

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 (4th Cycle) with CGPA 3.69 out of 4.0
(Affiliated to Bharathidasan University)
TIRUCHIRAPPALLI – 620 020

B.Sc. NUTRITION AND DIETETICS

Sem	Course Code	Part	Course Category	Course Title	Ins. Hrs/Week	Credit	Marks		Total
							CIA	ESE	
I	23U1LT1/LA1/LF1/LH1/LU1	I	Language - I		6	3	25	75	100
	23UCN1LE1	II	English - I	English for Communication - I	6	3	25	75	100
	23UND1CC1	III	Core - I	Food Science	5	5	25	75	100
	23UND1CC2P		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
Total					30	22			700
II	23U2LT2/LA2/LF2/LH2/LU2	I	Language - II		6	3	25	75	100
	23UCN2LE2	II	English - II	English for Communication - II	6	3	25	75	100
	23UND2CC3	III	Core - III	Nutrition through Life Cycle	5	5	25	75	100
	23UND2CC4P		Core - IV	Nutrition through Life Cycle - Practical	3	3	20	80	100
	23UND2AC3		Allied - III	Human Physiology	5	4	25	75	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 / 23U2AT1		Basic Tamil - I / Advanced Tamil - I	எழுத்தும் இலக்கியமும் அறிமுகம் - I / தமிழ் இலக்கியமும் வரலாறும் - I	-	-	-	100 #	-	
Total					30	22			700
@ Only grades will be given									
III	23U3LT3/LA3/LF3/LH3/LU3	I	Language - III		6	3	25	75	100
	23UCN3LE3	II	English - III	English for Communication - III	6	3	25	75	100
	23UND3CC5	III	Core - V	Dietetics - I	4	4	25	75	100
	23UND3CC6P		Core - VI	Dietetics - I - Practical	3	3	20	80	100
	23UND3AC5		Allied - V	Nutritional Biochemistry	4	4	25	75	100
	23UND3AC6P		Allied - VI	Nutritional Biochemistry - Practical	3	2	20	80	100
	23UND3GE1	IV	Generic Elective - I		2	2	-	100	100
	23UND3AE2		AECC - II	Environmental Studies	2	2	-	100	100
Total					30	23			800
IV	23U4LT4/LA4/LF4/LH4/LU4	I	Language - IV		6	3	25	75	100
	23UCN4LE4	II	English - IV	English for Communication - IV	6	3	25	75	100
	23UND4CC7	III	Core - VII	Dietetics - II	6	6	25	75	100
	23UND4CC8P		Core - VIII	Dietetics - II - Practical	3	2	20	80	100
	23UND4AC7		Allied - VII	Fundamentals of Food Microbiology	4	4	25	75	100
	23UND4AC8P		Allied - VIII	Fundamentals of Food Microbiology - Practical	3	2	20	80	100
	23UND4GE2	IV	Generic Elective - II		2	2	-	100	100
	23UCN4EL		Experiential Learning	Internship	-	2	-	100	100
	23UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
23U4BT2 / 23U4AT2		Basic Tamil - II / Advanced Tamil - II	எழுத்தும் இலக்கியமும் அறிமுகம் - II / தமிழ் இலக்கியமும் வரலாறும் - II	-	-	-	100 #	-	
Total					30	25			800
V	23UND5CC9	III	Core - IX	Food Processing and Preservation	6	6	25	75	100
	23UND5CC10P		Core - X	Food Processing and Preservation - Practical	5	5	20	80	100
	23UND5CC11		Core - XI	Food Service Management - I	5	5	25	75	100
	23UND5CC12		Core - XII	Bakery & Confectionery	5	5	25	75	100
	23UND5DE1A/BP	IV	Discipline Specific Elective - I		5	4	20	80	100
	23UND5SE1		Skill Enhancement Course - I	Entrepreneurial Practices in Food Industry	2	1	-	100	100
	23UND5SE2P		Skill Enhancement Course - II	Application of Computer in Nutrition and Dietetics - Practical	2	1	-	100	100
	23UND5EC1		Extra Credit Course - I*	Online Course	-	*	-	-	-
Total					30	27			700
VI	23UND6CC13	III	Core - XIII	Food Service Management - II	5	5	25	75	100
	23UND6CC14P		Core - XIV	Food Service Management - Practical	5	5	20	80	100
	23UND6CC15		Core - XV	Community Nutrition	5	5	25	75	100
	23UND6CC16		Core - XVI	Food Safety and Quality Control	5	5	25	75	100
	23UND6DE2A/B	IV	Discipline Specific Elective - II		4	4	25	75	100
	23UND6DE3A/B		Discipline Specific Elective - III		5	4	25	75	100
	23UCN6AE3		AECC - III	Gender Studies	1	1	-	100	100
	23UND6EC2		Extra Credit Course - II*	Online Course	-	*	-	-	-
23UNDECA		Extra Credit Course for all**	Online Course	-	**	-	-	-	
Total					30	29			700
** Programme Specific Online Course for Advanced Learners									
** Any Online Course for Enhancing Additional Skills									
Grand Total						148			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
II	23U2BT1	Basic Tamil – I (எழுத்தும் இலக்கியமும் அறிமுகம் - I)
	23U2AT1	Advanced Tamil – I (தமிழ் இலக்கியமும் வரலாறும் - I)
IV	23U4BT2	Basic Tamil – II (எழுத்தும் இலக்கியமும் அறிமுகம் - II)
	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.

DISCIPLINE SPECIFIC ELECTIVES

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

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UND1CC1	Core - I	5	5	25	75	100

Course Title	FOOD SCIENCE
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SYLLABUS		
Unit	Contents	Hours
I	<p>CLASSIFICATION AND COOKING METHODS</p> <p>Classification of Foods - Definition: Food, Food Science. Classification Based on functions of food, Food Groups (Basic four) My plate and *Food Pyramid*.</p> <p>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</p>	15
II	<p>CEREALS, MILLETS AND PULSES</p> <p>Cereals: Composition and Nutritive value, Structure of Wheat, Rice and Ragi Cereal cookery concept- Gluten formation ,Cereal starch-Effect of moist heat- Gelatinization, Gel formation, Retro gradation, syneresis. Effects of Dry heat - Dextrinisation. * Role of cereals in cookery*.</p> <p>Pulses: Composition and Nutritive value, Cooking process- soaking, germination, fermentation, Parching and puffing. Role of pulses in cookery.</p>	15
III	<p>MILK AND ANIMAL PRODUCTS</p> <p>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.</p> <p>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 cookery*.</p> <p>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.</p> <p>Poultry: Classification, composition and nutritive value.</p> <p>Fish: Classification, composition and nutritive value, selection of fish and fish cookery.</p>	15

IV	<p>VEGETABLES AND FRUITS</p> <p>Vegetables: Classification, composition and nutritive value. Pigments: Classification- water insoluble and soluble. Changes occur during cooking of vegetables. *Role of Vegetables in cookery*.</p> <p>Fruits: Classification, composition and nutritive value, Pigments present in fruits. Ripening of fruits, Enzymatic and Non- Enzymatic browning and its preventive measures.</p>	15
V	<p>a) OILS, FATS AND NUTS</p> <p>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.</p> <p>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 Sesame seed it's Importance. *Role of Nuts and oil seeds in cookery*.</p> <p>b) SUGAR, BEVERAGES, SPICES AND CONDIMENTS</p> <p>Sugar: Nutritive value, Sugar and related product, sugar cookery, crystallization- meaning, factors affecting crystallization, stages of sugar cookery, Role of sugars in cookery.</p> <p>Beverages: Classification - Tea, coffee and cocoa, fruit beverages, soup, Milk based beverages and malted beverages.</p> <p>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.</p>	15
VI	<p>Current Trends (For CIA only)</p> <p>Milk and Milk based products- Substitute of Milk (Non- dairy fats and Gelato)</p> <p>Fats and Oil- Unconventional oil (Mango kernal, rice bran, cleome viscosa oil) , Fat substitutes.</p>	

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<p>Text Book(s):</p> <ol style="list-style-type: none"> 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.,5th edition, 2007. 3. Sumati R. Mudambi, Shalini M.Rao, "Food Science", New Age International Publishers, New Delhi, Revised Second Edition, 2011.
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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 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.	K3
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 Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: A. Yasmin Fathimaa

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UND1CC2P	Core - II	3	3	20	80	100
Course Title		FOOD SCIENCE - PRACTICAL					

SYLLABUS		
Exercise	Contents	Hours
1	<p>INTRODUCTION TO LABORATORY: (a) Laboratory rules (b) Familiarizing with laboratory equipments, Measuring ingredients -Methods of measuring different types of foods – grains, flours & liquids</p> <p>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</p>	45
2	<p>CEREALS a) Experiment- Determination of Gluten content in Wheat, Maida and Rice flour weight of wet and dry gluten.</p> <p>b)Cereal starch- Gelatinization temperature and Microscopic view of raw and cooked starch in various cereals (corn, ragi and wheat flour)</p> <p>(c)Recipes: Cereal preparations using by various cooking methods</p> <p>PULSES: (a)Experiments: (i) Germination of few pulses (peas, cowpea, green gram) -soaking and germination (ii)Factor affecting the quality of pulses- Use of hard water, soft water, sodium bi Carbonate, vinegar; pressure cooking .</p> <p>(b)Recipes: (i) Preparation of few pulse based recipes- soaked and unsoaked pulse for the preparation (any 2 recipes on each forms)</p>	
3	<p>VEGETABLES AND FRUITS:</p> <p>(a) Experiments:</p> <p>(i) Effect of heat on vegetable pigments like: chlorophyll, carotenoids, anthocyanin, anthoxanthin.</p> <p>(ii) Browning reaction in vegetables and fruits and its preventive methods.</p> <p>(b)Recipes: (i) Preparation of vegetables and fruits based recipes (Soups and salad)</p> <p>MILK COOKERY:</p> <p>(a)Experiments:</p> <p>(i) Effect of prolonged heat, acid and enzyme on cooking milk.</p> <p>(b)Recipes: (i) Preparation of milk recipes-non fermented and fermented recipes.</p>	

4	<p>EGG COOKERY: (a) Experiments: (i) Quality of egg-Floating test and candling test (ii)Boiled egg(Timing experiment)</p> <p>(b)Recipes: (i) Preparation of scrambled, poached egg, custards, omelette, egg curry.</p> <p>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</p>
5	<p>FATS AND OILS: (a) Experiments: (i) Smoking point temperature of different fats and oils(gingelly oil, groundnut oil, coconut oil and palm oil.</p> <p>(b)Recipes: (i) Preparation of few fat fried recipes - shallow fry and deep fat fry methods</p> <p>BEVERAGES: (a) Experiments: Preparation and evaluation of (i) Coffee (Filter and instant method)ii) Tea</p> <p>(b) Recipes (i) fermented beverages (ii) Non fermented beverages</p> <p>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.</p>

Text Book(s):
<p>1. Srilakshmi, B, “Food science”, New Age International Pvt. Ltd.Publishers, New Delhi, 7th edition, 2020.</p> <p>4. N. Shakuntala Manay, “Foods facts and Principles”, New Age International(P) Ltd., Publishers, New Delhi, Third Revised Edition, 2008.</p>
Reference Book(s):
<p>1. Mohini sethi, “Food Science Experiments and Applications”, CBS publishers and distributors Pvt Ltd, New Delhi, 2nd Edition, 2011.</p>
Web Resource(s):
<p>1. https://www.mdpi.com/2073-4395/11/8/1575</p> <p>2.https://voltagecoffee.com/brew-methods/</p>

Course Outcomes		
Upon successful 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	K3
CO4	Analyze the changes during cooking of food	K4
CO5	Develop the recipes based on the principles of Medicinal value.	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: A. Yasmin Fathimaa

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UND1AC1	ALLIED - I	5	4	25	75	100
Course Title		PRINCIPLES OF NUTRITION					

SYLLABUS		
Unit	Contents	Hours
I	<p>ENERGY METABOLISM</p> <p>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*.</p> <p>Basal Metabolic Rate-Definition, factors affecting Basal Metabolic Rate, methods for determination of energy expenditure-direct and indirect calorimetry. Calculation of energy requirements for an individual.(Atwater's Rosa, Benedict's Roth Apparatus)</p>	15
II	<p>CARBOHYDRATES AND PROTEINS</p> <p>Carbohydrates-nutritional classification, functions (list), sources, requirements, digestion, absorption and utilization.</p> <p>*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.</p> <p>Proteins- Nutritional classification, functions (list), sources, requirements, digestion, absorption and utilization.</p> <p>Protein quality evaluation methods-Net Protein Utilization (NPU), Biological Value (BV), Protein Efficiency Ratio (PER) (Definition & formula). Factors affecting protein quality. Nutritional problems due to excess and deficit intake of protein.</p>	15
III	<p>LIPIDS, WATER AND ELECTROLYTES</p> <p>Lipids- classification, functions (list), sources, requirements, digestion, absorption and utilization.</p> <p>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*.</p> <p>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.</p>	15

IV	<p>VITAMINS</p> <p>Classification of vitamins-fat and water-soluble vitamins.</p> <p>Fat soluble vitamins (A, D, E & K) – functions (list), requirements and food sources.</p> <p>Nutritional problems due to deficiency or excess intake of fat soluble vitamins.</p> <p>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*.</p>	15
V	<p>MACRO, MICRO AND TRACE MINERALS</p> <p>Minerals: Macro minerals- calcium, phosphorus, magnesium, sodium, potassium– Functions (list), requirements, *food sources*, deficiency and toxicity.</p> <p>Micro minerals: Iron, copper, zinc, manganese, iodine and fluoride. .Functions (list), requirements, food sources, deficiency and toxicity.</p> <p>Trace minerals: selenium, cobalt, chromium and nickel- Functions (list), requirements, food sources, deficiency and toxicity.</p>	15

..... Self Study

<p>Text Book(s):</p>
<p>1. Srilakshmi, Nutrition Science, New Age International (P) Ltd, New Delhi, Fifth Edition, 2008.</p> <p>2. Ambika Shanmugam, Fundamentals of Biochemistry for Medical Students, New Age Publishing Pvt.Ltd., New Delhi, Seventh Edition, 1986.</p> <p>3. Mudambi, R.S. and Rajagopal, M.Y. Fundamentals of Food and Nutrition. Wiley Eastern Limited, New Delhi, 1991.</p>
<p>Reference Book(s):</p>
<p>1. Joshi.A.S, Nutrition & Dietetics, Tata McGraw Hill Education Pvt. Ltd., New Delhi, Third Edition, 2010.</p> <p>2. R. Passmore and M.A. Eastwood, Human Nutrition and Dietetics, 8th language book Society/Churchill Livingstone, Hong Kong, 1986.</p> <p>3. U. Sathyanarayana and U. Chakrapani, Biochemistry, Uppala Author – Publisher Interlinks, Vijayawada, Third Edition, 2010.</p>
<p>Web Resource(s):</p>
<p>1. https://en.wikipedia.org/wiki/Water_intoxication</p> <p>2. https://www.cdc.gov/niosh/topics/nickel/default.html</p> <p>3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7037090/</p>

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	CO Statement	Cognitive Level (K-Level)
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 Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr.M.Angel

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UND1AC2P	Allied - II	3	2	20	80	100
Course Title		PRINCIPLES OF NUTRITION - PRACTICAL					

SYLLABUS		
Exercise	Contents	Hours
1	Qualitative analysis for Carbohydrates in food samples. a) Monosaccharide – Glucose and Fructose b) Disaccharide – Lactose and Sucrose c) Polysaccharide - Starch	45
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.	
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.
2. 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 successful 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	K3
CO4	Experiment the preparation of ash samples	K4
CO5	Estimate the vitamin and mineral content of food samples	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
Correlation											Medium

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

Course Coordinator: Dr.M.Angel

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCN1AE1	AECC - I	2	2	-	100	100
Course Title		Value Education for Women					

SYLLABUS		
Unit	Contents	Hours
I	VALUES IN LIFE: Purpose and philosophy of life – Need for values –five fold moral culture - Imbibing values: truth, loyalty, integrity, humility, trustworthy, considerate, not being greedy, clean habits, punctuality, kindness, gratitude, patience, respect and character building.	6
II	FAMILY: Nuclear – cluster – significance - social functions - changing trend - role of women in family - obedient daughter - purposeful youth- dedicated wife - caring mother.	6
III	PUBERTY: Need of knowledge of menstruation- menstrual symptoms – handling – menstrual disorder - maintaining good personal hygiene - motherhood- Stages of pregnancy- post pregnancy care.	6
IV	MARRIAGE: Types of marriage - purpose of marriage- love and infatuation – need for marital preparation - pre and post marital counselling - conflicts in marital life - divorce single parenthood.	6
V	HARMONY WITH SPOUSE: Husband and wife relationship - fidelity towards spouse-relationship among the family members. Tenets of bride for healthy family – kindness, respect, patience, care, love.	6

Hours of Teaching: 5 hours and Hours of Activity: 25 hours

Textbook(s):
1. Value Education for health, Happiness and harmony, the world community service centre, Vethathri Publications 2. N. Venkataiah, Value Education, APH Publishing Corporation, New Delhi, 1998 3. Betty, Carten and Meg Goldric, The Changing family life style - A Framework for Family Therapy, 2 nd Edition, 2000. 4. Marie, Madearentas, Family Life Education, CREST-Centre for research education service training for family promotion, Bangalore, 1999.
Web References:
1. https://www.slideshare.net/humandakakayilongranger/values-education-35866000 2. https://www.ananda.org/blog/5-secrets-to-a-harmonious-marriage/ 3. https://www.nap.edu/read/2225/chapter/14

Activity:

- Assignment on Values (not less than 20 Pages)
- Multiple Choice Questions and Quiz
- Elocution - (Manners and good Habits for 3 to 5 minutes)
- Field Visit
- Debating - Current issues
- Essay writing: Proper use of e-gadgets, Ethics, Cyber ethics, Social media, etc.,
- Case Study / Album Making / Poster Presentation / Documentary- Celebrating National Days, Drug abuse & illicit trafficking, Independence Day, Secularism, Teachers Day, National Youth Awakening Day, Father's Day / Mother's Day and etc.,

EVALUATION COMPONENT: TOTAL: 100 MARKS**Component I:**

Documentary (or) Poster Presentation (or) Elocution - 25 marks

Component II:

Quiz (or) Multiple choice questions Test - 25 marks

Component III:

Album Making (or) Case Study on a topic (or) Field visit - 25 marks

Component IV:

Assignment (or) Essay Writing (or) Debating - 25 marks

Course Coordinator: Dr. M. Purushothaman

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UND2CC3	CORE - III	5	5	25	75	100
Course Title		NUTRITION THROUGH LIFE CYCLE					

SYLLABUS		
Unit	Contents	Hours
I	<p>RECOMMENDED DIETARY ALLOWANCE AND MEAL PLANNING: RDA -Definition, RDA FOR INDIAN (2020), factors affecting Recommended Dietary Allowance, general principles for deriving RDA, applications, Estimated Average Requirement (EAR). Balanced Diet and meal planning- balanced diet, food exchange lists, principles of planning meal, *steps involved in planning a menu*.</p>	15
II	<p>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, Oedema, Hypertension, nutritional requirements, dietary guidelines. 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.</p>	15
III	<p>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 infant and mother, Artificial feeding, breast milk banks, food allergies in infants, weaning foods, supplementary foods, nutritional requirement. Preschool Children- Growth and development, feeding problems, nutritional requirements, *dietary guidelines*, nutrition programmes for preschool children.</p>	15
IV	<p>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. Adolescence- growth and development, nutritional problems- obesity, underweight, anaemia, eating disorders- anorexia nervosa, bulimia nervosa, binge eating, nutritional requirements, *dietary guidelines*, exercise and its importance.</p>	15

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

..... Self Study

Text Book(s):
<ol style="list-style-type: none"> 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):
<ol style="list-style-type: none"> 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):
<ol style="list-style-type: none"> 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 successful 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.	K3
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.	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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

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

Course Coordinator: S.Basheerunisha

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	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	45
2.	Planning, calculation of nutritive value and preparation of whole day menu for <ul style="list-style-type: none"> • Pregnant women (3rd trimester) • lactating women (0-6 months) • weaning food (6 -12 month infant) • Supplementary food (12 – 24 months) • Preschool children (3-6 years) • School children (7-12 years) • Adolescence (13-17 years) • Adult man & women • Elderly 	
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. https://www.hopkinsmedicine.org/health/wellness-and-prevention/nutrition-during-pregnancy

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	CO Statement	Cognitive Level (K-Level)
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.	K3
CO4	Evaluate the nutritive value of menus and compare with RDA.	K4
CO5	Assess the Anganwadi services.	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
Mean Overall Score											2.48
Correlation											Medium

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

Course Coordinator: S.Basheerunisha

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UND2AC3	Allied - III	5	4	25	75	100
Course Title		HUMAN PHYSIOLOGY					

SYLLABUS		
Unit	Contents	Hours
I	<p>BLOOD AND LYMPH:</p> <p>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.</p> <p>Lymph and Lymphatic System – Structure and functions.</p>	15
II	<p>CARDIOPULMONARY SYSTEM:</p> <p>Cardiovascular system - Structure of heart and blood vessels, properties of cardiac muscle, cardiac cycle, heart rate, blood pressure, measurement of blood pressure.</p> <p>Respiratory system - 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*.</p>	15
III	<p>DIGESTIVE AND EXCRETORY SYSTEM:</p> <p>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).</p> <p>Excretory system – Structure and functions of kidney and nephrons, formation of urine, composition of urine, factors affecting formation of urine, *micturition*.</p> <p>Skin- structure and functions.</p>	15
IV	<p>REPRODUCTIVE AND ENDOCRINE SYSTEM:</p> <p>Reproductive system – structure and functions of male and female reproductive system, spermatogenesis, oogenesis, menstrual cycle.</p> <p>Endocrine system and hormones- Structure and functions of pituitary thyroid, parathyroid, *pancreas* and adrenal glands and its hormones.</p>	15
V	<p>NERVOUS SYSTEM AND SPECIAL SENSES:</p> <p>Nervous system – structure and functions of nerve cell, brain and spinal cord.</p> <p>Ear, Eye, Nose and Tongue – structure and physiology of hearing, vision, smell and *taste*.</p>	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, 2001.
Web Resource(s):
1. https://dghs.gov.in/WriteReadData/userfiles/file/RTI/THOA_NOTP_NOTTO_ROTTO_SOTTO_16-7-2020.pdf

Course Outcomes		
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	K3
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:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr. J. Harine Sargunam

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UND2AC4P	Allied - IV	3	2	20	80	100
Course 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).	45
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).	
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, 11 th Edition, Kolkata, 2016.
Reference Book(s):
1. Sembulingam, K. Essentials of Medical Physiology, Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, 6 th 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:		
CO No.	CO Statement	Cognitive 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

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
Mean Overall Score											1.76
Correlation											Medium

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

Course Coordinator: Dr. J. Harine Sargunam

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UCN2SS	Soft Skills Development	2	2	-	100	100
Course Title		Soft Skills Development					

SYLLABUS		
Unit	Contents	Hours
I	Communication Skills: Verbal and Non - Verbal communication - The active vocabulary - Conversational Etiquette - KOPPACT syndrome	6
II	Emotional Skills: Emotional Intelligence - The five steps to Emotional Quotient - Self Awareness and Regulation - Empathy - Social Intelligence - stress management - coping with failures	6
III	Functional Skills: Using the tools of communicatory and emotional skills - Resume writing - Preparation of Curriculum Vitae - interview skills - Acing the interview - Group dynamics - Mock interviews and Group discussions	6
IV	Interpersonal Skills: Synergising relationships - SWOT analysis - SOAR analysis - The social skills - Time Management - Decision making - problem solving - prioritising and Implementation	6
V	Personality Skills: Leadership skills - Attributes and Attitudes - Social leader Vs The Boss - critical and creative thinking	6

Hours of Teaching : 5 hours and Hours of Activity: 25 hours

Textbook(s):
<ol style="list-style-type: none"> 1. Social intelligence: The new science of human relationships - Daniel Goleman; 2006. 2. Body Language in the workplace - Allan and Barbara Pease; 2011. 3. Student's Hand Book: Skill Genie - Higher education department, Government of Andhra Pradesh.
Web References:
<ol style="list-style-type: none"> 1. https://nptel.ac.in/courses/109105110

EVALUATION CRITERIA

Work Book (Each unit carries 10 marks)	-	50 Marks
Examination	-	50 Marks

1. Teacher who handles the subject will award 50 marks for work book based on the performance of the student.
2. On the day of examination the examiners (Internal & External) will jointly award the marks for the following categories:
 - Self-Introduction - 20 Marks
 - Resume - 10 Marks
 - Mock Interview - 20 Marks

To assess the self-introduction, Examiners are advised to watch the video presentation submitted by the students. If they failed to submit the video presentation, the Examiners may direct the student to introduce himself orally and a maximum 10 marks only will be awarded.

Mock Interview Marks Distribution

(20-Marks)

Attitude (self interest, confidence etc.) (4 Marks)	Physical appearance including dress code (4 Marks)	Communication Skills (6 Marks)	Answering questions asked from the resume and work book (6 Marks)
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Course Coordinator:
Dr. M. Syed Ali Padusha

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UND3CC5	Core - V	4	4	25	75	100
Course Title		Dietetics - I					

SYLLABUS		
Unit	Contents	Hours
I	Introduction and basic concepts in Dietetics 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
III	Special feeding techniques and diet for obesity and underweight Enteral feeding – methods- nasogastric, gastrostomy and jejunostomy, types of food, infusion techniques. Parenteral feeding – principles, TPN formula and complications. Pre and post-operative diet. Obesity-causes, signs and symptoms, grades of obesity, Complications, Dietary Management. Underweight – causes, signs and symptoms, Risk factors and dietary management.	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	Diet for Liver, gall bladder, pancreas diseases 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	Current Trends * (For CIA only) – Personalized nutrition	

* For Theory Core Course, wherever possible

Text Book(s):

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

Reference Book(s):
1. Mahtab.S, Bamji Prasad Rao N and Vinodini Reddy, Textbook of Human Nutrition, Oxford and IBH Publishing, 2 nd edition, 2003. 2. Shils M.E, Olson J.A, Shike M & Ross AC, Modern Nutrition in Health & Disease, Lippincott Williams and Wilkins, 10 th edition, 2006. 3. Krause and Mahan's, Food & Nutrition. Care Process, W.B Saunder, 16 th edition, 2022
Web Resource(s):
1. www.idaindia.com

Course Outcomes		
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.	K3
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.	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Ms. K. Priyadharshini

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UND3CC6P	Core - VI	3	3	20	80	100
Course Title		Dietetics - I - Practical					

Content for practical	Hours
<p>Planning, Nutritive value calculation and preparation of one serving diet for the following conditions:</p> <ol style="list-style-type: none"> 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. 6. Gall Bladder diseases- cholecystitis and cholelithiasis. 7. Pancreatic diseases- Acute and chronic pancreatitis. <p>Assessment and activities</p> <ol style="list-style-type: none"> 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. 	36

Text Book(s):
<ol style="list-style-type: none"> 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, 4th edition, 2017.

Course Outcomes		
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.	K3
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.	K3
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 Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Ms.K.Priyadharshini

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					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, Hurler syndrome, Phenylketonuria, Albinism, Cystinuria, Alcaptonuria, Wilson's disease.	12
III	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	Current Trends *(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 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):

1. <https://www.youtube.com/watch?v=DhwAp6yQHQI&list=PLRdQ4XybtNjRjIIIvcoCMcwN36BIgPDqw>
2. <https://www.youtube.com/watch?v=jLy2K-29xU>
3. <https://www.youtube.com/watch?v=YWEiQIEUFak>
4. <https://www.youtube.com/watch?v=iuW3nk5EADg>

Course Outcomes

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

CO No.	CO Statement	Cognitive Level (K-Level)
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 Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
Mean Overall Score											1.60
Correlation											Medium

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

Course Coordinator: J.PRIYA

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UND3AC6P	ALLIED –VI	3	2	20	80	100
Course Title		Nutritional Biochemistry - Practical					

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) 4. Estimation of Blood Glucose 5. Estimation of Blood Urea (DAM Method) 6. Estimation of serum cholesterol (Zak's Method) 7. Estimation of creatinine in urine.	45

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. 2. Pallab Basu, Biochemistry Laboratory Manual, Second Edition, Academic Publishers, Kolkata, 2016. 3. Soundravally Rajendiran and Pooja Dhiman, Biochemistry Practical Manual, Elsevier 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 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

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
Mean Overall Score											1.62
Correlation											Medium

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

Course Coordinator: J.PRIYA

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					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
II	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 th Edition. 2021 3. Dr. Sara Gottfried. Women food and Hormones, Piatkus publication, 2021
Reference Book(s):
1. Krause and Mahan’s, Food & Nutrition. Care Process, W.B Saunder, 16 th edition, 2022 2. Roberta. L Duyff, Complete food and Nutrition Guide. Harvest publications, 2017
Web Resource(s):
1. https://www.cdc.gov/reproductivehealth/womensrh/healthconcerns.html

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	CO Statement	Cognitive Level (K-Level)
CO1	Recall the role of nutrients in women's health	K1
CO2	Interpret the nutritional needs during pregnancy and lactation	K2
CO3	Develop the dietary guidelines for women	K3
CO4	Acquire knowledge about needs of nutritional requirements during menstrual cycle	K4
CO5	Appraise physiological changes in elder women	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					MEAN SCORE OF COs
	PO 1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
CORRELATION											MEDIUM

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

Course Coordinator: N. Asiffa Jabeen

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCN3AE2	AECC - II	2	2	-	100	100
Course Title		Environmental Studies					

Unit	Contents	Hours
I	The multidisciplinary nature of environmental studies Definition, scope, importance, awareness and its consequences on the planet.	6
II	Ecosystems: Definition, structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	6
III	Natural Resources: Renewable and Non-renewable Resources: Land Resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). Heating of earth and circulation of air; air mass formation and precipitation. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies. renewable energy resources significance of wind, solar, hydal, tidal, waves, ocean thermal energy and geothermal energy.	6
IV	Biodiversity and Conservation: Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns biodiversity hot spots. mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: <i>In situ</i> and <i>Ex situ</i> conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	6
V	Environmental Pollution & Conservation: Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution Waste to wealth - Energy from waste, value added products from waste, fly ash utilization and disposal of garbage, solid waste management in urban and rural areas, Swachh Bharat Abhiyan, recent advances in solid waste management, modern techniques in rain water harvesting and utilization.	6

Text books:

1. Asthana DK and Meera A, Environmental studies, 2nd Edition, Chand and Company Pvt Ltd, New Delhi, India, 2012.
2. Arumugam N and Kumaresan V, Environmental studies, 4th Edition, Saras Publication, Nagercoil, Tamil Nadu, India, 2014.

Activity – I:

1. Assignments – Titles on Environmental awareness to be identified by teachers from the following (scripts not less than 20 pages)
2. Elocution – (Speech on “Environment beauty is the fundamental duty” of citizen of the country for 3 to 5 minutes)
3. Environment issues – TV, Newspaper, Radio and Medias messages – Discussion π Case Studies/Field Visit/Highlighting Day today environmental issues seen or heard
4. Debating/Report Submission – Regarding environment issues in the study period Activity II
5. Environmental awareness through charts, displays, models and video documentation.

Celebrating Nationally Important Environmental DaysNational Science Day – 28th FebruaryWorld wild life Day – 3rd MarchInternational forest Day – 21st MarchWorld Water Day – 22nd MarchWorld Meteorological Day – 23rd MarchWorld Health Day – 7th AprilWorld Heritage Day – 18th AprilEarth / Planet Day – 22nd AprilPlants Day – 26th MayEnvironment Day – 5th June Activity III Discipline specific activities**EVALUATION COMPONENT:**

Component I: (25 Marks) Document (or) Poster presentation or Elocution

Component II: (25 Marks) Album making (or) case study on a topic (or) field visit

Component III: (25 Marks) Essay writing (or) Assignment submission

Component IV: (25 Marks) Quiz (or) multiple choice question test

Course Outcomes**Course Outcomes:** Upon successful completion of this course, the student will be able to:

CO No.	CO Statement	Cognitive Level (K-level)
CO1	To understand the multi-disciplinary nature of environmental studies and its importance	K1
CO2	To obtain knowledge on different types of ecosystem	K2
CO3	To acquire knowledge on Renewable and non-renewable resources, energy conservation	K3
CO4	To understand biodiversity conservation	K4
CO5	To analysis impact of pollution and conversion waste to products	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	02	02	02	02	02	03	03	03	03	03	2.5
CO2	02	03	03	02	03	03	03	03	03	03	2.8
CO3	02	03	03	03	03	03	03	03	03	03	2.9
CO4	02	02	03	03	03	03	03	03	03	03	2.8
CO5	02	03	03	03	03	03	03	02	03	03	2.8
Mean Overall Score											2.7
Correlation											High

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

Course Coordinator: Dr. B. Balaguru

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	23UND4CC7	Core - VII	6	6	25	75	100
Course Title		Dietetics - II					

SYLLABUS		
Unit	Contents	Hours
I	Diabetes Mellitus: 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	Cardio Vascular Disease and Metabolism Cardio vascular diseases -Pathogenesis, types, etiological factors, complications, dietary modification and diet planning for the hypertension, hyperlipidaemia, Atherosclerosis, Ischemic Heart Disease, Congestive Cardiac Failure. Diseases of Metabolism -Hypothyroidism, Hyperthyroidism, PCOD, Arthritis, Osteoporosis, Reproductive system diseases-etiological factors, symptoms, diagnostic tests, dietary modifications and guidelines.	18
III	Renal System and Inborn Error of Metabolism 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. Dietary management for Inborn Errors of Metabolism -Galactosemia (Carbohydrate metabolism), Phenylketonuria (Aminoacid Metabolism), Niemann Pick disease (lipid storage Metabolism).	18
IV	Dietary Management for Cancer and AIDS: 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	Nutritional care for pediatric with Special Needs, Musculoskeletal Disorders and Functional Foods 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. Functional foods – Definition, classification, uses of functional foods in the prevention and treatment of – Obesity, Diabetes mellitus, Cardiovascular diseases, Cancer.	18
VI	Current Trends - Dietary counseling and awareness on Naturopathy	

* For Theory Core Course, wherever possible

Text Book(s):
<ol style="list-style-type: none"> 1. Srilakshmi. B, Dietetics, 7th Edition, New Age International (P) Ltd. Publishers, Chennai, 2022. 2. Joshi, S.A, Nutrition and Dietetics, 2nd edition, TATA McGraw Hill publications, New Delhi. 2008 3. Antia, F.P, Clinical Dietetics and Nutrition, 4th 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 successful 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 Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: S. Sheerin

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UND4CC8P	Core - VIII	3	2	20	80	100
Course Title		Dietetics – II - Practical					

SYLLABUS		
Unit	Contents	Hours
I	Planning, Nutritive value calculation and preparation of one serving diet for the following conditions	
1	Diabetes Mellitus-Type-1, Type-II and Gestational diabetes.	45
2	Cardio vascular system disease - Hypertension, Atherosclerosis	
3	Renal disease - Glomerulonephritis, Nephrotic syndrome, Nephrolithiasis	
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):
<ol style="list-style-type: none"> 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):
<ol style="list-style-type: none"> 1. Dr.M. Swaminathan, “Food and Nutrition (An Advanced Textbook)” Vol.II, The Bangalore Printing & Published Co., Ltd., Bangalore, 2012. 2. Joshi.A.S, Nutrition & Dietetics, Tata McGraw Hill Education Pvt. Ltd., New Delhi, Third Edition, 2010
Web Resource(s):
<ol style="list-style-type: none"> 1. https://cdn.who.int/media/docs/default-source/healthy-diet/healthy-diet-fact-sheet-394.pdf?sfvrsn=69f1f9a1_2&download=true 2. https://girmeswheatgrass.com/wp-content/uploads/2020/06/Naturopathy-Diet-Recipes.pdf 3. https://sandhyaramanadharfoundation.com/wp-content/uploads/2021/05/Acknowledgement.pdf

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	CO Statement	Cognitive Level (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

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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											2.2
Correlation											Medium

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

Course Coordinator: S. Sheerin

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	23UND4AC7	ALLIED - VII	4	4	25	75	100
Course Title		Fundamentals of Food Microbiology					

SYLLABUS

Unit	Contents	Hours
I	INTRODUCTION TO FOOD MICROBIOLOGY: 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
II	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 responsible for food spoilage.	12
IV	FOOD BORNE DISEASES: 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</i> , <i>Escherichia coli</i> , <i>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	CURRENT CONTOURS: (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, 5th 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, Wiley Publications, 2023

Web resource(s):

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

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	CO Statement	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 Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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											1.54
Correlation											Medium

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

Course Coordinator: J. P. Jayasri

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					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.	45 Hours
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.	
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 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	K3

RELATIONSHIP MATRIX:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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											1.6
Correlation											Medium

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

Course Coordinator: JP. Jayasri

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

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

Text Book(s):
<ol style="list-style-type: none"> 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,1997 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 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.	K3
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	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
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
CORRELATION											MEDIUM

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

Course Coordinator: N. Asiffa Jabeen