# DEPARTMENT OF NUTRITION AND DIETETICS

## **COURSE STRUCTURE & SYLLABI** (For the students admitted from year 2023-2024 onwards)

## **Programme : B.Sc. Nutrition and Dietetics**





# JAMAL MOHAMED COLLEGE (AUTONOMOUS)

Accredited with A++ Grade by NAAC (4<sup>th</sup> Cycle) with CGPA 3.69 out of 4.0 (Affiliated to Bharathidasan University) TIRUCHIRAPPALLI – 620 020

## **B.SC. NUTRITION AND DIETETICS**

					Ins.		Marks		
Sem	Course Code	Part	Course Category	Course Title	Hrs/	Credit	CIA	FSF	Total
					Week		UIA	LOL	
	23U1LT1/LA1/LF	T	Language - I		6	3	25	75	100
	1/LH1/LU1	1			0	5	23	15	100
	23UCN1LE1	II	English - I	English for Communication - I	6	3	25	75	100
т	23UND1CC1		Core - I	Food Science	5	5	25	75	100
1	23UND1CC2P	ш	Core - II	Food Science - Practical	3	3	20	80	100
	23UND1AC1		Allied - I	Principles of Nutrition	5	4	25	75	100
	23UND1AC2P		Allied - II	Principles of Nutrition - Practical	3	2	20	80	100
	23UCN1AE1	IV	AECC - I	Value Education	2	2	-	100	100
		1		Total	30	22			700
	23U2LT2/LA2/LF	Ι	Language - II		6	3	25	75	100
	2/LH2/LU2			Eastish for Communication II	(	2	25	75	100
	23UUN2LE2	11	English - II	English for Communication - II	6	5	25	15	100
	23UND2CC3		Core - III	Nutrition through Life Cycle	2	2	25	/5	100
	23UND2CC4F	Ш		Human Dhusiology	5	5	20	00 75	100
II	23UND2AC3		Allied - III	Human Fnyslology	5	4	25	/5	100
	23UND2AC4P		Allied - IV	Human Physiology- Practical	3	2	20	80	100
	23UCN2SS	IV	Soft Skills Development	Soft Skills Development	2	2	-	100	100
	23UCN2CO	V	Community Outreach	JAMCROP	-	@	-	-	@
	23U2BT1 /		Basic Tamil - I /	எமுக்கும் இலக்கியமும் அறிமுகம் - I /				100 #	
	23U2AT1		Advanced Tamil - I	தமிழ் இலக்கியமும் வரலாறும் - I	-	-	-	100 #	-
	<sup>@</sup> Only grades will b	be given		Total	30	22			700
	23U3LT3/LA3/LF	-				_			
	3/LH3/LU3	I	Language - III		6	3	25	75	100
	23UCN3LE3	II	English - III	English for Communication - III	6	3	25	75	100
	23UND3CC5		Core - V	Dietetics - I	4	4	25	75	100
ш	23UND3CC6P		Core - VI	Dietetics - I - Practical	3	3	20	80	100
	23UND3AC5	- 111	Allied - V	Nutritional Biochemistry	4	4	25	75	100
	23UND3AC6P		Allied - VI	Nutritional Biochemistry - Practical	3	2	20	80	100
	23UND3GE1		Generic Elective - I		2	2	-	100	100
	23UND3AE2	IV	AECC - II	Environmental Studies	2	2	-	100	100
				Total	30	23			800
	23U4LT4/LA4/LF		<b>T T T T</b>				25		100
	4/LH4/LU4	1	Language - IV		6	3	25	/5	100
	23UCN4LE4	II	English - IV	English for Communication - IV Dietetics - II		3	25	75	100
	23UND4CC7		Core - VII			6	25	75	100
	23UND4CC8P		Core - VIII	Dietetics - II - Practical	3	2	20	80	100
	23UND4AC7	III	Allied - VII	Fundamentals of Food Microbiology	4	4	25	75	100
IV	23UND4AC8P		Allied - VIII	Fundamentals of Food Microbiology -	3	2	20	80	100
	2501104/1001			Practical	5	2	20	00	100
	23UND4GE2	IV	Generic Elective - II		2	2	-	100	100
	23UCN4EL	17	Experiential Learning	Internship	-	2	-	100	100
	23UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
	23U4B127 23U4AT2		Advanced Tamil II	எழுத்தும் இலக்கியமும் அறிமுகம் - II/ சமிம் இலக்கியமும் வாலாஸம் - II	-	-	-	100 #	-
	2304A12		Advanced Tallin - II	தமழ் தல்கள்படும் வரலாறும் - n Total	30	25			800
	2311ND5CC9		Core - IX	Food Processing and Preservation	6	6	25	75	100
	230103009			Food Processing and Preservation	0	0	23	15	100
	23UND5CC10P		Core - X	Practical	5	5	20	80	100
	23UND5CC11	III	Core - XI	Food Service Management - I	5	5	25	75	100
	23UND5CC12		Core - XII	Bakery & Confectionery	5	5	25	75	100
V	23UND5DE1A/BP		Discipline Specific Elective - I		5	4	20	80	100
	23UND5SE1		Skill Enhancement Course - I	Entrepreneurial Practices in Food Industry	2	1	-	100	100
		IV		Application of Computer in Nutrition and				100	100
	23UND5SE2P		Skill Enhancement Course - II	Dietetics - Practical	2	1	-	100	100
	23UND5EC1		Extra Credit Course - I*	Online Course	-	*	-	-	-
				Total	30	27			700
	23UND6CC13		Core - XIII	Food Service Management - II	5	5	25	75	100
	23UND6CC14P		Core - XIV	Food Service Management - Practical	5	5	20	80	100
	23UND6CC15	ш	Core - XV	Community Nutrition	5	5	25	75	100
	23UND6CC16	- 111	Core - XVI	Food Safety and Quality Control	5	5	25	75	100
V/T	23UND6DE2A/B		Discipline Specific Elective - II		4	4	25	75	100
V I	23UND6DE3A/B		Discipline Specific Elective - III		5	4	25	75	100
	23UCN6AE3	IV	AECC - III	Gender Studies	1	1	-	100	100
	23UND6EC2		Extra Credit Course - II*	Online Course	-	*	-	-	-
	23UNDECA		Extra Credit Course for all**	Online Course	-	**	-	-	-
	23UCN6ECA1 Extra Credit Course for all <sup>+</sup> Entrepreneurship Development					+	-	-	-
	* Programme Specific Online Course for Advanced Learners								-
	** Any Online Court	se for E	nnancing Additional Skills	Total	30	29			700
	Course for Ennanc	ing Eff(	CPICIICUI IAI ONIIIS	0		1.40			4400

#### **GENERIC ELECTIVE COURSES**

Semester	Course Code	Course Title
III	23UND3GE1	Nutrition For Women
IV	23UND4GE2	Culinary Art

#### #Self-Study Course – Basic and Advanced Tamil (Applicable to the candidates admitted from the academic year 2023 -2024 onwards)

Semester	Course Code	Course Title
п	23U2BT1	Basic Tamil – I (எழுத்தும் இலக்கியமும் அறிமுகம் - I)
11	23U2AT1	Advanced Tamil – I (தமிழ் இலக்கியமும் வரலாறும் - I)
IV	23U4BT2	Basic Tamil – II (எழுத்தும் இலக்கியமும் அறிமுகம் - II)
1 V	23U4AT2	Advanced Tamil – II (தமிழ் இலக்கியமும் வரலாறும் - II)

#### **Mandatory**

Basic Tamil Course - I and II are offered for the students who have not studied Tamil Language in their schools and college.

Advanced Tamil Course - I and II are offered for those who have studied Tamil Language in their schools but have opted for other languages under Part - I.

Semester	Course Code	Course Title
V	23UND5DE1AP	Bakery & Confectionery - Practical
v	23UND5DE1BP	Food Adulteration - Practical
	23UND6DE2A	Instrumentation in Food Analysis
VI	23UND6DE2B	Sports Nutrition
V I	23UND6DE3A	Perspectives of Home Science
	23UND6DE3B	Food Chemistry

#### DISCIPLINE SPECIFIC ELECTIVES

Somostor	Course Code	Course Cotogory	Hours/ Crodits			Marks for Evaluation			
Semester	Course Coue	Course Category	Week	Creatis	CIA	ESE	Total		
Ι	23UND1CC1	Core - I	5	5	25	75	100		
Course Ti	tle	FOOD SCIENC	E						

## **FOOD SCIENCE**

SYLLABUS						
Unit	Contents	Hours				
	CLASSIFICATION AND COOKING METHODS					
T	Classification of Foods - Definition: Food, Food Science. Classification					
	Based on functions of food, Food Groups (Basic four) My plate and *Food					
Ι	Pyramid*.					
	Cooking Methods: Objectives of cooking, Preliminary preparations of food,					
	cooking methods - Moist, Dry, Fat as Medium of Cooking and					
	Combination methods of cooking - Merits and Demerits					
	CEREALS, MILLETS AND PULSES					
	Cereals: Composition and Nutritive value, Structure of Wheat, Rice and Ragi					
	Cereal cookery concept- Gluten formation ,Cereal starch-Effect of moist heat-					
II	Gelatinization, Gel formation, Retro gradation, syneresis. Effects of Dry heat -					
	Dextrinisation. * Role of cereals in cookery*.					
	Pulses: Composition and Nutritive value, Cooking process- soaking, germination,					
	fermentation, Parching and puffing. Role of pulses in cookery.					
	MILK AND ANIMAL PRODUCTS					
	Milk: Composition of Milk, Physical properties, Milk processing- Clarification,					
	Pasteurisation, Homogenisation and Freezing. Types of milk. Milk cookery- Effect					
	of heat, Effect of acid and enzymes. Role of Milk and Milk products in cookery.					
	Egg: Structure of Egg, quality of egg, Evaluation of Egg Quality. Egg cookery-					
	Effects of Heat and Factors affecting coagulation of egg protein. *Role of egg in					
III	cookery*.	15				
	Fleshy foods: Meat- Classes of Meat, Composition and nutritive value,					
	postmortem changes, ageing and tenderizing of meat, Methods of cooking in meat-					
	Dry heat and Moist heat.					
	Poultry: Classification, composition and nutritive value.					
	Fish: Classification, composition and nutritive value, selection of fish and fish					
	cookery.					

	VEGETABLES AND FRUITS					
	Vegetables: Classification, composition and nutritive value. Pigments:					
IV	Classification- water insoluble and soluble. Changes occur during cooking of					
	vegetables. *Role of Vegetables in cookery*.					
	Fruits: Classification, composition and nutritive value, Pigments					
	present in fruits. Ripening of fruits, Enzymatic and Non- Enzymatic					
	browning <b>Ext</b> oand its preventive measures.					
	a) OILS, FATS AND NUTS					
	Fats and Oils: Composition and nutritive value, specific types of fats and					
	oils (Lard, butter, margarine, sesame oil, coconut oil, groundnut oil)					
	Effects of heat on cooking of fat, Rancidity- Types and its prevention.					
	Effects of Heating- smoking point, flash point and fire point. Role of fats					
	and oils in cookery.					
	Nuts and Oil seeds: Nuts: Composition and Nutritive value, Specific Nuts					
	and Oil seeds -almonds, coconut, groundnut, and walnut their importance, Oil					
	seeds: Flaxseed, Pumpkin seed and Seasame seed it's Importance. *Role of Nuts					
V	and oil seeds in cookery*.					
	b) SUGAR, BEVERAGES, SPICES AND CONDIMENTS					
	Sugar: Nutritive value, Sugar and related product, sugar cookery,					
	crystallization- meaning, factors affecting crystallization, stages of sugar					
	cookery, Role of sugars in cookery.					
	Beverages: Classification - Tea, coffee and cocoa, fruit beverages, soup, Milk					
	based beverages and malted beverages.					
	Spices and condiments – General functions of Spices, medicinal properties of					
	Indian spices- Ajwain, Aniseed, Asafoetida, Cardamon, Cinnamon, Cumin seeds,					
	Fenugreek seeds, Garlic ,Ginger and pepper). Role of spices in cookery.					
	Current Trends (For CIA only)					
<b>X</b> 7 <b>T</b>	Milk and Milk based products- Substitute of Milk (Non-dairy fats and Gelato)					
VI	Fats and Oil- Unconventional oil (Mango kernal, rice bran, cleome viscosa oil), Fa	t				
	substitutes.					
*	* Self Study					

## **Text Book(s):**

1. Srilakshmi, B, "Food science", New Age International Pvt. Ltd.Publishers, New Delhi, 7th edition, 2020.

- 2.Norman N.Potter, Joseph H.Hotchkiss, "Food Science", CBS Publishers & Distributors Pvt. Ltd., 5<sup>th</sup> edition, 2007.
- 3. Sumati R. Mudambi, Shalini M.Rao, "Food Science", New Age International Publishers, New Delhi, Revised Second Edition, 2011.

#### **Reference Book(s):**

1. Mohini sethi, "Food Science Experiments and Applications", CBS publishers and distributors Pvt Ltd, New Delhi, 2nd Edition, 2011.

2. Dr.M. Swaminathan, "Food and Nutrition (An Advanced Textbook)" Vol.II, The Bangalore Printing & Published Co., Ltd., Bangalore, 2012.

3. N. Shakuntala Manay, "Foods facts and Principles", New Age International(P) Ltd., Publishers, New Delhi, Third Revised Edition, 2008.

#### Web Resource(s):

1.http:// pulses.org

2.https://egyankosh.ac.in/bitstream/123456789/16755/1/Unit-18.pdf

3.https://www.ifst.org/resources/information-statements/oils-and-fats

	Course Outcomes					
Upon suc	Upon successful completion of this course, the student will be able to:					
CO No.	CO Statement	Cognitive Level (K-Level)				
CO1	Remember the name of different food group.	K1				
CO2	Understand the structure of different food grains	K2				
CO3	Apply food science knowledge to describe the functions of ingredients in food.	К3				
CO4	Analyse the various cooking methods and basic preservation techniques	K4				
CO5	Evaluation of quality of food and the effects of food in various forms	K5				

#### **Relationship Matrix:**

Course	Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)				
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	2	1	3	3	1	2	1	3	2	2.1
CO2	3	2	2	2	1	2	1	1	2	2	1.8
CO3	3	3	2	3	2	3	1	1	2	3	2.3
CO4	3	3	3	3	1	3	2	2	2	2	2.4
CO5	3	3	3	3	2	3	3	2	2	3	2.7
Mean Overall Score										2.26	
	Correlation										Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Somester	Course Code	Course Cotogory	Hours/	Cradita	Marks for Evaluation				
Semester	Course Coue	Course Category	Week	Creats	CIA	Iarks for EvaCIAESE2080	Total		
Ι	23UND1CC2P	Core - II	3	3	20	80	100		

**Course Title** 

## FOOD SCIENCE - PRACTICAL

SYLLABUS						
Exercise	Contents	Hours				
	<b>INTRODUCTION TO LABORATORY</b> : (a) Laboratory rules (b) Familiarizing					
	with laboratory equipments, Measuring ingredients -Methods of measuring					
	different types of foods – grains, flours & liquids					
1	COOKING METHODS - Moist heat methods - (i) boiling, simmering,					
	steaming, & Pressure cooking, (ii). Dry heat methods - baking. (iii), Fat as a					
	medium for Cooking-shallow and deep fat frying					
	<b>CEREALS</b> a) Experiment- Determination of Gluten content in Wheat,					
	Maida and Rice flour weight of wet and dry gluten.					
	b) Cereal starch-Gelatinization temperature and Microscopic view of raw					
	and cooked starch in various cereals (corn, ragi and wheat flour)					
	(c) Recipes: Cereal preparations using by various cooking methods					
2	DIU SES: (a) Experimentar (i) Cormination of few pulses (page company					
	<b>FOLSES.</b> (a)Experiments: (i) Germination of few pulses (peas, cowpea,					
	green gram) -soaking and germination (in)Factor affecting the quanty of	45				
	pulses- Use of hard water, soft water, sodium bi Carbonate, vinegar;					
	pressure cooking .					
	(b)Recipes: (1) Preparation of few pulse based recipes- soaked and unsoaked					
	pulse for the preparation (any 2 recipes on each forms)					
	vegetables and FRUITS:					
	(a) Experiments:					
	anthocyanin, anthoxanthin.					
	(ii) Browning reaction in vegetables and fruits and its preventive					
3	methods.					
	(b)Recipes: (i) Preparation of vegetables and fruits based recipes (Soups and salad)					
	(a)Experiments:					
	(i) Effect of prolonged heat, acid and enzyme on cooking milk.					
	(b)Recipes: (i) Preparation of milk recipes-non fermented and fermented recipes.					

	EGG COOKERY: (a) Experiments: (i) Quality of egg-Floating test and	
	candling test (ii)Boiled egg(Timing experiment)	
	(b)Recipes: (i) Preparation of scrambled, poached egg, custards, omelette, egg	
4	curry.	
	SUGAR: (a) Experiments: (i) Identify the stages of sugar cookery using food	
	thermometer (b)Recipes: Sweet preparations - chocolate fudge, peanut brittle,	
	laddu, mysore pak and Athirasam	
	FATS AND OILS: (a) Experiments: (i) Smoking point temperature of	
	different fats and oils(gingelly oil, groundnut oil, coconut oil and palm	
	oil.	
	(b)Recipes: (i) Preparation of few fat fried recipes - shallow fry and deep	
	fat fry methods	
5	<b>BEVERAGES: (a) Experiments:</b> Preparation and evaluation of (i) Coffee	
	(Filter and instant method) ii) Tea	
	(b) Recipes (i) fermented beverages (ii) Non fermented beverages	
	1SPICES: (a) Recipes: Preparation of medicinal value foods by using	
	spices and condiments- Turmericmilk, Rasam, Panagam, and detoxifying	
	drink-Cinnamon tea, Green tea, Herb tea.	

## **Text Book(s):**

1. Srilakshmi, B, "Food science", New Age International Pvt. Ltd.Publishers, New Delhi, 7th edition, 2020.

4. N. Shakuntala Manay, "Foods facts and Principles", New Age International(P) Ltd., Publishers, New Delhi, Third Revised Edition, 2008.

## **Reference Book(s):**

1. Mohini sethi, "Food Science Experiments and Applications", CBS publishers and distributors Pvt Ltd, New Delhi, 2nd Edition, 2011.

Web Resource(s):

1. https://www.mdpi.com/2073-4395/11/8/1575

2.https://voltagecoffee.com/brew-methods/

	Course Outcomes						
Upon suc	cessful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Remember the basic methods of cooking	K1					
CO2	Understand the different experimental procedure adopted in food preparation	K2					
CO3	Experiment various cooking methods to prevent the nutrient loss while cooking	К3					
CO4	Analyze the changes during cooking of food	K4					
CO5	Develop the recipes based on the principles of Medicinal value.	K5					

## **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Programme Specific Outcomes (PSOs)					Mean Score of
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	3	2	3	2	2	1	2	2	3	2.3
CO2	3	3	3	3	2	3	2	2	2	2	2.5
CO3	3	3	3	3	3	3	3	2	1	2	2.6
CO4	3	3	1	2	2	3	2	2	1	3	2.2
CO5	3	3	2	3	3	2	3	2	3	3	2.7
Mean Overall Score										2.46	
	Correlation									Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: A. Yasmin Fathimaa

Semester	Course Code	Course Cotogowy	Hours/	Cradita	Marks for Evaluation			
	Course Code	Course Category	Week	Creats	CIA	ESE	Total	
Ι	23UND1AC1	ALLIED - I	5	4	25	75	100	

Course Title

## PRINCIPLES OF NUTRITION

SYLLABUS						
Unit	Contents	Hours				
I	ENERGY METABOLISM Energy –Definition; Unit of measurement-calorie and joule. Measurement of calorific value of foods by Bomb calorimeter. Physiological fuel values of foods. *Specific dynamic action of foods*. Basal Metabolic Rate-Definition, factors affecting Basal Metabolic Rate, methods for determination of energy expenditure-direct and indirect colorimetry. Calculation of energy requirements for an individual.(Atwater's Rosa, Benedict's Roth Apparatus)	15				
Π	<ul> <li>CARBOHYDRATES AND PROTEINS</li> <li>Carbohydrates-nutritional classification, functions (list), sources, requirements, digestion, absorption and utilization.</li> <li>*Glycemic Index of foods*. Nutritional problems due to excess and deficit intake of carbohydrates. Dietary fibre-definition, classification and food sources. Role of fibre in human health.</li> <li>Proteins- Nutritional classification, functions (list), sources, requirements, digestion, absorption and utilization.</li> <li>Protein quality evaluation methods-Net Protein Utilization (NPU), Biological Value (BV), Protein Efficiency Ratio (PER) (Definition &amp; formula). Factors affecting protein quality. Nutritional problems due to excess and deficit intake of protein.</li> </ul>	15				
ш	LIPIDS, WATER AND ELECTROLYTES Lipids- classification, functions (list), sources, requirements, digestion, absorption and utilization. Nutritional problems due to excess and deficit intake of lipids. Fatty acids: Types such as saturated and unsaturated; Essential Fatty Acids (EFA): Definition and functions (list); PUFA (Poly Unsaturated Fatty Acids); Role of n-3, n-6 fatty acids in health and disease; *Trans fatty acids and its association with cardiovascular diseases*. Water- Body composition – extra- and intra- cellular fluid; Distribution, Physiological functions of water and electrolytes; water balance and its regulation. Requirement and sources; Nutritional and health problems due to imbalance of water intake.	15				

	VITAMINS					
	Classification of vitamins-fat and water-soluble vitamins.					
	Fat soluble vitamins (A, D, E & K) – functions (list), requirements and food sources.					
IV	Nutritional problems due to deficiency or excess intake of fat soluble vitamins.	15				
	Water soluble vitamins- functions(list), requirements, food Sources and deficiency					
	of B Complex vitamins – Thiamine, Riboflavin, Niacin, Pyridoxine, Folic Acid,					
	Pantothenic acid, Cyanocobalamin and *Vitamin C*.					
	MACRO, MICRO AND TRACE MINERALS					
	Minerals: Macro minerals- calcium, phosphorus, magnesium, sodium, potassium-					
	Functions (list), requirements, *food sources*, deficiency and toxicity.					
V	Micro minerals: Iron, copper, zinc, manganese, iodine and fluorideFunctions (list),	15				
	requirements, food sources, deficiency and toxicity.					
	Trace minerals: selenium, cobalt, chromium and nickel- Functions (list),					
	requirements, food sources, deficiency and toxicity.					

\*.....\* Self Study

## **Text Book(s):**

1. Srilakshmi, Nutrition Science, New Age International (P) Ltd, New Delhi, Fifth Edition, 2008.

2.Ambika Shanmugam, Fundamentals of Biochemistry for Medical Students, New Age Publishing Pvt.Ltd., New Delhi, Seventh Edition, 1986.

3. Mudambi, R.S. and Rajagopal, M.Y. Fundamentals of Food and Nutrition. Wiley Eastern Limited, New Delhi, 1991.

## **Reference Book(s):**

1. Joshi.A.S, Nutrition & Dietetics, Tata McGraw Hill Education Pvt. Ltd., New Delhi, Third Edition, 2010.

2. R. Passmore and M.A. Eastwood, Human Nutrition and Dietetics, 8th language book

Society/Churchill Livingstone, Hong Kong, 1986.

3. U. Sathyanarayana and U. Chakrapani, Biochemistry, Uppala Author - Publisher

Interlinks, Vijayawada, Third Edition, 2010.

## Web Resource(s):

 $1.\ https://en.wikipedia.org/wiki/Water_intoxication$ 

2.https://www.cdc.gov/niosh/topics/nickel/default.html

3.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7037090/

	Course Outcomes					
Upon suc	cessful completion of this course, the student will be able to:					
CO No. CO Statement						
CO1	List the nutrients present in food	K1				
CO2	Summarise the functions and sources of various nutrients	K2				
CO3	Explain the utilization of various nutrients	K3				
CO4	Evaluate the health problem associated with imbalance nutrition intake	K4				
CO5	Differentiate the signs and symptoms of nutrient deficiency and toxicity	K5				

## **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Score of				
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	3	2	3	1	3	1	1	2	3	2.2
CO2	3	1	2	3	3	3	2	1	3	3	2.4
CO3	3	1	2	3	3	3	3	1	2	3	2.4
CO4	3	2	2	3	3	3	3	1	3	3	2.6
CO5	3	3	2	3	3	3	3	1	3	3	2.7
Mean Overall Score										2.46	
Correlation									Medium		

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr.M.Angel

Semester	Course Code	Course Cotogory	Hours/	Credita	Marks for Evaluation			
		Course Category	Week	Creans	CIA	ESE	Total	
Ι	23UND1AC2P	Allied - II	3	2	20	80	100	

## Course Title | PRINCIPLES OF NUTRITION - PRACTICAL

SYLLABUS					
Exercise	Contents	Hours			
1	<ul> <li>Qualitative analysis for Carbohydrates in food samples.</li> <li>a) Monosaccharide – Glucose and Fructose</li> <li>b) Disaccharide – Lactose and Sucrose</li> <li>c) Polysaccharide - Starch</li> </ul>				
2	Qualitative analysis for protein in food samples a) Albumin b) Casein				
3	Estimation of Moisture content of the food sample. (Hot air oven method)				
4	Preparation of ash samples for mineral analysis in foods.	45			
5	Qualitative analysis for minerals in food samples a) Calcium b) Iron c) Phosphorus				
6	Estimation of glucose from the food sample				
7	Estimation of ascorbic acid from the food sample				
8	Determination of Fat content of the food sample (Demonstration) by Soxhlet Method				

## **Text Book(s):**

- 1. Sadasivam, S. and Manickam, A. Biochemical Method, New Age International P. Ltd., Publishers, New Delhi, Fourth Edition, 2022.
- Raghuramulu, N., Madhavannair, K. and Kalyana Sundaram, National Institute of Nutrition, A Manual of Laboratory Techniques, Hyderabad, 2013.

## **Reference Book(s):**

1. Suzanne Nielson S. Food Analysis Laboratory Manual, Springer, London, Second Edition, 2015.

## Web Resource(s):

1. https://vlab.amrita.edu/?sub=2&brch=191&sim=692&cnt=2

 $2.https://www.fsis.usda.gov/sites/default/files/media_file/2020-11/CLG_FAT_03.pdf$ 

3.https://aquadocs.org/mapping/26801/1/A-2.pdf

	Course Outcomes					
Upon suc	cessful completion of this course, the student will be able to:					
CO No.	CO Statement	Cognitive Level (K-Level)				
CO1	Identify the type of nutrients in food samples	K1				
CO2	Estimate the moisture content of food samples	K2				
CO3	Determine the fat content of the food sample	К3				
CO4	Experiment the preparation of ash samples	K4				
CO5	Estimate the vitamin and mineral content of food samples	K5				

## **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	(PSOs)	Mean Score of			
mes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	3	2	3	1	3	2	2	2	3	2.4
CO2	3	3	2	3	1	3	2	2	2	3	2.4
CO3	3	3	2	3	1	3	2	2	2	3	2.4
CO4	3	3	2	3	2	3	2	2	2	3	2.5
CO5	3	3	1	3	2	3	2	2	2	3	2.4
Mean Overall Score									2.42		
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr.M.Angel

Semester     Course Code     Course Category     Week     Creatis     CIA     ESE     CIA       II     23UND2CC3     CORF - III     5     5     25     75	Somester	Course Code	Course Category	Hours/	Hours/ Credita		Marks for Evaluation			
II 23UND2CC3 CORF_III 5 5 25 75	Semester			Week	Creans	CIA	ESE	Total		
	II	23UND2CC3	CORE - III	5	5	25	75	100		

**Course Title** 

# NUTRITION THROUGH LIFE CYCLE

SYLLABUS							
Unit	Contents	Hours					
	<b>RECOMMENDED DIETARY ALLOWANCE AND MEAL PLANNING:</b>						
	RDA -Definition, RDA FOR INDIAN (2020), factors affecting Recommended						
Ι	Dietary Allowance, general principles for deriving RDA, applications, Estimated	. –					
	Average Requirement (EAR).	15					
	Balanced Diet and meal planning- balanced diet, food exchange lists, principles of						
	planning meal, *steps involved in planning a menu*.						
	PREGNANCY & LACTATION:						
	Pregnancy -pre pregnancy nutrition and its importance, Physiological changes						
	during pregnancy, general dietary problems-nausea, vomiting, heart burn, and pica.						
	Complications during pregnancy- Anaemia, Gestational Diabetes, Constipation,						
П 	Oedema, Hypertension, nutritional requirements, dietary guidelines.	15					
	Lactation-physiology of lactation & role of hormones in milk production, lactation						
	failure – factors responsible for lactation failure, nutritional requirements, *dietary						
	guidelines*, importance of post-natal care.						
	INFANCY& PRESCHOOL CHILDREN						
	Infancy- Growth and Development, low birth weight infants, Breast Milk-						
	Colostrum, Transition milk, Foremilk, Hind milk. Advantages of breast milk to the						
III	infant and mother, Artificial feeding, breast milk banks, food allergies in infants,	15					
	weaning foods, supplementary foods, nutritional requirement.						
	Preschool Children- Growth and development, feeding problems, nutritional						
	requirements, *dietary guidelines*, nutrition programmes for preschool children.						
	SCHOOL GOING & ADOLESCENCE:						
	School going children- Growth and development, nutritional problems-						
	Underweight, Obesity, Constipation, Dental caries, nutritional requirement, dietary						
	guidelines, importance of breakfast, packed lunch, mid-day meal programme.						
IV	Adolescence- growth and development, nutritional problems- obesity,	15					
	underweight, anaemia, eating disorders- anorexia nervosa, bulimia nervosa, binge						
	eating, nutritional requirements, *dietary guidelines*, exercise and its importance.						

	ADULT & ELDERLY	
	Adult- Indian reference man and women, nutritional problems, nutritional	
	requirement of adult in relation to activity pattern, dietary guidelines.	
V	Elderly- Process of ageing, Physiological changes during ageing, psychological and	15
	socio-economic aspects influencing nutritional intake, nutritional problems-	
	osteoporosis, obesity, anaemia, underweight, constipation, nutritional requirement,	
	*dietary guidelines*.	
VI	Current Trends (For CIA only) – Government mid-day meal scheme in Tamil Na	ıdu

\*.....\* Self Study

## **Text Book(s):**

1. B.Srilakshmi, Dietetics, New Age International Pvt. Ltd, Sixth edition, (2010).

2. B.Srilakshmi, Nutrition Science, New Age International Pvt. Ltd, Fourth edition, (2012).

**Reference Book(s):** 

1. Prakash Shetty, Nutrition through Life Cycle, Leatherhead Publishing, First edition, (2002).

2. Judith Brown, Nutrition Through the Life Cycle, Cengage Learning, Seventh edition, (2020).

3.Mahtab S Bamji, N Prahlad Rao, Vinodini Reddy, Textbook of Human Nutrition, IBH publishing Co Pvt Ltd, Fourth edition, (1996).

## Web Resource(s):

1. https://www.ncbi.nlm.nih.gov

2.https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02479

3.https://mothersmilk.org/

	Course Outcomes						
Upon suc	cessful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Recognize the interrelationship between RDA and EAR to plan the balanced diet	K1					
CO2	Identify nutrition-related problems in pregnancy and lactation failure and describe their nutritional requirements.	K2					
CO3	Explain the benefits of breast milk and nutrition programs for preschool children.	К3					
CO4	Organize the nutrition and diet towards promotion of health and nutritional well-being of school going children and adolescence.	K4					
CO5	Assess the psychological and socio-economic aspects influencing nutritional intake during ageing.	К5					

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Score of				
(COs)	<b>PO1</b>	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	3	3	3	3	3	-	-	2	3	2.3
CO2	3	1	-	2	3	3	3	-	3	3	2.1
CO3	2	1	3	1	3	3	3	-	3	3	2.2
CO4	2	1	3	3	3	3	3	-	3	3	2.4
CO5	3	1	1	3	3	3	3	-	3	3	2.3
Mean Overall Score									2.2		
Correlation									Medium		

## **Relationship Matrix:**

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and $<$ 2.5	Medium
≥ 2.5	High

Course Coordinator: S.Basheerunisha

Somester	Course Code	de Course Category Hours/ Week Credit	Hours/	Hours/ Credits		Marks for Evaluation			
Semester	Course Coue		Creatis	CIA	ESE	Total			
Π	23UND2CC4P	CORE - IV	3	3	20	80	100		

## **Course Title**

## NUTRITION THROUGH LIFE CYCLE - PRACTICAL

	SYLLABUS	
Exercise	Contents	Hours
1.	Introduction to meal planning, balanced diet, RDA	
2.	<ul> <li>Planning, calculation of nutritive value and preparation of whole day menu for</li> <li>Pregnant women (3<sup>rd</sup> trimester)</li> <li>lactating women (0-6 months)</li> <li>weaning food (6 -12 month infant)</li> <li>Supplementary food (12 – 24 months)</li> <li>Preschool children (3-6 years)</li> <li>School children (7-12 years)</li> <li>Adolescence (13-17 years)</li> <li>Adult man &amp; women</li> <li>Elderly</li> </ul>	45
3.	Visit to an Anganwadi centre and Government Midday Meal Programme	

## **Text Book(s):**

1. Srilakshmi, B. Nutrition Science, New Age International ltd, Seventh edition, 2002.

2. Swaminathan M. Advanced text book on Food and Nutrition, An mol Publication Pvt,Ltd, Second Edition,2004.

#### **Reference Book(s):**

1. MahtabS.Bamji, Prasad Rao, N.Vinodini Reddy. Textbook of Human Nutrition, Oxford and IBH Publishing Co. Pvt .Ltd, Second Edition, 2003.

2. B.Srilakshmi, Dietetics, New Age International Pvt. Ltd, Sixth edition, (2010).

## Web Resource(s):

1. https://www.tarladalal.com/recipes-for-weaning-for-6-to-7-months-357

 $2. \underline{https://www.hopkinsmedicine.org/health/wellness-and-prevention/nutrition-during-pregnancy}$ 

	Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No. CO Statement							
CO1	Remember the principles of menu planning for different age groups.	K1					
CO2	Understand the nutrient need for different age group.	K2					
CO3	Practice the whole day menu for different age group.	К3					
CO4	Evaluate the nutritive value of menus and compare with RDA.	K4					
CO5	Assess the Anganwadi services.	K5					

## **Relationship Matrix:**

CourseProgramme Outcomes (POs)					Progra	Mean Score of					
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	3	2	3	3	3	3	-	3	3	2.6
CO2	3	3	2	3	3	3	3	-	3	3	2.6
CO3	3	3	2	3	3	3	3	-	3	3	2.6
CO4	3	3	2	3	3	3	3	-	3	3	2.6
CO5	1	2	1	2	3	2	3	2	3	1	2.0
								Me	an Overa	all Score	2.48
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

## Course Coordinator: S.Basheerunisha

Somestor	Course Code	Course Cotogony	Hours/	Credita	Marks for Evaluation			
Semester	Course Code	Course Category	Week	Creatis	CIA	ESE	Total	
II	23UND2AC3	Allied - III	5	4	25	75	100	

Course Title HUMAN PHYSIOLOGY

	SYLLABUS	
Unit	Contents	Hours
I	<ul> <li>BLOOD AND LYMPH:</li> <li>Blood – Composition and functions, Red Blood Corpuscles, White Blood Corpuscles, Platelets – structure and functions, coagulation of blood – coagulation time, *Blood grouping* and Rh factors, Erythropoiesis.</li> <li>Lymph and Lymphatic System – Structure and functions.</li> </ul>	15
	CARDIOPULMONARY SYSTEM:	
п	<b>Cardiovascular system -</b> Structure of heart and blood vessels, properties of cardiac muscle, cardiac cycle, heart rate, blood pressure, measurement of blood pressure.	15
	<b>Respiratory system -</b> Structure and functions of respiratory tract, mechanism of respiration, transport of respiratory gases in blood, gaseous exchange in lungs and tissues, *lung volumes and capacities*.	13
III	<ul> <li>DIGESTIVE AND EXCRETORY SYSTEM:</li> <li>Digestive system – Structure and functions of digestive tract, physiology of digestion – functions of saliva, gastric juice, bile, pancreatic juice, intestinal juice, movement of intestine. Liver, Pancreas and Gall bladder – structure and functions (list).</li> <li>Excretory system – Structure and functions of kidney and nephrons, formation of urine, composition of urine, factors affecting formation of urine, *micturition*.</li> <li>Skin- structure and functions.</li> </ul>	15
IV	<ul> <li>REPRODUCTIVE AND ENDOCRINE SYSTEM:</li> <li>Reproductive system – structure and functions of male and female reproductive system, spermatogenesis, oogenesis, menstrual cycle.</li> <li>Endocrine system and hormones- Structure and functions of pituitary thyroid, parathyroid, *pancreas* and adrenal glands and its hormones.</li> </ul>	15
V	<ul> <li>NERVOUS SYSTEM AND SPECIAL SENSES:</li> <li>Nervous system – structure and functions of nerve cell, brain and spinal cord.</li> <li>Ear, Eye, Nose and Tongue – structure and physiology of hearing, vision, smell and *taste*.</li> </ul>	15

\*.....\* Self Study

# Text Book(s): 1. K. Sembulingam, and Prema Sembulingam Essentials of Medical Physiology, Jay Pee Brothers Medical Publishes (p) Limited, New Delhi, Second Edition, 2010. 2. C.C. Chatterjee, Human physiology, Medical allied agency, 82/1Mahatma Gandhi road, Calcutta, Volume I, 1998. 3. C.C. Chatterjee, Human physiology, Medical allied agency, 82/1Mahatma Gandhi road, Calcutta, Volume II, 1998. Reference Book(s): 1. Ross and Wilson, Anatomy and Physiology in Health and Illness, Library Cataloging in Publication, Eleventh Edition, 2010. 2. Vidya Tatna, Hand book of Human physiology, Jay Pee Brothers Medical Publishers (p) Limited, New Delhi, Seventh Edition, 1993. 3. S.M. Subramanian and Mathavan kutty, Text book of Physiology, Chand and Company, New Delhi,

Web Resource(s): 1.https://dghs.gov.in/WriteReadData/userfiles/file/RTI/THOA\_NOTP\_NOTTO\_ROTTO\_SOTTO\_16-7-2020.pdf

	Course Outcomes								
Upon suc	Upon successful completion of this course, the student will be able to:								
CO No.	CO Statement	Cognitive Level (K-Level)							
CO1	Identify the organs of the human body	K1							
CO2	Infer about the structure of human organs	K2							
CO3	Interpret the physiological functions of human organs	К3							
CO4	Distinguish the vital role of the different organs of the human body	K4							
CO5	Evaluate the knowledge functional mechanism of human body	K5							

#### **Relationship Matrix:**

2001.

Course Programme Outcomes (POs)				Progra	Mean						
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	3	3	2	2	2	3	3	3	2	1	2.4
CO2	3	3	2	1	1	2	2	3	2	2	2.1
CO3	3	3	2	2	3	3	3	3	2	2	2.6
CO4	3	2	3	2	2	3	2	2	2	2	2.3
CO5	3	2	2	1	2	2	2	1	1	1	1.7
								Me	an Overa	all Score	2.2
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥2.5	High

Semester	Course Code	Course Cotogomy	Hours/	Hours/ Credita		Marks for Evaluation			
	Course Coue	Course Category	Week	Creatts	CIA	ESE	Total		
II	23UND2AC4P	Allied - IV	3	2	20	80	100		
			I						

**Course Title** 

## Title HUMAN PHYSIOLOGY - PRACTICAL

SYLLABUS								
Exercise	Contents	Hours						
1	Histology of tissues – columnar, cubical, ciliated, squamous and stratified squamous (observation with help of permanent slide).							
2	Histology of muscles – cardiac, striated and non-striated (observation with help of permanent slide).							
3	Microscopic structure of organs - LS of stomach, liver, ovary and pancreas (observation with help of permanent slide).							
4	Identification of blood groups.							
5	Determination of bleeding time (resting time). 45							
6	Determination of coagulation time (resting time).							
7	Estimation of haemoglobin by Shali's method.							
8	Recording of blood pressure – using sphygmomanometer and pulse rate before and after exercise.							
9	Enumeration of Red Blood Cells and White Blood Cells – Demonstration.							
10	Visit to human physiology laboratory to a Medical College.							

## **Text Book(s):**

1. Chatterjee C.C, Human Physiology, Medical Allied Agency, 11th Edition, Kolkata, 2016.

## **Reference Book(s):**

1. Sembulingam, K. Essentials of Medical Physiology, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, 6<sup>th</sup> Edition,2012

## Web Resource(s):

1. https://labpedia.net/erythropoiesis-rbc-maturation-rbc-counting-procedure/

	Course Outcomes							
Upon successful completion of this course, the student will be able to:								
		Cognitive						
CO No.	CO Statement	Level						
		(K-Level)						
CO1	Identify the structure of tissues, muscles and organs.	K1						
CO2	Distinguish the different types of blood groups	K2						
CO3	Examine bleeding time and coagulation time in blood	K3						
CO4	Estimate hemoglobin level in the blood	K4						
CO5	Measure blood pressure in individuals	K5						

Relations	hip Ma	trix:									
Course	Pro	gramm	e Outco	omes (P	Os)	Progra	amme Sp	ecific O	utcomes	(PSOs)	Mean Score of
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	2	3	2	2	1	1	1	1	1	1	1.5
CO2	3	3	1	1	2	2	2	1	1	1	1.7
CO3	3	3	2	1	1	1	1	1	1	1	1.5
CO4	3	3	1	1	3	3	3	2	1	1	2.1
CO5	3	3	1	1	2	3	3	1	1	2	2.0
								Me	an Overa	all Score	1.76
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr. J. Harine Sargunam

Somester	C	ourse Code	Course Cotogowy	Hours/	Credits	Marks for Evaluation			
Semester		ourse Code	Course Category	Week		CIA	ESE	Total	
III	23	SUND3CC5	Core - V	4	4	25	75	100	
Course Title		Dietetics - I							

	SYLLABUS	
Unit	Contents	Hours
I	<b>Introduction and basic concepts in Dietetics</b> Definition of dietetics and dietitian. Types of dietitian, role and responsibilities of dietitians, qualification, and professional code of ethics. Diet counselling - clients and counselors, client responsibility, attributes of a Successful counselor, steps in counselling process, counselling guidelines.	8
II	Diet therapy Definitions & Principles of Diet Therapy, Concepts and objectives of therapeutic diet. Types of diet: Normal diet, Routine Hospital Diet: -clear fluid diet, full fluid diet, semi-solid diet, soft diet, bland diet, high & low-calorie diet, high & low protein diet, high & low fiber diet, low fat diet, high and low residue diet, sodium and potassium restricted diet.	10
ш	<ul> <li>Special feeding techniques and diet for obesity and underweight</li> <li>Enteral feeding – methods- nasogastric, gastrostomy and jejunostomy, types of food, infusion techniques.</li> <li>Parenteral feeding – principles, TPN formula and complications. Pre and post-operative diet.</li> <li>Obesity-causes, signs and symptoms, grades of obesity, Complications, Dietary Management.</li> <li>Underweight – causes, signs and symptoms, Risk factors and dietary management.</li> </ul>	10
IV	Diet for Burns, Allergy, GI diseases Burns- types, assessment, degree of burns and dietary management. Allergy- types, symptoms, diagnosis and dietary management. Upper-Gastro intestinal diseases: Causes, signs and symptoms, complications, diagnosis, dietary management for gastritis, peptic ulcer, celiac sprue and lactose intolerance Lower-Gastro intestinal diseases: Causes, signs and symptoms, complications, diagnosis, dietary management for constipation, diarrhoea, dysentery and haemorrhoids.	10
V	<b>Diet for Liver, gall bladder, pancreas diseases</b> Liver diseases: Causes, signs and symptoms, complications and dietary management, for fatty liver, hepatitis, cirrhosis, hepatic coma. Gall bladder diseases: Causes, signs and symptoms, complications and dietary management for cholecystitis and cholelithiasis. Pancreatic diseases: Causes, signs and symptoms, complications and dietary management for pancreatitis – Acute and chronic pancreatitis.	10
VI	<b>Current Trends</b> * (For CIA only) – Personalized nutrition	

\* For Theory Core Course, wherever possible

## Text Book(s):

Srilakshmi.B, Dietetics, New Age International (P) Ltd. Publishers, Chennai, 9th edition, 2023.
 Shubhangini A. Joshi, Nutrition and Dietetics, Tata Mc.Graw Hill Publication, 4<sup>th</sup> edition, 2017.

#### **Reference Book(s):**

1. Mahtab.S, Bamji Prasad Rao N and Vinodini Reddy, Textbook of Human Nutrition, Oxford and IBH Publishing, 2<sup>nd</sup> edition, 2003.

2. Shils M.E, Oslon J.A, Shike M & Ross AC, Modern Nutrition in Health & Disease, Lippincott Williams and Wilkins, 10<sup>th</sup> edition, 2006.

3. Krause and Mahan's, Food & Nutrition. Care Process, W.B Saunder, 16<sup>th</sup> edition, 2022

#### Web Resource(s):

## 1. www.idaindia.com

	Course Outcomes							
Upon suc	Upon successful completion of this course, the student will be able to:							
CO No.	CO Statement	Cognitive Level (K-Level)						
CO1	Demonstrate the role and responsibilities of dietitian, diet counseling process and Nutritional Assessment.	K2						
CO2	Make use of various methods and techniques in the therapeutic modification of diet.	К3						
CO3	Relate the special feeding methods and dietary management of obesity and underweight.	K2						
CO4	Analyse the dietary management for Burns, Allergy and Gastrointestinal diseases	K4						
CO5	Appraising the dietary treatment for liver, gall bladder and pancreatic disorder.	К5						

#### **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Score of				
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	1	2	3	2	3	2	1	3	2	2.2
CO2	3	2	3	1	2	3	3	2	1	1	2.1
CO3	3	3	1	2	1	3	2	1	1	3	2.0
CO4	3	1	2	3	1	3	1	2	3	2	2.1
CO5	3	2	1	3	2	3	2	3	2	1	2.2
Mean Overall Score											2.12
Correlation											Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

#### Course Coordinator: Ms. K. Priyadharshini

Somester	Course Code		Course Cotogory	Hours/	Credita	Marks for Evaluation			
Semester			Course Category	Week	Creans	CIA	ESE	Total	
III	231	UND3CC6P	Core - VI	3	3	20	80	100	
<b>Course Title</b>		Dietetics - I	- Practical						

Content for practical	Hours			
Planning, Nutritive value calculation and preparation of one serving diet for				
the following conditions:				
1. Routine hospital diet - Clear fluid, full fluid, semi-solid, soft and bland diet.				
2. Obesity and underweight.				
3. Burns and allergy.				
4. Gastrointestinal diseases- Gastritis, Peptic ulcer, Constipation, Diarrhea and dysentery.				
5. Liver diseases- fatty liver, hepatitis, cirrhosis, hepatic coma.	36			
6. Gall Bladder diseases- cholecystitis and cholelithiasis.				
7. Pancreatic diseases- Acute and chronic pancreatitis.				
Assessment and activities				
1. Prepare a diet model and education material- chart and pamphlets for the above				
specified disease condition.				
2. Submit any one case study report for the above specified disease condition.				

#### **Text Book(s):**

1. Srilakshmi.B, Dietetics, New Age International (P) Ltd. Publishers, Chennai, 9th edition, 2023.

2. Dietary guidelines for Indians, A manual, National Institute of Nutrition, ICMR, Hyderabad, 2011.

3. Indian Food Composition Table, National Institute of Nutrition, ICMR, Hyderabad. 2020.

4. Krause and Mahan's, Food & Nutrition Care Process, W.B Saunder, 16th edition, 2022.

5. Shubhangini A. Joshi, Nutrition and Dietetics, Tata Mc.Graw Hill Publication, 4<sup>th</sup> edition, 2017.

	Course Outcomes							
At the end	At the end of this course, the student will be able to:							
CO No.	CO Statement	Cognitive Level (K-Level)						
CO1	Develops the ability to plan a diet for disease condition.	К3						
CO2	Appraise the diet principles in the management of disease condition.	K5						
CO3	Apply the skills in imparting diet counselling for the treatment of the disease conditions.	К3						
CO4	Focusing on the knowledge about the food to be included and avoided according to the deficiency diseases.	K4						
CO5	Interpret the modification of diet for various disease conditions.	K2						

Relationship Matrix:											
Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Second of				
(COs)	<b>PO1</b>	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	2	1	2	3	3	1	2	3	1	2.1
CO2	3	3	1	2	3	3	2	3	1	2	2.3
CO3	3	1	2	3	1	3	1	2	3	1	2.0
CO4	3	2	3	1	2	3	2	3	2	1	2.2
CO5	3	1	3	2	1	3	1	2	3	2	2.1
Mean Overall Score										2.14	
Correlation										Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Ms.K.Priyadharshini

Semester	Course Code	Course Cotogomy	Hours/	Credita	Marks for Evaluation			
	Course Coue	Course Category	Week	Creatis	CIA	ESE	Total	
III	23UND3AC5	Allied -V	4	4	25	75	100	

**Course Title** Nutritional Biochemistry

	SYLLABUS	
Unit	Contents	Hours
I	Carbohydrate metabolism: Carbohydrate – carbohydrate as a source of energy, Metabolism of Carbohydrate – Glycolysis, Glycogenesis, glycogenolysis, oxidation of pyruvate to acetyl CoA, Tricarboxylic acid Cycle (TCA cycle), Hexose Monophosphate Shunt, Gluconeogenesis. Diabetes Mellitus-Types and metabolic changes of Diabetes Mellitus. Inborn error of metabolism: Glycosuria, Fructosuria, Galactosemia. Glycogen storage diseases.	12
II	Protein metabolism: Protein – Amino acid pool, General pathway of Protein metabolism. Protein Metabolism - Anabolism of protein-protein turn over and formation of peptide linkage. Catabolism of protein- Oxidative Deamination, Transamination, Trans deamination, Urea Cycle. Inborn error of metabolism: Maple syrup urine disease, Hurtnup syndrome, Phenylketonuria, Albinism, Cystinuria, Alcaptonuria, Wilson'sdisease.	12
ш	Lipid metabolism: Classification of Lipids, Metabolism of Lipid-Beta Oxidation of Fatty acid, ketogenesis, ketosis. Synthesis of Triglycerides, Fattyacids and Cholesterol. Role of fat in Lipid metabolism. Plasma Lipoproteins: Functions and metabolism of Lipoproteins. Disorder of Lipoproteins- Hyperlipoproteinemias and Hypolipoproteinemias.	12
IV	Liver and Kidney function test Bile -Formation and functions of Bile acids and bile salts, bile pigments. Liver Function Test- Test for bile pigment metabolism in Jaundice, Bile pigment metabolism in Health and in Jaundice, Jaundice-Biochemical changes in Jaundice. Test for plasma protein concentration, test for detoxifying functions, test for serum enzymes, test for excretion of foreign substances. Renal Function Tests: Composition of Urine, Normal and abnormal constituents of urine. Inulin clearance test, Urea Clearance test, Addis test, Mosenthal test	12
V	Enzymes and Hormones: Enzymes and coenzymes: Definition and mechanism of action Role of Hormones: Thyroxine, Insulin, glucagon, Epinephrine, Corticoid, Androgens, Estrogen, progesterone	12
VI	<b>Current Trends</b> *(For CIA only) – Tomography (Awareness and knowledge)	

## **Text Book(s):**

- 1. Ambika Shanmugam's, Fundamentals of Biochemistry for Medical Students, Eighth Edition, Wolters Kluwer (India) Pvt.Ltd., New Delhi, 2016.
- 2. U. Sathyanarayana and U. Chakrapani, Textbook of Biochemistry, Fourth Edition, Elsevier Pvt.Ltd, 2013
- 3. Dulsy Fathima, Biochemistry, Sara's Publications, 2010

## **Reference Book(s):**

- 1. S. Ramakrishnan, K.G. Prassanan and R. Rajan, Text book of Medical Biochemistry, Third Edition, Orient Longman limited Orient Longman, Hyderabad, 2001.
- 2. Thomas.M. Devlin, Text Book of Biochemistry (with Clinical corrections), Sixth Edition, John John Wiley and sons,2006.
- 3. Donald Voet and Judith G.Voet, Fundamentals of Biochemistry, 4th edition, 2018
- 4. DM Vasudevan, Sreekumari S and Kannan Vaidyanathan, Text Book of Biochemistry for Medical Students, Seventh Edition, Jaypee Medical Limited, 2013.

#### Web Resource(s):

11.https://www.youtube.com/watch?v=DhwAp6yQHQI&list=PLRdQ4XybtNjRjlIIVcoCMcwN36BIgPDqw 2.https://www.youtube.com/watch?v=jLyi2K-29xU

3.https://www.youtube.com/watch?v=YWEiQlEUFak

4.https://www.youtube.com/watch?v=iuW3nk5EADg

	Course Outcomes							
Upon suc	Upon successful completion of this course, the student will be able to:							
CO No.	CO No. CO Statement							
CO1	Demonstrate the chemical and physiological role of Carbohydrates metabolism.	K1						
CO2	Illustrate the protein metabolism and its inborn errors	K2						
CO3	Organise the metabolism of lipids and Lipoprotein-Types and disorders	K3						
CO4	Categorise the liver and renal function Test	K4						
CO5	Appraise the role of enzymes and hormones in metabolic pathways	K5						

#### **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Programme Specific Outcomes (PSOs)					Mean Score of
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	1	1	2	2	1	1	1	1	2	2	1.4
CO2	1	2	1	2	2	3	1	2	1	2	1.7
CO3	1	1	2	3	2	1	2	1	1	1	1.5
CO4	2	1	2	2	3	2	1	2	1	2	1.7
CO5	2	3	2	1	2	1	2	1	1	2	1.7
								Me	an Overa	all Score	1.60
	Correlation										Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

## **Course Coordinator: J.PRIYA**

Course Code	Course Cotogowy	Hours/	Credite	Marks for Evaluation			
Course Coue	Course Category	Week	Creans	CIA	ESE	Total	
23UND3AC6P	ALLIED –VI	3	2	20	80	100	
	Course Code 23UND3AC6P	Course CodeCourse Category23UND3AC6PALLIED -VI	Course CodeCourse CategoryHours/ Week23UND3AC6PALLIED –VI3	Course CodeCourse CategoryHours/ WeekCredits23UND3AC6PALLIED -VI32	Course CodeCourse CategoryHours/ WeekCreditsMarks CLA23UND3AC6PALLIED-VI3220	Course CodeCourse CategoryHours/WeekCreditsMarks for Eval23UND3AC6PALLIED -VI322080	

Content for practical	Hours
1. Qualitative analysis of Urine for Sugar, Protein, Ketone bodies, Bile salts &	
Bile pigments	
2. Estimation of Urine Glucose (Benedict's Method)	
3. Estimation of Urine Urea (DAM Method)	15
4. Estimation of Blood Glucose	43
5. Estimation of Blood Urea (DAM Method)	
6. Estimation of serum cholesterol (Zak's Method)	
7. Estimation of creatinine in urine.	

#### **Text Book(s):**

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).

#### **Reference Book(s):**

1. Jayaraman, J. Laboratory manual in Bio Chemistry, Second Edition, New Age International Ltd Publishers, New Delhi, 2020.

 Pallab Basu, Biochemistry Laboratory Manual, Second Edition, Academic Publisers, Kolkata, 2016.
 Soundravally Rajendiran and Pooja Dhiman, Biochemistry Practical Manual, Elesevier Relx India Pvt Ltd., 2019.

## Web Resource(s):

1. https://skyfox.co/wp-content/uploads/2020/12/Practical-Manual-of-Biochemistry.pdf

- 2. https://guides.lib.utexas.edu/biochemistry
- 3. https://www.liverpool.ac.uk/~agmclen/Medpracs/Prachomepage.html

	Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Infer the normal and abnormal constituents of Urine	K2					
CO2	classify the clinical correlation of glucose, Creatinine and Urea	K4					
CO3	Examine the Clinical abnormalities of Cholesterol	K4					
CO4	Determine the clinical abnormalities in blood by analysing sugars	K5					
CO5	Conclude the clinical report of analysed values	K5					

Relationsh	ip Mat	rix:									
Course	Pro	gramm	e Outco	omes (P	Os)	Progra	amme Sp	pecific O	utcomes	(PSOs)	Mean Score of
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	2	2	3	2	1	1	2	1	2	2	1.8
CO2	1	1	2	2	1	1	1	1	2	3	1.5
CO3	2	3	2	1	2	1	1	1	2	1	1.6
CO4	1	1	2	1	1	2	2	2	1	2	1.5
CO5	1	2	3	1	2	2	1	2	1	2	1.7
								Me	an Overa	all Score	1.62
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥2.5	High

**Course Coordinator: J.PRIYA** 

Somestan	Course Code	Course Cotogory	Hours/	Cradita	Marks for Evaluation			
Semester		Course Category	Week	Creats	CIA	ESE	Total	
III	23UND3GE1	Generic Elective - I	2	2	-	100	100	

**Course Title** 

#### NUTRITION FOR WOMEN

SYLLABUS					
Unit	Contents	Hours			
I	Nutrition for Adolescent Girls Physiological and psychological changes of adolescent girls. Nutritional Requirements and Dietary Guidelines for adolescent girls. Nutritional problem in adolescent girls- Anemia, Obesity Thyroid PCOS, PCOD and Dietary Management	6			
Π	Nutrition For Adult Women Indian reference woman, Nutritional requirements of adult women in relation to activity pattern. Food habits and consumption pattern of working women Nutritional requirements for working women, Pre conceptual nutrition	6			
III	Nutrition for Pregnant Women Physiological changes, Nutritional requirements and dietary guidelines during pregnancy. General nutritional problems during pregnancy-Nausea, vomiting, heartburn, aversions, craving. Complications during Pregnancy - Anemia, Constipation, Hypertension, GDM And Oedema	6			
IV	Nutrition during Lactation Physiological changes during lactation. Nutritional requirement, Nutritional risk, Dietary guidelines during lactation. Breast feeding-types of milk - Colostrum, Transition milk, foremilk, hind milk. Advantages of breast feeding to mother and the infant	6			
V	Nutrition during Elderly Physical and Psychological changes, Nutritional requirements and Dietary Guidelines for elderly. Nutrition related problem of old age – constipation, obesity, osteoporosis and Alzheimer's disease. Menopausal Disorders – Problems Faced. Pre, During and Post Nutritional Requirements for Menopause. *Importance of physical activity during old age*.	6			
VI	Nutritional status of Working Women – case study				
*	* Self Study				

**Text Book(s):** 

1. B. Srilakshmi, "Dietetics", New Age International Pvt. Ltd., Seventh edition, Chennai. 2014.

- 2. Shubhangini A Joshi. Nutrition and Dietetics with Indian Case studies. 5<sup>th</sup> Edition. 2021
- 3. Dr. Sara Gottfried. Women food and Hormones, Piatkus publication, 2021

## **Reference Book(s):**

Krause and Mahan's, Food & Nutrition. Care Process, W.B Saunder, 16<sup>th</sup> edition, 2022
 Roberta. L Duyff, Complete food and Nutrition Guide. Harvest publications, 2017

Web Resource(s):

1. <u>https://www.cdc.gov/reproductivehealth/womensrh/healthconcerns.html</u>

	Course Outcomes						
Upon suc	cessful completion of this course, the student will be able to:						
CO No.	CO No. CO Statement						
CO1	Recall the role of nutrients in women's health	K1					
CO2	Interpret the nutritional needs during pregnancy and lactation	К2					
CO3	Develop the dietary guidelines for women	К3					
CO4	Acquire knowledge about needs of nutritional requirements during menstrual cycle	K4					
CO5	Appraise physiological changes in elder women	K5					

# **Relationship Matrix:**

Course	Prog	ramme	e Outco	omes (I	POs)	Progr	Mean Score				
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	of COs
CO1	3	2	1	3	3	1	2	1	3	2	2.1
CO2	3	2	2	2	1	2	1	1	2	2	1.8
CO3	3	3	2	3	2	3	1	1	2	3	2.3
CO4	3	3	3	3	1	3	2	2	2	2	2.4
CO5	3	3	3	3	2	3	2	3	3	2	2.7
MEAN OVERALL SCORE									2.26		
									CORRE	ELATION	MEDIUM

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: N. Asiffa Jabeen

Somestan	Course Code	Course Cotogory	Hours/ Credita		Marks for Evaluation			
Semester	Course Coue	Course Category	Week	Creans	CIA	ESE	Total	
IV	23UND4CC7	Core - VII	6	6	25	75	100	

**Course Title** Dietetics - II

	SYLLABUS	
Unit	Contents	Hours
I	<b>Diabetes Mellitus:</b> Diabetes Mellitus – Pathogenesis, types, etiological factors, symptoms, diagnostic tests, complications. Pre diabetes and Gestational diabetes. Treatment of diabetes – Insulin and oral hypoglycemic drug, Dietary modification and guidelines, Glycemic index, glycaemic load, food exchange list-meaning and its uses.	18
II	<ul> <li>Cardio Vascular Disease and Metabolism</li> <li>Cardio vascular diseases -Pathogenesis, types, etiological factors, complications, dietary modification and diet planning for the hypertension, hyperlipidaemia, Atherosclerosis, Ischemic Heart Disease, Congestive Cardiac Failure.</li> <li>Diseases of Metabolism-Hypothyroidism, Hyperthyroidism, PCOD, Arthritis, Osteoporosis, Reproductive system diseases-etiological factors, symptoms, diagnostic tests, dietary modifications and guidelines.</li> </ul>	18
III	<ul> <li>Renal System and Inborn Error of Metabolism</li> <li>Glomerulonephritis, Nephrotic Syndrome-pathogenesis, etiological factors, symptoms, dietary modification. Acute and chronic Renal Failure, Nephrolithiasis-Pathogenesis, etiological factors, symptoms, dietary modification. Kidney transplantation and Dialysis.</li> <li>Dietary management for Inborn Errors of Metabolism-Galactosemia (Carbohydrate metabolism), Phenylketonuria (Aminoacid Metabolism), Niemann Pick disease (lipid storage Metabolism).</li> </ul>	18
IV	<b>Dietary Management for Cancer and AIDS:</b> Cancer – Etiology, types, mechanism of cancer formation, dietary modification and nutritional problems of cancer therapy. AIDS - Pathophysiology, etiology, stages of HIV infection, #mode of transmission#, clinical manifestation and dietary management.	18
V	<ul> <li>Nutritional care for pediatric with Special Needs, Musculoskeletal Disorders and Functional Foods</li> <li>Nutritional Care for pediatric with Special Needs: Types of disability, Etiology, symptoms, nutritional management and modification of diet in Attention deficit hyper activity disorder (ADHD), Autism, Cerebral palsy and Down's Syndrome Special conditions – Epilepsy, Muscular Dystrophy - etiological factors, symptoms and dietary Modifications and guidelines.</li> <li>Functional foods– Definition, classification, uses of functional foods in the prevention and treatment of – Obesity, Diabetes mellitus, Cardiovascular diseases, Cancer.</li> </ul>	18
VI	Current Trends - Dietary counseling and awareness on Naturopathy	

For Theory Core Course, wherever possible

## **Text Book(s):**

- Srilakshmi. B, Dietetics, 7<sup>th</sup> Edition, New Age International (P) Ltd. Publishers, Chennai, 2022.
   Joshi, S.A, Nutrition and Dietetics, 2<sup>nd</sup> edition, TATA McGraw Hill publications, New Delhi. 2008
- 3. Antia, F.P, Clinical Dietetics and Nutrition, 4<sup>th</sup> Edition, Oxford University Press, Delhi, 2002.
- 4. Micheal J. Gibney IA. Mac Donald and Helan M. Roche, Nutrition and Metabolism, Blackwell Publishing Company, Bangalore, 2004.

## **Reference Book(s):**

- 1. Mahan L.K and Arlin M.T, Food and the Nutrition care process, Thirteenth Edition, W.B. Saunder Company, London. 2000
- 2. Krause MV & Mahan MA, Food Nutrition and Diet Therapy. W.B.Sunders Company, Philadelphia London, 1992.

#### Web Resource(s):

- 1. https://www.iete.org/naturopathy-umashankar.pdf
- 2. http://rnlkwc.ac.in/pdf/study-material/physiology/ff.pdf
- 3. https://cdn.who.int/media/docs/default-source/healthy-diet/healthy-diet-fact-sheet-
- 394.pdf?sfvrsn=69f1f9a1\_2&download=true

	Course Outcomes							
Upon suc	cessful completion of this course, the student will be able to:							
CO No.	CO Statement	Cognitive Level (K-Level)						
CO1	Relate the Nutritional Management of Diabetes and Prediabetes	K1						
CO2	Illustrate the concepts and principles of Nutrition in basic Dietetics	K2						
CO3	Construct the Principles of Nutrition in Medical Nutrition Therapy for Therapeutic diets	K3						
CO4	Discover the diet for the Deficiency Disorder and Disease	K4						
CO5	Appraise the diet Principles in the Management of Disease Condition	K5						

#### **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Score of				
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	2	1	2	1	3	1	2	2	3	2
CO2	3	2	1	2	3	3	3	2	2	1	2.2
CO3	3	1	3	1	3	3	3	2	2	2	2.3
CO4	3	1	2	3	3	2	2	1	2	2	2.1
CO5	3	3	3	3	3	2	2	3	2	3	2.7
Mean Overall Score									2.26		
Correlation										Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

#### **Course Coordinator: S. Sheerin**

Semester	Course Code	Course Cotogomy	Hours/	Hours/ Credita		Marks for Evaluation			
	Course Coue	Course Category	Week	Creans	CIA	ESE	Total		
III	23UND4CC8P	Core - VIII	3	2	20	80	100		

**Course Title** | Dietetics – II - Practical

	SYLLABUS	
Unit	Contents	Hours
Ι	Planning, Nutritive value calculation and preparation of one serving diet for the following conditions	
1	Diabetes Mellitus-Type-1, Type-II and Gestational diabetes.	
2	Cardio vascular system disease - Hypertension, Atherosclerosis	
3	Renal disease - Glomerulonephritis, Nephrotic syndrome, Nephrolithiasis	45
4	Inborn Errors of Metabolism– Galactosemia and Phenyl Ketonuria (PKU).	
5	Cancer and AIDS	
6	Thyroid disorder - Hyperthyrodism, Hypothyrodism	
7	Attention Deficit Hyper Activity Disorder (ADHD), Autism, Cerebral palsy and Down syndrome.	
II	Assessment and Activities	
1	Prepare a diet model and education material-Chart and pamphlets for any one special condition- Naturopathy	
2	Select any one functional food and prepare a recipe with that food.	

## **Text Book(s):**

- 1. Srilakshmi. B, Dietetics, 9th Edition, New Age International (P) Ltd. Publishers, Chennai, 2023.
- 2. Antia, F.P, Clinical dietetics and Nutrition, 4th Edition, Oxford University Press, Delhi, 2002.
- 3. Nutrient Requirement and Recommend Dietary Allowances for Indians by Indian council of Medical Research, National Institute of Nutrition, Hyderabad, 2020.

## **Reference Book(s):**

- Dr.M. Swaminathan, "Food and Nutrition (An Advanced Textbook)" Vol.II, The Bangalore Printing & Published Co., Ltd., Bangalore, 2012.
- Joshi.A.S, Nutrition & Dietetics, Tata McGraw Hill Education Pvt. Ltd., New Delhi, Third Edition, 2010

## Web Resource(s):

- 1. <u>https://cdn.who.int/media/docs/default-source/healthy-diet/healthy-diet-fact-sheet-394.pdf?sfvrsn=69f1f9a1\_2&download=true</u>
- 2. https://girmeswheatgrass.com/wp-content/uploads/2020/06/Naturopathy-Diet-Recipes.pdf
- 3. <u>https://sandhyaramanadharfoundation.com/wp-content/uploads/2021/05/Acknowledgement.pdf</u>
|   | Course Outcomes   |                                 |  |  |  |  |  |  |  |  |  |
|---|---|---------------------------------|--|--|--|--|--|--|--|--|--|
| Upon successful completion of this course, the student will be able to: |   |                                 |  |  |  |  |  |  |  |  |  |
| CO No.  | CO Statement  | Cognitive<br>Level<br>(K-Level) |  |  |  |  |  |  |  |  |  |
| CO1   | Define the competency and skills in planning, preparation and evaluation of various therapeutic diets     | K1                              |  |  |  |  |  |  |  |  |  |
| CO2   | Infer the application of principles of nutrition in different age group                                   | K2                              |  |  |  |  |  |  |  |  |  |
| CO3   | Apply knowledge of nutrition and health assessment and interpretation in comprehensive patient management | K3                              |  |  |  |  |  |  |  |  |  |
| CO4   | Distinguish the principles of nutrition therapy in multiple disorders in clinical setting                 | K4                              |  |  |  |  |  |  |  |  |  |
| CO5   | Evaluate the principles of medical nutrition therapy for some complications in Diabetes mellitus          | K5                              |  |  |  |  |  |  |  |  |  |

Course	Pro	gramm	e Outco	omes (P	Os)	Programme Specific Outcomes (PSOs)					Mean Score of	
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs	
CO1	3	2	2	3	2	3	1	3	2	2	2.3	
CO2	3	1	2	3	2	3	1	2	2	2	2.1	
CO3	3	2	1	3	2	3	2	2	1	3	2.2	
CO4	3	2	1	2	3	3	2	2	2	3	2.3	
CO5	3	2	1	2	1	3	3	2	2	2	2.1	
Mean Overall Score												
	Correlation											

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

**Course Coordinator: S. Sheerin** 

Semester	Course Code	la Course Category		Cradita	Marks for Evaluation			
	Course Coue	Course Category	Week	Creatis	CIA	ESE	Total	
IV	23UND4AC7	ALLIED - VII	4	4	25	75	100	

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Course Title
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#### **Fundamentals of Food Microbiology**

	SYLLABUS	
Unit	Contents	Hours
Ι	<b>INTRODUCTION TO FOOD MICROBIOLOGY:</b> History and Development of Food Microbiology. Scope of food microbiology Classification and nomenclature of microorganisms, General characteristics and economic importance of bacteria, fungi, virus, algae and protozoa.	12
п	CULTIVATION OF MICRO-ORGANISMS: Methods of isolation and cultivation, Serial dilution method, Pure culture technique. Microbial Growth in Food: Bacterial growth curve and microbial growth in food. Factors affecting the growth of microorganisms in food, effect of environmental factors in growth of microorganism - pH, water activity, oxygen availability, temperature and others.	12
III	MICROBIAL FOOD SPOILAGE: Sources of Microorganisms in foods. Some important food spoilage microorganisms. Spoilage of specific food –cereal (rice and wheat), milk, egg, fish, meat and poultry; fruits (apple and orange) and vegetables (potato and tomato) and canned (pineapple and carrot) & baked products (bread and rolls). Factors resposible for food spoilage.	12
IV	<b>FOOD BORNE DISEASES:</b> Microbial intoxication and infections: Sources of contamination of food, Types of food borne infections, food borne intoxications, symptoms and method of control. Food borne illness - <i>Clostridium botulinum, Escherichia coli, Salmonella</i> - The organism, pathogenesis, clinical features and association with foods.	12
V	WATER BORNE DISEASES: Sources of contamination of water, Microbiology of fresh water and waste water, Types of water borne infections -cholera amoebiasis - epidemiology, symptoms, prevention, treatment and method of control.	12
VI	<b>CURRENT CONTOURS:</b> (For Continuous Internal Assessment Only): Visit a food microbiology laboratory and submission of report	

#### Text book(s):

- 1. RC Dubey, DK.Maheshwari "A textbook of microbiology" S chand publishers, 5 th edition, 2023
- 2. Ramesh Singh Food Microbiology, MJP Publishers, 2021
- 3. MO Moss & MR Adams Food Microbiology, New Age Publishers, 2008

#### **Reference book(s):**

1.Frazier William C and Westhoff, Dennis C. Food Microbiology, McGraw Hill Education; Fifth edition 2017

- 2. Garbutt, John. Essentials of Food Microbiology, Arnold, London, 1997.
- 3. Pelczar MJ, Chan E.C.S and Krieg, Noel R. Microbiology, 5th Ed., TMH, New Delhi, 1993.

4. Joanne Willey, Kathleen Sandman and Dorothy Wood, Prescott's Microbiology, 12th Edition, Willey Publications, 2023

#### Web resource(s):

1.https://www.frontiersin.org/journals/microbiology/sections/food-microbiology

- 2. <u>https://microbiologysociety.org/publication/past-issues/food-microbiology.html</u>
- 3.https://vikaspedia.in/health/nutrition/food-borne-diseases-or-food-poisoning

	Course Outcomes										
Upon succes	Upon successful completion of this course, the student will be able to:										
CO No.	Cognitive level (k-level)										
CO1	Memorizing the different characteristic features of microorganisms	K1									
CO2	Tagging the isolation methods and growth of microorganisms	K2									
CO3	Examining the microbial food spoilage from various food materials	K3									
CO4	Distinguish the various food borne diseases and Control measures	K4									
CO5	Appraise the sources of water Contamination and its related disease	K5									

### **RELATIONSHIP MATRIX:**

Course	Pro	gramm	e Outco	omes (P	Os)	Programme Specific Outcomes (PSOs)					Mean Score of	
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs	
CO1	3	2	-	1	-	1	1	2	2	1	1.3	
CO2	1	1	2	3	-	1	2	2	1	2	1.5	
CO3	1	1	2	2	1	2	1	2	2	1	1.5	
CO4	3	2	1	1	2	2	2	1	1	2	1.7	
CO5	2	2	1	2	1	3	2	1	2	1	1.7	
Mean Overall Score												
	Correlation											

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

# Course Coordinator: J. P. Jayasri

Semester	Course Code	Course Cotogomy	Hours/	Cradita	Marks for Evaluation			
	Course Coue	Course Category	Week	Creats	CIA	ESE	Total	
IV	23UND4AC8P	ALLIED - VIII	3	2	20	80	100	
	•		•	•				

Course Title Fundamentals of Food Microbiology - Practical

Exercise	Content for practical	Hours
1.	Study of different equipments in a microbiology lab.	
2.	Safety practices of microbiology laboratory	
3.	Cleaning of glassware and demonstration of sterilization of glassware using hot air oven, autoclave	
4.	Microscopy - Principles, Parts, function and operation.	45 Hours
5.	Microscopic structure of algae, fungi, yeast and bacteria	
6.	Examination of organisms using simple staining technique (Lactophenol cotton blue).	
7.	Examination of organisms using gram staining technique.	
8.	Demonstration of media preparation (PDA medium)	

\* For Theory Core Course, wherever possible

# **Practical manual:** 1. RC Dubey , DK.Maheshwari " Practical manual of microbiology " S chand publishers, 5 th edition, 2023

	Course Outcomes									
Upon suc	Upon successful completion of this course, the student will be able to:									
CO No.	CO Statement	Cognitive Level (K-Level)								
CO1	Illustrate the Microbiological laboratory equipments	K2								
CO2	Apply the safety practices of microbiology laboratory	K3								
CO3	Categorize the microbial groups through staining techniques	K4								
CO4	Contrast the microbial diversity	K4								
CO5	Construct the microbial media preparation	К3								

Course	Pro	gramm	e Outco	omes (P	Os)	Programme Specific Outcomes (PSOs)					Mean Score of	
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs	
CO1	2	3	3	1	-	1	1	2	2	2	1.7	
CO2	1	2	1	2	1	1	1	3	1	1	1.4	
CO3	2	1	1	1	1	3	2	2	1	-	1.4	
CO4	1	2	2	1	-	2	2	1	2	1	1.4	
CO5	3	3	2	2	1	2	2	3	2	1	2.1	
Mean Overall Score												
	Correlation											

# **RELATIONSHIP MATRIX:**

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: JP. Jayasri

Semester	Course Code	Course Cotogory	Hours/	Cradita	Marks for Evaluation			
	Course Code	Course Category	Week	Creats	CIA	ESE	Total	
IV	23UND4GE2	Generic Elective - II	2	2	-	100	100	

#### Course Title CULINARY ART

	SYLLABUS	
Unit	Contents	Hours
I	CULINARY FOUNDATION - I Methods of cooking- Moist heat method, Dry heat method, Combination Method. Preparation Techniques-Handling Knife ,Basic Cuts And Shapes, Cutting Techniques, Preliminary Cooking, Equipment in the kitchen, Hygiene and sanitation.	6
п	<ul> <li>CULINARYFOUNDATION – II</li> <li>Stocks- Introduction Definition of Stock &amp; Glazes. Uses of Stock &amp; Glazes. Classification of Stock.</li> <li>Soups- Classification of soups. Tips for Making Good Soups.</li> <li>Sauces- Definitions, Functions &amp; Uses, Structure of Sauces, Classification of Sauces, Preparation of Basic sauce.</li> <li>Gravies- Introduction, Concept of Dry &amp; Wet Masalas, Pastes used in Indian Cooking, Difference between Gravies &amp; Curries, Preparation of Gravies.</li> <li>Salads- Introduction, Composition of a Salad, Salient Features of Preparing Good Salads,</li> </ul>	6
ш	<ul> <li>INDIAN CUISINE</li> <li>Introduction- Philosophy of Indian cuisine, Features of early Indian cuisine, Tradition, cookware, ingredients, festive cooking in India.</li> <li>Northern India: North-west frontier, Kashmiri, Delhi and Avadhi (Dum Pukht)</li> <li>Eastern India: Bengal, Bihar, Orissa and Arunachal Pradesh</li> <li>Western India: Goa, Gujrat, Kohlapuri, Malwani, Konkan and Agri –Koli</li> <li>Southern India: Karnataka, Kerala , Hyderabadi and Chettinad.</li> </ul>	6
IV	<b>CONTINENTAL CUSINE</b> <b>Historical background</b> - Ethnic cuisine, staple food with regional influences, Ingredients, Emblematic international dishes of different countries <b>Elementary continental cooking:</b> Vegetable preparations, garnishes and accompaniments. Preparation of minimum five continental menus with starter, soup, main course and simple dessert.	6
V	<ul> <li>CULINARY MATH</li> <li>Measurement - Ingredients Measurement, Weight, Volume Count Portion Control, Portion Control in preparation, Portion Control in Plating &amp; Service. Procedure for scaling total yield, Procedure for scaling portion size.</li> <li>Food Cost Calculation- Food Cost percentage, Yield Cost Analysis, Raw Yield Test, Cooked Yield Test, Portion Cost.</li> <li>Inventory Control- Physical &amp; Perpetual Inventory, Inventory Valuation, FIFO (First In First Out) ,LIFO (Last In First Out), FEFO (First Expiry First Out) ,Weighted Average , Inventory Turnover Ratio.</li> </ul>	6
VI	<b>Current Trends</b> * (For CIA only) –Gastronomy. The perception of Gastronomy in society, Modern approach towards study of Gastronomy. History & growth of Indian Gastronomy	

#### **Text Book(s):**

- 1. Fundamentals of Culinary Art (Theory and Practice of Cooking), S Chand and Company, 2013
- 2. Parvinder S.Bali, Theory of Cookery, Oxford University Press, First Edition, 2017
- 3. K. T. Achaya, A Historical Dictionary of Indian Food, Oxford University Press, second edition, 199
- 4. Thangam E. Philip, Modern Cookery For teaching and the trade, Orient Black Swan, volume I and Volume II, sixth edition, 2010
- 5. J Inder Singh Kalra, Prashad Cooking with Indian Masters, Allied Publishers Pvt ltd, 2022

#### **Reference Book(s):**

- 1. K. T. Achaya, Indian food Historical Companion, Oxford University Press, second edition 1997
- 2. J Inder Singh Kalra, Prashad, Cooking with Indian Masters, Allied Publishers Pvt ltd,2022

#### Web Resource

- 1. 101 Things I Learned in Culinary School (Second Edition) Louis Eguaras; Matthew
- 2. The Essential Cook's Kitchen : Traditional Culinary Skills, From Bread making and Dairy to Preserving and Curing Alison Walker.

Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:					
CO No.	CO Statement	Cognitive Level (K-Level)				
CO1	Demonstrate the preparation of stocks, soups, salads, gravies and masalas and various recipes	K1				
CO2	Summarise the historical events that influenced the food culture and emblematic dishes, typical products of different countries and their origin.	K2				
CO3	Organise proper vegetable cuts, justify different cooking methods and Produce cold and hot sauces and their derivatives.	К3				
CO4	Distinguish the relationship between culinary skills and culinary math	K4				
CO5	Prioritise the history and importance of gastronomy and new trends changing in the hotel industry and restaurants	К5				

#### **Relationship Matrix:**

Course Outcomes	rse Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	2	1	3	3	1	2	1	3	2	2.1
CO2	3	2	2	2	1	2	1	1	2	2	1.8
CO3	3	3	2	3	2	3	1	1	2	3	2.3
CO4	3	3	3	3	1	3	2	2	2	2	2.4
CO5	3	3	3	3	2	3	2	3	3	2	2.7
MEAN OVERALL SCORE								2.26			
								CO	RRELA	TION	MEDIUM

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

#### Course Coordinator: N. Asiffa Jabeen

Somostor	Course Code	Course Category	Hours/	Credits	Marks for Evaluation			
Semester	Course Coue	Course Category	Week	Creans	CIA	ESE	Total	
V	23UND5CC9	CORE – IX	6	6	25	75	100	
				II			1	

**Course Title** 

### FOOD PROCESSING AND PRESERVATION

SYLLABUS					
Unit	Contents	Hours			
Ι	<ul> <li>PROCESSING AND PRESERVATION OF CEREALS &amp; PULSES</li> <li>Definition of Cereal Processing and Importance of Preservation</li> <li>Processing of Cereals (Rice, Wheat &amp; Millets)- Pre-processing, Milling, Cooking, Fermentation, Extrusion.</li> <li>Processing of Pulse products- Pre-processing, De hulling, cooking, Fermentation, Sprouting. Fumigation of Pulses.</li> <li>Preservation Techniques- Drying, Canning, Freezing, Vacuum packing. Fortification of Cereals and Pulses.</li> </ul>	18			
II	<ul> <li>PROCESSING AND PRESERVATION OF MEAT AND POULTRY</li> <li>Meat: Quality standardization of meat of processing. Processed meat products-sausages, burger patties, cutlets.</li> <li>Poultry: Quality standardization of fresh produce. Steps involved in Slaughtering, Poultry products.</li> <li>Sanitation &amp; hygiene practices followed in Slaughter houses.</li> <li>Egg: Quality standardization of raw materials. Processed products- pickled eggs and egg based sauces.</li> <li>Fish: Quality standardization of raw materials. Fish processing methods, Processed fish product- canned fish.</li> </ul>	18			
III	<ul> <li>PROCESSING AND PRESERVATION OF FRUITS &amp; VEGETABLES</li> <li>Quality standards for raw materials used in processing Standardization of raw material, primary processing-grading, sorting, cleaning, washing, peeling, slicing and blanching.</li> <li>Preservation of fruits and vegetables – Canning, Food Irradiation.</li> <li>Types of drying and dryers utilized- Tray dryers, Freeze dryers, Spray dryers. General principles and manufacturing processes of preserves, candied fruits, glazed fruits, crystallized fruits.</li> </ul>	18			

	PROCESSING AND STORAGE OF SPICES AND OILSEEDS				
IV	Types of Spices grown in India. Pre and Post-harvest problems during processing, properties, drying, storage. Health and culinary benefits.				
	Manufacturing process of Indian spice powder and pastes- processing, quality standard, storage.				
	Quality standards and Pre Processing of oilseeds for oil extraction.				
	Types of oil extraction: Mechanical and Solvent extraction methods. Steps followed in Oil refining, Hydrogenation, Utilization of de-oiled cake, Quality Control and Testing of oils				
	PACKAGING SOLUTIONS FOR PROCESSED & PRESERVED FOODS				
V	Definition: Understanding the role of packaging in food processing and marketing. Functions: Key functions of packaging – sustainability, protection, containment, and convenience. Modified Atmospheric Packaging.	18			
	Materials: Overview of different packaging materials, such as plastic, paper, and glass, and their specific applications in perishable products.				
	Current Trends *(For CIA only)				
VI	1. Plant based food processing				
	2. Smart food innovations				

#### \* For Theory Core Course, wherever possible

#### Textbook(s):

The Food Lab: Better Home Cooking Through Science by J. Kenji López-Alt, (2019).
 Food Processing and Preservation, G. Subbulakshmi et al., New Age International Publishers, (2021).

3. Textbook of Food Science and Technology, Sharma A, CBS Publishers & Distributers, (2019).

#### **Reference Book(s):**

- 1. Food Processing and Preservation, Sivasankar. B, PHI Learning, (2009).
- 2. Textbook of Spices and Condiments, B.G. Chippa et al., Agrotech Books, (2023).

#### Web Source (s):

- 1. https://www.sciencedirect.com/science/article/abs/pii/S0924224418307027
- 2. https://www.sciencedirect.com/science/article/abs/pii/B9781845694791500201
- 3. <u>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8066757/</u>
- 4. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5030248/
- 5. https://www.sciencedirect.com/science/article/pii/S1319562X21003090

	Course Outcomes						
Upon suc	ccessful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Categorizing the type of food and the required knowledge to process it.	K2					
CO2	Analyze the food processing techniques and apply precisely to achieve better product quality	K4					
CO3	Assessing the techniques and application if it	K5					
CO4	Validating the current techniques utilized in product formulation	K6					
CO5	Exploring and analyze the reactions involved between food and packaging	K4					

Course	Course Programme Outcomes (POs)				Programme Specific Outcomes (PSOs)					Mean	
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	3	2	2	3	2	3	2	3	2	2	2.4
CO2	2	2	3	3	1	3	3	3	3	3	2.6
CO3	3	2	2	3	1	3	1	2	2	3	2.2
CO4	3	1	3	3	3	2	2	2	3	3	2.5
CO5	3	2	3	1	3	2	3	3	3	2	2.5
Mean Overall Score								2.44			
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

# Revision 100 %

Course Coordinator : Ms. A. Ayisha Sukaina

Semester	Course Code	Course Cotogory	Hours/	Credits	Marks for Evaluation			
		Course Category	Week	Creans	CIA	ESE	Total	
V	23UND5CC10P	CORE – X	5	5	20	80	100	
				1		1	1	

**Course Title** 

#### FOOD PROCESSING AND PRESERVATION - PRACTICALS

SYLLABUS						
Exercise	Contents	Hours				
I	Preparation of Selected Jams, Jellies, Marmalades, Preserves, Glazed Fruit candies, Squashes, Ketchup and Sauces. Use refracto meter to check the sugar concentration for the prepared recipes.					
п	Pickling: Preparation of - Fermented Pickle: Sauerkraut, Kimchi. Unfermented Pickle: Lemon, Tomato, Raw Mango, Garlic, Mixed Vegetable Pickles.					
ш	Preparation of Meat products such as Luncheon patties, sausages, cutlets and egg based sauces.					
IV	Preparation of Meat based pickles and Accelerated shelf life study. Preparation of various powders such as instant chutney powders, Indian spice masalas, value added powders and thogaiyals using vegetable peels, fruit skins, roots and tuber skins. Test for pH Measurement and Color Stability					
V	Preparation of dehydrated products vathal, vadam, value added dehydrated products such as crisps, fruit leathers.					

#### Textbook(s):

1. Theory of Bakery and confectionery, Yogambal Ashok Kumar, , PHI Learning private Limited, New Delhi, (2009).

2. A Professional text to Bakery and Confectionary, John Kingslee, New age international (p) Limited, publishers, New Delhi, (2006).

3. Recipes on Ripples, Soju Phillip, Lightning Source, 1st Edition, January, (2018)

#### **Reference Book(s):**

- 1. Recipes on Ripples, Soju Phillip, Lightning Source, 1<sup>st</sup> Edition, January, (2018).
- 2. Masala Lab, Ashok Krish, Penguin, January (2020).

#### Web Resource(s):

- 1. <u>https://m.tarladalal.com/</u>
- 2. https://www.allrecipes.com/recipes/233/world-cuisine/asian/indian/

	Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Grouping to prepare processed products and analyze organoleptic properties	K2					
CO2	Organizing the food processing techniques and prepare precise products with the studied techniques	K4					
CO3	Experimenting different techniques in preparation of varied products	K5					
CO4	Grading the products by understanding the science of the ingredients and techniques required	K6					
CO5	Illustrating and analyzing the keeping quality and sensory evaluation of the prepared food product	K4					

Course	Programme Outcomes (POs)				Programme Specific Outcomes (PSOs)					Mean	
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	3	2	2	3	2	3	2	3	2	2	2.4
CO2	2	3	3	3	1	3	3	3	3	2	2.6
CO3	1	2	2	3	3	3	1	2	2	3	2.2
CO4	3	1	3	3	3	2	2	2	3	3	2.5
CO5	3	2	3	1	3	2	3	3	2	3	2.5
Mean Overall Score										2.44	
Correlation										Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥2.5	High

# Revision

100%

Course Coordinator : Ms. A. Ayisha Sukaina

Semester	Course Code	Course Cotogory	Hours/	Credits	Marks for Evaluation			
		Course Category	Week	Creuits	CIA	ESE	Total	
V	23UND5CC11	CORE –XI	5	5	25	75	100	

**Course Title** 

### FOOD SERVICE MANAGEMENT - I

	SYLLABUS	
Unit	Contents	Hours
Ι	<ul> <li>Food service industry: History and growth of food service industry in India Classification of food service industry: Commercial and non-commercial food service.</li> <li>Commercial: Catering in hotels and specialty restaurants, café/coffee shop, dhabas, Fast food outlets, meals on wheels, food vending machines, On line app-based delivery.</li> <li>Catering in transport services-Air, railway, cruise and space missions.</li> <li>Non-Commercial: Catering in hospitals, educational institutions, industrial catering and Community feeding (religious places)</li> </ul>	15
	<b>Others-</b> Social catering (weddings, functions), contract and outdoor catering services	
п	Ideal Food Plant layout Layout of food plants- Space allocation for the various areas, Work simplification and workflow. Kitchen space- Size and type of kitchen, layout of kitchen, work centers in the kitchen layout. Storage space- Types of storage, planning. Service area- Location and planning. Noise control, Good lighting in different areas, humidity and air conditioning.	15
III	<b>Equipment design and selection</b> Classification of equipmentEquipment for food storage, pre-preparation, cooking, holding, serving, dishwashing and auxiliary equipment. Equipment design, construction and finishes. Factors influencing selection of equipment.; Trends in equipment available in the market. Care of major equipment.	15
IV	Menu planning Definition of menu and types of menu Table d' hote, a'la carte, carte de jour, cyclic, ethnic, speciality menus. Factors affecting menu planning and steps in planning a menu. Designing menu cards using ICT tools. Standardization–Definition, steps and methods. Portion control, stepping up of recipes. Pricing-factors affecting pricing, pricing methods. Elements of cost and Cost control.	15
V	Quantity food purchase, receiving and storage Purchase – food buyer, duties of purchasing officer, Purchasing procedure, objectives of food specification, methods of purchasing, forms used in purchasing control. Receiving - procedures and forms. Storing and issuing- objectives, types of storage- dry, refrigerator and freezers, types of store records and inventory control. Current Trends Use of Robotics (AI) in Food Service operations	15
VI	Current Trends Use of Robotics (AI) in Food Service operations.	

### **Text Book(s):**

- 1. Kotschever, L. and Terrell, M. E. Food Service planning, Layout and Equipment. John Wiley & Sons, Inc., London. (1981)
- 2. Sethi, M, InstitutionalFoodManagement, 2<sup>nd</sup>ed. NewAgeInternationalPvt. Ltd., New Delhi. (2016)
- 3. Saravanavel,, Entrepreneurial Development, Ess Pee Key Publishing House, Chennai. (2005)

#### **Reference Book(s):**

- 1. West B.B, Wood L, Harger V.P, Food Service in Institutions. John Willey and Sons, Inc., New York. (2006)
- 2. Malhotra R.K, Food Service and Catering Management, Anmol publications Pvt Ltd., New Delhi. (2005)
- 3. C.Jain, Handbook for New Entrepreneurs, Oxford University Press.(2012)

#### Web Resource(s):

- 1. https://www.brainkart.com/article/Definition-and-Types-of-Equipment\_35155/
- 2. https://www.mooc-list.com/course/innovation-food-industry-futurelearn
- 3. http://www.ddegjust.ac.in/studymaterial/mba/cp-401.pdf

	Course Outcomes							
Upon suc	Upon successful completion of this course, the student will be able to:							
CO No.	CO No. CO Statement							
CO1	Define the plan layout based on the type of food service.	K1						
CO2	Categorize the equipments based on type and order of use.	K2						
CO3	Determine the appropriate menus for different types of catering.	К3						
CO4	Categorize the procedures for purchase, receiving and storage.	K4						
CO5	Assessing the price and cost for various types of menus.	K5						

#### **Relationship Matrix:**

Course	Programme Outcomes (POs)				Programme Specific Outcomes (PSOs)					Mean	
Outcomes	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of
(COs)											COs
CO1	3	3	2	2	2	3	3	3	2	1	2.4
CO2	3	3	2	1	1	2	2	3	2	2	2.1
CO3	3	3	2	2	3	3	3	3	2	2	2.6
CO4	3	2	3	2	2	3	2	2	2	2	2.3
CO5	3	2	2	1	2	2	2	1	1	1	1.7
Mean Overall Score										2.2	
Correlation										Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

# Revision: 30%

Course Coordinator : S.Basheerunnisa

Semester	Course Code	Course Category	Hours/	Credits	Marks for Evaluation				
	Course Coue	Course Category	Week	Cicuits	CIA	ESE	Total		
V	23UND5CC12	UND5CC12 CORE XII		5	25	75	100		
<b>Course Titl</b>	e	BAKERY & CONFECTIONERY							

SYLLABUS						
Unit	Contents	Hours				
I	<b>INTRODUCTION TO BAKERY :</b> Bakery- Definition, aims , principles, objectives and classification of baking products. Personal hygiene and bakery hygiene required for bakery personnel.Bakery equipment and tools. Identification and handling of raw materials. Permutation formula - °C to°F and °F to°C .Oven at different baking temperatures.	15				
П	<b>ROLE OF MAJOR AND MINOR INGREDIENTS IN BAKING :</b> Role of Major Ingredients : Flour -Types, Flour test and Grading. Millet based flour - types and uses of flour incorporated items biscuits,cookies ,bread ,cake and pastry.Role of yeast, fat and egg in baking. Shortenings - Definition, types and characteristics of good shortenings. Sweetening agent - Definition, types, role and uses of cane sugar, palm jaggery, jaggery and honey. Raising agent -Definition, types of raising agent and role of raising agents. Leavening agents- Definition, types (physical, biological and chemical) and role in baking. Role of minor ingredients: Milk, water, salt, flavours, baking powder and natural colours.	15				
Ш	<b>PRODUCT DEVELOPMENT IN BAKERY</b> Bread - Definition, types, methods, faults and improvers. Prevention of bread spoilage. Cake - Definition, types, methods, icing and cake decorations. Biscuits and Cookies - Definition, types and methods , general procedure of biscuits and cookies making .	15				
IV	<b>INTRODUCTION TO CONFECTIONERY:</b> Confectionery - Definition, aims, principles, objectives and classification of confectionery products. Chocolate - Definition, Types, Different forms in which coco and chocolate are available. Process of chocolate tempering. Chocolate designs, garnish and presentations. Ice Creams - Definition, Various types and methods of ice creams and chocolate bombs. Icing - Definition, Types of Icing (Butter icing, Royal icing, Marzipan icing, Fudge icing, Glaze icing, chocolate icing). Casting molds - Gum paste mold, Fruit strapes mold. Storage of confectionery products.	15				
v	<b>PACKAGING OF BAKERY AND CONFECTIONERY PRODUCTS:</b> Introduction, packaging materials used for bakery and confectionery products. Techniques for packaging of bakery and confectionery products - Flexible packaging, Wrapping styles and Endfold wrappin . Packaging for odd sized biscuits, Modified atmosphere packaging (MAP). Eco-friendly packaging for bakery and confectionery products - Biodegradable Materials, plant-based materials. Eco - labeling and certifications (compostable and biodegradable).	15				
VI	CURRENT TRENDS: Revolutionizing the bakery : Cutting - edge technology and hardware:2024					

#### **Text Book(s):**

1.John Kingslee,"A Professional text to Bakery and Confectionery". New age international (p) Limited, publishers, New Delhi,(2006).

2.Yogambal Ashok Kumar ," Theory of Bakery and Confectionery", PHI Learning private Limited, New Delhi, (2009).

3. Richard W. Hartel "Confectionery science and Technology " (2010)

4.Bhuvaneswari.D and Kavitha.V, "Easy to Bake" Divakar Publications, Trichy (2017).

5.Shri.Anand Yadav, Bakery and Confectionery, Yahwantrao Chavan Maharashtra open University, Nashik (2018).

#### **Reference Book(s):**

1.Yogambal Sivalingam, "Textbook of Bakery and Confectionery, Third edition, PHI Learning private Limited (2023).

2.Sanjay singh , Prof. Kavitha gupta,"Introduction to Bakery and Confectionery ",ISBN-13-978-8119295395 , Tarun publication (2023).

3.K.Arora," Theory of Cookery "Frank Brothers (2008).

#### Web Resource(s):

1.Bakery & Confectionery Technology (pp.11-32)Chapter: 2 Publisher:

https://www.nipabooks.com/info/9789394490512/bakery-confectionery-technology.

2. Most Suitable Food Packaging for Baked Product," https://www.thecustombakeryboxes.com/packaging-blog/most-suitable-packaging-for-baked-products.

3.Developing new confectionery products (https://www.foodresearchlab.com) /our-products/newconfectionery-development.

4. Baking packaging trends,<u>www.bakels.in</u>.

5. Eco packaging – <u>www.recyclingstartup.org</u>.

	Course Outcomes										
Upon suc	Upon successful completion of this course, the student will be able to:										
CO No.	CO Statement	Cognitive Level (K-Level)									
CO1	Highlighting the basic concepts of bakery and confectionery	K1									
CO2	Categorize the raw materials used in bakery	K2									
CO3	Paraphrasing the bakery products development	K3									
CO4	Presenting of various confectionery products	K4									
CO5	Defending the various types and technology of packaging	K5									

Course	Pro	ogramn	ne Outo	comes (	POs)	Programme Specific Outcomes (PSOs)					Mean
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	2	-	1	1	3	3	3	2	3	1	1.9
CO2	3	2	2	2	3	3	3	3	3	3	2.7
CO3	2	2	2	3	3	2	3	3	3	3	2.6
CO4	-	-	1	-	3	3	3	1	3	1	1.5
CO5	-	-	2	1	3	2	3	3	3	2	1.9
Mean Overall Score											2.12
									Co	rrelation	Medium

Mean Overall Score	Correlation
<1.5	Low
≥1.5 and <2.5	Medium
≥ 2.5	High

# <mark>REVISION – 20 %</mark>

Course Coordinator : JP.Jayasri

Semester	Course Code	Course Category	Hours/	Credits	Marks for Evaluation			
	Course Coue	Course Category	Week	creats	CIA	ESE	Total	
V	23UND5DE1AP	DSE -I	5	4	20	80	100	

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COURSE TITLE
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# BAKERY & CONFECTIONERY - PRACTICAL

SYLLABUS	HOURS
LIST OF PRACTICALS	
BAKERY AND CONFECTIONERY	
1.Bread - Plain Bread, Fruit Bread and Garlic bread.	
2.Buns - Sweet Bun and Spice Bun.	
3.Cakes - Sponge Cake , Eggless Cake , Ice cream Cake and Multi Millet Cake .	
4.Pastry - Puff Pastry , Danish Pastry ,Muffins , Millet Pizza and Millet Burger .	
5.Biscuits - Ginger Biscuits, Millet Biscuits and Salt Biscuits.	75
6.Cookies - Butter Cookies, Melting Moments, Piped Cookies and Dutch Cookies.	
7. Chocolate - Milk Chocolate, Pomegranate Cripspop Chocolate and Peanut Chocolate.	
8. Icing - Butter Icing, Chocolate Icing and Royal Icing.	
9.Casting Mold - Candy mold and Fruit strapes mold .	
10. Visit and submission of report about a well - established bakery and confectionery unit.	

**Practical Manual (s):** 

1. Yogambal Ashok Kumar," Theory of Bakery and Confectionery", PHI Learning private Limited, New Delhi,(2009).

2.Bakery - I Students handbook and practical manual, First edition (October 2013).

3.Bhuvaneswari. D and Kavitha.V, "Easy to Bake" Divakar Publications, Trichy, (2017).

	Course Outcomes									
Upon su	Upon successful completion of this course, the student will be able to:									
CO No.	CO Statement	Cognitive Level (K-Level)								
CO1	Defining the techniques to prepare various kinds of breads	K1								
CO2	Categorize and prepare the various types of cakes and icing methods	K2								
CO3	Demonstrate and prepare different types of pastry, biscuits and cookies	K3								
CO4	Execute and develop various chocolates and Casting mold methods	K4								
CO5	Assessing the complete steps involved in bakery and confectionery unit	K5								

Course	Pro	ogramn	ne Outo	comes (	POs)	Programme Specific Outcomes (PSOs)					Mean
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	1	-	-	1	3	3	2	1	3	-	1.4
CO2	-	-	-	1	3	3	2	1	3	1	1.4
CO3	2	1	-	1	2	3	3	1	3	-	1.5
CO4	1	1	-	1	1	3	2	1	3	1	1.4
CO5	2	2	-	2	3	3	2	1	3	1	1.9
Mean Overall Score											1.52
Correlation										Medium	

Mean Overall Score	Correlation
<1.5	Low
≥1.5 and <2.5	Medium
≥ 2.5	High

Revision : 100% Course Coordinator : J P.Jayasri

Semester	<b>Course Code</b>	Course	Hour	Credit	Marks for Evaluation			
		Category			CIA	ESE	Total	
V	23UND5DE1BP	DSE -I	5	4	20	80	100	

# COURSE TITLE FOOD ADULTERATION - PRACTICAL

SYLLABUS	Hours
LIST OF PRACTICALS	
Testing foods adulterants in the different food group and food products	
Detection of water in milk	
Detection of detergent in milk	
Detection of starch in milk	
Detection of mashed potatoes in shee/butter	
II Oils and Fats	
Detection of other oils in coconut oil	
III Sugars and Confectionery	
Detection of sugar solution in honey	
Detection of shalk powder in sugar	
IV Food Crains and Its Products	
Detection of extraneous matter (dust nebble stone straw weed seeds damaged	
grain weeviled grain insects rodent hair and excreta) in food grains	
Detection of ergot (a fungue containing poisonous substance) in food grains	
Detection of excess bran in wheat flour	75
Detection of khesari dal in dal whole and split	
Detection of added colour in food grains	
Detection of iron filings in atta/maida/suji (rawa)	
V Spices and Condiments	
Detection of foreign resin in asafoetida (hing)	
Detection of soan stone or other earthy matter in asafoetida (hing)	
Detection of papaya seeds in black pepper	
Detection of artificial/water soluble synthetic colours in chilli powder	
Detection of grass seeds coloured with charcoal dust in cumin seeds	
Detection of argemone seeds in mustard seeds	
Detection of lead chromate in turmeric whole	
Detection of artificial colour in turmeric powder	
Detection of sawdust and powdered bran in powdered spices	
Detection of extraneous matter (dust, pebble, stone, straw, weed seeds, damaged	
grain. grain, insects, rodent hair and excreta) in whole spices	
Detection of fennel seeds in cumin seeds	
VI. Miscellaneous	
Detection of malachite green in green chilli and green vegetables	
Detection of artificial colour on green peas	
Detection of white powder in iodised salt	
Differentiation of common salt and iodised salt	
Detection of exhausted tea in tea leaves	
Detection of iron filings in tea leaves	
Detection of wax polishing on apple	
Detection of chicory powder in coffee powder	

**Practical Manual (s):** 

1. FSSAI, Manual of Methods of Analysis of Foods Instruction manual-part I, (2012)

2. FSSAI, DART (detect adulteration with rapid test), (2015)

3. FSSAI, Manual of Methods of Analysis of Foods, Food additives (cereals, pulses, fruits and vegetables, spices, oils and fats), Food Safety And Standards Authority Of India Ministry Of Health And Family Welfare, Government Of India, New Delhi (2016)

	Course Outcomes									
Upon	Upon successful completion of this course, the student will be able to:									
CO No.	CO Statement	CO Statement								
CO1	Retrieving about the common food adulterants and their detection method	K1								
CO2	Categorizing the different adulterants in various food products	K4								
CO3	Grouping the standards and composition of foods and role of consumer	K2								
CO4	Judging the knowledge in the legislator aspects of adulteration	К3								
CO5	Detecting the different chemical additives in foods products	К5								

#### **Relationship Matrix:**

Course	Pı	ogram	me Out	comes	(POs)	Progr	Mean				
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	1	-	-	1	3	3	2	1	3	-	1.4
CO2	-	-	-	1	3	3	2	1	3	1	1.4
CO3	2	1	-	1	2	3	3	1	3	-	1.5
CO4	1	1	-	1	1	3	2	1	3	1	1.4
CO5	2	2	-	2	3	3	2	1	3	1	1.9
Mean Overall Score											1.52
Correlation											Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Revision : 100 % Course Co-ordinator : Dr.V.Kavitha

Sem	Course Code	Course Category	Hours/	Credits	Marks of Evaluation		ation
			Week		CIA	ESE	Total
V	23UND5SE1	Skill Enhancement Course - I	2	1	-	100	100
Course	Title	RACTICE	CS IN FOO	D INDUST	RY		

	SYLLABUS	
Unit	Contents	Hours
	Introduction to Entrepreneurship in the Food Industry	
	Definition and importance of entrepreneurship, Characteristics of successful	
Ι	entrepreneurs, Role of entrepreneurship in the food industry	6
	Overview of Food Industry: Current trends in the food industry, Types of food	
	businesses - restaurants, food manufacturing and food retail, Challenges and	
	opportunities in the food industry	
	Idea Generation and Concept Development: Identifying business opportunities in the	
	food industry, Market research and consumer analysis, Idea generation techniques –	
Π	brainstorming and design thinking, concept testing and validation, value proposition.	6
	<b>Developing a Business Plan</b> : Components of a business plan - executive summary.	-
	marketing plan financial plan. Business plan tools and templates. Presenting and pitching	
	the business plan to investors.	
	<b>Product Design and Development:</b> *Understanding consumer needs and trends* Steps	
	in product development Innovation & Concept development Prototyping and product	
	testing Packaging and labeling	
ш	Market Segmentation and Branding: Identifying target markets and customer	6
111	segments Consumer behavior in the food industry Social media marketing and content	U
	creation E-commerce and online food delivery platforms. Influencer marketing and	
	partnerships Branding and Brand Management: Creating a strong brand identity	
	Brand communication Managing brand equity and reputation	
	Financial Management and Supply Chain Management: Understanding financial	
	statements income statement balance sheet cash flow Budgeting and financial	
	statements - income statement, balance sneet, cash now, budgeting and infancial forecasting. Cost control and profit margin management. Venture conital loops grants	
<b>TX</b> 7	rorecasting, Cost control and profit margin management, venture capital, , loans, grants	(
1 V	and alternative financing methods Supply Chain Management in the Food Industry Location selection and facility	0
	Supply Chain Management in the Food moustry: Location selection and facility	
	ayout, Ose of equipment and technology in food production, Starring and numan resource	
	Seeling and Crowth Strategies	
	Scaling and Growth Strategies Strategies for scaling a food business. Expansion options: franchising new markets	
	strategies for scaling a food business, Expansion options. Indictinging, new markets,	
	Entropronourial Schomes and Quality Management:	
	Covernment Initiatives: Central Covernment schemes - Startup India 20 Prime	
	Minister's Employment Generation Program (PMEGP) MUDPA scheme Digital India	
	Initiativa Standun India Schome State Covernment schemes Temil Nedu stortun and	
V	Innuative, Standup India Scheme. State Government schemes – Tanin Nadu startup and Inneviation Deliay. Tamil Nadu small industries development correction (TANSIDCO)	2
v	schemes. Women's Empowement scheme (Mahalir Thittam). Tamil Nadu Entrepreneur	4
	Development Program (TNEDP). Thirwellwar Agri Entropropourship Development	
	Schome	
	Institutions supporting antropropourship. National Small Industries Composition	
	(NSIC) Small Industrias Development Penk of India (SIDPI) Insubation contract	
	Venture Capitalists	
	Venture Capitalists. Food Sofaty and Quality Management: Importance of food sofaty in product	
	development ESSAL and HACCP Quality control and assurance practices	
	Current Trands (For CIA only)	
VI	Sustainability and Ethical Practices. Sustainable sourcing and production. Waste manage	rement
V I	and reduction. Ethical considerations and corporate social responsibility	sement
	and reduction, Buncal constantions and corporate social responsionity	

#### **Text Book(s):**

1.Bergh, P., & McKay, K. Food Entrepreneurship: Market Trends, Business Models, and Innovation. Routledge (2019).

2.Hisrich, R. D., Peters, M. P., & Shepherd, D. A. Entrepreneurship (11th ed.). McGraw-Hill Education 2020.
3. Khanka. S.S., Entrepreneurship Development, S Chand & Company, (11<sup>th</sup> edition), (2007).

#### **Reference Book(s):**

1. Berlow, A. The Food Entrepreneur's Handbook: Start, Grow, and Succeed in the Food Business. Storey Publishing(2013).

2.Fromm, J., & Read, A. Marketing to Millennials: Reach the Largest and Most Influential Generation of Consumers Ever (2nd ed.). AMACOM (2015).

3. Glover, J. Food Safety and Quality Management: Techniques and Tools for the Food Industry. Wiley-Blackwell (2015).

#### Web Resource (s)

https://www.foodbusinessnews.net

https://foodtechconnect.com

https://haccpmentor.com

www.socialmediaexaminer.com

https://www.foodprocessing.com

	Course Outcomes						
Upon succes	Upon successful completion of this course, the student will be able to :						
CO No.	Cognitive Level (K-Level)						
CO1	Interviewing the entrepreneurial concepts to identify potential challenges and opportunities within the food industry.	K3					
CO2	validating business idea by applying design thinking principles and market research insights.	K5					
CO3	Analyze the effectiveness of different product testing methods in refining a food product before its market launch.	K4					
CO4	Interpreting the principles of budgeting, financial forecasting and cost control within the food industry.	K2					
CO5	Reviewing a comprehensive scaling strategy for a food business and implement a robust food safety and quality management system	K5					

#### **Relationship Matrix:**

Course	Course Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)				
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs	
CO1	3	3	2	2	2	3	3	3	2	1	2.4	
CO2	3	3	2	1	1	2	2	3	2	2	2.1	
CO3	3	3	2	2	3	3	3	3	2	2	2.6	
CO4	3	2	3	2	2	3	2	2	2	2	2.3	
CO5	3	2	2	1	2	2	2	1	1	1	1.7	
Mean Overall Score										2.2		
Correlation										Medium		

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
$\geq$ 2.5	High

#### Revision : 100 % Course Coordinator: Dr. J. Harine Sargunam

Semester	Course Code	Course Cotogory	Hours/	Cradita	Marks for Evaluation		
	Course Coue	Course Category	Week	Creatis	CIA	ESE	Total
V	23LIND5SE2D	Skill Enhancement	2	1	-	100	100
	23UIND58E2P	Course - II					

#### **Course Title** Application of Computer in Nutrition and Dietetics - Practical

SYLLABUS					
Exercise	Contents	Hours			
	Working techniques with E-mail on a computer				
Ι	Working with files and folders. <b>Control panel:</b> Installation and Uninstalling of new programs, changing passwords and security options.	6			
	Browsing: nutrition-related content and journal website, downloading images, creating e-mail ID, composing, sending and receiving emails,				
	Application of Ms Word in Nutrition related content framing	6			
II	Tables and List, Create and Manage References, Insert and Format Graphic Flement Hyperlink				
	Application of Ms Power point in presentation with animation on nutrition				
	related topics				
III	Create and Manage Presentations, Insert and Format Text, Shapes, Images, Insert	6			
	Tables, Charts, SmartArt, and Media, and Apply Transitions and Animations.				
	Application of Ms Excel for dietary calculation				
	Manage Workbook Options and Settings, Apply Custom Data Formats				
IV	and Layouts, Create Tables, Perform Operations with Formulas and	6			
	Functions, Create Charts and Objects, Manage Workbook Options and				
	Settings.				
	Nutrition education aids using-AI-Tools				
V	Google Scholar, Canva-Creating pamphlets, and pictorial posters for education. Grammarly- Improve writing by enhancing grammar, speechify-paper reading tools, Dublichecker-Plagiarism checking, and Inshort-video content making for nutrition-related topics.	6			

#### **Text Book(s):**

1. K. Pradeep Sinha and Priti sinha, Computer Fundamentals-Concepts, systems and applications, Third Edition, BPB Publications, New Delhi (2003).

2. E Balagurusamy, Fundamentals of Computers, Tata McGraw Hill Education Private Limited New Delhi, 2009.

**Reference Book(s):** 

1. Juuso Rytilahti, Oshani Weerakoon AI Tools for Study Material Generation, A Practical Guide for University Teachers, 2023

#### Web Resource(s):

1. https://www.cga.ct.gov/2024/gldata/TMY/2024SB-00002-R000229-Bastian,%20Kenneth--TMY.PDF

2.Microsoft Word - Canva Userguide\_v5\_5172020.docx (d31kydh6n6r5j5.cloudfront.net)

3. <u>https://s3.amazonaws.com/lumenlearning/success/tx/sanjac/English-Composition-1\_12-6-16.pdf</u>

	Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Inferring file management through basic computer operations	K1					
CO2	Experimenting the documents with graphic elements and hyperlinks.	K2					
CO3	Implementing animations and transitions for engaging content delivery.	К3					
CO4	Linking data by creating charts and graphs.	K4					
CO5	Reviewing AI tools to improve nutrition research.	К5					

Course	Pro	gramm	e Outco	omes (P	Os)	Programme Specific Outcomes (PSOs)					Mean Score of
mes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	2	2	3	1	3	2	2	2	3	2.3
CO2	3	3	3	2	1	3	2	2	2	3	2.4
CO3	3	2	2	3	1	3	2	2	2	3	2.3
CO4	3	3	2	2	2	3	2	2	2	3	2.4
CO5	3	2	1	3	2	3	2	2	2	3	2.3
Mean Overall Score											2.32
Correlation										Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥2.5	High

Revision : 20 % Course Coordinator: S. SHEERIN

Semester	C	ounce Code	Course Cotogony	Hours/	Credita	Marks for Evaluation			
	U	ourse Code	Course Category	Week	Creans	CIA	ESE	Total	
VI	231	UND6CC13	CORE-XIII	5	5	25	75	100	
Course Title		FOOD SERVICE MANAGEMENT - II							

SYLLABUS						
Unit	Contents	Hours				
I	<ul> <li>Introduction to Food production system and Style of service</li> <li>Types: Conventional, Commissary, Ready prepared (Cook chill /cook freeze)</li> <li>Assembly line system, Cloud kitchens.</li> <li>Style of service: Formal Service-Banquet, Restaurant and Buffet.</li> <li>Semi formal service- Fast food outlet, Cafeteria, Room service, Hospital service, Travel service- Railway, Airline and Bus. Informal service- Dhabas, coffee shop, counter service, canteen service, vending and Take-away service.</li> </ul>	15				
II	<ul> <li>Food service management: Management – Definition, Principles of management.</li> <li>Approaches to management-Classical, Neoclassical, MBO, Systems approach, Behavioural, Human relations approach, Contingency approach, JIT (Just in time) approach and TQM approach.</li> <li>Tools: Tangible tools- Organizational chart -structure of an organization, Job description, Job specification, Job analysis. Intangible tools. Leadership- definitions, essential qualities of a good leader, Leadership styles. Communication -definitions, communication skills, process and barrier. Management of Resources-money, space, time, energy, equipment.</li> </ul>	15				
III	<ul> <li>Human Resource Management</li> <li>Recruitment-definition, source of recruitments. Selection-definition. steps involved in selections</li> <li>Orientation-definition, methods and process.</li> <li>Employee training and development-Types and methods of training.</li> <li>Performance appraisal-definition and its methods. Promotion approach, Human relationships</li> <li>between employer and employee. Employee benefits: financial and non-financial incentives</li> <li>Labour Legislations- Labour laws relating to payments and working conditions in catering establishments</li> </ul>	15				
IV	<ul> <li>Financial management:</li> <li>Financial and Management accounting -definition, Application of management accounting in catering operation.</li> <li>Budgeting- Definitions, classifications of the budget-capital, operating and master Accounting system – Accounting techniques-single and double entry system, advantages of double entry system. Types of accounts.</li> <li>Books of Accounts-purchase, purchase return, sales, sales return, cash, ledger, journal, trial balance, profit and loss account and balance sheet.</li> </ul>	15				

	Fuel and Food waste management:					
	Fuel management- types of fuel, merits and demerits, fuel saving economy in					
	relation to food service industries.					
	Food waste management - Plate waste, waste treatment, Disposables used by					
	catering establishments *Waste Disposable Management Guidelines by FSSAI*					
	Hygiene and sanitation - definition, importance, environmental hygiene and					
	sanitation. Hygiene in food handling, personnel hygiene, *importance of pest and					
	rodent control in food service units *	15				
V	Disaster management: challenges faced by food service industry during flood,	15				
v	tsunami, fire accidents, and pandemic situations.					
	Experiential Learning:					
	i)A Field visit to the food service industry- (commercial / non-commercial /contract					
	catering) prepare and submit a report- Type, origin, organisational chart, managing					
	manpower, fuel and food waste in the food service.					
	ii)Prepare a job description and job specification for Food service staff					
	iii) <b>Roleplay</b> of different leadership skills.					
	iv)Case study – Food waste management, Hygiene and sanitation of the food					
	service establishments -prepare and submit the report.					
	Current trends in food service Industry : * (For CIA only)					
VI	i) FSSAI regulatory requirements for Food Service.					
	ii)Managing Artificial Intelligence (AI) in food service technology-concept and application					
VI	<ul> <li>i) FSSAI regulatory requirements for Food Service.</li> <li>ii) Managing Artificial Intelligence (AI) in food service technology-concept and appli</li> </ul>	cation				

\* .....\* Self-study portion

#### Text Book(s):

- 1. Mohini Sethi, Institutional Food Management, New Age International (P) Limit Publishers New Delhi, Reprint, 2011.
- 2. Sudhir Andrews, Textbook of Food and Beverage Management, Tata McGraw-Hill publishing company Limited, New Delhi,2008.

#### **Reference Book(s):**

1. Benard Davis, Andrew Lockwood, Sally stone, Food and Beverage Management, Butterworth -Heinemann, An Imprint of Elsevier, Linacre House, Joran Hill, Burlington MA, 1998 2. R. Singaravelavan, Food and Beverage, Oxford University Press, New Delhi, 2011.

#### Web Resource(s):

- 1.<u>https://egyankosh.ac.in > bitstream > Unit-11</u>
- 2.https://www.fssai.gov.in/cms/food-safety-and-standards-regulations.php
- 3.<u>https://www.anfponline.org > docs > fpc072023</u>

	Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Memorizing and acquire knowledge about various food service systems based on food production systems.	K1					
CO2	Paraphrasing the skills to obtain various managerial functions in the food service units.	K2					
CO3	Tagging knowledge about activities of the human resources department, employee benefits and labor laws to work in food service industry	K2					
CO4	Validating the budget and account books related to financial management aspects in food service units	К5					
CO5	Experimenting the concept of Food waste management, Hygiene and sanitation (Guidelines by FSSAI) in food service institutions.	K5					

Course Outcomes	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	1.5	1	1.5	1	2	1.5	1	1.5	1	1.5	1.35
CO2	1	1	1.5	1	1.5	1	1	1	1	2	1.2
CO3	2	1	2	1	2	2	1	1.5	1	2	1.55
CO4	1	1	1.5	1	1.5	1.5	1	1.5	1	1.5	1.25
CO5	2	1	2	1	2	2	1	1.5	1.5	2	1.6
Mean Overall Score										1.39	
Correlation										Low	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

# Revision -15 %

Course Coordinator: B. RAJALAKSHMI

Somostor	Course Code	Course Cotogory	Hours/	Credits	Marks for Evaluation			
Semester	Course Coue	Course Category	Week	Cicuits	CIA	ESE	Total	
VI	23UND6CC14P	ND6CC14P CORE –XIV		5	20	80	100	
Course Ti	tle FOOD SER	<b>RVICE MANAGEMENT -</b>	PRACT	ICAL				

SYLLABUS					
Unit	Contents	Hours			
Ι	<ul> <li>Planning, compiling and preparation of menus for different regions</li> <li>a. Indian Menu -south, north, east and west regions - Thali meals and mini</li> <li>meals</li> <li>b. Western Menu- Italian, French cuisine, Chinese, Thai and Mediterrenean-</li> <li>breakfast, dinner menu.</li> </ul>				
II	Standardization of selected recipes and their preparation, calculation of cost and serving size per yield.	75			
III	Preparation of standardized recipes for 10 members.				
IV	Demonstration on Table setting and Napkin fold Table setting – A'la carte, Table de' hote, Breakfast, High tea and lunch cover. Napkin fold - Basic napkin folds.				
V	Field Visit to a hotel industry or catering establishment				

#### Text Book(s):

1. West's and Woods 'Introduction to food service, 2nd Edition, Mac Millan Publishing, NewYork, 1998.

**Reference Book(s):** 

1. Mohini Sethi, Institutional Food Management, New age international (p) limited Publishers New Delhi, reprint 2005.

Web Resource(s):

1. https://www.jaypeehotels.com/blog/top-7-famous-international-cuisines-in-the-world

	Course Outcomes					
Upon suc	cessful completion of this course, the student will be able to:					
CO No.	CO No. CO Statement					
CO1	Retrieving the menus of various regions of India and World.	K1				
CO2	Summarize the menu planning and compiling of different regions.	K2				
CO3	Examining menu of different regions.	К3				
CO4	Analyze the cost and serving size per yield.	K4				
CO5	Assess and select appropriate table settings and napkin folding for various meals and occasions.	K5				

Course	Pro	gramm	e Outc	omes (P	POs)	Programme Specific Outcomes (PSOs)					Mean
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	3	2	2	3	2	3	2	3	2	2	2.4
CO2	2	1	3	2	3	3	3	3	3	3	2.6
CO3	3	2	2	1	1	3	3	2	2	3	2.2
CO4	3	1	3	3	3	2	2	2	3	3	2.5
CO5	2	2	3	1	3	2	3	3	3	3	2.5
Mean Overall Score										2.44	
Correlation										Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥2.5	High

**Revision: 10% Course coordinator: S.Basheerunnisa** 

Semester	Course Code		Hours/	Caralla.	Marks for Evaluation			
		Course Category	Week	Credits	CIA	ESE	Total	
VI	23UND6CC15	CORE –XV	5	5	25	75	100	

# Course Title COMMUNITY NUTRITION

SYLLABUS					
Unit	Contents	Hours			
I	HEALTH, NUTRITION AND MALNUTRITION Definition – Health, Nutrition, Community, Family and Village. Concept of community and nutrition Scope of community nutrition Malnutrition- Meaning of optimum nutrition, under nutrition and over nutrition. Causes of Malnutrition– Vicious cycle of malnutrition, factors contributing of malnutrition in the community – food habits, customs and practices, availability of food, socio-economic factors, ignorance, social- cultural factors housing and hygienic conditions. #Food fads and fallacies#	15			
п	ASSESSMENT OF NUTRITIONAL STATUS OF THE COMMUNITY Nutritional Status (Assessment and Surveillance)- Meaning and need Objectives & Importance Direct and Indirect Assessment- anthropometry, biochemical, clinical and diet survey. Characteristics of community- demography, vital statistics, morbidity and mortality, Infant Mortality Rate (IMR), Maternal Mortality Rate (MMR), Current Scenario of IMR and MMR.	15			
III	<ul> <li>NUTRITIONAL PROBLEMS CONFRONTING THE COMMUNITY -</li> <li>PREVALENCE, ETIOLOGY, CLINICAL FEATURES AND PREVENTION THROUGH FOOD.</li> <li>Protein Energy Malnutrition, Micro nutrient Deficiencies- Iron Deficiency Anemia-prophylaxis programme, Iodine Deficiency Disorder- Fluorosis, Vitamin A deficiency, Vitamin D deficiency, Zinc Deficiency, Calcium Deficiency, B Complex deficiency disorders</li> <li>HAZARDS IN COMMUNITY HEALTH</li> <li>Adulteration in food, definition, types of adulterants. Pollution of water &amp; Waste disposal Contamination with Agro-chemicals. Food born pathogens Sociological Factor in the Etiology and Prevention of Malnutrition, Food production and availability, Cultural influences , Socio – economic factors &amp; Conditioning factors, Food consumption -Medical and educational services.</li> </ul>	15			
IV	<ul> <li>ROLE OF NATIONAL AND INTERNATIONAL ORGANIZATIONS</li> <li>State level feeding programme – Morning breakfast programme, mid- day meal programme and integrated child development services. (ICDS)</li> <li>National organizations - Indian council of medical research (ICMR), National institute of nutrition(NIN), National Nutrition Monitoring Bureau (NNMB), central food technological research institute(CFTRI), Defense food research laboratory (DFRL) and National institute of public cooperation and child development, National Rural Development Programme(NRDP), National Rural Employment Programme (NREP), National Institute of public Co-operation and child development (NIPCCD)</li> <li>International organizations – world health organisation (WHO), Food and Agriculture organization (FAO), United Nations International children's Emergency Fund (UNICEF), United Nations Educational Scientific and Cultural Organisation, Co-operative for assistance and relief everywhere and world bank.</li> </ul>	15			

	<b>NUTRITION EDUCATION</b> Meaning, nature and importance of nutrition education to the community. Channels of Nutrition education, principles of planning, executing and evaluating nutrition education programmes. Problems in conducting nutrition education	
	programmes.	
	Nutrition apps: NutriAIDE, MyPlate Calorie Counter, Nutrify India Now, NIN	
V	Health Calculator English, NIN Nutrition Uttasathu Tamil	15
	Classification of Extension Teaching Methods	
	According to Use, According to Form, classification according to function, according	
	to the stages of innovation decision process, according to the stage of learning process,	
	According to learning objectives, According to adopter categories, Factors influencing	
	the selection of extension teaching methods, Extension methods useful for Nutrition	
	education (AIDCAS), Factors influencing the combination of extension methods	
VI	Current Trends	
	Geographic information systems(GIS) for food access mapping	
	Tele health nutrition conuselling	

#### Text Book(s):

- 1.. Park K, Preventive and Social Medicine, 21st Edition, Banarsidas Bhanot Publishers. 2011
- 2. Swaminathan M, Handbook of Food and Nutrition, BAPPCO Publishers, Bangalore. 2014
- 3. Srilakshmi B, Nutrition Science, New Age International Publishers, New Delhi. 2014
- 4. Begum R. M, A Textbook of Foods, Nutrition and Dietetics, 3rd revised edition, Sterling Publishers Pvt. Ltd New Delhi

#### **Reference Book(s):**

1. Bagchi,K. 1990. Guidelines for the management of nutrition programmes- a manual for nutrition officers. WHO EMRO Technical Publication no. 15, WHO, Geneva

2. Bendich, A and Deckelbaum, RJ, 1997. Preventive Nutrition. The Comprehensive guide for health professional.

#### Web Resource(s):

https://www.fao.org/nutrition/education/healthy-eating-resources/en/

https://vinu.libguides.com/nutrition/onlineresources

https://guides.gccaz.edu/nutrition/websites

	Course Outcomes						
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Defining the concepts of community nutrition	K1					
CO2	Annotating the factors affecting nutritional status	K2					
CO3	Executing the role of community nutrition program	К3					
CO4	Distinguishing the relationship between Nutrition and chronic diseases	K4					
CO5	Exemplifying the schemes, programmes and policies of India to combat malnutrition and micronutrients	K2					

Course	Course Programme Outcomes (POs)						Programme Specific Outcomes (PSOs)					
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs	
CO1	2	1	1	1	1	1	2	1	2	2	1.4	
CO2	1	1	2	1	2	1	2	2	2	2	1.6	
CO3	2	2	1	2	2	2	1	1	2	1	1.6	
CO4	1	1	2	1	2	1	1	1	2	2	1.4	
CO5	2	2	1	2	2	2	2	1	2	1	1.7	
Mean Overall Score										1.54		
									Cor	relation	Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Revision: 25 percent Course Co-ordinator: Dr. A. Sangeetha

Somestan	C	ourse Code	Course Cotogowy	Hours/	Credita	Marks	for Eva	luation
Semester	U	Jurse Code	Course Category	Week Credits				Total
VI	23	UND6CC16	Core - XVI	5	5	25	75	100
Course Ti	tle	FOOD SAF	<b>ETY AND QUALITY CO</b>	NTROL				

#### **SYLLABUS** Unit Hours Contents **Introduction to Food Safety** Definition- Food safety, Risks and hazards: Food hazards - Physical, Chemical and Microbial. Ι 15 Food Hygiene and Handling - Definition, Basic aspects of Personal Hygiene, Education of food handler in handling and serving food, Importance of personal hygiene of the food handler. **National Food Authorities** Food Safety and Standards Act & FSSAI- structure and organizational chart, responsibilities of the food business operator, licensing and registration of food Π business. 15 Food Safety Officer and their roles. Food Analysist and their roles. Laws relating to food processing industries in India - AGMARK, Essential Commodities Act. BIS. ISO 22000 and APEDA. **Universal Food Authorities** World Trade Organization- functioning and responsibilities. Codex alimentarius- history, operations & responsibilities. III 15 WHO-history, operations and responsibilities. ICGFI, FDA, MMPO– Role and functions **Quality Control Measures** Introduction, Subjunctives and Objectives of food safety and quality control Food adulteration: common adulterants, simple tests for detection of adulteration. IV 15 Food additives- classification, functional role and safety issues, types of adulteration and recent trends in food adulteration. Food Hazard Control Measures - FSMS, HACCP, GMP, CGMP, GHP and GAP Food packaging and labelling regulations Introduction to food packaging, importance, types, regulations and specification, V testing and quality control of packaging materials and packaging laws. 15 Introduction to food labeling. Importance of food labeling and nutritional labeling. Labels- regulations and specifications and labelling laws. VI **Current Trends** \* (For CIA only) – Bar-coding technology in labelling

Text Book(s):
Ali, A. A., & Joshi, S. Food Safety and Quality Management: A Comprehensive Approach. CRC Press. (2018).
Reference Book(s):
Potter, N.N., Food Science, CBS Publishers, ND.2007
Sethi, Mohini, Food Science, CBS Publishers, ND. 2001

Manay, N.S. Foods: Facts & Principles, Wiley Eastern Ltd., ND.2005

Web Resource(s):

https://www.pdfdrive.com/food-safety-handbook-e13966331.html

https://www.amazon.in/Food-Safety-Management-Chapter-Personal-ebook/dp/B019ZU7PGC

https://www.elsevier.com/books/food-safety-and-quality- systems-in-developing-

countries/gordon/978-0-12-814272-1

Course Outcomes							
Upon suc	Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)					
CO1	Defining the food safety, hazards and hygiene	K1					
CO2	Relating the national systems and organizations involved in food safety	K2					
CO3	Examine the regulating international authorities for food safety	К3					
CO4	Categorizing the quality control measures	K4					
CO5	Defending the food packaging and food labeling regulations	K5					

#### **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Score of				
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	2	1	3	1	2	3	1	2	3	1	1.9
CO2	1	2	3	2	3	2	2	3	1	3	2.2
CO3	3	3	2	1	2	2	1	3	2	1	2.0
CO4	3	2	1	2	2	1	3	2	3	2	2.1
CO5	2	3	1	3	1	1	2	1	2	2	1.8
Mean Overall Score										2.0	
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Revision : 15 % Course Coordinator : Ms.K.Priyadharshini

Semester	Course Code	Commo Cotogomy	Hanna	Credita	Marks	for Eval	luation
	Course Code	Course Category	Hours	Creatts	CIA	ESE	Total
VI	23UND6DE2A	DSE-III	4	4	25	75	100

#### Course Title INSTRUMENTATION IN FOOD ANALYSIS

	SYLLABUS	
Unit	Contents	Hours
I	GeneralPreparation of samples for food Analysis: Grinding dry materials, grinding moistmaterials, enzymatic and chemical treatmentGeneral application and chemical Composition: Determination of moisture – Airoven methods, Distillation methods, chemicals methods, physical methodsAsh and minerals – Determination of ash, ashing procedures for elemental analysis	12
п	Spectroscopic Instrumentation for food analysis – Working Principles and applications UV-Visible Spectroscopy, Atomic-Absorption Spectroscopy (AAS) ,Mass spectroscopy, Fourier Transform Infrared Spectroscopy (FT-IR)	12
III	Chromatographic techniques for food analysis – Working Principles and Applications: Paper and thin layer chromatography, Column chromatography, HPLC, HPTLC, Gas – liquid chromatography, GC-MS,	12
IV	<b>Rheological methods and instrumentation – Working Principles and applications</b> Rheological Properties, Rheological methods and instrumentation, Measuring thecomponents of Food texture	12
V	<b>Rheological Instrumentation</b> : Wire cutting, Circular Cutting Devices, Cone Penetrometer of Varying Dimensions Pea Tenderometer, The Warner – Bratzler Shaler Test Kramer Shear Press, Instron Machine, The Ottawa Texture Measuring System General Foods Texturometer, Other Instruments	12

#### **Text Book(s):**

- Pomeranz. Y and Clifton E. Meloan, Food Analysis : Theory and Practice, 2004. 3<sup>rd</sup> Edition, CBS Publishers & Distributors PVt, LTd.
- 2. S.Ranganna, Hand Book of Analysis and Quality Control for Fruit and Vegetable Products, TataMcGraw-HillPublishingCompanyLimited,New Delhi, 2004.
- 3. S.Sadasivam, A.Manickam, biochemical methods, New Age International Publisher, New Delhi, 2004.

#### Web Resource(s):

1.<u>https://fssai.gov.in/upload/uploadfiles/files/Manual\_Spices\_25\_05\_2016(1).pdfhttps://ttps://www.fssai.g</u>ov.in/upload/uploadfiles/files/MILK\_AND\_MILK\_PRODUCTS.pdf
	Course Outcomes									
Upon suc	Upon successful completion of this course, the student will be able to:									
CO No.	O No. CO Statement									
CO1	Defining the principles behind analytical techniques	K1								
CO2	Categorizing modern instrumental methods to analyse proximate composition of foods	K2								
CO3	Determine the nutrient content of food analysis by standard methods	К3								
CO4	Correlating the purposes and methods of food analysis in research and food industry	K4								
CO5	Assessing the Rheological Properties of food by Instrumentation	К5								

Course	Pro	gramm	e Outco	omes (P	Os)	Progr	Mean					
Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs	
CO1	3	3	2	2	2	3	3	3	2	1	2.4	
CO2	3	3	2	1	1	2	2	3	2	2	2.1	
CO3	3	3	2	2	3	3	3	3	2	2	2.6	
CO4	3	2	3	2	2	3	2	2	2	2	2.3	
CO5	3	2	2	1	2	2	2	1	1	1	1.7	
Mean Overall Score												
Correlation												

Revision : 100 % Course Coordinator: Asiffa Jabeen. N

SemesterCourse CodeCourse CategoryWeekCreatisCIAESETotalVI23UND6DE2BDiscipline Specific Elective - II442575100	Semester	Course Code	Course Cotogory	Hours/	Cradita	Marks for Evaluation			
VI23UND6DE2BDiscipline Specific Elective - II442575100		Course Coue	Course Category	Week	Creans	CIA	ESE	Total	
	VI	23UND6DE2B	Discipline Specific Elective - II	4	4	25	75	100	

**Course Title** 

SPORTS NUTRITION

	SYLLABUS	
Unit	Contents	Hours
Ι	Introduction to Sports nutrition Meaning and importance of sports nutrition. Different types of sports. Physiological changes during sports and exercise. Nutritional requirements for Sports and exercise. Nutritional consideration for sports person as compared to normal active person. Energy substrate for activities of different intensity and duration.	12
п	<ul> <li>Carbohydrate – requirements, functions, Carbohydrate as energy source for sports and exercise. Glycogen re-synthesis and carbohydrate loading. Consumption of carbohydrate – pre exercise, during and after exercise. Factors affecting utilization of carbohydrates during exercise.</li> <li>Protein and amino acid – requirements, importance of protein and amino acids during sports. Protein supplements and high protein diets. Factors affecting protein turnover during endurance exercise, resistance exercise and recovery process.</li> </ul>	12
ш	Lipids – requirements, Role of lipids, Fat stores, oxidation of fats, factors affecting fat oxidation (intensity, duration, training status and carbohydrate feeding).Utilization of fats, Factors that influence the fat utilization – total fat intake, high carbohydrate diets, dietary fibre and alcohol. Importance of micronutrients for sports – Role of vitamins(Vitamin A, D and B vitamins), minerals (Iron, Calcium and Zinc) and antioxidants.	12
IV	<b>Fluid and Electrolytes</b> – distribution of water and electrolytes, role of hydration during exercise, requirements. Fluid balance and thermoregulation. Effects of Dehydration, water intoxication. Snacking – importance, interval of snacking. Best practices for Sports Nutrition – guidelines and tips.	12
V	<ul> <li>Dietary supplements – Sports foods. Diets for competition, on and before competition, diets for different sports.</li> <li>Eating Disorders and Deficiencies - Chronic dieting and eating disorder, Sports anaemia. Influence factors - Female athlete triad, stress, type of exercise, gender influence, lipid metabolism and weight loss, caffeine and athletic performance.</li> <li>Myths and facts about Sports putrition.</li> </ul>	12

Text B	Book(s):
1.	B.Srilakshmi, V.Suganthi and C.Kalaivani Ashok, Exercise Physiology Fitness and Sports
	Nutrition, First Edition, New Age International Publishers, 2018.
2.	D. Eleanor, Schlenker and Sara Long Roth, Essentials of Nutrition and Diet Therapy, Tenth
	Edition Library of Congress Cataloging-in- Publication Data, 2011.
3.	Smolin and Grosvenor, Nutrition Science and Application, Library of Congress
	Cotalogingin Dubligation Data 2008

Catalogingin– Publication Data, 2008.
Anjana Agarwal and A. Shobha Udipi, Textbook of Human Nutrition, First Edition, Jaypee Brothers Medical Publishers (p) Ltd, 2014.

#### **Reference Book(s):**

- 1. Don MacLaren., Advances in Sport and Exercise Science : Nutrition and Sport , ChPublished by Churchhill Livingstone, Elsevier 2007.
- 2. Brouns Fred and Caustan Cargill, Essentials of Sports Nutrition 2nd edition, John Wiley and Sons, England, 2002.
- 3. Burke Louse and Deakin Vicky, Clinical Sports Nutrition, McGraw Hill Pvt. Ltd. Australia, 2006.

### Web Resource(s):

https://en.wikipedia.org/wiki/Sports\_nutrition https://www.healthline.com/health/fitness-exercise-eating-healthy#workoutsnacks https://www.verywellfit.com/fitness-sports-nutrition-4157142 Nutrition\_&\_Hyd\_Guidelines\_for\_Athletes\_Final\_report.pdf

	Course Outcomes									
Upon successful completion of this course, the student will be able to:										
CO No.	CO Statement	Cognitive Level (K-Level)								
CO1	Associating the nutrition required for sports in order to enhance performance	K2								
CO2	Articulate the specific activity of Carbohydrate & Protein in Sports nutrition	К3								
CO3	Calculate the role of lipids and micronutrients during Sports activities	K4								
CO4	Validating the importance of fluid & electrolyte balance and snacking	K5								
CO5	Reviewing the eating disorders and deficiencies in Sports individuals	К5								

#### **Relationship Matrix:**

Course	Pro	gramm	e Outco	omes (P	Os)	Progra	Mean Score of					
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Cos	
CO1	2	1	2	3	1	2	1	2	1	3	1.8	
CO2	3	2	1	2	2	1	2	3	2	3	2.1	
CO3	2	2	2	3	1	1	1	2	3	1	1.8	
CO4	1	2	2	2	2	2	3	1	2	1	1.8	
CO5	3	2	1	2	2	2	1	2	2	1	1.8	
Mean Overall Score												
									Cor	relation	Medium	

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Semester	Course Code	Course Cotogory	Hours/	Crodits	Marks for Evaluation			
	Course Coue	Course Category	Week	Creuits	CIA	ESE	Total	
VI	23UND6DE3A	Discipline Specific Elective – III	5	4	25	75	100	

**Course Title** 

# PERSPECTIVES OF HOME SCIENCE

	SYLLABUS	
Unit	Contents	Hours
I	<b>FOUNDATIONS AND SCOPE OF HOME SCIENCE EDUCATION:</b> Meaning of Home science Education, Philosophy of home and family, Components of Home science, Career perspectives – its relation to other disciplines – science and humanities. The Home Science Association of India – History and objectives, achievements of the association, representation in national bodies.	15
II	<b>TEXTILES, CLOTHING AND INTERIOR DESIGN: PRINCIPLES AND</b> <b>APPLICATIONS</b> <b>Textile and Clothing:</b> Fiber – Classification (Natural & Synthetic), Yarn – Definition, Types. Fabric – Construction method – Weaving, Knitting, Nonwovens. Clothing – Clothing theory, Selection of clothing, Cloth finishing – dyeing, embroidery. Eco-friendly textiles – Classification, Eco-friendly fibres. <b>Interior Design:</b> Interior Design - Types, Elements, Principles, Colour scheme, Dimensions of colour. Flower arrangement – Principles, Requirement, Types and style. Furniture – Selection, Arrangement principles and Furnishing materials.	15
ш	<ul> <li>HUMAN RESOURCE MANAGEMENT:</li> <li>Management - concept, approaches, management of time, energy, money, space, motivating factors, motivation theories, decision making.</li> <li>Functions of management - planning, supervision, controlling, organizing, evaluation, family life cycle -stages, availability and use of resources.</li> <li>Resources - classification, characteristics, factors affecting use, resource conservation, time management, work simplification techniques, classes of change, fatigue and its management.</li> <li>Concept of sustainable development goals (SDGs).</li> </ul>	15
IV	HUMAN DEVELOPMENT: Human Development – Definition, Goals, Domains and Stages. Prenatal development and its stages, Infancy, Childhood and Adolescence – Characteristics and Developmental tasks. Adulthood and Old age – Characteristics and Problems. Theories of human development and behavior – Piaget's theory of Cognitive development, Sigmund Freud's Psychosexual theory and Erikson's Psychosocial theory.	15
V	<b>EXTENSION EDUCATION:</b> Extension Education – Definition, Objectives, Philosophy and Principles. Home Science extension service at various levels – Village, Block and District level. Role of Home science extension in rural and national development. Welfare Programme – National Social Assistance Programme (NSAP), Mahatma Gandhi National Rural Employment Gurarantee Act (MGNREGA), Pradhan Mantri Gram Sadak Yojana (PMGSY), Annapoorna Scheme, Women's Voluntary Service (WVS), Swarna Jayanthi Gram Swarozgar Yojana (SGSY).	15
VI	CURRENT TRENDS (For CIA Only)* AI Applications in Sustainable Fashion and Textiles	

## Text Book(s):

1. Premalatha Mullick (2007), "Text book of Home Science", Kalyani Publishers, Chennai.

2. Jalihal K.A and Veerabhadran V (2007), "Fundamentals of Extension Education and Management

in extension", Concept Publishing Company, New Delhi.

3. Nisha.M (2006), "Wings of Home Science", New Delhi: Kalpaz Publications, India.

4. Sethi.M (2011), "Institutional Food Management", New Age International (P) Limited.

**5.** Srivastava Sushil.A (2020), *"Text book of Human Development"*, S.Chand Rani, Sudha Company Limited, New Delhi.

# **Reference book(s):**

**1.** Seema Sekhri (2011), *"Textbook of fabric science, Fundamentals to finishing"*, New Delhi: PHI Learning Private Limited, India.

2. Meenakshi Rastogi (2009), "Fibres and Yarn", New Delhi: Sonali Publications, India.

**3.** Trueman Team (2019), "*NTA – UGC NET Home Science*", Danika Publishing Company, New Delhi.

# Web Resource(s):

1. https://epgp.inflibnet.ac.in/Home/viewSubject?catid=8x0nJkh/R0vHkX1U70Z/CQ==

2. https://www.yourarticlelibrary.com/home-management/home-management-meaning-concept-and-needs/47779

	Course Outcomes										
Upon suc	Upon successful completion of this course, the student will be able to:										
CO No.	CO Statement	Cognitive Level (K-Level)									
CO1	Gathering fundamental knowledge in Home Science	K2									
CO2	Determining the role of fibers and yarns in textiles and clothing	K3									
CO3	Appraising the critical thinking and problem-solving abilities in the context of managing human resources	K4									
CO4	Reviewing the growth and development in different stages of human life cycle	K5									
CO5	Experimenting the practical skills in food, nutrition, textiles and home management	K5									

Relat	tionship	) Matrix	x:								
Course	Pro	gramm	e Outco	omes (P	Os)	Progra	amme Sp	pecific O	utcomes	(PSOs)	Mean Seera of
(COs)	<b>PO1</b>	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	COs
CO1	3	2	2	1	2	3	2	1	3	1	2.0
CO2	2	1	1	2	2	3	1	1	3	2	1.8
CO3	1	1	1	2	1	3	2	1	2	3	1.7
CO4	2	2	1	1	2	1	1	2	1	3	1.5
CO5	2	1	1	2	3	3	3	2	2	1	2.0
Mean Overall Score											
									Cor	relation	Medium

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥ 2.5	High

Revision : 100 % Course Coordinator:

S.Ashma Banu R.Mohanambal

Semester	Course Code	Course Category	Hours/	Credits	Marks for Evaluation		
			Week		CIA	ESE	Total
VI	23UND6DE3B	DSE-III	5	4	25	75	100

Course Title FOOD CHEMISTRY

	SYLLABUS					
Unit	Contents	Hours				
	Introduction to Food Chemistry and Colloids:					
Ι	Food Chemistry- Definition of food chemistry, Chemical Composition of Physico         1					
	-chemical properties of foods- Moisture in Foods, Water Bonding, Water Activity					
	in Foods. Emulsiners, Colloids (sols, gels), Foams - Definition, types,					
	Carbohydrates:					
п	Classification of Carbohydrates. Monosaccharides (glucose fructose galactose)	15				
11	Disaccharides (sucrose lactose maltose) Polysaccharides (starch glycogen fiber)	13				
	Chemical Properties and Reactions-Glycosidic bonds, Hydrolysis and condensation					
	reactions. Caramelization and browning. Changes of carbohydrates on cooking.					
	Lipids:					
III	Classification of Lipids, Physical and Chemical Properties - Fatty acid oxidation,	15				
	Lipid hydrolysis and synthesis, Lipid peroxidation. Changes in fats and oil –					
	Rancidity, lipolysis, flavour reversion.					
	Proteins:					
	Classification of Proteins, Physical and Chemical Properties - Protein denaturation,					
IV	Some foods (plants, milk and egg)	15				
	Enzymes:					
	Enzyme: Definition, Characteristics of Enzymes, Sources of enzyme,					
	Classification of enzymes, Factors affecting the rate of enzymatic reactions.					
	Applications of enzyme in food processing.					
	FOOD ADDITIVES, PIGMENTS AND FLAVOUR:					
	Food Additives-Definition, Classification, Functions, Categories of food additives-					
V	Antioxidants, Colouring agents, Favouring agents, Preservatives, Sweeteners,	15				
	Anticaking agents.					
	<b>Food Figments:</b> Natural Food colours-Uniorophylis, Myoglobins, Anthocyanins, Batalins, Tannins, Caramel, Carotenoids, Artificial Food Colour Types					
	<b>Food Flavour</b> Definition Classification and Types of Flavour					
VI	Current Trends: Omics Technologies					
V I						

**Text Book(s):** 

Lillian Hoagland Meyer, "Food chemistry", CBS publishers & distributors PVT.LTD, New Delhi 2004)
 B. Srilakshmi, "Food Science", New age international (P) limited, publishers (2015)
 H.K. Chopra, P.S. Panesar," Food chemistry", Narosa Publishing House (2010)
 Seema Yadav, Food chemistry, Publication of anmol pvt., ltd., 1997.

### **Reference Book(s):**

- 1.Shakuntala Manay, Shadaksharaswamy. M "Foods, Facts and Principles", New Age International Pvt Ltd Publishers, 2nd Edition (2000)
- 2.Swaminathan, M. "Food Science, Chemistry and Experimental Foods", Bappco Publishers, Bangalore. (2005)
- 3.Dennis. D, Muller., Food chemistry, a Laboratory Manual by inter science publication, John Willey&Sons Inc.
- 4.Shakuntala Manay, Shadaksharaswamy. M "Foods, Facts and Principles", New Age International Pvt Ltd Publishers, 2nd Edition (2000)

## Web Resource(s):

1. https://www.sciencedirect.com/topics/chemistry/colloid-chemistry

2. <u>https://alraziuni.edu.ye/uploads/pdf/book1/Laboratories/Food%20Chemistry%203rd%20ed%20-</u>%20O.%20Fennema%209ed)%20(Marcel%20Dekker,%201996)%20WW.pdf

3. https://gpbhiwani.ac.in/e-content-food-technology/

4. https://www.classcentral.com/course/swayam-mvp-001-food-fundamentals-and-chemistry-293416

Course Outcomes						
Upon successful completion of this course, the student will be able to:						
CO No.	CO Statement	Cognitive Level (K-Level)				
CO1	Defining the relationship of food chemistry to Nutrition and Dietetics	K1				
CO2	Inferring knowledge on chemical nature of carbohydrates	K2				
CO3	Interviewing the chemical structure and properties of Lipids	K3				
CO4	Distinguish the structure of protein molecules and Enzymes	K4				
CO5	Assessing the role of food additives, Food Colours and Food Flavour	K5				

#### **Relationship Matrix:**

Course	Progr	amme (	Dutcom	es (POs	;)	Programme Specific Outcomes (PSOs)					Mean
(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	Score of COs
CO1	1	-	1	-	3	3	2	2	3	-	1.5
CO2	-	-	-	1	3	3	2	1	3	1	1.4
CO3	2	1	-	1	2	3	2	1	3	-	1.5
CO4	1	1	-	1	1	3	2	1	3	2	1.5
CO5	2	2	-	2	2	3	1	2	3	1	1.8
Mean Overall Score								all Score	1.54		
Correlation								relation	Medium		

Mean Overall Score	Correlation
< 1.5	Low
$\geq$ 1.5 and < 2.5	Medium
≥2.5	High

Revision : 30 % Course Coordinator: J.Priya