

B.SC. HOME SCIENCE

**CHOICE BASED CREDIT SYSTEM-LEARNING OUTCOMES BASED
CURRICULUM FRAME WORK (CBCS - LOCF)**

(Applicable to the candidates admitted from the academic year 2026-2027 onwards)

Sem	Part	Courses	Title	Ins. Hrs.	Cred its	Exam. Hours	Maximum Marks		
							Int.	Ext.	Total
I	I	Ability Enhancement Course – I (AEC - I)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course –II (AEC - II)	English Course - I	6	3	3	30	70	100
	III	Core Course -1 (CC - 1)	Food Science and Nutrition	4	4	3	30	70	100
		Core Practical - 1 (CP - 1)	Food Science and Nutrition (P)	4	4	3	40	60	100
		Allied Course – 1 (AC - 1)	Human Physiology	4	4	3	30	70	100
		Allied Course Practical - I (AP-I)	Human Physiology and Nutritional Biochemistry (P)	2	**	**	**	**	**
	IV	Value Education		2	2	3	30	70	100
		Interdisciplinary Course – 1 (IDC - 1) #	One Course from Outside Department	2	2	3	30	70	100
	Total			30	22	--	--	--	700
II	I	Ability Enhancement Course –III (AEC - III)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course –IV (AEC - IV)	English Course - II	6	3	3	30	70	100
	III	Core Course- 2(CC - 2)	Nutrition Through Life Cycle	4	4	3	30	70	100
		Core Practical - 2(CP - 2)	Nutrition Through Life Cycle (P)	4	4	3	40	60	100
		Allied Course – 2 (AC - 2)	Nutritional Biochemistry	2	4	3	30	70	100
		Allied Course Practical - I (AP-I)	Human Physiology and Nutritional Biochemistry (P)	4	4	3	40	60	100
	IV	Skill Enhancement Course - 1(SEC - 1) ##	Naan Mudhalvan Course/SEC (List enclosed)	2	2	3	30	70	100
		Interdisciplinary Course – 2 (IDC - 2) #	One Course from Outside Department	2	2	3	40	60	100
	Total			30	26	--	--	--	800

III	I	Ability Enhancement Course –V(AEC - V)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100
	II	Ability Enhancement Course –VI (AEC - VI)	English Course - III	6	3	3	30	70	100
	III	Core Course- 3(CC - 3)	Fundamentals of Human Development	4	4	3	30	70	100
		Core Practical - 3 (CP - 3)	Fundamentals of Human Development (P)	4	4	3	40	60	100
		Allied Course – 3 (AC - 3)	Early Childhood care and Education	4	4	3	30	70	100
		Allied Course Practical - II (AP-II)	Early Childhood care and Education and Apparel Design (P)	2	**	**	**	**	**
	I V	Skill Enhancement Course - 2 (SEC - 2) ##	Naan Mudhalvan Course/SEC (List enclosed)	2	2	3	30	70	100
		Interdisciplinary Course – 3 (IDC - 3) \$\$	One Course from Outside Department	2	2	3	30	70	100
		Health & Wellness @		--	1	--			100
	Total			30	23	--	--	--	800
I	Ability Enhancement Course –VII (AEC - VII)	(Tamil\$ / Other Languages+, #)	6	3	3	30	70	100	
IV	II	Ability Enhancement Course –VIII (AEC - VIII)	English Course - IV	6	3	3	30	70	100
	III	Core Course- 4(CC - 4)	Textile Science	4	4	3	30	70	100
		Core Practical - 4(CP - 4)	Textile Science (P)	4	4	3	40	60	100
		Allied Course – 4 (AC - 4)	Apparel Design	2	4	3	30	70	100
		Allied Course Practical - II (AP-II)	Early Childhood care and Education and Apparel Design (P)	4	4	3	40	60	100
	IV	Skill Enhancement Course - 3 (SEC - 3) ##	Naan Mudhalvan Course/SEC (List enclosed)	2	2	3	30	70	100
		Interdisciplinary Course – 4 (IDC - 4) \$\$	One Course from Outside Department	2	2		40	60	100
	Total			30	26	--	--	--	800
		Summer Internship / Industrial Activity during the Summer Vacation after II Year							

V	III	Core Course - 5 (CC - 5)	Family Resource Management	4	4	3	30	70	100
		Core Course - 6 (CC - 6)	Community Nutrition	5	4	3	30	70	100
		Core Course - 7 (CC - 7)	Principles of Interior Design	5	4	3	30	70	100
		Core Course - 8 (CC - 8)	Fundamentals of Research Methodology and Statistics	5	4	3	30	70	100
		Core Practical - 5(CP - 5)	Family Resource Management and Interior Design (P)	5	4	3	40	60	100
	IV	Skill Enhancement Course - 4 (SEC - 4)	Community Health and Nutrition	2	2	3	30	70	100
		Skill Enhancement Course - 5 (SEC - 5) ##	Naan Mudhalvan Course/SEC (List enclosed)	2	2	3	30	70	100
		Introduction to Disaster Management		2	2	3	30	70	100
		Summer Internship / Industrial Activity @@	(with Viva-Voce)	--	2	--	20	80	100
	Total			30	28	--	--	--	900
VI	III	Core Course - 9(CC - 9)	Home Science Extension and Communication	4	4	3	30	70	100
		Core Course- 10(CC - 10)	Dietetics	5	4	3	30	70	100
		Core Course- 11(CC - 11)	Food Service Management	5	4	3	30	70	100
		Core Project Work(CPW) @@	Project Work (with Viva-Voce)	6	4	3	20	80	100
	IV	Value Added Course	General Studies for Competitive Examinations	2	1	--	30	70	100
		Skill Enhancement Course - 6 (SEC - 6)	Event Management	2	2	3	30	70	100
		Skill Enhancement Course - 7 (SEC - 7) ##	Naan Mudhalvan Course/SEC (List enclosed)	2	2	3	30	70	100
		Environmental Studies		2	2	3	30	70	100
		Gender Studies		2	1	3	30	70	100
		Extension Activities *		--	1	--	--	--	--
	Total			30	25	--	--	--	900
	Grand Total			180	150	--	--	--	4900

ALLIED COURSE

First Year Students

1. Human Physiology (AC-I)
2. Human Physiology (AP-I)
3. Nutritional Biochemistry (AC-II)
4. Human Physiology and Nutritional Biochemistry Practical (AP-I)

Second Year Students

5. Early Childhood Care and Education (AC-III)
6. Early Childhood Care and Education and Apparel Design Practical (AP-II)
7. Apparel Design (AC-IV)
8. Early Childhood Care and Education and Apparel Design (AC-II)

SKILL ENHANCEMENT COURSE(SEC)

Sl. No.	Title of paper	Sl. No.	MANDATORY Naan Mudhalvan Scheme##
1.	Family Dynamics	1.	2nd Semester:
2.	Food Hygiene and Sanitation		
3.	Gender Sensitization for Empowerment	2.	3rd Semester:
4.	Paediatric Nutrition		
5.	Palliative Care	3.	4th Semester:
6.	Community Health and Nutrition		
7.	Event Management	4.	5th Semester:
--		5.	6th Semester:

INTERDISCIPLINARY COURSE (IDC) FOR WHO HAVE OPT TAMIL AS PART – I (for other Department Students only)	
1 st Semester	Food Preservation
2 nd Semester	Food Preservation (P)
3 rd Semester	Bakery and Confectionary
4 th Semester	Bakery and Confectionary (P)

INTERDISCIPLINARY COURSE (IDC)# FOR WHO HAVE NOT OPT TAMIL AS PART - I		
Those who have studied Tamil up to 10 th +2 but opt for other languages in degree	1 st Semester	Special Tamil - I
	2 nd Semester	Special Tamil - II
Those who have not studied Tamil in school level	1 st Semester	Basic Tamil - I
	2 nd Semester	Basic Tamil – II
Those students who opt for either special Tamil (or) Basic Tamil as IDCs, have to choose 2 more IDCs courses in their 3 rd and 4 th Semester from Outside his/her department.		

INTERDISCIPLINARY COURSE (IDC) \$\$ FOR NCC CADETS ONLY	
NCC Course is a Compulsory Course for the NCC Cadets in the 3rd Semester:	NCC Course is a Compulsory Course for the NCC Cadets in the 4th Semester:
Introduction to NCC	1. Special Subject Army (or) 2. Special Subject Navy (or) 3. Special Subject Air force
Those students who opt for NCC Courses as IDCs, have to choose 2 more IDCs courses in their 1 st and 2 nd Semester from Outside his/her department.	

SUMMARY OF CURRICULUM STRUCTURE OF UG PROGRAMMES

Sl. No.	Part	Types of the Courses	No. of Courses	Credits for each Course	Total Credits	Marks
1.	I	Ability Enhancement Course	4	3	12	400
2.	II	Ability Enhancement Course	4	3	12	400
3.	III	Core Course	11	4	44	1100
4.		Core Practical	5	4	20	500
5.		Allied Course (AC)	4	4	16	400
6.		Allied Course Practical (AP)	2	4	8	200
7.		Core Project Work (CPW)	1	4	4	100
8.	IV	Skill Enhancement Course (SEC)	7	2	14	700
9.		Interdisciplinary Course (IDC)	4	2	8	400
10.		Value Education	1	2	2	100
11.		Health and Wellness	1	1	1	100
12.		Introduction to Disaster Management	1	2	2	100
13.		Summer Internship / Industrial Activity	1	1	1	100
14.		Value Added Course	1	2	2	100
15.		Environmental Studies	1	2	2	100
16.		Gender Studies	1	1	1	100
17.		EXTENSIONACTIVITIES (NCC / NSS / SPORTS / ANTI DRUG CELL / YRC & Any Other Activities	--	1	1	--
Total			49	-	150	4900

\$	For those who have studied Tamil up to 10 th +2 (Regular Stream)															
+	Syllabus for other Languages should be on par with Tamil at degree level															
#	Those who have studied Tamil up to 10 th +2 but opt for other languages in degree level under Part-I should study special Tamil and those who have not studied Tamil in the school level should study Basic Tamil in Part-IV under the Interdisciplinary Course.															
**	Examination at the end of the next semester															
##	Naan Mudhalvan Scheme: As per the Naan Mudhalvan Scheme instructions, 5 courses from 2 nd to 6 th semester should be studied under Skill Enhancement Course.															
\$\$	NCC Course is one of the Choices in the Interdisciplinary Course. Only the NCC Cadets are eligible to choose this course. However, NCC Course is a Compulsory Course for the NCC Cadets.															
@	Health and Wellness: Assessments: • Use self-reflective worksheets to assess their understanding • submit the worksheets to internal audit / external audit • Every student's activity report should be documented and the same have to be assessed by the Physical Director with Mentor. The evaluation should be for 100 marks. No examination is required. Scheme of Evaluation: <table><tr><th>Part</th><th>Description</th><th>Marks</th></tr><tr><td>A</td><td>Report</td><td>40</td></tr><tr><td>B</td><td>Attendance</td><td>20</td></tr><tr><td>C</td><td>Activities (Observation During Practice)</td><td>40</td></tr><tr><td colspan="2">Total</td><td>100</td></tr></table>	Part	Description	Marks	A	Report	40	B	Attendance	20	C	Activities (Observation During Practice)	40	Total		100
Part	Description	Marks														
A	Report	40														
B	Attendance	20														
C	Activities (Observation During Practice)	40														
Total		100														
@ @	Summer Internship / Industrial Activity Internship will be carried out during the summer vacation after the second year. Viva-Voce will be conducted by the college and Marks shall be sent to the University and the same will be included in the 5th semester Mark Statement. Summer Internship / Industrial Activity & Project Work Scheme of Evaluation: <table><tr><th>Description</th><th>Marks</th></tr><tr><td>Report</td><td>80</td></tr><tr><td>Viva-Voce</td><td>20</td></tr><tr><td>Total</td><td>100</td></tr></table>	Description	Marks	Report	80	Viva-Voce	20	Total	100							
Description	Marks															
Report	80															
Viva-Voce	20															
Total	100															
*	Extension Activities shall be outside instruction hours.															

First Year

CORE COURSE 1
FOOD SCIENCE AND NUTRITION
(Theory)

Semester : I

Code:

Credits : 4

COURSE OBJECTIVES: To enable the students to

- Obtain knowledge of different food groups, their composition and their role in diet.
- Study the different methods of cooking foods.
- Obtain knowledge about the nutrients present in the foods.

UNIT I FOOD GROUPS, BASIC COOKING AND RDA:

- a. Definitions: Food Science, Food, Nutrients, Nutritional Status, Malnutrition- Under – nutrition, over nutrition, Balanced diet, Hunger-Hollow Hunger, Hidden Hunger, Appetite, Satiety, Health, Meal, Menu.
- b. Food Groups: Basic five, Nutritional classification of foods – Energy yielding, Body building and protective foods.
- c. Cooking: Objectives, cooking methods- Moist and Dry heat methods of cooking, merits and demerits.
- d. Recommended dietary allowances (RDA) – Definition, General principles of deriving RDA, Factors affecting RDA, uses of RDA.

UNIT II CEREALS, PULSES, CARBOHYDRATES AND VITAMINS:

- a. Cereals and Cereal products: Structure and Nutritive value of rice and wheat, nutritional importance of millets– maize, jowar, ragi, bajra, Milling of rice and wheat, Parboiling of rice, Products of wheat and rice, Enrichment and fortification of cereals and flours, Batters and doughs; Malting of cereals.
- b. Pulses and Nuts: Nutritive value, factors affecting cooking quality of pulses, germination – process, advantages.
- c. Carbohydrates –Definition, Nutritional classification, Functions, Requirements and Sources.
- d. Vitamins – Fat Soluble Vitamins – Vitamin A, D, E and K – Functions, Requirements, Sources and Effect of deficiency. Water soluble vitamins – Thiamine, Riboflavin, Niacin, Ascorbic acid, Folic acid, Vitamin B6 and B12 – Functions, Requirements, Sources and Effects of deficiency.

UNIT III VEGETABLES, FRUITS, MACRO AND MICRO MINERALS:

- a. Vegetables: Botanical classification, Nutritive value, Pigments- fat soluble, water soluble, selection of vegetables, cooking of vegetables- changes during cooking, nutrient loss, effect of cooking on the pigments
- b. Fruits: Classification, Nutritive value, changes during ripening of fruits, enzymatic browning and prevention, storage.
- c. Macro minerals – Calcium, Phosphorus, Magnesium, Sodium and Potassium – Functions, Requirements, Sources, Effects of

Deficiency, Effect of imbalance of Sodium and Potassium.

- d. Micro Minerals – Iron, Fluorine and Zinc – Functions, Requirements, Sources and Effect of Deficiency.

UNIT IV MILK, EGG, PROTEIN AND PROTEINS:

- a. Milk and Milk Products: Composition and Nutritive value, Different types of milk, pasteurization of milk, milk products.
- b. Egg: Structure, Composition and Nutritive value. Measures of egg quality, role of egg in cookery. Meat- structure, composition, a list of different types of meat, cuts of meat, post mortem changes in meat, and tenderness of meat.
- c. Poultry- composition and classification. Fish- structure, composition, nutritive value, selection of fish.
- d. Proteins – Definition, Composition, Nutritional classification of protein and amino acids, Functions of Proteins and amino acids, Sources and Requirements.

UNIT V FATS AND OILS, SUGAR, SPICES & CONDIMENTS AND ENERGY:

- a. Fats and oils- composition processing and refining of fats, refined oils, plasticity, hydrogenation, winterization. Smoking point, factors that lower smoking point, absorption of fat during cooking.
- b. Sugar- nutritive value, sugar related products, stages of sugar cookery, crystallization, factors affecting crystallization.
- c. Spices and condiments- types and uses in Indian cookery, medicinal value.
- d. Energy – Definitions, Energy units, Determination of energy value of foods by direct and indirect calorimetry and physiological Energy Value of foods. BMR – Definition, Determination, Factors affecting the BMR

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Design posters, brochures, infographics, or digital content on balanced diets, healthy eating habits, food adulteration, or nutrition-related health issues.

Visit to a modern rice mill

Visit to a Dairy farm/ Milk processing unit

Recommended Books:

1. Shakuntala Manay. N. (2013). Foods: Facts and Principles. (3rd ed.). New Age International Publishers, New Delhi.
2. Swaminathan, M. (2019). Advanced Text Book on Food and Nutrition. (2nd ed.). Bangalore Printing and Publishing Co. Ltd, Bangalore.
3. Srilakshmi.B.(2020). Food Science. (8th ed). New Age International publishers, New Delhi.
4. Iqbal, Syed Aftab. (2011). Advanced Food Chemistry. Discovery Publishing House, New Delhi.
5. Chopra H,K and Panesar P,S. (2015). Food Chemistry. Narosa Publishing

House(P) Ltd, New Delhi.

Reference Books:

1. Parker, R. Introduction to food Science, Delmer, Thomson Learning Co., Delma, 2000.
2. Vickie, A., Vaclavik Elizabeth, W.Christian. (2014). Essentials of Food Science.(4th ed.). Springer Science and Business Media, New York.
3. Raheena Begum, M. (2015). Textbook of Foods. Nutrition and Dietetics. (3rd ed.), Sterling Publishers Pvt. Ltd, New Delhi.
4. Avantika Sharma. (2019). Textbook of Food Science and Technology. (3rd ed.). CBS Publishers and Distributors

E-reference:

1. <https://www.sciencedirect.com/journal/food->
2. <https://www.eolss.net/sample-chapters/c10/e5-08-07-00.pdf>
3. <http://egyankosh.ac.in/handle/123456789/69055>

At the end of the course, the students will have the ability to		
CO1	Identify foods based on food groups and list their uses.	LO1
CO2	Describe classification, nutritive value, storage and preservation of foods.	LO4
CO3	Explain changes in food due to cooking, processing and factors that affect palatability, acceptability, and nutritive value.	LO5
CO4	Compare different methods of cooking and select the methods best suited for cooking different Foods.	LO7 LO13
CO5	Justify the selection, processing, storage, and cooking methods to preserve nutritive values of various foods and make them safe and acceptable.	LO10 LO11
CO6	Integrate knowledge of foods and the science behind cooking	LO6 LO15

Mapping with Program Outcomes:

	O 1	O 2	O 3	O 4	O 5	O 6	O 7	O 8	O 9	O 10
O 1										
O 2										
O 3										
O 4										
O 5										
O 6										

S- Strong(3) M-Medium(2) L-Low(1)

First Year

CORE PRACTICAL I

Semester : I

FOOD SCIENCE AND NUTRITION

Code:

(Practical)

Credits : 4

COURSE OBJECTIVES: To enable the students to

- General guidelines to be followed in laboratory.
- Observation of different types of cereals, pulses, vegetables, fruits and nuts and oil seeds
- Method of Measuring Ingredients.
- Demonstration of Cooking Methods.

PRACTICALS:

1. Cereals – Preparation of rice by steaming, absorption method, Straining and Pressure cooking. Batters and dough. Preparation of Idli, Dosa, Upma, Kichadi, Chapathi, Poori, Fried Rice, Briyani and variety rice. Planning and Nutritive value calculation and preparation of macro nutrient rich dishes
2. Pulses – Factors affecting the cooking quality of pulses. Preparation of Sambar, Sundal, Bholi, Mysore-pak, Vada, Channa Masala, Thuvaiyal, Green gram payasam, Besan omlette, Sprouted salad and koottu.
3. Vegetables – Selecting, cleaning, coring, pitting and chopping of fruits and vegetables. Avial, poriyal, stew, kuruma, cutlet, fry, chips, podimas, pachadi, stuffed chapathi, koottu.
4. Fruits – Fritters, Halwa, Salad, Stuffed items, Jelly, Payasam, Thokku, Sauce and Jams.
5. Milk – Cottage Cheese, Paneer, Phirnee, Payasam, Ice cream, kova, Buttermilk curry, Basanthi and Jamun.
6. Egg – Boiled, Scrambled, Poached, Curry, Masala, Omelette.
7. Score card preparation and sensory evaluation.
8. Demonstration of fibre estimation
9. Demonstration of total fat estimation

Recommended Books :

1. Varley, H., Gowenlak, A.H. and Hill, M. Practical Clinical Biochemistry, William Itinmaon Medical Books, London, 2000.
2. Oser, B.L., Harke's Physiological Chemistry XIV Edition Tata McGraw Hill Publishing Company Ltd., Bombay, 2001.
3. Gopalan.C, Rama Sastri.V.B and Balasuramanian.S.C (2016). Nutritive Value of Indian foods.

Reference :

1. Sadasivam, S. and Manickam, A. Biochemical Method, Second Edition, New Age International P. Ltd., Publishers, New Delhi, 2003.
2. Raghuramulu, N., Madhavannair, K. and Kalyana Sundaram, National Institute of Nutrition, 2013, A Manual of Laboratory Techniques, Hyderabad, 500007.

COURSE OUTCOMES (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Demonstrate the preparation of cereal-, pulse-, vegetable-, fruit-, milk-, and egg-based dishes using appropriate cooking methods.	LO1
CO2	Apply the principles of food preparation, processing, and standardization in the development of traditional and value-added food products.	LO4
CO3	Plan balanced meals and calculate the nutritive value of macronutrient-rich dishes.	LO5
CO4	Evaluate the quality and acceptability of food products using sensory evaluation techniques and score cards.	LO7, LO13
CO5	Perform basic laboratory techniques for the estimation of crude fibre and total fat in foods.	LO10, LO11
CO6	Analyze the effects of ingredients, cooking methods, and processing techniques on food quality, nutritive value, and sensory attributes.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

First Year

ALLIED COURSE – 1

Semester : I

**HUMAN PHYSIOLOGY
(Theory)**

Code

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Understand the structure and functions of various organs of the body
- Obtain a better understanding of the principles of nutrition through the study of physiology
- Appreciate the importance of hormonal and nervous regulation of the body.

UNIT I BLOOD:

- a) Cell and tissues - Structure of Cell and functions of different organelles. Classification, structure and functions of tissues.
- b) Blood – Blood - Constituents of blood- RBC, WBC and Platelets and its functions. Erythropoiesis, Blood clotting, Different Blood groups. Haemoglobin – Structure and functions; erythropoiesis, Blood coagulation, Reticulo- Endothelial System – Definition and functions, Lymphatic System.

UNIT II DIGESTIVE SYSTEM AND CIRCULATORY SYSTEM:

- a) General Anatomy; Digestion in the mouth, stomach and intestines. Movements of the intestine; Role of Liver and Pancreas – Structure and Functions.
- b) Heart and Circulation – Structure of heart and blood vessels; Properties of cardiac muscle; cardiac cycle; origin and conduction of heart beat; measurement of arterial blood pressure.

UNIT III RESPIRATORY AND EXCRETORY SYSTEM:

- a) Respiratory System – Structure of Respiratory organs; Sub – divisions of lung air; Chemistry of Respiration.
- b) Excretory system – Physiology of the Urinary System- Structure of kidney and nephron; Formation of urine, micturition. Skin – Structure and functions, Regulations of body temperature.

UNIT IV ENDOCRINE AND REPRODUCTIVE SYSTEM:

- a) Endocrine System – Structure and functions of thyroid, pituitary, parathyroid, adrenals, islets of langerhans of pancreas
- b) Reproductive System – anatomy of the male and female reproductive organs; menstrual cycle; mammary glands; Fertilisation; Development of Embryo; Pregnancy and parturition.

UNIT V NERVOUS SYSTEM AND SENSE ORGANS:

- a) Nervous System –General classification of nervous system; Structure of nerve cell and Spinal cord; Basic Knowledge of different parts of the brain – anatomy and functions of cerebrum, cerebellum and medulla oblongata.
- b) Sense Organs – Structure and function of eye and ear; taste, smell and cutaneous sensation

UNIT – VI CURRENT CONTOURS (Self-directed learning activities for Continuous

Internal Assessments only):

Prepare video on functions of haemoglobin, artificial respiration

Prepare a PPT on movements of the intestine and menstrual disorders.

Recommended Books:

1. Sembulingam. (2016). *Essentials of Medical Physiology*. Health Sciences Publisher. New Delhi.
2. Subramanyam., Sarada. (2018). *Textbook of Human Physiology*. S.Chand and company Ltd, New Delhi.
3. Randhawa.S.S., Atul Kabra.(2017). *Human Anatomy and Physiology-I*. S.Vikas and Company, India.
4. Creager, J. G. (1992) *Human Anatomy and Physiology*. 2nd ed. WMC Brown Publishers, England.
5. Best, C. H. and Taylor, N. B. (1980) *Living Body*. 4th ed. BIP, Bombay.
6. Guyton, A.C. (1979) *Physiology of the Human Body*. 5th ed. Saunders College of Publishing, Philadelphia.

References:

1. Guyton (2000). Guyton and Hal *Textbook of Medica Physiology*, Saunders, United States of America.
2. Waugh Anne Ross and Wilson (2003). *Anatomy and Physiology in Health and Illness*. Churchill Livingston. New York.
3. Murugesh. N (2011). *Anatomy and Physiology*, Sathya Publishers, Madurai.
4. Wilson Ross (2014). *Anatomy and Physiology in Health and Illness*, Reed Elsevier India Private Limited. New Delhi.
5. Chatterjee .C. (2016). *Human Physiology Volume I*, Medical Allied Agency. Kolkata.

E-Reference:

1. <https://www.khanacademy.org/science/health-and-medicine/human-anatomy-and-physiology>
2. <https://www.biologyonline.com/tutorials/the-human-physiology>
3. <https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/>
4. <https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA==>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Describe the structure and functions of a cell, various tissues, primary organs and systems in the body.	LO1
CO2	Explain the interrelationship between systems for maintenance of equilibrium.	LO4
CO3	Evaluate the role of the nervous and endocrine system in regulating the activities of other systems.	LO5
CO4	Identify the microscopic structure of basic tissues, label the parts of primary physiological systems in the body such as nervous, respiratory, digestive, endocrine and reproductive systems.	LO7, LO13
CO5	Perform haematological study of blood such as blood smear, blood count and blood grouping, record pulse, blood pressure and interpret a normal ECG.	LO10 LO11
CO6	Apply physiological knowledge and basic laboratory assessment techniques to interpret normal body functions and common health conditions.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

First Year	ALLIED COURSE PRACTICAL - I	Semester: I
	HUMAN PHYSIOLOGY & NUTRITIONAL BIOCHEMISTRY (P)	
Code	(Practical)	Credits: **

COURSE OBJECTIVES: To enable the students to

- Impart knowledge on the microscopic structure and organization of various human tissues and organ systems.
- Develop practical skills in performing basic hematological experiments and physiological measurements.
- Familiarize students with the anatomy of major organ systems through the study of models, specimens, charts, and videos.
- Enhance observational and analytical abilities in identifying tissue structures and relating them to their physiological functions.

Practicals:

1. Microscopic study of different tissues: epithelial, connective, muscular and nervous tissue
2. Blood Experiments- Blood Smear, Blood Count and Blood Grouping
3. Study of the Structure of Brain using model/ specimen and structure of Eye and Ear using models/charts
4. Recording of Blood Pressure
5. Study of the structure of Heart Lung using specimen, model/charts/videos
6. Study of the Structure of Liver, Pancreas, Stomach using model /charts /specimen/ videos
7. Microscopic study of tissues of the Pituitary, Thyroid, Ovary and Testis
8. Study of the structure of the male and female reproductive organs using models/charts/videos

Recommended Books:

1. Beck, W.S. (1971) Human Design. Harcourt Brace Jovanovich Inc., New York.
2. Best, C. H. and Taylor, N. B. (1980) Living Body. 4th ed. BIP, Bombay.
3. Creager, J. G. (1992) Human Anatomy and Physiology. 2nd ed. WMC Brown Publishers, England.
4. Guyton, A.C. (1979) Physiology of the Human Body. 5th ed. Saunders College of Publishing, Philadelphia.
5. Subramaniam, S. and Madhavan Kutty, K. (1971) The Text Book of Physiology. Orient Longman Ltd., Madras.

References:

1. Tortora G. J. Anagnostakos N.P. (1984) Principles of Anatomy and Physiology, 4th edition, Harper and Row Publishers, New York.
2. Waugh A and Grant A. (2012) Ross and Wilson Anatomy and Physiology in Health and Illness. 11th ed. Churchill and Livingston, Elsevier
3. Wilson, K. J. W. (1987) Anatomy and Physiology in Health and Illness. 6th ed. ELBS, Churchill Livingstone, London.

E-Reference:

1. <https://youtu.be/uFf0zxQ3rBU>
2. <http://epgp.inflibnet.ac.in/Home/Download>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Identify and describe the microscopic structure and characteristics of basic human tissues	LO1
CO2	Perform basic hematological experiments using standard laboratory procedures.	LO4
CO3	Identify and explain the anatomical structure and functions of major organ systems	LO5
CO4	Demonstrate the measurement and interpretation of physiological parameters using appropriate instruments and procedures.	LO7, LO13
CO5	Recognize and differentiate the histological structure and physiological significance of endocrine glands and reproductive organs.	LO10, LO11
CO6	Apply practical physiological knowledge for observation, interpretation and reporting of normal human anatomical and physiological functions in laboratory settings.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

First Year

INTERDISCIPLINARY COURSE – 1
FOOD PRESERVATION
(Theory)

Semester : I

Code

Credits : 2

COURSE OBJECTIVES: To enable the students to

- Provide an understanding of the concept, importance, and principles of food preservation.
- Develop knowledge on various methods of food preservation using natural and chemical preservatives.
- Familiarize students with preservation techniques involving temperature control such as heating, chilling, and freezing.
- Impart knowledge on drying, dehydration, and fermentation methods used in food preservation.
- Create awareness about food safety, permissible limits of preservatives, and their impact on health and nutritive value of foods.

UNIT -I: CONCEPT OF FOOD PRESERVATION:

Importance of Food Preservation, Types of Food spoilage by Micro organisms and by Enzymes, Basic Principles of Food Preservation.

UNIT -II: PRESERVATION BY USING NATURAL PRESERVATIVES:

Sugar concentrates- general principles and methods of preparation of jam, jellies and marmalade, crystallized and glazed fruits, preserves, squashes and syrups. Theory of gel formation. Salt concentrates- general principle, role of ingredients, preparation of sauerkraut, dill and common Indian pickles.

UNIT III: PRESERVATION BY USING CHEMICAL PRESERVATIVES:

Nature and characteristics of chemical preservatives, organic and inorganic preservatives, permissible limits, health hazards associated to preservatives.

UNIT -IV: PRESERVATION BY APPLICATION OF HIGH AND LOW TEMPERATURE:

Pasteurization, sterilization, canning methods advantages and limitations. Effect on nutritive value of foods Chilling and refrigeration advantages and limitations. Effect on nutritive value of foods.

UNIT V: PRESERVATION BY DRYING AND FERMENTATION:

Methods of drying & dehydration, different types of driers, freeze drying lyophilisation , packing & storage Foods fermented by Yeasts and Bacteria, Common Fermented Foods: Dosa, idli, bun, bread, wine, etc.

UNIT – VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Visit local supermarkets and document different preserved food products.
Develop a preserved food product (jam, pickle, squash, dehydrated product, etc.).

Recommended Books:

1. Srivastava R.P. (2012), Fruit and vegetable preservation – Principles and Practices,
2. International Book Distributing Co., (IBDC), New Delhi.
3. Maria Parloa (2009), canned fruit, preserves and jellies: Household methods of
4. preparation, US Department of Agriculture, Washington.
5. Shafiur, Rahman, M. (2007), Handbook of Food Preservation, 2 nd edition.

Reference:

1. Desrosier, N.W. and James N. (2007). Technology of food preservation. AVI Publishers
2. Gould, G.W. (1995). New Methods of Food Preservation, Blackie Academic and
3. Professional, London
4. Girdharilal, G.S. et.al.. (1986). Preservation of Fruits and Vegetables. New Delhi:
5. Publications and Information Division, ICAR.

E-Reference:

1. <https://www.sciencedirect.com/journal/food->
2. <https://www.eolss.net/sample-chapters/c10/e5-08-07-00.pdf>
3. <http://egyankosh.ac.in//handle/123456789/69055>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Explain the principles, importance, and causes of food spoilage and preservation.	LO1
C02	Prepare and evaluate preserved food products using natural preservatives such as sugar and salt.	LO4
C03	Identify and assess the use of chemical preservatives, their permissible limits, and associated health effects.	LO5
C04	Apply knowledge of preservation techniques using high and low temperatures and analyze their effect on food quality and nutrition.	LO7, LO13
C05	Demonstrate understanding of drying and fermentation processes and relate them to commonly consumed fermented foods.	LO10, LO11
C06	Develop and recommend suitable food preservation methods for improving shelf life, safety, and nutritional quality of food products.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

First Year

CORE COURSE 2
NUTRITION THROUGH LIFE CYCLE
(Theory)

Semester : II

Code

Credits : 4

COURSE OBJECTIVES: To enable the students to

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

UNIT I MEAL PLANNING AND NUTRITION IN ADULTHOOD:

Introduction to meal planning – Balanced diet, food groups, Food Guide Pyramid (ICMR), Food plate, RDA, factors affecting RDA. Principles of meal planning – steps involved in planning a diet.

Nutrition for Adult – Nutritional requirements, planning balanced diets for adult men and women, promoting healthy lifestyle through holistic approach.

UNIT II NUTRITION IN PREGNANCY AND LACTATION:

Nutrition during pregnancy- Physiological demands of pregnancy, nutritional needs, effect of nutrition on pregnancy outcome, optimal weight gain, nutrition related problems in pregnancy, complications of pregnancy.

Nutrition during lactation- Physiology of lactation, nutritional requirements, concerns of breast-feeding mother.

UNIT III NUTRITION IN INFANCY AND PRESCHOOL AGE CHILDREN:

Nutrition during infancy- Growth and development, growth standards, food and nutritional requirements, breast feeding, artificial feeding, low birth weight babies, complementary feeds.

Nutrition for preschool children- Growth and development, food and nutritional requirements, eating habits and food behaviors, nutrition related problems- PEM, VAD and their dietary interventions.

UNIT IV NUTRITION IN SCHOOL CHILDREN AND ADOLESCENCE:

Nutrition for school children- Growth pattern, nutritional requirement, importance of healthy snacks, factors affecting eating habits, school lunch.

Nutrition during adolescence- Growth and development, nutritional requirements, food habits, nutritional problems – obesity, underweight, anaemia and eating disorders

UNIT V NUTRITION FOR OLD AGE:

Nutrition for old age- Physiological changes in elderly, food and nutritional requirements, nutritional and health concerns in old age, healthy lifestyle.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Dissemination of nutrition knowledge for chosen target groups during. National Nutrition Month. Sensitising the nursing mothers on the importance of breast feeding during World Breast Feeding Day.

Recommended Books :

1. Srilakshmi B. (2011) Dietetics, sixth edition, New age Publishing Press, New Delhi.
2. Gopalan,C., Ramanathan, P.V. Balasubramanian, S.C. (2001) Nutritive value of Indian foods, NIN, Hyderabad.
3. Longvah T, Ananthan R, Bhaskar K, Venkaiah K. (2017) Indian Food Composition Tables, National Institute of Nutrition.
4. Abraham S, Nutrition through Lifecycle. (2016) 1st edition, New age international publishers, New Delhi.

Reference:

1. Stacy N, William's Basic Nutrition and Diet Therapy. (2005) 12th edition, Elsevier publications, United Kingdom.
2. Whitney EN and Rolfes SR, Understanding Nutrition. (2002) 9th edition West/Wordsworth, London.
3. Groff JL, Gropper SS, Advanced Nutrition and Human Metabolism.(2000) 3rd edition, West / Wadsworth, United Kingdom.
4. Cataldo, DeBruyne and Whitney, Nutrition and Diet therapy– Principles and Practice.(1999) 5th edition, West/ Wadsworth, London.

E-Reference

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

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Explain the physiological basis for nutritional needs through the human life cycle.	LO1
C02	Identify nutrition related concerns and deficiency disorders at every stage of lifecycle.	LO4
C03	Discuss appropriate dietary guidelines for various age groups.	LO5
C04	Discuss appropriate dietary guidelines for various age groups.	LO7, LO10
C05	Demonstrate skills to plan and prepare appropriate and sustainable diets for deficiency diseases.	LO10, LO11
C06	Design nutritionally adequate, age-specific and culturally appropriate dietary interventions to promote health across the lifecycle.	LO6, LO15,

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

First Year

**CORE PRACTICAL 2
NUTRITION THROUGH LIFECYCLE
(Practical)**

Semester : II

Code

Credits : 4

COURSE OBJECTIVES : To enable the students to

- Gain knowledge on nutritive value of Indian foods.
- Understand the importance of nutrition for various stages of life cycle.
- Plan meal for various stages of life cycle.

Practicals:

1. Plan, calculate nutritive value and prepare meal for pregnant women.
2. Plan, calculate nutritive value and prepare meal for lactating women.
3. Plan, calculate nutritive value and prepare meal for an infant.
4. Preparation of supplementary foods – Liquid, semi solid and solid.
5. Plan, calculate nutritive value and prepare meal for preschooler
6. Plan, calculate nutritive value and prepare meal for school going children
7. Plan, calculate nutritive value and prepare meal for an adolescent boy and an adolescent girl.
8. Plan, calculate nutritive value and prepare meal based low, moderate and high income for an adult man and an adult woman.
9. Plan, calculate nutritive value and prepare meal for elderly.

Reference:

Gopalan.C, Rama Sastri.V.B and Balasuramanian.S.C (2016). *Nutritive Value of Indian Foods* National Institute of Nutrition (ICMR) Hyderabad

E-Reference

1. <https://www.tarladalal.com/recipes-for-healthy-pregnancy--369>
2. <https://www.indianhealthyrecipes.com/indian-baby-food-recipe/>
3. <https://poshan.outlookindia.com/story/poshan-news-healthy-recipes-for-adolescents/361731>
4. <https://www.tarladalal.com/recipes-for-senior-citizen-easy-to-chew-1028>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Identify the nutritive value of various foods.	LO1
C02	Explain the importance of Recommended Dietary Allowance (RDA) for various stages of the lifecycle.	LO4
C03	Prepare meals according to RDA recommendations.	LO5
C04	Determine the nutrient content of the planned recipe.	LO7, LO13
C05	Ascertain appropriate meals for various stages of the lifecycle.	LO10, LO11
C06	Plan and evaluate nutritionally balanced, age-specific meals based on dietary requirements and practical meal planning principles.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	2	2	2	2	1	1	-	1
CO 3	2	3	2	2	2	2	2	2	1	1
CO 4	1	3	3	3	3	2	2	3	2	1
CO 5	2	3	3	3	2	2	2	3	1	1
CO 6	3	3	3	3	3	3	2	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

First Year

**ALLIED COURSE 2
NUTRITIONAL BIOCHEMISTRY
(Theory)**

Semester : II

Code:

Credits : 4

COURSE OBJECTIVES: To enable the students to

- Acquire knowledge on basic concepts of biochemical reactions.
- Understand the biochemical reactions involved in the metabolism of various nutrients in the body.
- Comprehend the mode of action of different enzymes in cell.

UNIT I CELL ,ENZYMES AND HORMONES:

a) Cell

Introduction, cell organelles, cell membrane, movement of the substances and water through the cell membrane, bioelectric potentials.

b) Enzymes

Definition, classification of enzymes, Coenzyme, Role of B-vitamins as coenzyme, factors affecting enzyme activity, enzyme inhibition.

c) Hormones

Protein hormones, steroid hormones.

UNIT II PROTEIN, NUCLEOTIDES AND NUCLEIC ACIDS:

a) Protein

Amino acids classification, structure, properties, protein structure, peptide linkage, covalent backbone, three-dimensional conformation, quaternary structure of oligomeric proteins. Determination of –N and –C terminal amino acids, protein functions. Hormonal regulation of protein metabolism. Protein metabolism- synthesis of proteins and metabolism of amino acids.

b) Nucleotides and nucleic acids

Structure of purine and pyrimidines nucleotides, DNA, RNA – structure and types, biosynthesis and catabolism of purine and pyrimidine nucleotide

UNIT III CARBOHYDRATES AND LIPIDS:

a) Carbohydrates

Classification, structure, properties and functions. Hormonal regulation of carbohydrate metabolism. Carbohydrate metabolism – glycolysis, HMP shunt pathway, TCA cycle, gluconeogenesis from TCA intermediates/ amino acids/ acetyl CoA, concept of glycogenesis and glycogenolysis. Glucose homeostasis.

b) Lipids

Classification, structure, properties, biological significance, Bioenergetics – electron transport and oxidative phosphorylation, redox potential, high energy compounds. Hormonal regulation of lipid metabolism. Lipid metabolism – Alpha, omega, beta oxidation of fatty acids, biosynthesis of fatty acids.

UNIT IV VITAMINS AND MINERALS:

a) Vitamins

Fat Soluble Vitamins – A,D,E,K and its metabolism. Water Soluble – B,C and its metabolism.

b) Minerals -Macro Minerals – Calcium, Phosphorus, Sodium, Potassium, Magnesium and its metabolism. Micro Minerals – Iron, Fluorine, Zinc, Iodine, Selenium and its metabolism.

UNIT V FREE RADICALS AND NUTRIGENOMICS:

a) Free radicals and antioxidants Definition, Formation in biological systems. Antioxidants– definition, classification – enzymatic and non-enzymatic.

b) Nutrigenomics

Definition, Scope, effects of nutrients on gene expression – direct interactions, epigenetic interactions, genetic variations.

UNIT VI

CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Review the role of free radicals and antioxidants in chronic diseases, aging, and immunity and prepare a scientific poster.

Recommended Books:

1. Sucheta PDandekai.(2000).*Medical Biochemistry*.B.I.Churchill Livingstone.
2. Lauralee Sherwood.(2007). *Human Physiology*(6th Ed). Brooks Cole Publishing Co.
3. AmbikaShanmugam.(2008).*Fundamentals of Biochemistry for Medical students*.Lippincott Williams & Wilkins.
4. Rafi MD.(2015).*Textbook of Biochemistry for Medical Students*. University of Health Sciences. University Press.

Reference:

1. Patricia Trueman.(2007). *Nutritional Biochemistry*. MJP Publishers.
2. Mallikarjuna Rao N.(2008). *Medical Biochemistry*.S.Chandand Company Ltd. NewDelhi.
3. Jain J L.(2008). *Fundamentals of Biochemistry*.S.Chandand Company Ltd.New Delhi.
4. Robert k Murray.(2009). *Harper's Illustrated Biochemistry*.McGraw Hill.
5. John E Hall.Guyton&Hall.(2013).*Text Book of Medical Physiology*.Elsevier India Private Limited. New Delhi.
6. Agarwal G R Meerut.(2014). *Text Book of Biochemistry*.Krishnaprakashan Media (P) Ltd.
7. SatyanarayananU.(2014). *Biochemistry*, Elsevier India Private Limited.New Delhi.

E-Reference:

1. <https://opentextbc.ca/anatomyandphysiology/chapter/24-4-lipid-metabolism/>
2. <https://www.ncbi.nlm.nih.gov/books/NBK9921/>
3. <https://vikaspedia.in/health/nutrition/antioxidants/antioxidant-and-their-medicinal-applications>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	State the structure, classification, properties and functions of macro and micro nutrients.	LO1
CO2	Illustrate the cellular functions involved in maintaining homeostasis.	LO4,
CO3	Describe enzyme activity in metabolic actions	LO5
CO4	Predict the anabolic and catabolic mechanisms of nutrients.	LO7, LO13
CO5	Associate the effect of free radicals and genes on nutrient metabolism.	LO10, LO11
CO6	Apply biochemical principles to interpret nutrient metabolism and their implications in health and disease.	LO6, LO15,

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	2	2	2	2	1	1	-	1
CO 3	1	3	2	2	2	2	2	2	1	1
CO 4	1	3	3	3	3	2	2	3	2	1
CO 5	2	3	3	3	2	2	2	3	1	1
CO 6	3	3	3	3	3	3	2	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

First Year **ALLIED COURSE PRACTICAL-I**
HUMAN PHYSIOLOGY AND NUTRITIONAL BIOCHEMISTRY
Code: **(Practical)**

Semester : II
Credits : 4

COURSE OBJECTIVES: To enable the students to

- Develop skills in handling analytical equipment
- Understand the procedures of qualitative analysis
- Learn the analytical techniques of quantitative analysis

Practical:

1. Qualitative tests for sugars-glucose, fructose, lactose, maltose and glucose.
2. Quantitative estimation of reducing sugar.
3. Qualitative tests for proteins
4. Demonstration Experiments.
 - a. Estimation of total nitrogen in foods (Micro or Macro kjeldahl methods)
 - b. Determination of Iodine value
 - c. Determination of fat content in food using Soxhlet method

Recommended Books:

1. Practical Biochemistry(Laboratory manual) for pharmacy students, Ritu Mahajan,Vayu education of India, New Delhi, First Edition,2009.
2. Biochemistry & Clinical pathology (Theory & Practical), K.K.Pillai & J.S.Qadry, CBS Publishers& Distributors, New Delhi, First edition (Reprint)(2008).
3. Varley's Practical Biochemistry, Alan H Gowenlock, CBS Publishers& Distributors, New Delhi, Sixth edition (2008).

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Identify the chemicals used for qualitative and quantitative analysis.	LO1
CO2	Illustrate qualitative and quantitative analytical methods.	LO4
CO3	Prepare reagents required for qualitative and quantitative analysis.	LO5
CO4	Predict and perform the procedures involved in qualitative and quantitative analysis.	LO7, LO13
CO5	Infer and interpret the analytical results obtained.	LO10, LO11
CO6	Apply laboratory analytical techniques accurately for evaluation and reporting of experimental findings.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	3	2	2	1	2	1
CO 2	1	3	2	3	3	2	2	2	2	1
CO 3	1	3	2	2	3	2	2	1	3	1
CO 4	1	3	3	3	3	2	2	3	3	1
CO 5	2	3	3	3	3	2	2	3	3	1
CO 6	3	3	3	3	3	3	2	3	3	2

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to:

- Understand the practical principles of food preservation and factors causing food spoilage.
- Develop skills in preparing preserved food products using natural and chemical preservatives.
- Gain practical knowledge of preservation techniques involving heat, cold, drying, and fermentation.
- Assess the quality, shelf life, and acceptability of preserved food products.
- Promote safe food handling and sustainable household-level food preservation practices.

Practical:

1. **Identification of common causes of food spoilage and observation of spoilage changes in food samples**
2. **Preparation of preserved products using sugar as a natural preservative**
 - Jam
 - Jelly
 - Marmalade
 - Fruit squash
3. **Preparation of preserved products using salt as a natural preservative**
 - Lime pickle
 - Mango pickle
 - Salt-cured vegetables
4. **Demonstration and identification of commonly used chemical preservatives and their applications in food preservation**
 - Sodium benzoate
 - Potassium metabisulphite
 - Citric acid
 - Vinegar
5. **Preparation of preserved food products using chemical preservatives**
 - Fruit syrup
 - Ready-to-serve fruit beverage
 - Tomato ketchup
6. **Preservation using high temperature methods**
 - Blanching
 - Pasteurization (demonstration)
 - Bottle sterilization
7. **Preservation using low temperature methods**
 - Refrigeration
 - Freezing
 - Observation of quality changes during cold storage
8. **Drying and dehydration techniques**
 - Sun drying of fruits/vegetables
 - Tray drying (demonstration)
 - Preparation of dehydrated vegetable products

9. Preparation of fermented food products

- Curd
- Idli/Dosa batter
- Bread
- Fermented beverage (demonstration)

10. Sensory evaluation and shelf-life assessment of preserved products

Recommended Books:

1. Arthey, D and Ashurst, P.R (1996), Fruit processing, Blackie academic and professional. London.
2. Fellows, P.J (2016): Food Processing Technology: Principles and Practice, second edition, CRC Wood head publishing Ltd, Cambridge.
3. Gould. G.W (1995), New methods of food preservation. Blackie academic and professional. London.
4. Rahman M S (2020) Handbook of Food Preservation CRC Press, USA
5. Srilakshmi B (2017) Food Science, New Age International Publications, New Delhi.
6. Suganthi.V and Subaratinam.R (2021) Textbook on Food preservation, Dipti Press(OPC) Pvt. Ltd, Chennai.

E Reference:

<https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/food-spoilage>.

<http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111436>

<http://ecoursesonline.iasri.res.in/mod/page/view.php?id=111435>

<http://www.homepreservingbible.com/2247-an-introduction-to-the-drying-food-preservation-method/>

COURSE OUTCOMES

At the end of the course, the students will have the ability to		
CO1	Explain the principles, importance and causes of food spoilage and preservation.	LO1
CO2	Prepare and evaluate preserved food products using natural preservatives such as sugar and salt.	LO4
CO3	Identify and assess the use of chemical preservatives, their permissible limits and health effects.	LO5
CO4	Apply preservation techniques using heat and cold methods and evaluate their effects on food quality.	LO7, LO13
CO5	Demonstrate drying and fermentation processes and relate them to commonly consumed preserved foods.	LO10, LO11
CO6	Develop suitable food preservation methods for enhancing shelf life, safety and nutritional quality of food products.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	2	2	3	2	2	2	1	1
CO 3	1	3	3	3	3	2	2	2	1	1
CO 4	1	3	3	3	3	2	2	3	1	1
CO 5	1	3	2	3	3	2	2	2	1	1
CO 6	2	3	3	3	3	3	3	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

Second Year

**CORE COURSE 3
FUNDAMENTALS OF HUMAN DEVELOPMENT
(Theory)**

Semester: III

Code:

Credits: 4

COURSE OBJECTIVES : To enable the students to

- Familiarize with the growth process from conception to confinement.
- Know the development of an individual from infancy to old age.
- Understand the physical, psychological, and social development of the individual from infancy to old age.
- Develop an awareness of the problems of children, adolescent, and exceptional children.

UNIT I PRE-NATAL DEVELOPMENT AND CHILD BIRTH PROCESS:

Conception, Stages of prenatal development. Signs and symptoms of Pregnancy. Common discomforts and complications of Pregnancy. Factors influencing prenatal development.

Child Birth – stages and types of delivery. Post-natal care of the mother. Infant and Maternal mortality – Causes and prevention.

UNIT II INFANCY AND CHILDHOOD:

Characteristics, physical, social, and emotional development, cognitive and language development during infancy, early childhood, and late childhood.

UNIT III ADOLESCENCE:

Adolescence –physical and psychological changes, emotional, moral and social development, Problems of adolescence.

Delinquency – causes, prevention, and rehabilitation.

Educational and vocational guidance, role of family and schools and colleges in guiding adolescence

UNIT IV ADULTHOOD AND OLD AGE:

Adulthood - Characteristics and developmental tasks, all aspects of development and vocational adjustments.

Old age - Characteristics of old age, physical changes, psychological changes. Place of the aged in Indian Society

UNIT V CHILDREN WITH SPECIAL NEEDS:

Introduction to Children with Special Needs and identification & Educational Rehabilitation. Gifted children, Orthopedically challenged, Mentally retarded, Hearing impaired, Visually handicapped Learning disability

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Development of e content on prenatal care, adolescent problems, and care of the aged. Utilization of digital learning platforms to strengthen knowledge and understanding of human development.

Recommended Books:

1. Hurlock E.B., (1972). Child Development, New York: McGraw Hill Book company.
2. Hurlock, E.B., (1995): Developmental Psychology - A Life Span Approach, 5th (Ed.) NewYork: McGraw Hill Book Co.
3. Nanda V.K., (1998): Principles of Child Development, NewDelhi: Anmol Publications Pvt. Ltd.
4. Rajammal P. Devadas and Jaya N. Muthu (2002). A Textbook of Child Development, NewDelhi: Macmillan Publishers.
5. Singh, A. (2015). Foundations of Human Development: A Life Span Approach. New Delhi:Orient Black Swan.

References:

1. Suriakanthi A., (1997). Child Development – An Introduction, Tamil Nadu: KavithaPublishers.
2. Swaminathan, M (1998). The First Five Years: A Critical Perspective on Early Childhood Care and Education in India. New Delhi: Sage Publications.
3. Suriakanthi, A., (2009). Child Development. Kavitha publications, Tamil

E-Reference:

1. http://www.wbnsou.ac.in/online_services/SLM/BED/SEM-01_A1.pdf
2. <https://ncert.nic.in/textbook/pdf/kepy104.pdf>
3. <https://egvankosh.ac.in/bitstream/123456789/17134/1/Unit-3.pdf>
4. https://www.cukashmir.ac.in/departmentsdocs_16/Growth%20&%20Development%20-%20Dr.%20Ismail%20Thamarasseri.pdf

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Describe the meaning and principles of growth and development.	LO1
C02	Explain developmental aspects during infancy, early childhood and late childhood.	LO4
C03	Evaluate developmental aspects during adolescence.	LO5
C04	Identify the developmental tasks during adulthood and old age.	LO7, LO13
C05	Explain children with special needs, their identification and educational rehabilitation.	LO10, LO11
C06	Apply principles of human growth and development to assess age-related developmental needs and support appropriate interventions across the lifespan.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	1	2	1	2	1	1	-	1
CO 2	1	3	2	2	1	2	1	1	1	1
CO 3	1	3	3	3	1	2	2	2	1	1
CO 4	1	3	2	3	1	2	2	1	1	1
CO 5	2	3	3	2	2	2	3	3	1	1
CO 6	2	3	3	3	2	3	2	2	1	2

S- Strong(3) M-Medium(2) L-Low(1)

Second Year**CORE PRACTICAL -3****Semester: III****FUNDAMENTALS OF HUMAN DEVELOPMENT****Code:****(Practical)****Credits: 4****COURSE OBJECTIVES: To enable the students to**

- Understand the milestones on development of children
- Identify the issues and challenges faced by an individual in various stages of life span
- Orient towards various methods of child study.

Practical:

1. Prepare an album illustrating the developmental milestones of children.
2. Undertake a field visit to an Anganwadi center and document observations.
3. Plot and interpret growth monitoring charts for children.
4. Observe and compare child-rearing practices among families from different socio-economic backgrounds.
5. Plan and conduct an educational programme for young mothers focusing on immunization and weaning practices.
6. Conduct case studies of individuals across different life stages—toddler, school-age child, adolescent, middle-aged, and elderly.
7. Design and organize games and activities suitable for school-age children.
8. Interview adolescent boys and girls to understand lifestyle patterns and behaviors in relation to gender and socio-economic status.
9. Study and document common health problems among middle-aged and elderly individuals.
10. Visit an old age home and prepare a report based on observations and interactions.

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Gain skills in working with children and adults.	LO1
C02	Plan and implement programmes for individuals in various age groups.	LO4
C03	Develop the ability to assess growth, development and health status across different stages of life.	LO5
C04	Acquire skills in community interaction, data collection and conducting field-based studies related to family and child welfare.	LO7, LO13
C05	Enhance communication, counseling and educational skills for promoting health, nutrition and well-being among individuals and groups.	LO10, LO11
C06	Apply life span development principles and practical skills to design supportive interventions for individuals, families and communities.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	2	2	1	2	2	2	1	1
CO 2	3	3	2	2	2	3	2	3	1	1
CO 3	2	3	3	3	2	2	3	3	2	1
CO 4	3	3	3	3	2	2	3	2	3	1
CO 5	3	3	3	2	2	3	3	3	2	2
CO 6	3	3	3	3	2	3	3	2	2	2

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to

- Understand the importance of ECCE
- Develop an insight into the educational thoughts of Indian and western educationists on ECCE
- Develop awareness of ECCE policies and programmes in India
- Gain skills in designing the curriculum for children below six years

UNIT-I: CONCEPT AND SIGNIFICANCE OF ECCE:

Understanding terminologies, “Child”, “Childhood”, and “Early Childhood Care and Education”. Importance and significance of ECCE- Developmental Perspective, Neuroscience Perspective, Human Rights Perspective. Types of ECCE service delivery – Formal and informal; Government funded, Philosophy oriented, Laboratory nursery school, Franchise oriented

UNIT-II: POLICIES AND PROGRAMMES IN ECCE IN INDIA :

Contributions of Thinkers and Educationists in ECCE – educational thoughts of Froebel, John Dewey, Montessori, Gandhi, Tagore and Aurobindo on understanding of childhood and programmes for young children. History of Early Childhood Care and Education in India (Brief) ECCE Policy Framework: National Policy on Education (1986), Article 45 In Indian Constitution and 86th Amendment, National Curriculum Framework (2005), ECCE in Right to Education (2010) and National Policy on ECCE (2013), Curriculum Framework for Early Childhood Care and Education 2012/2013, New Education Policy 2020.

UNIT-III: PHYSICAL ARRANGEMENTS FOR AN IDEAL ECCE CENTRE:

Building, site, safety, space; Furniture – types, shapes, safety. Other equipment – play equipment –selection, use and storage. Setting up the learning environment – indoor area, outdoor area, learning activity corners. Quality Standards as per ECCE policy.

UNIT-IV: EARLY CHILDHOOD CURRICULUM:

Definition and concept of curriculum: Curriculum Approaches – Subject centered, learner centered, community centered. Developmentally appropriate practice(DAP)–definition and core considerations, myths and consequences of developmentally inappropriate ECE practices .Components and essential features of developmentally appropriate ECCE curriculum. Planning a developmentally appropriate curriculum –approaches ,key principles and types of plans.

UNIT-V: ORGANIZATIONAL MANAGEMENT, COMMUNITY INVOLVEMENT AND EVALUATION OF ECCE PROGRAMMES:

Organizational Management of ECCE Centres - Planning, administration, and supervision of ECCE programmes ,Infrastructure, facilities, and safety standards
Roles, competence, and teaching methodologies of ECCE professionals.

Community Involvement and Home–School Linkages - Parental involvement and parent education programmes - Community participation and support systems - Continuity between home and preschool learning environments.

Evaluation of ECCE Programmes -Maintenance of records (attendance, health, developmental progress)- Monitoring and evaluation of programme quality and effectiveness - Assessment of children and preschool participation .

UNIT VI URRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Visits to Anganwadi centers, preschools, and ECCE institutions to observe classroom practices, learning environments, and teacher–child interactions.

Observation and documentation of developmental milestones and behaviour of children (0–6 years) .

Preparation of developmentally appropriate activity plans and low-cost teaching-learning materials using locally available resources.

Recommended Books:

1. Aggarwal, J. C. (2007). *Early Childhood Care and Education: Principles and Practices*. New Delhi: Shipra Publications.
2. Arni, K., & Wolf, G. (1999). *Child Art with Everyday Materials*. Chennai: Tara Publishing.
3. Fleeer, M. (2010). *Early Learning and Development: Cultural–Historical Concepts in Play*. Cambridge: Cambridge University Press.
4. Kaul, V. (2009). *Early Childhood Education Programme*. New Delhi: National Council of Educational Research and Training (NCERT).

References:

1. Mohanty, J., & Mohanty, B. (1996). *Early Childhood Care and Education*. New Delhi: Deep & Deep Publications.
2. Morrison, G. S. (2003). *Fundamentals of Early Childhood Education*. Upper Saddle River, NJ: Merrill/Prentice Hall.
3. Muralidharan, R., & Banerji, V. (1989). *A Guide Booklet for Nursery Teachers*. New Delhi: NCERT.
4. Swaminathan, M. (1998). *The First Five Years*. New Delhi: Sage Publications.
5. Singh, V. A. (1995). *Playing to Learn: A Training Manual for Early Childhood Education*. Chennai: M. S. Swaminathan Research Foundation.

E- Reference:

1. <https://www.unicef.org/early-childhood-development>
2. <https://ncert.nic.in?utm>
3. <https://ncert.nic.in>
4. https://ncert.nic.in?utm_source=

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Explain the importance of early childhood years and the significance of intervention programmes for early childhood development.	LO1
CO2	Describe the policies and programmes of ECCE in India.	LO4
CO3	Plan developmentally appropriate activities for children in various age groups.	LO5
CO4	Organize parent education programmes.	LO7, LO13
CO5	Assess the developmental needs, learning readiness and behavioural characteristics of young children in early childhood settings.	LO10, LO11
CO6	Apply principles of early childhood care and education in designing child-centred learning experiences and family support interventions.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	2	2	1	2	1	1	-	1
CO 2	2	3	2	2	1	2	1	1	1	1
CO 3	2	3	3	3	2	3	2	3	1	1
CO 4	3	3	2	2	1	2	2	2	1	2
CO 5	2	3	3	3	2	3	2	3	2	1
CO 6	3	3	3	3	2	3	3	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

Second Year

**ALLIED COURSE PRACTICAL – II
EARLY CHILDHOOD CARE AND EDUCATION
AND APPAREL DESIGN**

Semester: III

Code:

(Practical)

Credits:**

COURSE OBJECTIVES:

- Understand the various types of ECCE centres
- Gain skills in designing curriculum for the preschool

LIST OF PRACTICAL

1. Visit to Anganwadi and assess physical infrastructure, facilities and resources available in the centre
2. Conduct Interview with AWW in order to understand the challenges faced by them and Interviews with 2-3 families regarding the access and satisfaction of ECD services
3. Visit to a Nursery school and assess physical infrastructure, facilities and resources available in the centre
4. Identify appropriate features of physical social environments that will promote all round development in young children
2. Identify, plan and record activities and methods of playful interactions to foster development in children birth –two years
3. Identify, plan and record activities and methods of playful interactions to foster development in children two –six years
4. Organise Workshops in any two of the following
5. Understanding childhood nutrition and health
6. Developing work sheets to teach concepts
7. Enhancing social and language skills
8. Music, movement and drama for children
9. Curriculum planning and space design
10. Methods and tools to assess progress of children and programme
11. Setting up a crèche /preschool

References:

1. Aggarwal, J. C. (2007). *Early Childhood Care and Education: Principles and Practices*. New Delhi: Shipra Publications.
2. Arni, K., & Wolf, G. (1999). *Child Art with Everyday Materials*. Chennai: Tara Publishing.
3. Fler, M. (2010). *Early Learning and Development: Cultural–Historical Concepts in Play*. Cambridge: Cambridge University Press.
4. Kaul, V. (2009). *Early Childhood Education Programme*. New Delhi: National Council of Educational Research and Training (NCERT).

E-Reference:

1. <https://www.unicef.org/early-childhood-development>
2. <https://ncert.nic.in?utm>
3. <https://ncert.nic.in>
4. https://ncert.nic.in?utm_source=

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Prepare a plan for setting up an Early Childhood Care and Education (ECCE) centre.	LO1
CO2	Plan developmentally appropriate activities for children in various age groups.	LO4
CO3	Evaluate parent education programs.	LO5
CO4	Identify the infrastructural, administrative and educational requirements for effective functioning of an ECCE centre.	LO7, LO13
CO5	Develop educational materials and activity plans to promote holistic child development in early childhood settings.	LO10, LO11
CO6	Apply principles of ECCE in organizing child-centred programmes and strengthening parent-school partnerships.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	2	3	2	3	2	3	1	1
CO 2	2	3	3	3	2	3	2	3	1	1
CO 3	3	3	3	3	1	2	2	2	2	1
CO 4	3	3	2	3	2	2	2	3	1	1
CO 5	2	3	3	3	2	3	2	3	2	1
CO 6	2	3	3	3	2	3	3	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

Second Year

**INTERDISCIPLINARY COURSE – 3
BAKERY AND CONFECTIONERY**

Semester : III

Code:

(Theory)

Credits : 2

COURSE OBJECTIVES: To enable the students to

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

UNIT I AN OVERVIEW OF BAKERY INDUSTRY:

Current status and growth of bakery industry in India.

Baking – principles, process. Layout and organization of a bakery unit. Equipment and tools used in baking and confectionery. Bakery sanitation and personnel hygiene.

UNIT II INGREDIENTS IN BAKERY AND CONFECTIONERY:

Ingredients - Flour, Sugar, Shortenings, Egg, Leavening agents-yeast, baking soda, baking powder, chocolates, cocoa powder. Other ingredients- salt, milk and milk derivatives, malt products, dough improver, oxidizing agents, flavours and colors, nuts, spices and condiments, preserved and candied fruit peels.

UNIT III BREADS AND CAKES:

Bread - ingredients, types of breads, faults and its prevention

Cakes – ingredients, types of cakes, cake judging, faults and remedies. Different types and techniques of cake decoration -icings and fillings.

UNIT IV PASTRIES, COOKIES AND BISCUITS

Pastries- types of pastries- puff pastry, short crust, phyllo pastry, flaky pastry, choux pastry

Cookies & biscuits – ingredients, types and processing.

UNIT V CONFECTIONERY AND MARKETING OF BAKED PRODUCTS

Chocolates- production, types, chocolate decorations Sugar based confectionery – fudge, fondant, sugar candies.

Marketing and sales promotion- costing, packaging and labelling.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Study the latest trends and applications of food additives used in bakery products, including emulsifiers, preservatives, dough conditioners, enzymes, sweeteners, flavoring agents, and food colors.

Recommended Books:

1. John Kingslee (2006) A Professional Text book to Bakery and Confectionary. New Age International Pvt Limited Publisher, New Delhi.
2. Uttam K Singh (2011). Theory of Bakery and Confectionary- An Operational Approach. Kanishka Publishers and Distributors, New Delhi.
3. Yogamba I Ashokkumar (2012) Theory of Bakery and Confectionary, PHI publication. New Delhi.
4. Nicoletto, I. and Foote, R (2000). Complete Confectionary Techniques. Hodder and Solution, London.

References:

1. Bakers hand Book on practical Baking (2000) Published by U.S. Wheat Associates, New Delhi.
2. Dubey. S.C (2002) Basic Baking. 4th Edition. Published by the Society of Indian Bakers, New Delhi.
3. Sarah R. Lebensky, Pricilla et al., (2004) Textbook of Baking and Pastry Fundamentals, third edition, Pearson Education Ltd.
4. The Culinary Institute of America, Baking & Pastry: Mastering the Art and Craft, John Wiley & Sons, Inc New Jersey. 2009.

E-Reference:

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

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Understand the principles and process of baking and confectionery	LO1
C02	Acquire knowledge on the role of various ingredients used in baking and confectionery.	LO4
C03	Develop skills to design baked goods using alternative healthy ingredients to cater to special dietary needs.	LO5
C04	Identify and control faults in baking.	LO7, LO13
C05	Enhance entrepreneurial skills in bakery and confectionery to establish a bakery unit.	LO10, LO11
C06	Apply baking and confectionery principles to develop innovative, quality-assured and commercially viable bakery products.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	2	2	3	2	1	1	1	1
CO 3	2	3	3	3	3	2	2	3	1	1
CO 4	1	3	3	3	3	2	2	3	1	1
CO 5	3	2	2	2	1	3	2	3	2	3
CO 6	2	3	3	3	3	3	2	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to

- Understand the basic concepts and importance of textiles
- Develop knowledge of fibres, yarns, and fabric construction
- Familiarize students with dyeing, printing, and finishing techniques
- Impart knowledge on care and maintenance of textiles
- Build awareness of sustainable and modern textiles

Unit-I: INTRODUCTION TO TEXTILE FIBERS:

Definition, Meaning, Classification of Textiles Fibers-Natural fiber-cotton,Jute, silk, wool-manufacturing process, properties and end uses. Minor Textile fibers-coir, ramie, kapok, manufacturing process properties and uses.

Synthetic fibers- nylon, nylon 6,6, polyester, acrylic- modacrylic, olefins, spandex, Aramids, carbon fiber, glass fiber, metallic fibers, properties uses and cares.

Regenerated fiber and regenerated modified fibers - Viscose rayon, acetate, cupra ammonium rayon, Bamboo, Modal, Soya, manufacturing process properties and its uses and cares. (Understanding Concepts only)

Unit-II: SPINNING:

Yarn construction – Definition- Directions of yarn Twist: Z, S twist, Yarn number or Yarn count –Direct and Indirect system. Process of yarn construction, Types of spinning, Dry, Wet, Melt, Conventional spinning-cotton system, woolen and worsted system, Non conventional spinning-Open End, Friction and Self Twist, Yarn classification – Simple yarn, Complex yarn, Textured yarns, Fancy yarns, Spun yarns.(Understanding Concepts only)

Unit-III FABRIC CONSTRUCTION:

Definition, parts and functions of simple loom. Types of weaves- Basic weaves – Plain, Twill weave and Satin weaves, Decorative weave- Dobby, Jacquard ,Pile, Leno weave ,Lappet and Swivel weave. Knitting- Definition, classification of knitting- Warp and Weft knitting- properties and end uses.

Non-woven fabric - Definition, web formation and web bonding. Decorative fabric construction-Knotting, Lacing, Braiding and Felting-properties and end uses.

Unit-IV: TEXTILE FINISHING:

Basic finishes-Singeing, Desizing, Scouring, Bleaching, Mercerizing, Napping, Calendaring. Special finishes –Antimicrobial, Waterproof finishes, Flame Resistant, Stain Resistant. Finishes suitable to Natural and Manmade fibers. (Understanding Concepts only)

Unit- V: DYEING AND PRINTING:

Definition of Dyes, concept of Dyes, Classification of dyes, Dyes suitability to various fibers. Methods of Dyeing- Stock dyeing, yarn dyeing, piece dyeing, cross and union dyeing. Printing- Definition, Styles of printing-Direct, Discharge, Resist. Colour Fastness.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Visits to textile units, handloom centres, or garment industries to observe fibre processing, yarn production, and fabric manufacturing techniques.

Observation and identification of different types of fibres, yarns, and fabrics available in the market, along with their properties and uses.

Preparation of sample albums containing natural, regenerated, and synthetic fibres with suitable labeling and descriptions.

Recommended Books:

1. A.J. Hall. "The standard hand book of Textiles", Wood head Publishing 8th edition 2004.
2. Clarke-Introduction to printing.
3. E.P.G. Gohl, L.D. Velensky, "Textile Science" CBS Publishers and Distributors, 2003
4. P.V. Vidyasagar, "Hand Book of Textiles", A. Mittal Publications, 2005
5. Sara J. Kadolph, "Textiles", Prentice Hall, 10th edition 2007

References:

1. Dantyagi, S. (1996). Fundamentals of Textiles and Their Care. New Delhi.
2. Hollen. And Saddler. J. Textiles Macmillan co, New York.
3. Joseph M, Introductory Textile science-6th Ed., Fort Worth Harcourt, Brace
5. Joseph M. L. (1976) Essentials of Textiles Holt Rinehart of Winston, New York.
6. Jovani och college publishers, 1993. Orient long man limited.
6. Textbook-Textile Science-Deepali Rastogi, Sheetal Chopra.
7. Tortora, P.G. (1978) Understanding Textiles New York Macmillan publishing. Inc.
8. Wingate, B.I. (1976). Textiles Fabrics and their selection. USA: Prentice Hall. Inc.

E- Reference:

<https://epgp.inflibnet.ac.in/>

<https://ndl.iitkgp.ac.in/>

<https://www.textileschool.com/>

<https://textilelearner.net/>

<https://www.fibre2fashion.com/>

<https://www.textiletoday.com.bd/>

<https://www.intechopen.com/subjects/textile-engineering>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Identify and classify textile fibres.	LO1
C02	Explain yarn formation and fabric construction.	LO4
C03	Analyze dyeing, printing and finishing processes in textiles.	LO5
C04	Apply textile care and maintenance methods.	LO7, LO13
C05	Evaluate textiles based on quality and sustainability.	LO10, LO11
C06	Apply textile science principles for selection, care and sustainable use of textile materials for varied applications.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	2	2	2	2	1	1	-	1
CO 3	1	3	3	3	3	2	2	2	1	1
CO 4	1	3	2	2	2	3	2	2	1	2
CO 5	2	3	3	3	2	2	2	3	2	2
CO 6	2	3	3	3	3	3	2	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

Second Year

**CORE PRACTICAL- 4
TEXTILE SCIENCE
(Practical)**

Semester: IV

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Develop hands-on skills in textile identification and construction
- Provide exposure to dyeing, printing and finishing techniques
- Train in care, maintenance and stain removal
- Enhance creativity and analytical ability
- Promote self-directed learning

Practicals:

1. Identification of fiber
 - Burning Test
 - Solubility test
 - Microscopic structure
2. Identification of Yarn
3. Identify the direction of Yarn Twist
4. Identification of different Fabric types
5. Identification of weaves using pick glass
6. Preparation of basic weaves
7. Collect different weave samples
8. Identification of printing types
9. Identification of fabric defects

Reference

1. P.V.Vidyasagar, "HandBookofTextiles", A.MittalPublications, 2005
2. SaraJ.Kadolph, "Textiles", PrenticeHall, 10th edition 2007

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Identify fibres and fabrics using standard testing methods.	LO1
C02	Demonstrate textile construction techniques.	LO1
C03	Perform dyeing, printing and finishing processes.	LO5
C04	Apply laundry and stain removal methods for textile care and maintenance.	LO7, LO13
C05	Develop a textile portfolio documenting textile samples, techniques and applications.	LO10, LO11
C06	Apply practical textile skills for identification, maintenance, documentation and quality evaluation of textile materials.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	3	3	2	2	2	2	1
CO 2	1	3	2	2	3	2	2	2	1	1
CO 3	1	3	2	3	3	2	2	2	2	1
CO 4	1	3	2	2	1	3	2	3	1	2
CO 5	3	3	2	2	3	3	2	1	2	2
CO 6	2	3	3	3	2	3	2	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to

- Understand the essential tools used for apparel designing
- Acquire knowledge on the basic construction techniques

UNIT I INTRODUCTION AND BASIC HAND STITCHES:

- a) Parts, functions, attachments and use and care of a Sewing machine. Minor troubles and solutions encountered while sewing.
- b) Tools used for clothing construction– cutting tools, measuring tools, marking tools, general tools, pressing tools.
- c) Basic hand stitches- temporary and permanent stitches. Hems – types, different stitches used.

UNIT II BASIC CONSTRUCTION TECHNIQUES- SEAMS AND FULLNESS:

- a) Seams and seam finishes – types, working of seams and seamfinishes.
- b) Fullness- definition, types- darts, tucks, pleats, flares and godets, gathers and shirrs, frills or ruffles, flounces

UNIT III BASIC CONSTRUCTION TECHNIQUES- PLACKETS AND FASTENERS:

- a) Plackets – definition, characteristics of a good placket, types – inconspicuous placket and conspicuous plackets. Method of constructing the same.
- b) Fasteners – conspicuous (Button and button-holes, button loops, button with holes, shank buttons, eyelets and cords). Inconspicuous (press buttons, hooks and eyes, zips).

UNIT IV BASIC CONSTRUCTION TECHNIQUES-SLEEVES AND NECKLINE:

- a) Sleeves – definition, types, set-in-sleeves – plain sleeve, puff sleeve, bishop sleeve, bell, circular, cap sleeve and magyar sleeve.
 - b) Sleeve and bodice combined – raglan, kimono and dolman.
 - c) Modified armhole – squared armhole.
 - d) Collars – definitions, types of collars- peter pan, scalloped, puritan, sailor, square, rippled, full shirt collar, open collar, chinese, turtleneck, shawl collar
- Yokes – types, simple yoke, yoke with fullness within the yoke, yoke supporting/ releasing fullness

UNIT V BASIC CONSTRUCTION TECHNIQUES-POCKETS, FACING AND BINDING:

- a) Pockets – definition, types of pockets – patch pocket, bound pocket, pocket in a seam, front hip pocket.
- b) Facings – bias facing, shaped facing and decorative facing and Binding – single bias binding, double bias binding.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Visit apparel manufacturing units, boutiques, retail stores, or fashion exhibitions and document observations. Explore digital fashion design tools and software for fashion illustration, pattern making, and garment visualization.

References:

1. Wood, Dorothy. (2007). The Practical Encyclopedia of Sewing. London: Lorenz Books. Claire B. Shaeffer (2011) Couture Sewing Techniques. Taunton Press Inc, USA
2. Matthews J (2018) Pattern Design: Fundamentals: Construction and Pattern Making for Fashion Design. Fairbanks Publishing, USA
3. Adele M (2019) The Dressmaking Book: A Simplified Guide for Beginners. Echo Point Books and Media, USA

E- Reference:

1. <http://www.sewingsupport.com/seam-finishes.html>
2. <http://vintage Sewing.info/1930s/33-pt/pt-02.html>
3. <http://www.stitchplaystudio.com/AnnouncementRetrieve.aspx?ID=521146>
4. <http://aces.nmsu.edu/pubs/c/C-233.html>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Identify the appropriate sewing tools, sewing machine components, hand stitches, sleeves, pockets, collars, plackets and fullness techniques.	LO1
CO2	Describe the concepts related to basic garment construction techniques.	LO4
CO3	Demonstrate the steps involved in designing apparel considering the overall appearance and functionality of the garment.	LO5
CO4	Explain the functions and role of sewing machines, hand stitches, fullness, plackets, pockets, sleeves, yokes and collars used in apparel construction.	LO7, LO13
CO5	Construct garments in various styles using the knowledge and skills acquired.	LO10, LO11
CO6	Apply garment construction principles and practical sewing skills to design and produce functional and aesthetically appealing apparel.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	3	2	2	2	1	1	-	1
CO 3	2	3	2	3	2	2	2	3	1	1
CO 4	1	3	3	2	3	2	1	2	1	1
CO 5	2	3	3	3	3	3	1	3	2	1
CO 6	1	3	3	2	3	3	2	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to

- Develop basic skills in hand stitches, seams, hems, and seam finishes used in garment construction.
- Prepare samples of fullness techniques such as darts, tucks, pleats, gathers, and ruffles.
- Impart knowledge and practical skills in constructing plackets, fasteners, sleeves, collars, yokes, and pockets.
- Train students in the application of facings and bindings for garment finishing.
- Enhance accuracy, creativity, and workmanship in preparing garment samples.

Practical:

1. Preparation of samples for Basic hand stitches.
2. Preparation of samples for Hems
3. Preparation of samples for seam -Plain, Top Stitched, Flat fell, Piped seam.
4. Preparation of samples for seam finishes - Overcast, Hem, Edgestitched, Bound.
5. Preparation of samples for fullness - Darts, Tucks -pin, cross, group tucking with scalloped effect, Pleats (any 3)-knife, box, kick, gathering by machine, elastic. Ruffles- single, double.
6. Preparation of samples for Plackets and Fasteners-continuous, bound, faced and zipper plackets, Tailored Placket, button and buttonhole, press button, hook and eye.
7. Preparation of samples for Sleeves- plain sleeve, puff sleeve and Raglan or cap sleeve.
8. Preparation of samples with Yoke –simple yoke and yoke supporting fullness.
9. Preparation of samples for Collar - peter pan collar and shirt collar
10. Preparation of samples for Pocket- Patch pocket
11. Preparation of samples for Facing and Binding-bias facing, shaped facing, binding

References:

1. [Dorothy Wood \(2007\) The Practical Encyclopedia of Sewing.](#)
2. [Claire B. Shaeffer \(2011\) Couture Sewing Techniques.](#) Taunton Press Inc, USA
3. Matthews J (2018) [Pattern Design: Fundamentals: Construction and Pattern Making for Fashion Design.](#) Fairbanks Publishing, USA
4. [Adele M \(2019\) The Dressmaking Book: A Simplified Guide for Beginners.](#) Echo Point Books and Media, USA

E- Reference:

1. <https://epgp.inflibnet.ac.in/>
2. <https://ndl.iitkgp.ac.in/>
3. <https://www.fibre2fashion.com/>
4. <https://textilelearner.net/>
5. <https://www.fashiondesigningcourses.net/>
6. <https://www.apparelresources.com/>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Demonstrate proficiency in basic hand stitches, hems, seams and seam finishes.	LO1
CO2	Apply techniques of fullness such as darts, tucks, pleats, gathers and ruffles in sample preparation.	LO4
CO3	Construct plackets, fasteners, sleeves, collars, yokes and pockets using appropriate methods.	LO5
CO4	Utilize facings and bindings effectively for garment finishing.	LO7, LO13
CO5	Develop neatness, precision and professional skills in garment construction through systematic sample preparation.	LO10, LO11
CO6	Apply garment construction techniques and practical sewing skills to produce quality apparel components with professional finishing standards.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	2	2	1	1	-	1
CO 2	1	3	3	2	2	2	1	1	-	1
CO 3	2	3	2	3	2	2	2	3	1	1
CO 4	1	3	3	2	3	2	1	2	1	1
CO 5	2	3	3	3	3	3	1	3	2	1
CO 6	1	3	3	2	3	3	2	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to

- Impart knowledge of baking equipment, tools, and their safe handling.
- Develop skills in preparing a variety of baked products including breads, cakes, biscuits, and pastries.
- Understand baking principles, ingredient functions, and processing techniques.
- Introduce preparation of modified bakery products for special nutritional requirements.
- Enhance creativity, hygiene practices, and quality control in bakery and confectionery production.

Practical :

1. Equipment and tools used in baking and confectionery.
2. Preparation of buns, rolls, soup sticks, rusk and pizza base.
3. Preparation of angel food cake, butter cake, sponge cake, chocolate cake, pound cake.
4. Modified baked products - high fiber, low / alternate sugar, low fat, gluten free, and millet based bakery products for special nutritional requirements.
5. Preparation of biscuits, cookies.
6. Preparation of pastries- short crust pastry, flaky pastry, puff pastry, choux pastry.
7. Preparation of plain chocolate, fudge, fondant.

Recommended Books:

1. Srilakshmi, B. (2018). *Food Science* (7th Edition). New Age International Publishers, New Delhi.
2. Dubey, S.C. (2017). *Basic Baking: Science and Craft* (2nd Edition). Society of Indian Bakers, New Delhi.
3. Y.H. Hui (2014). *Bakery Products: Science and Technology* (2nd Edition). Wiley Blackwell.
4. Figoni, P. (2010). *How Baking Works: Exploring the Fundamentals of Baking Science* (3rd Edition). Wiley.
5. Gisslen, W. (2016). *Professional Baking* (7th Edition). Wiley.
6. Kazmierczak, S. (2017). *On Baking: A Textbook of Baking and Pastry Fundamentals* (3rd Edition). Pearson.

References:

1. Beranbaum, R.L. (2022). *The Baking Bible*. Mariner Books.
2. King Arthur Baking Company (2021). *The All-Purpose Baker's Companion*. Countryman Press.
3. Migoya, F. (2017). *The Modern Baker*. Don't Panic Publishing.
4. Suas, M. (2008). *Advanced Bread and Pastry*. Delmar Cengage Learning.
5. Amendola, J., & Rees, N. (2002). *Understanding Baking: The Art and Science of Baking*. Wiley.
6. Bennion, M., & Scheule, B. (2004). *Introductory Foods*. Pearson Education.

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Identify and use baking equipment and tools effectively and safely.	LO1
CO2	Prepare a range of bakery products such as buns, cakes, cookies and pastries using appropriate techniques.	LO4
CO3	Apply knowledge of ingredients and baking principles in product preparation.	LO5
CO4	Develop modified baked products suitable for specific dietary needs (low sugar, low fat, gluten-free, millet-based, etc.).	LO7, LO13
CO5	Demonstrate hygienic practices, quality control and presentation skills in bakery and confectionery production.	LO10, LO11
CO6	Apply bakery production skills to develop innovative, nutritionally suitable and quality-assured baked products for domestic and entrepreneurial applications.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	3	2	2	1	1	1
CO 2	1	3	2	2	3	2	2	2	1	1
CO 3	1	3	3	3	3	3	2	2	1	1
CO 4	2	3	3	3	3	3	2	3	2	1
CO 5	2	3	2	3	3	3	2	2	2	1
CO 6	2	3	3	3	3	3	2	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

CORE COURSE- 5
FAMILY RESOURCE MANAGEMENT
(Theory)

Semester: V

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Recognize and use appropriate resources to achieve one's goal.
- Develop skills in utilizing the available resources in day-to-day life.
- Gain knowledge about work simplification and effective management of Time, Energy and Money.

UNIT I INTRODUCTION TO MANAGEMENT:

Management Concepts - Definition, Concept, Micro and Macro environment. Principles of Management Process - Planning, Controlling, Evaluating. Qualities of a Good Manager. Motivational factors - Values, Goals and Standards.

UNIT II RESOURCES AND DECISION MAKING:

Resources - Meaning and classification, optimizing the use of family resources, Factors affecting the use of resources.

Decision making - Meaning and its importance, Types of decisions, Decision making process, Methods of resolving conflicts.

UNIT III TIME AND ENERGY MANAGEMENT:

Time Management - Tools in time management - Time norms, Peak loads, Work Curves and rest periods, Time management process - Planning - Steps in making time plans - Controlling the planning action - Evaluation.

Energy Management - The efforts required in home-making activities; Energy required for household activities.

UNIT IV WORK SIMPLIFICATION, BODY MECHANICS AND FATIGUE:

Work Simplification - Definition, Importance, Techniques – Formal and Informal Techniques - Mundel's Classes of change - Planning efficient work areas in kitchen.

Body Mechanics - Posture, Gravity, Rhythmic movement, Proper use of Muscle and to take advantage of Momentum.

Fatigue - Concepts, Types - Physiological and Psychological fatigue and Managerial process applied to energy.

UNIT V MONEY MANAGEMENT AND FAMILY EXPENDITURE:

Money Management - Family Income - Types, sources and methods of augmenting family income.

Family Expenditure - Budget - Meaning - Types of budgets, Planning a budget for a family of a fixed income, Hotel / Restaurant, advantages of budgeting, Factors affecting family budget, Engel's law of consumption, methods of handling money - Family financial records, Savings-importance and types.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Conduct a case study on decision-making processes and resource allocation within families.

Participate in webinars, online courses, or workshops related to personal finance, consumer awareness, and resource management.

Recommended Books:

1. Bela Bhargava (2005), "Family resource Management & Interior Decoration", universitybook house pvt ltd, ISBN-13: 978-8187339229
2. Marion Giordan (2016), "Consumer Education: A handbook for Teachers", Routledge; 1st edition, ISBN-13: 978-1138839151
3. Nickell & Dorsey (2002), "Management in Family Living", CBS; 4th edition, ISBN-13: 978-8123908519
4. Pushpa Chakravorty (2007), Home Management, New Delhi: Pointer Publishers.

References:

1. Rao (2020), "Taxmann's Human Resource Management", Taxmann Publications Pvt.Ltd.; 2nd edition, ISBN-13: 978-9390128396
2. Ready GB (2021), "EBC consumer Protection Act", LAW BOOKS, ASIN: B097TQ64QV
3. Steven, D.S, (2016). Consumer Economics: A Practical Overview", New York: Routledge Taylor and Francis group.
4. Sudhir Dixit (2018), "Time Management", Manjul Publishing House, ISBN-13: 978-9388241106

E-Reference:

1. <http://www.yourarticlelibrary.com/decision-making/decision-making-in-management->
2. <http://www.familyresourcemanagement.org/services/goals/>
3. <http://www.familyresourcemanagement.org/services/standards/>
4. <http://www.nios.ac.in/media/documents/sechmscicour/english/home%20science%20>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Apply the principles of management process in day-to-day life.	LO1
C02	Identify and analyze the need for resources.	LO4
C03	Utilize tools of time management effectively in day-to-day life.	LO5
C04	Apply work simplification techniques while managing work.	LO7, LO13
C05	Develop decision-making skills and plan a budget within the available income while maintaining accounts.	LO10, LO11
C06	Apply resource management principles for effective decision-making, efficient utilization of resources and sustainable family living.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

**CORE COURSE- 6
COMMUNITY NUTRITION
(Theory)**

Semester: V

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Provide information regarding nutritional assessment
- Understand national nutritional problems and their implications.
- Acquaint them knowledge regarding nutrition intervention programmes.

UNIT I MALNUTRITION AND NATIONAL NUTRITION POLICY:

Ecology of Malnutrition - Definition, prevalence malnutrition, vicious cycle, ecological factors leading to malnutrition-income, family size, dietary pattern, occupation, customs, food fads, fallacies, ignorance and other factors. Synergism between malnutrition and infection.

National Nutrition Policy – objectives, Strategies-Direct and Indirect, Food Security-Dimension, activity

UNIT II NUTRITIONAL PROBLEMS AND NUTRITIONAL ASSESSMENT:

Nutritional Problems - Prevalence, causes, consequences and prevention of common nutritional problems – Protein Energy Malnutrition (PEM), Vitamin A Deficiency Disease, Anemia, Iodine Deficiency Disorder (IDD), Intra burden, Double burden, Triple burden.

Assessment of Nutritional status -Direct method -Anthropometry, biochemical, biophysical and clinical assessment). Indirect method - Dietary Survey (24-hour dietary recall, food frequency questionnaire, diet history, dietary record), Vital statistics.

UNIT III NUTRITION INTERVENTION & IMMUNIZATION PROGRAMMES:

Nutrition intervention programmes in India – School Lunch Programme, Chief Minister's Nutritious Noon Meal Program (CMNNMP), Chief Minister's Breakfast Scheme, Integrated Child Development Services (ICDS), Nutritional programmes for adolescent girls, Primary Health Care (PHC), Public Distribution System (PDS), Poshan Abhiyan 2.0, Annapoorna Scheme.

Immunization–Universal Immunization Programmes (UIP), Immunization schedule, milestones, improving coverage, improving quality, and new vaccine introduced

UNIT IV NATIONAL, INTERNATIONAL AND VOLUNTARY AGENCIES TO PROMOTE COMMUNITY HEALTH:

National Organization concerned with food and Nutrition – Indian Council of Medical Research (ICMR), National Institute of Nutrition (NIN), National Nutrition Monitoring Bureau (NNMB), Central Food Technological Research Institute (CFTRI), Defence Food Research Laboratory (DFRL), and National Institute of

Public Cooperation and Child Development (NIPCCD), Food and Nutrition Board (FNB).

b. International Organization concerned with Food and Nutrition-Sustainable development goals. Food and Agricultural Organization (FAO), United Nations International Children's Emergency Fund (UNICEF), World Bank, World Health Organization (WHO)

UNIT V NUTRITION EDUCATION AND PROGRAMMES :

Nutrition Education - Definition, importance, principles and methods of nutrition education. Nutrition Intervention Theories-Behavioral, Social Cognitive theory, meaningful Learning Model. Role of audio-visual aids in nutrition education-Information Electronics Communication Technology.

Organization of nutrition education programmes - Principles, planning, executing and evaluating nutrition education programmes, problems encountered in conducting nutrition education programmes.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Develop educational materials such as posters, pamphlets, and social media content for nutrition awareness.

Explore the role of community nutrition in achieving SDG 2 (Zero Hunger) and SDG 3 (Good Health and Well-being).

Recommended Books:

1. Swaminathan, M., (2007), Essentials of Food and Nutrition. An Advanced Textbook The Bangalore Printing and Publishing Co. Ltd, Bangalore.
2. Srilakshmi, B., (2020), Nutrition Science, New Age International Publication, New Delhi

Reference:

1. Park, A., (2007), Park's Textbook of Preventive and Social Medicine, (11th ed), M/S Banarasidas, Bharat Publishers, 1167, Prem Nagar, Jabalpur.
2. Bamji M.S, PrahladRao N, Reddy V.,(2004), Textbook of Human Nutrition, (2nd ed), Oxford and PBH Publishing Co. Pvt. Ltd , New Delhi.
3. Bhatt D.P,(2008), Health Education, KhelSahitya Kendra, New Delhi.
4. Gibney, M.J., Margetts, B.M., Kearney, J.M., Arab, L., (2004), Public Health Nutrition, Blackwell Publishing Co. UK.

E-Reference:

1. <https://www.worldbank.org/en/topic/agriculture/brief/food-security-update/what-is-food-security>
2. <https://vikaspedia.in/health/nutrition/malnutrition>
3. <https://egyankosh.ac.in/bitstream/123456789/33443/1/Unit-16.pdf>
4. <https://www.nutritionintl.org/>
5. <https://www.india.gov.in/national-nutrition-policy-ministry-women-child-development?page=3>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Identify ecological factors leading to malnutrition.	LO1
C02	Describe the role of nutrition intervention programmes.	LO4
C03	Apply nutrition education programmes and create nutrition awareness.	LO5
C04	Execute skills in assessment of nutritional status of the community.	LO7, LO13
C05	Determine strategies for improving the nutrition and health status of the community.	LO10, LO11
C06	Design and implement community-based nutrition interventions for prevention and management of public health nutrition problems.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1										
CO 2										
CO 3										
CO 4										
CO 5										
CO 6										

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

CORE COURSE- 7
PRINCIPLES OF INTERIOR DESIGN
(Theory)

Semester: V

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Understand the elements, principles of design and principles of housing.
- Learn the concepts of colour and create colour scheme for interiors.
- Learn the application of art principles, elements of design, colour schemes and housing principles in creating aesthetic interiors.

UNIT I INTRODUCTION TO ART AND DESIGN:

Importance of design, Application of good taste and Role of good designer. Types of design- Structural and Decorative design. Classification of Decorative Design - Naturalistic, Stylized, Abstract and Geometrical Design.

UNIT II ELEMENTS OF DESIGN:

Line and its types – horizontal, vertical, diagonal, curved, zigzag; Shape; Form – 2D&3D, Size, Texture- tactile and visual; light, pattern, Space- positive & negative and Colour-warm and cool. Application of elements to form design.

UNIT III PRINCIPLES OF DESIGN:

Harmony – harmony of line, shape, size, texture and ideas. Balance – symmetrical, asymmetrical and radial. Proportion – proportional relationships, Greek oblong and Scale.

Emphasis – emphasis through grouping of objects, use of contrast color, decoration, plain background space, unusual lines, shapes, and sizes.

Rhythm – achieving rhythm through repetition of shapes, progression of size, continuous line movement, radiation, and gradation.

UNIT IV COLOUR :

Definition, Qualities of colour, Hue, Value, Intensity. Tints and Shades. The colour wheel/systems - Prang colour system, Physicist's Theory, Psychologist's Theory, Harmonies of related colors- Monochromatic, Analogous and Accented Neutral; Harmonies of contrasting colours – Direct, double, split and triad.

UNIT V HOUSING:

Selection of site and functions of house. Basic principles of planning a life space - Orientation, Grouping, Roominess, Lighting, Circulation, Storage Facilities and Privacy. Creating a life space- Factors in planning different rooms – Living Room, Bedroom, Dressing Room, Dining, Kitchen, Study Room, Store room, Bathroom, Utility space, Staircase and Verandah.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Visit a furniture showroom, interior design studio, or model house and prepare an observation report.

Review recent trends in sustainable and eco-friendly interior design and present the findings through a report or presentation.

Recommended Books:

1. Andal. A and Parimalam.P, (2008), "A Text Book of Interior Decoration", SatishSerialPublishing House.
2. Chaudhari, S.N. (2006), "Interior Design", Aavishkar Publishers, Jaipur.
3. Goldstein, (1976), "Art in Every Day Life", Oxford and IBH Publishing House.
4. Kasu, A.A. 2005, "Interior Design", Ashish Book centre Delhi.

References:

1. P.C. Varghese (2013), "Building Construction", PHI Learning Private Limited.
2. Premavathy Seetharaman and Parveen Pannu, (2009), "Interior Design and Decoration", CBSPublishers and Distributors Pvt Ltd. New Delhi.

E-Refernce:

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

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Classify design types such as structural and decorative designs	LO1
C02	Use different elements of design appropriately in creating design objects.	LO4
C03	Apply the principles of art in interior design.	LO5
C04	Apply colour harmonies in various rooms.	LO7, LO13
C05	Explain the Principles involved in planning a living space.	LO10, LO11
C06	Design aesthetically pleasing, functional and sustainable interior spaces by applying principles of design, colour and space planning.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	1	2	2	1	-	1
CO 2	1	3	2	2	2	2	2	2	1	1
CO 3	1	3	3	3	2	2	2	2	1	1
CO 4	1	3	2	2	2	2	2	2	1	1
CO 5	1	3	3	3	2	2	2	3	2	1
CO 6	2	3	3	3	2	3	3	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

CORE COURSE- 8

Semester: V

FUNDAMENTALS OF RESEARCH METHODOLOGY AND STATISTICS

Code:

(Theory)

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Understand the basic concepts, types, and significance of research.
- Develop skills in formulating research problems, objectives, and hypotheses.
- Gain knowledge of data collection methods and research design.
- Apply basic statistical tools for data analysis and interpretation.
- Develop competence in report writing and presentation of research findings.

UNIT I INTRODUCTION TO RESEARCH:

Meaning, objectives, and significance of research, Types of research: Basic, Applied, Qualitative, Quantitative. Research process and steps, Identification and formulation of research problem. Variables- Types and concepts

UNIT II RESEARCH DESIGN AND SAMPLING:

Research design- Meaning and types (Exploratory, Descriptive, Experimental). Sampling- Meaning, need, and types. Probability sampling (simple random, stratified) Non-probability sampling (convenience, purposive). Sample size determination . Pilot study

UNIT III DATA COLLECTION METHODS:

Types of data - Primary and Secondary. Methods of data collection- Observation, Interview, Questionnaire and Schedule, Scaling techniques (Likert, rating scales). Reliability and validity

UNIT IV STATISTICAL ANALYSIS:

Classification and tabulation of data. Measures of central tendency- Mean, Median, Mode. Measures of dispersion - Range, Standard Deviation. Graphical representation - Bar diagram, Pie chart, Histogram. Introduction to inferential statistics - Chi-square test, t-test, ANOVA (basic concept)

UNIT V RESEARCH REPORT AND INTERPRETATION:

Interpretation of data. Structure of research report - Introduction, Methodology, Review of Literature, Results and discussion. Conclusion and recommendations. Referencing styles (APA/MLA). Ethical issues in research

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Review published research articles and identify the research problem, objectives, methodology, and findings.

Learn the use of statistical software such as MS Excel, SPSS, or R for basic data analysis.

Recommended Books:

1. Kothari G.R.(2004).Research Methodology. New Age International (P) Ltd
2. Dr.Rajamohan.S. and Thilagaraj A.(2010). Introduction to Statistics(2nd ed). Learn tech Press
- 3.Saravanavel P. (2013). Research Methodology. Kitab Mahal Allahabad

Reference Books:

1. VijayalakshmiG. and Sivapragasam .C. (2008).Research Methodology. MJP Publishers
2. Borse. M. N. (2004).Hand Book of Research Methodology. Shree Niwas Publications, Jaipur(India).
3. Grumani N.(2014).Research Methodology for Biological Sciences. MJP Publishers
4. Ramadas. R. and Wilson. A.(2014). Research and Writing. MJP Publishers.
5. Gupta S. P.(2002).Statistical Methods. Sultan Chand & Sons, New Delhi.

E-Reference:

1. https://www.google.co.in/books/edition/Fundamental_of_Research_Methodology_and/zrFwbt6PKIC?hl=en&gbpv=1&dq=research+methodology+books+pdf&p.
2. https://www.google.co.in/books/edition/Research_Methodology/k6pMrsB5T_oC
3. <https://egyankosh.ac.in/bitstream/123456789/11204/1/Unit-1.pdf>
4. <https://egyankosh.ac.in/bitstream/123456789/8380/1/Unit-10.pdf>
5. <https://www.ignouhelp.in/ignou-mli>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Explain fundamental concepts and types of research in various fields.	LO1
C02	Formulate research problems, hypotheses and design appropriate methodologies.	LO4
C03	Collect, organize and present data using suitable tools.	LO5
C04	Apply descriptive and basic inferential statistical techniques for analysis.	LO7, LO13
C05	Prepare structured research reports with proper interpretation and conclusions.	LO10, LO11
C06	Conduct basic research systematically using appropriate methodology, data analysis techniques and ethical reporting practices.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	1	2	1	1	2	1
CO 2	2	3	3	3	2	2	2	3	3	1
CO 3	1	3	2	3	2	2	2	2	3	1
CO 4	2	3	3	3	3	2	2	3	3	1
CO 5	3	3	2	3	2	3	2	2	3	2
CO 6	2	3	3	3	1	3	2	3	3	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

CORE PRACTICAL -5

Semester: V

FAMILY RESOURCE MANAGEMENT AND INTERIOR DESIGN

Code:

(Practical)

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Understand personal and family values, goals, and their interrelationship in effective home management.
- Develop skills in time management using tools like schedules and Gantt charts.
- Apply ergonomic principles using anthropometric measurements for efficient workspaces.
- Gain knowledge in financial planning through preparation of family budgets and understanding savings schemes.
- Apply elements and principles of design, colour harmonies, and space planning in creating functional and aesthetic interiors.

Practical:

1. Identification of personal and family values and goals – their Interrelationship
2. Preparation of a time schedule and Evaluate time schedule using Gantt chart.
3. Study on work heights based on anthropometric measurement on vertical and horizontal planes.
4. Preparation of family budget. Study of a saving institution and its scheme.
5. Sketching different types of structural and decorative designs.
6. Application of Elements of design in interiors
7. Application of Art Principles in arranging areas in interiors
8. Colour Harmonies for Interiors.
9. Planning layout for different areas in interiors.

Recommended Books:

1. Andal. A and Parimalam.P, (2008), “A Text Book of Interior Decoration”, SatishSerialPublishing House.
2. Chaudhari, S.N. (2006), “Interior Design”, Aavishkar Publishers, Jaipur.
3. Kasu, A.A. 2005, “Interior Design”, Ashish Book centre Delhi.
4. Bela Bhargava (2005), “Family resource Management & Interior Decoration”, university book house pvt ltd, ISBN-13: 978-8187339229

References:

1. Marion Giordan (2016), “Consumer Education: A handbook for Teachers”, Routledge;1st edition, ISBN-13: 978-1138839151
2. Nickell & Dorsey (2002), “Management in Family Living”, CBS; 4th edition, ISBN-13:978-8123908519
3. Pushpa Chakravorty (2007), Home Management, New Delhi:Pointer Publishers.

E-Reference:

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

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Analyze and relate personal and family values and goals for better decision-making in household management.	LO1
CO2	Design and evaluate time schedules using Gantt charts for effective time utilization.	LO4
CO3	Assess and apply anthropometric data to optimize work heights and workspace efficiency.	LO5
CO4	Prepare and manage a family budget and evaluate suitable saving schemes from financial institutions.	LO7, LO13
CO5	Create and apply design concepts, including elements, principles, colour harmonies and layout planning, in interior design projects.	LO10, LO11
CO6	Apply resource management, financial planning, ergonomics and interior design principles for efficient, functional and sustainable household living.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	3	3	1	3	2	3	1	2
CO 2	2	3	2	3	2	3	2	3	1	2
CO 3	1	3	3	3	3	2	2	3	2	1
CO 4	2	3	3	3	2	3	2	3	1	2
CO 5	2	3	3	3	2	2	3	2	1	2
CO 6	3	3	3	3	3	3	3	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

**SKILL ENHANCEMENT COURSE - 4
COMMUNICATION FOR DEVELOPMENT
(Theory)**

Semester : V

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Introduce students to the concept and dimensions of development in the context of society.
- Understand the principles, models, and approaches of development Communication.
- Examine the role of various media in promoting development initiatives.
- Develop skills in development journalism and effective reporting.
- Enable students to design Social and Behaviour Change (SBCC) Communication strategies and advocacy campaigns.

Unit I: CONCEPT OF DEVELOPMENT:

Concept and meaning of development. Development goals and indicators. Characteristics of developing countries. Human development indices (HDI, GDI, etc.). Issues of poverty and gender in development.

Unit II DEVELOPMENT COMMUNICATION :

Concept, genesis, characteristics, and philosophy. Types of communication in development context. Approaches to development communication. Models of development communication- Dominant Paradigm, Dependency Model, Basic Needs Model, New Paradigm of Development

Unit III MEDIA AND DEVELOPMENT COMMUNICATION:

Role of traditional media in development communication. Community media - types and role. Community media vs mainstream media. Role of radio and television in development communication

Unit IV DEVELOPMENT JOURNALISM:

Definition and types of journalism. Need and importance of development journalism. News reporting- Definition and elements of news. News values and qualities. Types of news reports. Structure of news reports

Unit V SOCIAL AND BEHAVIOUR CHANGE COMMUNICATION (SBCC) AND ADVOCACY:

Concept and relevance of SBCC. SBCC vs advocacy. Approaches to SBCC. Advocacy: types and steps. SBCC strategy design and implementation

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Analyze government and non-government communication campaigns focusing on health, nutrition, environment, and social welfare.

Conduct a field study or survey to assess communication needs and information dissemination practices in a community.

Recommended Books:

1. Kotler, P. & Lee, N. (2011). *Social Marketing: Influencing Behaviors for Good*, 4th Ed. Thousand Oaks, CA: Sage Publications. (K&L). 204-232.
2. Kumar, K. J. (2000). *Mass communication in India*. New Delhi: Jaico Publishing House.
3. McQuail, D. (2010). *Mass Communication Theory*. London: Sage Publications. Chapter 7, Page 161-188.
4. Melkote, S. & Steeves, L. (2013). *Communication for Development in the Third World*. New Delhi: Sage Publications.

References:

1. Pannu, P. & Azaad, Y. T. (2012). *Communication Technology for Development*. New Delhi: I
2. K. International Publications. ISBN: 9789380578903. Page 65-80.
3. Servaes, Jan (2008). *Communication for Development and Social Change*. New Delhi,: Sage

E-Reference:

1. <https://www.fao.org/communication-for-development/en/>
2. <https://www.unicef.org/communication-for-development/>
3. <https://www.unesco.org/en/communication-information>
4. <https://epgp.inflibnet.ac.in/>
5. <https://swayam.gov.in/>
6. <https://ndl.iitkgp.ac.in/>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Explain key concepts of development, human development indices, and socio-economic issues.	LO1
C02	Analyze theories, models, and approaches in development communication.	LO4
C03	Evaluate the role of traditional and modern media in development processes.	LO5
C04	Demonstrate basic skills in development journalism and news reporting.	LO7, LO13
C05	Design and implement SBCC strategies and advocacy plans for community development.	LO10, LO11
C06	Apply communication strategies, participatory approaches, media tools, and advocacy techniques to facilitate sustainable community development and social change.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	2	2	1	2	1	2	1	1
CO 2	2	3	3	3	2	2	2	3	2	1
CO 3	3	3	3	3	2	2	2	2	1	2
CO 4	3	2	2	2	1	3	2	2	2	2
CO 5	3	3	3	3	2	3	3	3	2	2
CO 6	3	3	3	3	2	3	3	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year**Semester: V**

**SUMMER INTERNSHIP/ INDUSTRIAL ACTIVITY
(WITH VIVA VOCE)**

Code:**Credit: 2**

Internship/ Industrial Visit/ Field Visit/ Case Study/ Survey
Visit may be to Textile Processing/ Weaving/ Spinning/ Knitting/ Garment
Production Unit / Retail store / Boutique

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Describe the organizational structure, workflow, and operations of textile, garment, retail, and boutique sectors.	LO1
CO2	Identify various processes involved in textile manufacturing, including spinning, weaving, knitting, processing, and garment production.	LO4
CO3	Apply theoretical knowledge of textiles and apparel in understanding real-world industrial practices and business operations.	LO5
CO4	Analyze production systems, quality control measures, and merchandising practices followed in textile and apparel industries.	LO7, LO13
CO5	Conduct field studies, surveys, and case analyses to collect, interpret, and present industry-related data.	LO10, LO11
CO6	Prepare professional reports and communicate observations, findings, and recommendations based on industrial visits, internships, or field experiences.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	2	2	1	2	2	1	1	1
CO 2	1	3	2	2	3	2	2	2	1	1
CO 3	2	3	3	3	2	2	2	3	2	2
CO 4	1	3	3	3	2	2	2	3	2	2
CO 5	3	3	3	3	3	2	2	3	3	3
CO 6	3	3	3	3	1	3	2	2	3	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

CORE COURSE 9
HOME SCIENCE EXTENSION AND COMMUNICATION
(Theory)

Semester: VI

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

- Understand the concept of Communication and its role in exchange of information
- Examine the models and barriers to communication
- Develop skills in use of audiovisual aids
- Learn about the concept of Home science extension, extension approaches and models
- Enhance the students in the selection and use of media in different socio-cultural environment

UNIT -I: COMMUNICATION CONCEPTS:

Meaning, definition, nature, scope and importance of communication. Functions of communication – information, command or instructive, influence or persuasive and integrative. Elements of Communication – Sender, Message, Channel, Receiver and Feed back . Means of Communication – Oral, Written, Sign –Symbol, signal, action, object. Types of Communication– Formal and Informal Communication. Pattern - one way, two way, circular, star, wheel

UNIT -II: COMMUNICATION MODELS:

Models of Communication-Aristotle Model, Shanon – Weaver Model, Berlo Model, and Scharmm Model. Significance of models in communication. Barriers to Communication – semantic, psychological, organizational and personal. How to overcome barriers.

UNIT -III: HOME SCIENCE EXTENSION:

Concept, need, components, Objectives, Characteristics, functions, principles and scope of Home science, Approaches to Home Science extension.

Communication methods in extension- individual method, group method, mass method Advantages and limitations of each method.

UNIT -IV: AUDIO VISUAL AIDS:

Audio – Visual aids – Meaning, classification – Audio aids, visual aids, Audio visual aids.

Factors influencing effectiveness of audio visual aids. Cone of Experience and its importance in communication. .

UNIT-V: MASS MEDIA:

Mass media – Meaning, Characteristics, types – Radio, Television, Print media, Print Media Vs Broadcast Media. New communication technologies – computers, e -mail, video conferencing, internet, cyber safes, social media (elementary understanding).

Traditional Media – Folk songs, puppets, Street play, drama and villupattu. Comparison between traditional media and modern media.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Review success stories of community development programmes and prepare a report on their communication strategies.

Develop extension teaching aids such as posters, charts, pamphlets, flipbooks, and digital communication materials.

Recommended Books:

1. Adivi Reddy (2009). Extension Education. Bapatla: Sree Lakshmi Press.
2. Chandra, A., Shah, A. and Joshi, U. (1989). Fundamentals of Teaching Home Science. Sterling Publishers Pvt Ltd., New Delhi.

Reference:

Ray, G.L. (1994). Extension Communication and Management. Calcutta: Maya Prakash.

E-Reference:

1. <https://epgp.inflibnet.ac.in/>
2. <https://swayam.gov.in/>
3. <https://ndl.iitkgp.ac.in/>
4. <https://www.fao.org/communication-for-development/en/>
5. <https://www.unesco.org/en/communication-information>
6. <https://doaj.org/>
7. <https://www.inflibnet.ac.in/>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
C01	Gain knowledge on the need and importance of communication and its significance in exchange of information.	LO1
C02	Analyse the models of communication and the role of traditional and modern media in societal development.	LO4
C03	Perceive the importance of communication and extension in Home Science.	LO5
C04	Acquire knowledge and develop skills in the use of audio-visual aids.	LO7, LO13
C05	Experience the role of mass media in Home Science extension and communication.	LO10, LO11
C06	Apply communication principles, extension methods and media tools effectively for dissemination of Home Science knowledge and community development.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	3	3	1	1	1	2	1	1	-	1
CO 2	3	3	3	3	2	2	2	2	1	1
CO 3	3	3	2	2	1	2	2	2	1	1
CO 4	3	2	2	2	2	2	2	2	1	2
CO 5	3	3	3	2	2	2	2	2	1	2
CO 6	3	3	3	3	2	3	3	3	3	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

**CORE COURSE 10
DIETETICS
(Theory)**

Semester :VI

Code:

Credits : 4

COURSE OBJECTIVES: To enable the students to

- Understand the causes and symptoms and dietary management of various disease conditions.
- Gain comprehensive knowledge on principles and planning of therapeutic diets
- Acquire knowledge on nutritional needs of sick persons and develop aptitude and skills for taking up dietetics as a profession.

UNIT I CONCEPT OF DIET THERAPY AND ROLE OF DIETITIAN:

Principles of therapeutic diets, modification of normal diet, classification of therapeutic diets.
Different feeding techniques -enteral and parenteral feeding. – Indications, contraindications and complications. Dietitian- Definition, role and code of ethics, classification of dietitians in nutritional care

UNIT II DISEASES OF GASTROINTESTINAL TRACT:

Etiology, symptoms, dietary management of : Diarrhoea, dysentery, and constipation, Peptic ulcer, irritable bowel syndrome & inflammatory bowel disease (ulcerative colitis), Crohn's disease and celiac disease

UNIT III DISEASES OF LIVER, GALL BLADDER & FEBRILE CONDITIONS:

Etiology, symptoms, dietary management of: Disease of liver & Gall bladder- Hepatitis, cirrhosis, gall stones Febrile conditions - Acute & Chronic fevers (Typhoid, influenza, malaria, tuberculosis, COVID)

UNIT IV METABOLIC DISORDERS:

Etiology, symptoms, and dietary management of: Obesity and PCOS, Diabetes mellitus- types, symptoms and metabolic changes, treatment with diet and insulin, GI, GL, carbohydrate counting, artificial sweeteners and complications. Cardiovascular diseases – hypertension, atherosclerosis.

UNIT V DISEASES OF EXCRETORY SYSTEM AND CANCER:

Etiology, symptoms, dietary management of: Glomerular nephritis Nephrotic syndrome, urinary calculi, renal failure. Cancer – Risk factors, modification of diet in cancer, nutritional problems of cancer therapy
Role of antioxidants in prevention of degenerative diseases.

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Conduct a group discussion to understand various diseases and presentation of case-studies.

Planning of various low-cost recipes using locally available ingredients for dietetics Practical

Conducting a nutrition exhibition to display sample menus for various diseased conditions for different sections of society.

Recommended Books:

1. Antia F. P. (2002), Clinical Dietetics and Nutrition, 4th edition, Oxford University Press, Chennai.
2. Guthrie H. A, Picciano M. F (1995) Human Nutrition, Mosby, St. Louis Missouri.
3. Joshi. S.A. (2005), Nutrition and Dietetics, Tata Mc Graw-Hill Publishing Company Limited, New Delhi
4. Passmore R. and Davidson S. (1986) Human nutrition and Dietetics. Liming stone publishers

Reference:

1. Sharma.A.(2017), Principles of Therapeutic Nutrition and Dietetics, CBS Publishers&Distributors Pvt Ltd, New Delhi.
2. Srilakshmi B, Dietetics (2019),8th edition, New Age International Publishing Ltd, New Delhi
3. Williams S.R, (2000) Basic Nutrition and Diet Therapy, Mosby publication.

E-Reference:

1. [https://www.cdss.ca.gov/agedblindddisabled/res/VPTC2/9%20Food % 20 Nutrition % 20and%20Preparation/Types of Therapeutic Diets.pdf](https://www.cdss.ca.gov/agedblindddisabled/res/VPTC2/9%20Food%20Nutrition%20and%20Preparation/Types_of_Therapeutic_Diets.pdf)
2. <http://www.differencebetween.net/science/health/difference-between-enteral-and-parenteral-nutrition/>
3. https://www.medicinenet.com/difference_between_diarrhea_and_dysentery/article.html
4. <https://my.clevelandclinic.org/health/diseases/15587-inflammatory-bowel-disease-overview>

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Explain concepts of diet therapy and the role of the dietitian.	LO1
CO2	Identify the etiology, symptoms and principles of dietary management for various diseases.	LO4
CO3	Apply the principles of dietetics to plan therapeutic diets for various disease conditions.	LO5
CO4	Examine the physiological condition of individuals and explain the role of foods and diet in disease management.	LO7, LO13
CO5	Summarize the causes and symptoms of diseases/disorders and design suitable diet plans using principles of nutritional management and recommended dietary allowances.	LO10, LO11
CO6	Apply therapeutic nutrition principles to assess patients' nutritional needs and develop evidence-based dietary interventions for disease prevention and management.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	1	1	2	2	1	1	1	1
CO 2	1	3	2	2	2	2	1	2	1	1
CO 3	2	3	3	3	3	2	2	3	1	1
CO 4	1	3	3	3	3	2	2	3	1	1
CO 5	2	3	3	3	3	2	2	3	2	1
CO 6	2	3	3	3	3	3	2	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

Third Year

**CORE COURSE 11
FOOD SERVICE MANAGEMENT
(Theory)**

Semester: VI

Code:

Credits: 4

COURSE OBJECTIVES: To enable the students to

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

UNIT I ORGANISATION MANAGEMENT:

Types of Organisation, Management - definition, principles, functions and tools of management-Tangible tools-organization chart, job description, job specification, job analysis, work schedule, Intangible tools-budget, leadership styles, decision making, and communication skills.

UNIT II PERSONNEL MANAGEMENT:

Definition, functions of personnel department, Recruitment- sources, Selection-steps, Induction - definition, methods, uses, Training- advantages, methods, supervision, performance appraisal, promotion, demotion, transfer, retirement, termination and dismissal of employees.

Labor laws pertaining to the food service establishment.

UNIT III FOOD MANAGEMENT:

Food purchase – purchasing process, functions of food buyer, methods of buying openmarket, formal, negotiated, wholesale, blanket order, contract.

Storage in food service – types of stores, storeroom management, purchase, stores records- Physical and perpetual inventory order form, requisition slip, invoice, goodsreceived book, stock book, bin card, stores ledger.

UNIT IV PLANT AND EQUIPMENT MANAGEMENT:

Planning of food service unit - Layout of a food service, planning of storage, production and service areas, concepts of workflow and work simplification technique. Environmental hygiene-pest control-types of pests and pest control methods; garbage disposal method.

Safety in food service institution - Accidents - causes and prevention.

Equipment in food service - Classification of equipment, factors affecting selection of equipment.

UNIT V FINANCIAL MANAGEMENT:

Book- keeping – definition, advantages of double entry system, books of accounts– an introduction.

Costing and Cost control: Basic cost concepts – elements of cost (material, labour, overheads), behavior of cost (fixed, variable, semi-fixed / semi-variable),

methodsof costing (Dish, meal, menu costing & costing for events), cost control, concept ofbreak-even, break-even point.

Pricing - factors affecting pricing, pricing methods (cost plus, factor, rate of return,subsidy, discount).

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Group discussion and power point presentation on job descriptions, recruitment advertisements in print media / online sites.

Prepare resumes for job interview and conducting of mock interview.

Role plays of different leadership skills.

Recommended Books:

1. Andrews and Sudhir. (2000). Introduction to Hospitality Industry, Tata-McGraw HillPub. Co., New Delhi.
2. Dhawan and Vijay. (2001). Food and Beverage Service, Frank Boss and Co,NewDelhi.
3. Foskett David. (2011). The Theory of Hospitality and Catering, Hodder Education,London.
4. Lillicarp, D.R. and Cousins, J. (2010). Food and beverage Service, 8th edition, HodderEducation, London.
5. Sethi, Mohini, Malhan, Surjeet. (2015). Catering Management – An IntegratedApproach, 3rd ed, New Age International Publishers, New Delhi.

References:

1. Suganthi, V and Premakumari, C. (2017). Food Service Management, Dipti Press(OPC) Pvt. Ltd, Chennai.
2. Verghese and Brian. (2000). Professional Food and Beverage Service Management,Macmillan India Ltd., India

E-Reference:

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

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	Apply the principles and tools of management for effective functioning of an organization.	LO1
CO2	Develop managerial skills to select, train and appraise human resources.	LO4
CO3	Recognize the use and operation of equipment and acquire skills in equipment selection and planning sample layouts for food service units.	LO5
CO4	Evaluate and implement food safety and environmental sanitation practices in the workplace.	LO7, LO13
CO5	Use basic bookkeeping concepts and cost elements to assess the financial viability of the organization.	LO10, LO11
CO6	Apply food service management principles for efficient organizational functioning, quality service delivery and sustainable operational decision-making.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	2	3	2	2	1	3	2	2	1	2
CO 2	3	3	2	2	1	3	2	2	1	2
CO 3	1	3	2	3	3	2	2	3	1	1
CO 4	2	3	3	3	3	2	2	3	2	1
CO 5	2	3	3	3	2	2	2	3	1	2
CO 6	2	3	3	3	3	3	3	3	2	3

S- Strong(3) M-Medium(2) L-Low(1)

COURSE OBJECTIVES: To enable the students to

- Gain knowledge and develop skills and techniques in planning and preparation of therapeutic diets.
- Plan diets based on the medical history of the patients and nutritional assessments –anthropometric measurements.
- Calculate the nutrient content of diets.

Practical:

1. Planning, Calculation of nutrient content, Preparation and Service of diets for Tube feeds and for Fevers – Typhoid and Tuberculosis.
2. Planning, Calculation of nutrient content, Preparation and Service of diets for: Peptic Ulcer Diarrhoea and constipation.
3. Planning, Calculation of nutrient content, Preparation and Service of diets for: Viral hepatitis, Cirrhosis of liver
4. Planning, Calculation of nutrient content, Preparation and Service of diets for Obesity, Diabetes Mellitus and Atherosclerosis.
5. Planning, Calculation of nutrient content, Preparation and Service of diets for: Hypertension and Chronic kidney disease

UNIT VI CURRENT CONTOURS (Self-directed learning activities for Continuous Internal Assessments only):

Initiate a diet counseling center in the institution for students, teaching, and non-teaching faculty.

Prepare pamphlet indicating foods to be included / avoided/ restricted indifferent disease conditions.

Commemorate days such a World Diabetes Day, World Heart Day and organize Seminars and awareness programs.

Recommended Books:

1. Antia, F.B. (2010), Clinical Nutrition and Dietetics, Oxford University Press, London.
2. IDA. (2018), Clinical Dietetic Manual, 2nd edition, Elite Publishing House, New Delhi
3. Sri Lakshmi. B.(2019) Dietetics, 8th th, New Age International Pub. Co, Chennai.
4. Vimala V. (2010). Advances in Diet Therapy, 1st Ed., National Institute of Nutrition –Hyderabad.

References:

1. Williams S.R, (2000) Basic Nutrition and Diet Therapy, Mosby publication.
2. Sharma. A.(2017), Principles of Therapeutic Nutrition and Dietetics, CBS Publishers & Distributors Pvt Ltd, New Delhi.
3. Bajaj .M (2019) Diet Metrics: Handbook of Food Exchanges, Norton Press, Chennai.

COURSE OUTCOMES: (With Mapping)

At the end of the course, the students will have the ability to		
CO1	List the principles of dietary management for various conditions.	LO1
CO2	Calculate the nutrient content of diets for various conditions and compare them with recommended allowances.	LO4
CO3	Apply the principles of dietary management in planning diets for various conditions.	LO5
CO4	Justify the choice of foods, preparation methods, nutrient content and consistency for different disease conditions.	LO7, LO13
CO5	Plan and prepare diets for various disease conditions.	LO10, LO11
CO6	Apply therapeutic diet planning skills to prepare nutritionally appropriate, condition-specific diets for effective disease management and patient care.	LO6, LO15

Mapping with Program Outcomes:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10
CO 1	1	3	2	2	1	2	2	1	-	1
CO 2	1	3	2	2	2	2	2	2	1	1
CO 3	1	3	3	3	2	2	2	2	1	1
CO 4	1	3	2	2	2	2	2	2	1	1
CO 5	1	3	3	3	2	2	2	3	2	1
CO 6	2	3	3	3	2	3	3	3	2	2

S- Strong(3) M-Medium(2) L-Low(1)
