Role of yoga in Maintaining health.

**Distribution of Marks:** Theory – 50 (univ. exam) = 50 Marks

### **TEXT BOOKS:**

<b>S.NO</b>	<b>AUTHORS</b>	<b>TITLE</b>	<b>PUBLISHERS</b>	<b>YEAR OF PUBLICATION</b>
1	Swaminathan T,	Essentials of Food and Nutrition	Bangalore Printing Publishing Co.	2008
2	Mishra, S. C	Physiology in Sports	Sports Publication,	2005

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Werner W. K Hoejer	Life time Physical Fitness and Wellness,	Morton Publishing Company	1989
2	Greenberg, S. J and Pargman, D	Physical Fitness – A Wellness Approach	Hall International (UK) Limited,	1989
3	McArdle, W. D, Frank I. Katch, F. I and Victor L. Katch	Exercise Nutrition: Energy Nutrition and Human Performance.	William & Wilkin Publishing	(1996)
4	Mahan, K and Stump, E. S	Krause Food and Nutrition and Diet Therapy	W.B Saunders Company	1996
5	B. Srilakshmi	Food Science, 6 <sup>th</sup> edition	New Age International Publishers	2015

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## DIETETICS - I

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
V	22CNF5A	Core paper V	90	6	90	6	-----	5

### COURSE OBJECTIVE:

1. To impart knowledge in the field of Dietetics
2. To make them a Responsible Dietician
3. To understand the principles of Diet, modifications of Diet for various Medical Conditions.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to Diet Therapy and learning about the responsibility of Dietician	K2
CO2	Diet for Obesity and Underweight	K2, K3, K4
CO3	Diet for Diabetes Mellitus	K2, K3, K4
CO4	Diet for Gastrointestinal Disorders	K2, K3, K4
CO5	Diet for Hepatobiliary Disorders	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	S	M
CO2	S	M	S	S	M
CO3	S	M	S	S	M
CO4	S	M	S	S	M
CO5	S	M	S	S	M

S-Strong; M-Medium, L- Low

## **UNIT – I**

**18 Hours**

### **Introduction to Diet therapy**

- A. Diet – Definition, types and Principles of Diet
- B. Therapeutic Diets–Clear fluid diet, full fluid diet, soft diet, Regular Normal diet, Tailor made diets.
- C. Special Feeding Methods – Enteral Nutrition and Parenteral Nutrition (Feeding formulas)
- D. Dietitians – Classification, code of ethics, Responsibilities, Dietitians in India, Indian Dietetic Association (IDA)

## **UNIT – II**

**18 Hours**

### **Diet for Obesity and Underweight**

- A. Obesity –Definition, Aetiology, Method of Assessments, Types, Dietary recommendations, other treatments, Complications of Obesity.
- B. Underweight – Definitions & limitations, Aetiology, Signs & symptoms, Dietary Recommendations.

## **UNIT – III**

**18 Hours**

### **Diet for Diabetes Mellitus**

- A. Diabetes Mellitus– Definition, prevalence, Types, Aetiology, symptoms, Diagnosis, Principles of Diet, Dietary Recommendations and other Treatment methods, Complications.

### **Diet for Endocrine Disorders**

- B. Other Endocrine Disorders – Thyroidism, Cushing Syndrome, Poly Cystic Ovarian Disease (PCOD)

## **UNIT – IV**

**18 Hours**

### **Diet for Gastrointestinal Disorders**

- A. Gastroesophageal Reflux Disease (GERD) and Esophagitis, Dyspepsia and Functional Dyspepsia, Gastritis and Peptic Ulcers, Dumping Syndrome - Definition, Types, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.
- B. Intestinal Gas and Flatulence, Constipation, Diarrhoea - Definition, Types, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.
- C. Gastro Intestinal Intolerance - Celiac Disease, Lactose Intolerance, Fructose Malabsorption - Definition, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.
- D. Inflammatory Bowel Diseases – Crohn’s Disease, Ulcerative Colitis, Irritable Bowel Syndrome - Definition, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.

**UNIT V****18 Hours****Diet for Hepatobiliary Disorders**

- A. Liver - Hepatitis, Cirrhosis, Chronic Liver Disease, On-Alcoholic Fatty Liver Disease, Hepatic Encephalopathy - Definition, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.
- B. Gall Bladder – Cholestasis, Cholecystitis & Cholelithiasis and Cholangitis - Definition, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.
- C. Pancreas - Acute & Chronic Pancreatitis – Definition, Aetiology, signs & symptoms, Principles of Diet, Dietary Recommendations.

**Distribution of Marks:** Practical – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	L. Katheleen Mahan, Janice L. Raymond	Krause's Food and The Nutritional Care Process, 14 <sup>th</sup> Edition	Elsevier	2017
2	B. Srilakshmi	Dietetics, 7 <sup>th</sup> Edition	New Age International Publishers	2014

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Antia F.P. And Philip Abraham	Clinical Nutrition and Dietetics	Oxford Publishing Company.	2001
2	Gopalan C., Ram Sastri B.V and Bal Subramaniam S.C.,	Nutritive Value of Indian Foods, Hyderabad,	National Institute of Nutrition, Indian Council of Medical Research.	2006

3	Seth V and Singh K	Diet Planning through the Life Cycle Part II: Diet Therapy. A Practical Manual, 4th edition.	Elite Publishing House Pvt. Ltd.	2007
4	Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S	Textbook of Nutrition and Dietetics.	Phoenix Publishing House Pvt. Ltd	2013
5	Mahan L K and Escott Stump S	Krause's Food & Nutrition Therapy, 13th ed.	Saunders-Elsevier	2013
6	Stacy Nix	William's Basic Nutrition and Diet Therapy, 13th Edition.	Elsevier Mosby	2009

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## PRINCIPLES OF HUMAN NUTRITION

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
V	22CNF5B	Core paper IV	90	6	90	6	-----	4

### COURSE OBJECTIVE:

1. To introduce the students to the principle of Human Nutrition
2. To gain skill in qualitative tests and quantitative estimation of nutrients

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Learning about the carbohydrates	K1, K2
CO2	To understand about the energy	K2, K3
CO3	To learn about the lipids	K2, K3
CO4	Learning about the vitamins	K2, K3, K4
CO5	Knowing about the minerals and water	K2. K3. K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	S
CO3	M	S	S	S	S
CO4	S	S	M	S	S
CO5	S	S	M	S	S

S-Strong; M-Medium, L- Low

## **UNIT –I**

**18 Hours**

### **CARBOHYDRATES**

Carbohydrates – Definition and composition, classification, Review of digestion, absorption and metabolism – Regulation of blood sugar, Hormonal controls, functions of carbohydrates in the body. Dietary fibre – definition, soluble and insoluble fibres, sources of fibre, components and physiological effects of dietary fibre, Role of fibre in human nutrition, sources and requirements

## **UNIT-II**

**18 Hours**

### **ENERGY**

Energy Units – Kilocalories, Mega joules, determination of energy value of foods using Bomb Calorimeter, gross calorific values, Physiological energy value of foods, relation between oxygen used and calorific value, determination of direct calorimetry.

Relation between Respiratory quotient, and energy output-specific dynamic action of food, indirect calorimetry – Basal metabolism – definition, determination-Benedict Roth basal metabolism Apparatus- factors affecting BMR – recommended allowances for calories, energy requirements of adults expressed in terms of Reference man and Reference woman.

## **UNIT – III**

**18 Hours**

### **LIPIDS**

Lipids – classification, composition function – essential fatty acids, deficiency food sources of EFA, Function of TGL, DHA, Sterols-cholesterol-function, food sources, phospholipids-function, ketone bodies – fat requirements – food sources

## **UNIT – IV**

**18Hours**

### **VITAMINS**

Fat soluble vitamins-Vitamin A,D,E,K – functions, effects of deficiency, sources, requirements, units of measurement and hyper-vitaminosis.

Function, effects of deficiency, sources and requirements of water-soluble vitamins, ascorbic acid, thiamine, riboflavin and Niacin, Importance of folic acid, Vitamin B12, Pyridoxine, Biotin and Pantothenic acid to the body.

**UNIT – V****18 Hours****MINERALS AND WATER**

Distribution in the body, functions, food sources, requirements and effects of deficiency of calcium, phosphorus, iron and Iodine

Trace elements in human nutrition – copper, fluorine, zinc-functions, food sources, requirements and effects of deficiency

Selenium and vitamin E relationship, chromium and glucose tolerance factor

Distribution of water in the body, water intake and loss, exchange of water in the body, composition of body fluids, water exchange between plasma fluids.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
3	Wardlaw, G.M. Insef, P.H	Perspectives in Nutrition	Times Mirror I. Mosby college publishing Co.St.Louis, Toronto, Boston.	1990
4	William; Sue Rodwell.	Nutrition and Diet Therapy, 5 <sup>th</sup> edition	Mosbey Co. St, Louis	1985
5	M. Swaminathan	“Principles of Nutrition and Dietetics”	Bappeo88	1993
6	Maurice E Shills	“Modern nutrition in health and disease	A waverly company	1994

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
2	Srilakshmi	Nutrition science	New Age International Private Ltd	2008

## DIETETICS PRACTICAL -I

Sem	Subject Code	Category	Lecture		Theory	Practical		Credits
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
V	22CNF51	Core practical III	-	-	-----	75	5	3

1. Grouping of foods according to ICMR classification
2. Find the percentage of edible portion of foods
3. Food Exchange System and Standardization of Raw to Cooked Foods
4. Development of a Ready – Reckoner for calculating nutrient content of various foods, portion size and volume, conversion of cooked to raw equivalent of various foods.  
Learning how to use different nutrition assessment tools
5. Planning of routine hospital diet–clear liquid, full fluid, soft, Regular Normal diet.
6. Diet for Obesity and Underweight
7. Diet for Diabetes Mellitus
8. Diet for Gastrointestinal Tract Disorders
9. Diet for Hepatobiliary Disorders

**Distribution of Marks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### TEACHING METHODOLOGY

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity
- Hospital Visit

### SYLLABUS DESIGNER:

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## PRINCIPLES OF HUMAN NUTRITION PRACTICAL

Sem	Subject Code	Category	Lecture		Theory	Practical		Credits
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
V	22CNF52	Core practical IV			-----			3
			-	-		75	5	

1. Quantitative estimation of calcium (5 HRS)
2. Quantitative estimation of phosphorus (5 HRS)
3. Quantitative estimation of vitamin-C(10HRS)
4. Quantitative estimation of thiamine (10 HRS)
5. Quantitative estimation of riboflavin (10 HRS)
6. Demonstration of Iodine value (5 HRS)
7. Quantitative estimation of Iron (10 HRS)
8. Demonstration of saponification number (5 HRS)

**Distribution of arks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### TEACHING METHODOLOGY

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

### SYLLABUS DESIGNER:

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## FOOD ADULTERATION AND TOXICOLOGY

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
V	22CNF5C	Elective Paper I					-----	3
			45	3	45	3		

### COURSE OBJECTIVE:

1. To learn and understand about food adulterations.
2. To identify the different types of toxins in various foods.
3. To learn the importance of food safety regulations.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to Food Adulteration and Additives	K1, K2
CO2	Learning about different types of food toxins	K1, K2
CO3	Understanding the difference between food sensitivity and contaminants	K1, K2
CO4	Evaluating the Quality of food	K2, K3, K4
CO5	Regulations to be followed to maintain the food safety	K2. K3. K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	S	M	M	S
CO2	M	S	S	M	S
CO3	M	S	S	M	S
CO4	M	S	M	M	S
CO5	M	S	M	M	S

S-Strong; M-Medium, L- Low

## UNIT – I

9 Hours

### INTRODUCTION TO FOOD ADULTERATION AND ADDITIVES

- A. **Food adulteration:** Meaning and definition; Types of food adulterants; Methods used for detection of food adulterants.
- B. **Food Additives and Adulterants:** Food additives definition; Common food additives and its function and usage; Permissible limits of additives in foods; Implications of additives on consumers health;

## UNIT – II

9 Hours

### DIFFERENT TYPES OF FOOD TOXINS

- A. **Food poisoning:** types, causative factors, preventive symptoms, natural food toxins, antinutritional factors, other food toxins, harmful effects, methods of removal.
- B. **Microbial toxins and food intoxications:** Source of contamination Effect on health, preventive measures, methods of inactivation/destruction.
- C. **Chemical toxins:** Pesticides, insecticides metallic and others, residual effects, preventive measures, methods of removal.
- D. Determination of toxicants in foods and their management.

## UNIT – III

9 Hours

### FOOD SENSITIVITY AND CONTAMINANTS

- A. **Food allergies and sensitivities:** natural sources and chemistry of food allergens; true/untrue food allergies; handling of food allergies; food sensitivities (anaphylactoid reactions, metabolic food disorders and idiosyncratic reactions); Safety of genetically modified food: potential toxicity and allergenicity of GM foods. Safety of children consumables.
- B. **Environmental contaminants and drug residues in food:** fungicide and pesticide residues in foods; heavy metal and their health impacts; use of veterinary drugs (e.g. Malachite green in fish and  $\beta$ agonists in pork); other contaminants in food, radioactive contamination of food, Food adulteration and potential toxicity of food adulterants. Endocrine disrupters in food.

## UNIT – IV

9 Hours

### EVALUATION OF FOOD QUALITY

- A. **Testing of Food Quality:** Quality meaning and need of food quality testing; Types of evaluation – subjective and objective; Subjective evaluation methods based on difference, rate, sensitivity etc.; Objective evaluation methods – tools and instruments used; quality standards for cereal, pulses and legumes, vegetables and fruits, milk, egg and flesh foods, fat and sugar and related products.

**UNIT – V****STANDARDS FOR FOOD SAFETY****9 Hours**

A. **Food Laws and Standards:** Need and importance; National food legislation such as FSSA, Essential Commodities Act, HACCP, ISI or BIS, AGMARK, FPO and PFA, International Organization such as FAO, WHO, Codex Alimentarius, and Agriculture and Processed food products Export Development Authority (APEDA). Recent Food Laws and standards.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	TõnuPüssa	Principles of Food Toxicology, Second Edition	CRC Press	2013
2	S.S. Deshpande Ed,	Handbook of Food Toxicology	CRC Press, ISBN 9780824707606.	2013
3	Srilakshmi, B.	Food Science, 5 <sup>th</sup> Edition	New Age International (P) Ltd., Publishers, New Delhi	2012

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Helferich, W., and Winter, C.K.	Food Toxicology	CRC Press	2001
2	Shibamoto, T., and Bjeldanes, L.	Introduction to Food Toxicology, 2nd Ed	Elsevier Inc., Burlington, MA	2009
3	Duffus, J.H., and Worth, H.G. J	Fundamental Toxicology	The Royal Society of Chemistry	2006
4	Stine, K.E., and Brown, T.M.	Principles of Toxicology, 2nd Ed.	CRC Press	2006
5	Tõnu, P.	Principles of Food Toxicology.	CRC Press	2007

## **TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

## **SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## HUMAN DEVELOPMENT

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
V	22CNF5D	Elective Paper II					-----	3
			45	3	45	3		

### COURSE OBJECTIVES:

1. To understand development aspects (both normal and exceptional) from conception to old age as they can be guided effectively.
2. To have complete knowledge about the behavior pattern of the individual and various factors influencing them.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	General guidelines on Growth and Development.	K1, K2,
CO2	Pre-Natal and Post Natal care.	K2, K3, K4
CO3	Infancy Development and care	K2, K3, K4
CO4	Early childhood, Late childhood and Children with special needs-Physical and Psychological development.	K2, K3, K4
CO5	Adolescence, Adulthood, Old age-Physiological and Psychological changes	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	S
CO2	M	M	S	S	S
CO3	M	M	S	S	S
CO4	M	M	S	S	S
CO5	M	M	S	S	S

S-Strong; M-Medium, L- Low

## UNIT-I

9 Hours

1. **The concept of development and growth** - principles governing growth and development, developmental tasks of different stages. , Factors influencing. Nature – Nurture Controversy.
2. **Stages of Life span** - conception, infancy, early childhood, late childhood, adolescence, adulthood, middle age and old age.
3. **Methods of child study**—projective technique, observation, experimentation, case study (elementary treatment). Needs of Children.

## UNIT-II

9 Hours

**1.Prenatal Development** - Conception, test tube baby, Periods of prenatal development – signs and symptoms of pregnancy. Common discomforts and complications of Pregnancy. Factors influencing prenatal development.

2. **Prenatal care** - Management of normal pregnancy - hygiene, diet and medical supervision and hazards during pregnancy.

3. **Labor** - signs of labor, stages of labor - types of birth, multiple pregnancy.

4. **Maternal mortality** – Causes and prevention

5. Post-natal care, prevention of gynecological complications.

6. Adjustment of the newborn to temperature, breathing, feeding and elimination.

## UNIT-III

9 Hours

**1.Infancy(Birth to 2 years)** – Appearance of the new born- size – physical proportion and physiological functions; sensory abilities of the new born.

**2.Development** - physical and motor, social, emotional, cognitive and language, Minor ailments Low birth weight , premature babies. Apgar test, care of the new born. Infant mortality – Causes and prevention.

**3.Effect of stimulation** - care of infants, Infant feeding – Breast feeding and its advantages, bottle feeding and supplementary feeding.toilet training, bathing, clothing, sleeping and immunization, prevention of accidents, importance of mothering and emotional growth. Importance of psychological needs.

## UNIT- IV

9 Hours

1. **Early childhood (preschool stage 2 - 6 years)** - Physical and motor development, emotional, social, cognitive and language development, creativity, importance of play, importance of family relationship, behavior problems - causes and treatment.
2. Importance of preschool education.

**3. Late childhood (Elementary school period 6 - 12 years) -** Developments - physical, social, emotional, cognitive and language. Sex Education.

**4. Children with special needs -** identification and rehabilitation.

**UNIT-V**

**9 Hours**

**1. Adolescence (12 - 18 years) -**Physical, emotional, intellectual and motor development, personal adjustment and maladjustment. Delinquency - causes, prevention and rehabilitation. Drug addiction and alcoholism - rehabilitation.

**2. Adulthood (18 - 60 years) -** Characteristics and developmental tasks. All aspects of development and vocational development.

**3. Old age (60 years and above) -** Physical and psychological changes, problems of the aged, family attitude towards the aged, place of the aged in Indian society.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Devadass, R.P; Jaya, N.	A Text Book on Child Development	Macmillan Indian Ltd.	1996
2	Parikh, S; Sudarshan.R	Human Development and Structural Adjustment	UNPP	1993

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Mussenetal	Child Development and personality	Harper and Row publishers	1990
2	Papalia, D.E	Human Development	Tata McGraw Hill Publishing company Ltd	1997
3	Suriakanthi, A	A Handbook on Human Development	Kavitha Publications	2005
4	Hurlock,E.B.	Developmental Psychology-A life span approach, 5th Edition,	McGraw Hill Book Co.	1995
5	Nanda V.K.	Principles of Child Development	Anmol Publications Pvt. Ltd.	1998

6.	Berk L.E.	Child Development	Pearson New	Longman	2004
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**WEB SOURCES:**

Link:[https://www.caluniv.ac.in/syllabus/Human\\_Development.pdf](https://www.caluniv.ac.in/syllabus/Human_Development.pdf)

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## BASICS OF RESEARCH IN NUTRITION

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
IV	22SNF5A	Skill based Paper III					-----	2
			30	2	30	2		

### OBJECTIVES:

1. To understand the meaning and importance of research.
2. To develop awareness regarding the basic elements of research
3. To develop understanding regarding the characteristics of a good tool of research.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	General Concepts on Research	K1,K2, K3, K4
CO2	Basic Elements of Research	K2, K3, K4
CO3	Survey Research	K2, K3, K4
CO4	Simple Statistical Methods	K2, K3, K4
CO5	Techniques of Writing Reports and Documentation	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	S
CO2	M	M	S	S	S
CO3	M	M	S	S	S
CO4	M	M	S	S	S
CO5	M	M	S	S	S

S-Strong; M-Medium, L- Low

## **UNIT- I**

**6 Hours**

Introduction To Research Definition of research, Need for research, Types of research –Pure, applied, Exploratory, Descriptive, Action and evaluative. Identification of a research topic Formulation of research questions.

## **UNIT -II**

**6 Hours**

Basic Elements of Research and their Importance Review of literature, Objectives, Assumptions and hypothesis Limitations, Sampling and sampling methods, Tool construction Analysis and Interpretation.

## **UNIT - III**

**6 Hours**

Survey Research-Meaning, Importance, Advantages, Limitations Tools for research – Interview schedule, questionnaire, Check list, Rating scale Characteristics of a good tool - Validity, reliability, objectivity, Practicability.

## **UNIT- IV**

**6 Hours**

### **SIMPLE STATISTICAL METHODS**

Classification and organisation of Data- Coding ,Tabulation, Graphic presentation, Simple statistical measures- Percentages, Mean, Mode ,Median Standard deviation.

## **UNIT -V**

**6 Hours**

### **TECHNIQUES OF WRITING REPORTS AND DOCUMENTATION**

Research report- Meaning, purpose, Characteristics, Steps in planning report writing, Research report format – Prefactory items, body of the report – Introduction, design of the study, results: Findings, discussion, Summary, conclusion, and recommendations. Terminal Items – Bibliography – writing format.

**Distribution of Marks:** Theory –50 (univ. exam) = 50 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Krishnaswami,O.R	Methodology of research in social sciences	Himalaya Publishing House.	2011
2	Gupta,S.P.	Statistical Methods. Publication Manual . 6th edition.	American Psychological Association.	2014

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Kothari C. R and Gaurav Garg	Research Methodology Methods and Techniques	New Age International	2018

**WEB SOURCES:**

Link:<https://www.nutrition.org.uk/healthyliving/basics.html>

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## DIETETICS - II

Sem	Subject Code	Category	Lecture		Theory		Practical	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
VI	22CNF6B	Core paper VII	75	5	75	5	-----	5

### COURSE OBJECTIVE:

4. To impart knowledge in the field of Dietetics
5. To make them a Responsible Dietician
6. To understand the principles of Diet, modifications of Diet for various Medical Conditions.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Diet for Cardiovascular and Pulmonary Diseases	K2, K3, K4
CO2	Diet for Kidney Diseases	K2, K3, K4
CO3	Diet for Infections and Fevers	K2, K3, K4
CO4	Diet for Cancer	K2, K3, K4
CO5	Diet for Anemia and Rheumatic Diseases	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	M
CO2	S	M	S	S	M
CO3	S	M	S	S	M
CO4	S	M	S	S	M
CO5	S	M	S	S	M

S-Strong; M-Medium, L- Low

## **UNIT – I**

**15Hours**

### **Diet for Cardiovascular Diseases**

- a. Coronary Heart Disease (CHD) - Introduction, prevalence, clinical effects, risk factors, Role of fat in the development of Atherosclerosis, General Dietary Recommendations, Functional foods for CHD.
- b. Hypertension – Definition, Prevalence, Etiology, Types, symptoms, Principles of Diet, Dietary Recommendations.

### **Diet for Pulmonary Diseases**

- a. Asthma, Chronic Obstructive Pulmonary Disease (COPD), Acute Respiratory Distress Syndrome (ARDS), Pneumonia, Covid - Definition, Prevalence, Etiology, Types, symptoms, Principles of Diet, Dietary Recommendations.

## **UNIT – II**

**15Hours**

### **Diet for kidney Diseases**

- a. Glomerulonephritis, Nephrotic Syndrome/Nephrosis, Acute Renal Failure, Chronic Renal Failure, Urolithiasis, End Stage Renal Disease (ESRD) - Definition, etiology, symptoms, Principles of Diet, Dietary Recommendations
- b. Dialysis – Necessity of Dialysis, Types, Dietary Management, Drawbacks

## **UNIT – III**

**15Hours**

### **Diet for Infections and Fevers**

- a. Definition, Host Defense Mechanism, General causes, Usual Types of fever, General Dietary Considerations.
- b. Typhoid, Influenza, Malaria, Cholera, Ebola, Tuberculosis – Definition, Etiology, signs & symptoms, Principles of Diet, Dietary Recommendations.
- c. Human Immunodeficiency Virus (HIV) And Acquired Immune Deficiency Syndrome (AIDS) – Definition, Etiology, Classification, clinical findings, Medical and Nutritional Management.

## **UNIT – IV**

**15Hours**

### **Diet for Cancer**

- a. CANCER – Definition, Types, Risk Factors, symptoms, General Systemic Reactions, Nutritional Problems of Cancer Therapy, Nutritional Requirements & Dietary Management, Role of Food in the prevention of Cancer, Role of Physical activity and Cancer

## **UNIT – V**

**15Hours**

### **a) Diet for Anemia**

- a. Iron Deficiency Anemia, Megaloblastic Anemia – Definition, Prevalence, Etiology, Types, symptoms, Principles of Diet, Dietary Recommendations, Other Types of Anemias and Iron Overload.

### **b) Diet for Rheumatic Diseases**

- a. Osteoarthritis, Rheumatoid Arthritis, Gout - Definition, Prevalence, Etiology, Types, symptoms, Principles of Diet, Dietary Recommendations.

**c) Artificial Intelligence (AI) and Dietetics**

Definition, uses, advantages and disadvantages , Relationship between AI and Dietetics

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	L. Katheleen Mahan, Janice L.Raymond	Krause's Food and The Nutritional Care Process, 14 <sup>th</sup> Edition	Elsevier	2017
2	B. Srilakshmi	Dietetics, 7 <sup>th</sup> Edition	New Age International Publishers	2014

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Antia F.P. And Philip Abraham	Clinical Nutrition and Dietetics	Oxford Publishing Company.	2001
2	Gopalan C., Ram Sastri B.V and Bal Subramaniam S.C.,	Nutritive Value of Indian Foods, Hyderabad,	National Institute of Nutrition, Indian Council of Medical Research.	2006
3	Seth V and Singh K	Diet Planning through the Life Cycle Part II: Diet Therapy. A Practical Manual, 4th edition.	Elite Publishing House Pvt. Ltd.	2007
4	Khanna K, Gupta S, Seth R, Passi SJ, Mahna R, Puri S	Textbook of Nutrition and Dietetics.	Phoenix Publishing House Pvt. Ltd	2013
5	Mahan L K and Escott Stump S	Krause's Food & Nutrition Therapy, 13th ed.	Saunders-Elsevier	2013

6	Stacy Nix	William's Basic Nutrition and Diet Therapy, 13th Edition.	Elsevier Mosby	2009
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**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## FOOD SERVICE MANAGEMENT

Sem	Subject Code	Category	Lecture		Theory		Practicals	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
VI	22CNF6C	Core Paper IX	75	5	75	5	-----	4

### OBJECTIVES:

1. To create an awareness on the organizational aspect and functioning of different types of food service institutions.
2. To develop managerial skills among the students.
3. To understand the space allocation and arrangement of food service units .

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to food service industry	K1,K2,
CO2	Physical plant, sanitation and food purchase	K2, K3, K4
CO3	Quantity food service and equipments	K2, K3, K4
CO4	General guidelines on Management and Resource management	K2, K3, K4
CO5	Personnel management and financial management	K2, K3, K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	M	S	S	M
CO2	S	M	S	S	M
CO3	S	M	S	S	M
CO4	S	M	S	S	M
CO5	S	M	S	S	M

S-Strong; M-Medium, L- Low

## **UNIT- I**

**15Hours**

a) **FOOD SERVICE INDUSTRY:** Definition – types of catering- Hotel, Motel, Restaurant, Cafeteria and chain hotels.

b) **WELFARE** – Hospital, School lunch, Residential establishment, Industrial catering, Leisure linked Catering and Departmental Store Catering.

c) **TRANSPORT** – Air, Rail, Sea and Space, Miscellaneous – Contract and outdoor.

## **UNIT – II: PHYSICAL PLANT, SANITATION AND FOOD PURCHASE 15Hours**

a) **FOOD PLANT** -Types of Kitchen, Layout of different food service establishments, drainage ,Water lines, lighting and ventilation adopted in different units such as Kitchen, storage and dining area, working heights in relation to equipment.

**SANITATION AND SAFETY** – Sanitation of Plant and Kitchen Hygiene, Personal Hygiene, First aid principles and practice, Health and Safety at work. Use of fire extinguishers

b) **FOOD PURCHASE**- Procedures and Factors involved in the selection of food.

## **UNIT – III: QUANTITY FOOD SERVICE AND EQUIPMENTS**

**15Hours**

a) **QUANTITY FOOD SERVICE:**

Definition, objectives, types of service- waiter service, self – service, vending. Mechanics of waiter service.

b)**EQUIPMENTUSED IN FOOD SERVICE INDUSTRIES**-Classification of equipments electrical and non electrical equipments for food storage, Preparation, serving, dishwashing and laundering. factors involved in selection of equipments, use and care of major equipments, traditional and modern equipment.

C) **Menu planning:** Origin of menu, importance of menu planning. Types of menu- tabled’hote menu, a la carte, Dujour, theme, static, cycle. French classical menu. Use of menus, construction of menus, Menu Design, Factors affecting menu planning. Standardisation of Recipes and portion control.

## **UNIT – IV**

**15Hours**

a) **MANAGEMENT**- Definition, principles, Functions of management, Management Tools-The Organization Chart, Job Description and specification, Time schedule, Work

schedule, Job Analysis, Production service and staff analysis, Budget leadership style and training, decision making and communication. qualities of a good leader, styles of leadership.

**b) RESOURCE MANAGEMENT** – Money, Time, Energy, Computer applications in menu planning.

## UNIT – V

**15Hours**

**PERSONNEL MANAGEMENT-** Recruitment, selection and induction. Employee facilities and benefits, welfare schemes and laws governing food service institutions.

**FINANCIAL MANAGEMENT-** Buying and accounting procedures in food service institution, total budget, methods of cost control, records to be maintained, Cost accounting/analysis-Cost concepts- types of costfixedcost , semi fixed cost, variable cost. Food cost control - methods of controlling food cost, break even analysis. Records to be maintained- Book Keeping, system of book keeping, advantages of the double entry system. book of accounts- cash book, purchase book, sales book, purchase returns book, sales returns book and journals . use of computer technology in book keeping.

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

### TEXT BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Dr. Aggarwal D.K	Housekeeping Management	AMAN Publications,	2006
2	.Dr.Singh.R.K	Modern Trends in Hospitality industry	AMAN Publications,	2006

### REFERENCE BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Kaufman,R.	Mega planning- Practical tools for Organisational Success	Sage Publications Inc,	2000
2	Shring Y, P.	Effective Food Service Management	Anmol publications Pvt Ltd	2001
3	Stephen, B, Williams, S, R, “Bill Jardine, and Richard, J, N,	Introduction to Catering,Ingredients for Success	Delmar-Thomson learning,	2001
4	Yadav, C, P.	Management of Hotel and Catering Industry	Anmol publications Pvt Ltd	2001

5	Mohini Sethi and Surjeet Malham	Catering Management – an integrated approach	New Age International	2007
6	Sudhir Andrews	Food and Beverage Service Training Manual	Tata McGraw Hill Publishing Company Ltd	1999

### **WEB SOURCES:**

**Link:**<https://ahs.sgtuniversity.ac.in/syllabus-food-service-management-b-sc-nutrition-dietetics-second-year/>

### **TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

### **SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## COMMUNITY NUTRITION AND EXTENSION EDUCATION

Sem	Subject Code	Category	Lecture		Theory		Practical's	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
VI	22CNF6A	Core paper VII	60	4	60	4	-----	4

### COURSE OBJECTIVE:

To enable the students to understand

1. Understand the malnutrition problems and its prevalence in India
2. Gain knowledge on the national effort in combating malnutrition
3. The methods that are used in Extension
4. Programmes for the community upliftment

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to Malnutrition and its types	K1, K2
CO2	Learning about different types of nutritional deficiencies	K2, K3
CO3	Understanding the assessment of nutritional status	K2, K3, k4
CO4	Understanding the extension teaching methods	K2, K3, K4
CO5	Learning the Audio-visual aids	K2. K3. K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	S	S	S
CO3	S	S	S	M	S
CO4	S	S	M	M	S
CO5	S	S	M	M	S

S-Strong; M-Medium, L- Low

## **UNIT-I**

**12 Hours**

### **MALNUTRITION**

Malnutrition – Aetiology, symptoms, prevalence of malnutrition – under nutrition and over nutrition, balance between food and population growth

Meaning and objectives of Extension and definition of home science.

## **UNIT-II**

**12 Hours**

### **NUTRITIONAL DEFICIENCIES**

Nutritional problems confronting our country – PEM – prevalence, classification – Kwashiorkar and Marasmus – etiology, symptoms, pathological changes, biochemical change, Anaemia – Prevalence, etiology, symptoms, prophylaxis programmes

IDD-Etiology, prevalence, symptoms, prophylaxis

Fluorosis- Etiology, prevalence, symptoms

Vitamin A deficiency – Etiology, prevalence, symptoms and prophylaxis

## **UNIT – III**

**12 Hours**

### **ASSESSMENT OF NUTRITIONAL STATUS**

Methods of assessment of Nutritional status - sampling direct assessment – diet survey, anthropometry, clinical and biochemical estimation. Indirect assessment – Food balance sheet, Agricultural data, Ecological parameter and vital statistics, use of growth chart

## **UNIT – IV**

**12 Hours**

### **EXTENSION TEACHING METHODS**

- 1) Individual methods: Farm and Home visit, farmer's call and personal letters.
- 2) Group methods: Result demonstration, methods demonstration, group meetings, study tour
- 3) Mass methods: Farm publication, mass meetings, exhibition, campaign, newspaper, Radio and TV

## **UNIT – V**

**12 Hours**

### **AUDIO - VISUAL AIDS**

Definition, classification, criteria for selection and evaluation of audio-visual aids.

Audio aids: Tape records, public address system

Visual Aids: Projected slides, filmstrip, opaque projection, overhead projection

Non-projected: chalkboard, Bulletin board, flannel graph, flash card, poster-diagram, map, chart, graph, specimen and models

Audio-visual aids: Projected: Motion picture, video. Non-projected: drama and puppet show folk media

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Park	Preventive and Social Medicine	M/S Banarsidas Bhanot publishers	2000
2	Mirsa et al.,	Indian Health Report	Oxford University Press, New Delhi.	2003
3	P.K. Shukla	Nutritional Problems of India	Prentice Hall	2012

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Adivi Reddy	Extension education	Lakshmi Pub, Andrapradesh	1973
2	Dhaina and Bilartnagar Op	Education and communication for Development	Oxford Pub, New Delhi	2009
3	Roy G.L.	Extension communication and Management	New Delhi	1994

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## DIETETICS -II

Sem	Subject Code	Category	Lecture		Theory	Practical		Credits
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
VI	22CNF61	Core practical V			-----			3
			-	-		60	4	

1. Diet for Cardiovascular Diseases
2. Diet for Pulmonary Diseases
3. Diet for Kidney Diseases
4. Diet for Infections and Fevers
5. Diet for Cancer
6. Diet for Anemia
7. Diet for Rheumatic Diseases

**Distribution of Marks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### TEACHING METHODOLOGY

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity
- Hospital Visit

### SYLLABUS DESIGNER:

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## FOOD SERVICE MANAGEMENT

Sem	Subject Code	Category	Lecture		Theory	Practical		Credit
			Hrs/sem	Hrs/Per week		Hrs/sem	Hrs/Per week	
VI	22CNF6B	Core practical VI			-----			3
			-	-		60	4	

1. Visit to well-organized food service units.
2. Table setting and service-appraising and drawing silver cutlery and crockery Folding
3. Napkins - Laying of table cloth, table mats - Arrangement of cover and table - appointment according to the menu - serving food at the table cleaning of the table.
4. Standardization any 3 selected quantity recipes and their preparation. Calculation of nutritive value, yield of cost per serving - size of serving.
5. Quantity Cookery: Organizing, preparing and serving of south Indian, North Indian and oriental menu for 50 members.

**Distribution of Marks:** Practical – 40 (IA) + 60 (univ. exam) = 100 Marks

### TEACHING METHODOLOGY

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity
- Hospital Visit

### SYLLABUS DESIGNER:

- Ms. R. D.VAISHYA, Assistant Professor, Department of Foods and Nutrition.

## TEXTILE AND CLOTHING

Sem	Subject Code	Category	Lecture		Theory		Practical	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
VI	22CNF6C	Elective Paper III	45	3	45	3	-----	3

### COURSE OBJECTIVE:

1. To Propose possible classification with the textiles
2. To impart the knowledge in fashion and textiles
3. To become an area of excellence in fashion and textile education.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Introduction to textile terminologies and its manufacturing process	K1, K2
CO2	Understanding about the fabric construction and textiles finishes	K2, K3
CO3	Understanding the apparel designing	K2, K3
CO4	Learning maintenance of clothing and fashion	K2, K3, K4
CO5	Understanding the clothing and textiles	K2. K3. K4

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	S
CO2	S	S	M	S	S
CO3	S	S	M	S	S
CO4	S	S	M	M	S
CO5	S	S	M	M	S

S-Strong; M-Medium, L- Low

## **UNIT – 1**

### **CLASSIFICATION AND USES OF TEXTILES**

**9 Hours**

Textile terminologies – fibre, yarn, weave, fabric, knits, non-woven. Its classification and identification

Manufacturing process of major natural and manmade fibres, properties and their end use

## **UNIT – II**

### **FABRIC CONSTRUCTION AND TEXTILES FINISHES**

**9 Hours**

Different methods of fabric construction-woven, knitted and non-woven fabrics, their properties and end use.

Textiles finishes-classification, processing and purposes of finishes

## **UNIT – III**

### **APPAREL DESIGNING**

**9 Hours**

Selection of clothing for different age groups. Selection of fabrics for different and uses.

Pattern making-drafting, draping and flat pattern making techniques, pattern alteration and dart manipulation techniques.

## **UNIT – IV**

### **FASHION AND CLOTHING MAINTENANCE**

**9 Hours**

Fashion-Terminologies, fashion cycle, fashion theories, fashion adoption, fashion forecasting and factors affecting fashion.

Care and maintenance of clothing-principles of washing, laundry agents, storage techniques case labels and symbols.

## **UNIT – V**

### **CLOTHING AND TEXTILES**

**9 Hours**

Dyeing and printing-classification, method of block printing, tie and dye, batik, roller printing, screen printing, discharge, and heat transfer printing and digitized printing.

Traditional textiles of India-embroidered textiles, printed textiles, woven textiles, dyed textiles of various regions in India. Identification on the basis of fibre content, technique, motif, colour and designed

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	M.A. Varghese	Home management	New age international publishers	2001
2	Gioello and Berke	Figure Type And Size	Fairchild Publications, New York.	2013
3	Shenai	Chemistry of Dyes and Principles of Dyeing	Sevak Prakashan, Mumbai	1984

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Dhake. Spoons	Greenworld Retail Fashion Promotion and Advertising,	Mac Millian Publication	1992
2	Stone, E. and Samples, J. A.	Fashion Merchandising an Introduction	Mc. Graw Hill Book Company.	1985

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity

**SYLLABUS DESIGNER:**

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition

## FUNCTIONAL FOODS AND NUTRACEUTICALS

Sem	Subject Code	Category	Lecture		Theory		Practical	Credit
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
VI	22CNF6D	Elective IV					-----	3
			45	3	45	3		

### OBJECTIVES

To enable the students to

1. Gain knowledge on Functional Foods and Nutraceuticals
2. Study the applications of Phytochemicals in health and disease.

### COURSE OUTCOMES

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	General guidelines on the Functional foods	K1,K2,
CO2	Concept of Nutraceuticals, Designer Foods, Dietary Supplements	K2, K3, K4
CO3	Effects of Phytochemicals on Human Health	K2, K3, K4
CO4	Probiotics and Potential Health benefits	K2, K3, K4
CO5	Concept of Prebiotics, Synbiotics on Human health	K1,K2, K3

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

## MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	S
CO2	S	S	S	M	S
CO3	S	S	S	M	S
CO4	S	S	S	M	S
CO5	S	S	S	M	S

S-Strong; M-Medium, L- Low

### UNIT -I

**9 HRS**

**FUNCTIONAL FOODS** - Introduction and Definition of functional and traditional foods, pharma foods, History of functional foods, components of functional foods, sources of Functional foods\_ Functional foods from animal sources, Functional foods in the enhancing body image, Functional foods enhancing sports performance

### UNIT –II

**9 HRS**

**NUTRACEUTICALS AND DESIGNER FOODS** – Definition of Nutraceuticals, foods containing Nutraceuticals and classification of Nutraceuticals – based on plant sources, mechanism of action and chemical nature. Designer food – Definition, Types of Designer Foods. Herbal supplements – Definition, Uses of Herbal supplements, Types of Common Herbal supplements

### UNIT –III

**9 HRS**

**PHYTOCHEMICALS** - Definition of Phytochemicals, Classification of Dietary Phytochemicals , Phytochemicals and their potential benefits - Metabolism, Availability, Digestibility of Phytochemicals. Physiological Effects of Phytochemicals – Effect on Human Health

### UNIT- IV

#### PROBIOTICS

**9 HRS**

Introduction and Definition of Probiotic, Probiotic food products – Processed Foods. Characteristics of Probiotic microorganism, Potential health benefits of Prebiotic. Incorporating probiotic into Foods. Viability and Factors affecting Viability of Probiotic in food, Bioavailability of Probiotic

**UNIT- V****9 HRS**

**PREBIOTIC** \_ Definition of Prebiotic, Characteristics of Prebiotics, Sources of Prebiotic, safety and Toxicity of Prebiotic, Benefits of Prebiotic. Physiological effects of prebiotic. Definition of Synbiotics, uses of Synbiotics for Humans

**Distribution of Marks:** Theory – 25 (IA) + 75 (univ. exam) = 100 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Mahtab, S, Bamji, Kamala Krishnasamy, G.N.V. Brahmam	Text Book of Human Nutrition	Oxford and IBH Publishing Co. P. Ltd.	2009
2	Srilakshmi, B	Food Science	New Age International (P) Limited Publishers	2010

**REFERENCE BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Watson, David, H.	Performance Functional Foods	CRC Press, Wood Head Publishing Ltd.	2003
2	Tamine, A.	Probiotic Dairy Products	Blackwell Publishing Ltd.	2005
3	Gibson R.G and William M.C	Functional foods	Wohead publishing Ltd,	2001
4	Johnson I and Williamson G	Phytochemical Functional Foods	CRC Press	2003

**WEB SOURCES:**

Link: <http://www.bisep.karnataka.gov.in/images/pdf/neutraceutical-food-processing.pdf>

**TEACHING METHODOLOGY**

- Chalk and board teaching
- Study Assignment method
- Active learning method
- Group discussions
- PPT
- Seminars
- Other Group activity
- Hospital Visit

**SYLLABUS DESIGNER:**

- Ms. R.D.Vaishya, Assistant Professor, Department of Foods and Nutrition

## ENTREPRENEURSHIP DEVELOPMENT

Sem	Subject Code	Category	Lecture		Theory		Practical	Credits
			Hrs/sem	Hrs/Per week	Hrs/sem	Hrs/Per week		
VI	22SNF6A	Skill based Subject IV	30	2	30	2	-----	2

### COURSE OBJECTIVES:

The students will be able to

1. Understand the start-up of entrepreneurship.
2. Get to know the project proposals and institutions supporting for entrepreneurship
3. To provide exposure on entrepreneurial culture and industrial growth.
4. To develop the skill for project analysis and appraisal.

### COURSE OUTCOME:

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Know the characteristics, classifications of entrepreneurship.	K1
CO2	Learn to design and appraise the project and factors influencing the plant location.	K2,K3
CO3	Understand the concept, functions and growth of entrepreneurship in India	K2
CO4	To know about Institutions Supporting Small Business Enterprises	K2,K3
CO5	To study about Government Policy and Taxation Benefits	K1,K2

Knowledge level: K1 – Remember, K2-Understand, K3- Apply, K4-Analyse.

### MAPPING WITH PO

COS	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	S	S	S	M
CO3	S	S	M	M	S
CO4	M	S	M	M	M
CO5	M	M	S	S	S

S-Strong; M-Medium, L- Low

**UNIT I****6 Hours****ENTREPRENEURSHIP DEVELOPMENT**

Entrepreneur and entrepreneurship, Entrepreneur characteristics –Classification of Entrepreneurships –Incorporation of Business – Forms of Business organizations, concept, characteristics, functions and types of entrepreneur, growth of entrepreneurship in India, entrepreneurial culture and structure, Entrepreneurial traits, Entrepreneurial motivation, Women entrepreneurship, problems in establishing entrepreneurial system.

**UNIT II****6 Hours****PROJECT ANALYSIS**

Project identification and classification ,Internal and external constraints , project objectives, project life cycle, project formulation , need , concept , significance and elements of project formulation , feasibility analysis , project report , content , guideline for formulating a project report.

**UNIT III****6 Hours****PROJECT FORMULATION AND APPRAISAL**

Preparation of Project Report –Content; Guidelines for Report preparation –Project Appraisal techniques –economic –Steps Analysis; Financial Analysis; Market Analysis; Technical Feasibility.

**UNIT IV****6 Hours****INSTITUTIONS SUPPORTING SMALL BUSINESS ENTERPRISES**

Central level Institutions: NABARD; SIDBI, NIC, KVIC; SIDIO; NSIC Ltd; etc. – state level Institutions –DICs-SFC-SSIDC-Other financial assistance.

**UNIT V****6 Hours****GOVERNMENT POLICY AND TAXATION BENEFITS**

Government Policy for SSIs-tax Incentives and Concessions –Non-tax Concessions – Rehabilitation and Investment Allowances.

**Distribution of Marks:** Theory – 50(univ. exam) = 50 Marks

**TEXT BOOKS:**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Arya kumar	Entrepreneurship	New Delhi.	2010
2	Poornima M.CH	Entrepreneurship development	New Delhi. 64	2010
3	Gupta C.B., and Srinivasan M.P.,	Entrepreneurial development	Sultan chand Publications New Delhi.	2016
4	Khanka S.S	Entrepreneurial Development	S.Chand& Co., Ltd, New Delhi.	2016

## REFERENCE BOOKS:

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1	Deshpande M.V	Entrepreneurship of Small Scale Industries	Deepand Deep Publication, Allahabad.	(2015)
2	Prasanna Chandra	Project Preparation, Appraisal, Implementation	Tata MCGrawHill, New Delhi.	2016
3	Srivastava S.B,	A Practical guide to Industrial Entrepreneurs	Sultan Chand and Sons, New Delhi.	2016
4	Charantimath, P.M.	Entrepreneurship Development and Small Business Enterprises (5thed.)	India: Pearson Education India	(2009). E

## WEB SOURCES:

1. Link:  
[https://www.researchgate.net/publication/334863365\\_Fundamentals\\_of\\_Entrepreneurship\\_Development](https://www.researchgate.net/publication/334863365_Fundamentals_of_Entrepreneurship_Development)
2. Link:  
[https://books.google.co.in/books/about/Entrepreneurship\\_Development.html?id=REJjANEnzVYC](https://books.google.co.in/books/about/Entrepreneurship_Development.html?id=REJjANEnzVYC)
3. Link: <https://openpress.usask.ca/entrepreneurshipandinnovationtoolkit/back-matter/references/>
4. Link:  
[https://books.google.co.in/books/about/Entrepreneurial\\_Development.html?id=uUdLAgAAQBAJ&redir\\_esc=y](https://books.google.co.in/books/about/Entrepreneurial_Development.html?id=uUdLAgAAQBAJ&redir_esc=y)

## TEACHING METHODOLOGY

- Chalk and board teaching
- Assignments
- Group discussions
- PPT
- Seminars
- Other Group activity

## SYLLABUS DESIGNER:

- Mrs.K.Gowthami, Head and Assistant Professor, Department of Foods and Nutrition