CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS)

NATIONALLY ACCREDITED (IIICYCLE) WITH "A" GRADE BY NAAC ISO 9001:2015 Certified TIRUCHIRAPPALLI

DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS



B.Sc., NUTRITION AND DIETETICS

SYLLABUS

2023-2024 and Onwards

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS), TRICHY-18



DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS

B.Sc., NUTRITION AND DIETETICS LEARNING OUTCOME BASED CURRICULUM FRAME WORK (CBCS-LOCF) (For the Candidates admitted from the Academic year 2023-2024 onwards) Semester I

				Course Code			Exam			
		Course	Title		rs. k					
lester	art				st .H wee	lits	Marks		ks	_
Sem	P				II	Cred	Hrs.	Int	Ext	Tota
			பொதுத்தமிழ் -I	23ULT1						
			Hindi ka Samanya Gyan aur Nibandh	23ULH1						
I	Ι	Language Course – I (LC) – Tamil * / Other Languages *	Poetry, Grammar and History of Sanskrit Literature	23ULS1	6	6 3		25	75	100
			Foundation Course: Paper I- French I	23ULF1						
	п	English Language Course-I (ELC)	General English– I	23UE1	6	3	3	25	75	100
		Core Course –I (CC)	Human Physiology	23UND1CC1	5	5	3	25	75	100
		Core Practical-I (CP)	Human Physiology (P)	23UND1CC1P	3	3	3	40	60	100
	III	First Allied Course –I (AC)	Food Chemistry	23UND1AC1	4	3	3	25	75	100
		First Allied Course –II (AP)	Food Chemistry (P)	23UND1AC2P	4	3	3	40	60	100
	IV	Ability Enhancement Compulsory Course– I (AECC)	Value Education	23UGVE	2	2	-	100	-	100
		TOTAL			30	22				700

Semester II

	Comme		Course Code		/		Exam			
r		Course	Title		Hrs. ek					
este	art				st .F wee	its	Mark		ks	
Sem	$\mathbf{P}_{\mathbf{c}}$				In	Cred	Hrs.	Int	Ext	[otal
		பொதுத்தமிழ் - II 23ULT2 Language Course – II Grammar - II 22ULH2								
	I	* / Other Languages *	Prose, Grammar and History of Sanskrit literature	23ULS2	6	3	3	25	75	100
			Basic French - II	22ULF2						
	Π	English Language Course-II (ELC)	General English - II	23UE2	6	3	3	25	75	100
Π		Core Course –II (CC)	Nutrition Through Life Span	22UND2CC2	5	5	3	25	75	100
		Core Practical-II (CP)	Nutrition Through Life Span (P)	22UND2CC2P	3	3	3	40	60	100
	ш	Core Course –III (CC)	Food Science	23UND2CC3	2	2	3	25	75	100
		First Allied Course – III (AC)	Macro and Micro Nutrients	23UND2AC3	4	3	3	25	75	100
	TV	Ability Enhancement Compulsory Course– II (AECC)	Environmental Studies	22UGEVS	2	2	-	100	-	100
	ŢÂ	Ability Enhancement Compulsory Course– III (AECC)	Innovation and Entrepreneurship	22UGIE	2	1	-	100	-	100
		Extra Credit Course	SWAYAM ONLINE COURSE		As per UGC Recommend			ation		
		TOTAL			30	22				800

Semester III

Sem		Course	Title	Course Code	k		Exam			
	rt				st. Vee	lits		Ma	arks	al
	Pa				Ins rs/V	Cree	Irs	Int	Ext	Fot:
					ΗI	$\overline{}$	H			L '
	Ι	Language Course – III (LC) – Tamil* / Other	பொதுத்தமிழ்-III	23ULT3	6	3	3	25	75	100
		Languages *)	Hindi Literature & Grammar III	22ULH3						
			Drama, Grammar and History of Sanskrit Literature	23ULS3						
			Intermediate French - I	22ULF3						
III	Π	English Language Course- III (ELC)	Learning Grammar Through Literature - I	23UE3	6	3	3	25	75	100
	III	Core Course– IV(CC)	Diet Therapy I	23UND3CC4	5	5	3	25	75	100
		Core Practical–III (CP)	Diet Therapy I (P)	22UND3CC3P	3	3	3	40	60	100
		Second Allied Course- I (AC)	Nutritional Biochemistry	22UND3AC4	4	3	3	25	75	100
		Second Allied Course – II (AP)	Nutritional Biochemistry (P)	22UND3AC5P	4	3	3	40	60	100
	13.7		Basics in Nutrition	22UND3GEC1						
	IV	Course– I (GEC)	Basic Tamil - I	22ULC3BT1	2	2	3	25	75	100
			Special Tamil - I	22ULC3ST1						
		Extra Credit Course	SWAYAM ONLINE COURSE		As		As per UGC Recommendation			
		TOTAL			30	22				700

Semester III

					rs/ K	ts				
Sem	art	Course	Title	Course	t. H /eel	edi		Ma	rks	Total
	Ρ			Code	Inst W	Cr	Hrs	Int	Ext	
		Language Course	பொதுத்தமிழ்-IV	23ULT4						
			Hindi Literature & Functional Hindi	22ULH4					75	100
	Ι	* / Other	Alankara, Didactic and		6	3	3	25		
		Languages*)	Modern Literatures and Translation	23ULS4						
			Intermediate French II	22ULF4						
	II	English Language Course - IV(ELC)	Learning Grammar Through Literature - II	23UE4	6	3	3	25	75	100
IV	III	Core Course – V(CC)	Diet Therapy II	23UND4CC5	6	5	3	25	75	100
		Core Practical - IV(CP)	Diet Therapy II (P)	22UND4CC4P	4	4	3	40	60	100
		Second Allied Course – III (AC)	Food Microbiology	23UND4AC6	4	3	3	25	75	100
		Internship	Internship	22UND4INT	-	2	-	40	60	100
	IV	Generic Elective	Meal Planning for the Family	22UND4GEC2	2	2	2	25	75	
		Course– II	Basic Tamil - II	22ULC4BT2	2	Z	3	25	15	100
		(GEC)	Special Tamil - II	22ULC4ST2						
		Skill Enhancement Course– I (SEC)	Basics in Food Production (P)	22UND4SEC1P	2	2	3	40	60	100
		Extra Credit CourseSWAYAM ONLINE COURSE			As per UGC Recommenda					ion
		TOTAL			30	24				800

CAUVERY COLLEGE FOR WOMEN (AUTONOMOUS) DEPARTMENT OF FOOD SERVICE MANAGEMENT AND DIETETICS

VISION

To strengthen and integrate academic excellence, ethical values and social responsibility to develop a healthy nation by imparting skill based knowledge, professional competency and entrepreneurial skills.

MISSION

- To have a breath of knowledge across the subject areas of Nutrition and Dietetics.
- To professionally enrich the students for successful career in Academia, Industry and Research.
- To promote and inculcate self-reliance, social relevance, sound value system and code of professional practice among students.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEOs	Statements
PEO1	LEARNING ENVIRONMENT
	To facilitate value-based holistic and comprehensive learning by integrating innovative learning practices to match the highest quality standards and train the students to be effective leaders in their chosen fields.
PEO2	ACADEMIC EXCELLENCE
	To provide a conducive environment to unleash their hidden talents and to nurture the spirit of critical thinking and encourage them to achieve their goal.
PEO3	EMPLOYABILITY
	To equip students with the required skills in order to adapt to the changing global scenario and gain access to versatile career opportunities in multidisciplinary domains.
PEO4	PROFESSIONAL ETHICS AND SOCIAL RESPONSIBILITY
	To develop a sense of social responsibility by formulating ethics and equity to transform students into committed professionals with a strong attitude towards the development of the nation.
PEO5	GREEN SUSTAINABILITY
	To understand the impact of professional solutions in societal and environmental contexts and demonstrate the knowledge for an overall sustainable development.

PROGRAMME OUTCOMES FOR B.Sc., NUTRITION AND DIETETICS PROGRAMME

PO NO	Programme Outcome On completion of B.Sc., Programme, the students will be able to
	ACADEMIC EXCELLENCE AND COMPETENCE
PO1	Elicit firm fundamental knowledge in theory as well as practical for coherent
	understanding of academic field to pursue multi and interdisciplinary science
	careers in future.
	HOLISTIC AND SOCIAL APPROACH
PO2	Create novel ideas related to the scientific research concepts through advanced
	technology and sensitivity towards sustainable environmental practices as well as
	social issues.
PO3	PROFESSIONAL ETHICS AND TEAM WORK
	Explore professional responsibility through project strategies, internships, field
	trip/industrial visits and mentorship programmes to transmit communication
	skills.
PO4	CRITICAL AND SCIENTIFIC THINKING
	Equip training skills in internships, research Projects to do higher studies in
	multidisciplinary path with higher level of specialization to become professionals of
	high-quality standards.
PO5	SOCIAL RESPONSIBILITY WITH ETHICAL VALUES
	Ensure ethical, social and moral values in the minds of learners and attain gender
	parity for building a healthy nation.

PROGRAMME SPECIFIC OUTCOMES FOR B.Sc., NUTRITION AND DIETETICS PROGRAMME `

PSO NO	PSO NO Students of B.Sc., Nutrition & Dietetics will be able to						
PSO1	Apply the knowledge of food science, nutrition and dietetics to resolve the scientific issues and problems.	PO1					
PSO2	Assess the nutritional status and recommend nutritional support and therapeutic care as sustainable approach for better health and prevention of diseases.	PO1, PO2					
PSO3	Associate physiological, biochemical and microbiological parameters with health and diseases.	PO1					
PSO4	Develop technical and human relation skills in relation to food services, demonstrate professional attributes required to manage the hospitality industry and to communicate effectively in the context of nutrition and dietetics.	PO3, PO4					
PSO5	Demonstrate critical thinking skills and analytical abilities to identify and solve problems through internships and projects.	PO4,					
		PO5					

SEMESTER I	INTERNAL MAR	KS: 25	EXTERNAL MARKS:75			
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS		
23UND1CC1	HUMAN PHYSIOLOGY	CORE	5	5		

- To augment knowledge on anatomical perception of organs and its co-ordination with other organs.
- To understand the functions of the human organs.
- To study the structure of human organs.

CO	CO Statement	Cognitive
Number	On the successful completion of the course, students will be able to	Level
CO 1	Define the main structures composing human body	K1
CO 2	Explain process of the system in the body	K2
CO 3	Relate organ structure with function	К3
CO 4	Determine functions of cells, tissues and organs	K4
CO 5	Ascertain physiological adaptations	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	2
CO2	3	3	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	2	3	3	3	2	3	2
CO5	3	3	3	2	3	3	3	2	3	2

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE
				LEVEL
I	 a. Cell : Structure of organelles and functions. Tissues– Structure, classification and functions. b. Blood : Composition, functions, coagulation, factors affecting coagulation, blood groups. 	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
	c. Immune system : Innate, acquired and active immunity, cell mediated immunity, humoral immunity and complement system			
П	 a. Heart and Circulatory system: Structure, cardiac cycle, cardiac output, factors affecting cardiac output, normal ECG, heart failure, blood pressure, control and factors affecting blood pressure. b. Respiratory system : 	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
	Structure and functions, Lung volumes and lung capacities Eactors affecting efficacy of respiration			
III	 a. Nervous System: General classification of nervous system-, Structural organization of nervous system – neuron, ganglion, neuroglia, nerves – classification motor, sensory and mixed, Structure and functions - spinal cord, brain - anatomy and functions of cerebrum, cerebellum, brain stem and medulla oblongata. b. Sense Organs : Structure and function of eye, ear, nose and 	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
IV	a Gastrointestinal and Hepto biliary system : Digestive system- Anatomy, Structure and Functions of mouth, pharynx, esophagus, stomach, Small intestine and large intestine. Digestive gland – salivary, liver, gall bladder and pancreas. Digestion in the mouth, stomach and intestines. b. Excretory system : Urinary System-Structure and functions of organs of urinary system, Mechanism of urine formation. micturition	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4

	Skin- Structure and functions, Regulation of body temperature.			
V	a. Endocrine system : Thyroid, Parathyroid, Adrenal gland, Pituitary and Sex glands – Structure and functions	15	CO1, CO2, CO3, CO4, CO5	K1,K2,K3,K4
	b. Reproductive system : Female reproductive systemStructure and functions, menstrual cycle, menarche and menopause. Male Reproductive system - Structure and functions.			
VI	SELF STUDY FOR ENRICHMENT(Not to be included for External Examination)Functions of heamoglobin,Artificial respiration,Errors of refraction,Movements of the intestineMenstrual disorders.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

1. Sembulingam. (2016). Essentials of Medical Physiology. Health Sciences Publisher. New Delhi.

2. Subramanyam., Sarada. (2018). Textbook of Human Physiology. S.Chand and company Ltd, New Delhi.

3. Randhawa.S.S., Atul Kabra.(2017). Human Anatomy and Physiology-I. S.Vikas and Company, India.

Reference Books

1. Guyton (2000). Guyton and Hal Textbook of Medica Physiology, Saunders, United States of America.

2. Waugh Anne Ross and Wilson (2003). *Anatomy and Physiology in Health and Illness*. Churchill Livingston. New York.

3. Murugesh. N (2011). Anatomy and Physiology, Sathya Publishers, Madurai.

4. Wilson Ross (2014). Anatomy and Physiology in Health and Illness, Reed Elsevier India Private Limited. New Delhi.

5. Chatterjee .C.2016). Human Physiology Volume I, Medical Allied Agency. Kolkata.

Web Link:

1. <u>https://www.khanacademy.org/science/health-and-medicine/human-anatomy- andphysiology</u>

2. https://www.biologyonline.com/tutorials/the-human-physiology

3. <u>https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/</u>

4. https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkB A==

Journals:

1. Human Physiology, Maik Nauka / Interperiodica Publishing, Russian Federation.

2. Indian Journal of Clinical Anatomy and Physiology, Innovative publication Pvt. LTD, India.

3. American Journal of Physiology - Endocrinology and Metabolism, American Physiological Society, United States.

4. Canadian Journal of Physiology and Pharmacology, Canadian Science Publishing, Nrc Research Press, Canada.

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designers

• Ms. S.FATHIMA

SEMESTER I	INTERNAL MARKS:	EXTERNA	AL MARKS:60	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UND1CC1P	HUMAN PHYSIOLOGY (P)	CORE PRACTICAL	3	3

- > To acquire knowledge on cellular arrangements
- > To understand the components present in blood
- > To learn methods to be adopted for the measurement of various blood parameters

Course	Course Outcome and Cognitive Level Mapping								
СО	CO Statement	Cognitive							
Number	On the successful completion of the course, students will be able to	Level							
CO 1	Identify cells present in the body	K1							
CO 2	Explain cellular adaptations related to physiological changes	K2							
CO 3	Illustrate the methods to be adapted for the measurement of various blood parameters	K2							
CO 4	Predict number of cells present in blood	K3							
CO 5	Dissect various cellular arrangement in tissues and organs	K4							

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	2	3	2
CO2	3	3	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	3	2
CO4	3	3	3	2	3	3	3	2	3	2
CO5	3	3	3	2	3	3	3	2	3	2

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

List of Experiments

- 1. Microscopic study of tissues- epithelial, connective and muscular.
- 2. Collection of blood sample-Capillary blood from finger tips and venous blood.
- 3. Separation of blood components (Centrifugation).
- 4. Estimation of hemoglobin-Sahli's Acid hematin method.
- 5. Determination of Hematocrit (Wintrobe method).
- 6. Preparation and examination of stained blood smear (Wedge or glass slide method).
- 7. Determination of Erythrocyte Sedimentation Rate (Wintrobe method).
- 8. Determination of blood group.
- 9. Determination of bleeding time (Duke method) and coagulation time (Capillary tube method).
- 10. Platelet count (Rees Ecker method by hemocytometry).
- 11. Clinical examination of radial pulse (pulse rate).
- 12. Measurement of blood pressure (Sphygmomanometry).
- 13. Effect of exercise on blood pressure and heart rate.
- 14. Microscopic structure of heart, digestive system and kidney.
- 15. Microscopic structure of reproductive organs-ovary, uterus, mammary glands and testis.
- 16. Microscopic structure of endocrine glands-thyroid, pituitary and adrenal.

1. G.K.Pal and Parvati Pal.(2001) Text book of practical physiology. Orient Longman Ltd.

Reference Books

Sembulingam. (2016). Essentials of Medical Physiology. Health Sciences Publisher. New Delhi.
 Subramanyam., Sarada. (2018). Textbook of Human Physiology. S.Chand and Company Ltd, New Delhi

Web Links:

1. https://www.khanacademy.org/science/health-and-medicine/human-anatomy-andphysiology

- 2. https://www.biologyonline.com/tutorials/the-human-physiology
- 3. <u>https://digitaleditions.library.dal.ca/intropsychneuro/chapter/hunger-and-eating/</u>
- 4. https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkB A==

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demonstration

Course Designers

• MS. S.FATHIMA

SEMESTER I	INTERNALMARKS:	INTERNALMARKS:25		
COURSE CODE	COURSETITLE	CATEGORY	HRS / WEEK	CREDITS
23UND1AC1	FOOD CHEMISTRY	ALLIED	4	3

- To gain insight into the chemistry of foods
- To understand the scientific principles involved in food preparation
- To understand the various properties exhibited by foods

Course Outcome and Cognitive Level Mapping

CO	CO Statement	Cognitive Level
Number	On the Successful completion of the course, students will be	
	able to	
CO1		K 1
	Define physical and chemical properties of food	
CO2	Explain the structural changes of food during cooking	K2
CO3	Predict the cooking quality of food	K3
CO4	Classify plant pigments	К3
CO5	Examine the uses of food additives and leavening agent	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	1	1	3	3	1	1	1
CO2	3	2	2	1	1	3	2	1	1	1
CO3	3	3	2	2	1	3	3	1	1	1
CO4	3	3	2	2	1	3	3	1	2	1
CO5	3	2	1	-	-	3	3	2	1	1

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" - Substantial (High) Correlation "-" indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
Ι	 Introduction to Food Science, Physiochemical properties of food and water a) Introduction to Food Science – Definition of Food Science, Basic Five Food Groups and its components, Nutritional classification of food. b) Introduction to physiochemical properties of food - Physical Properties of water and ice, hydrogen bonding, bound water, water activity, determination of moisture content. c)Types of colloidal system - Colloids, sol, gel, emulsion and foam. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	 Starch and Sugar a)Starch- Structure, characteristics, components and types, swelling of starch granules, gel formation, gelatinization, retrogradation, effect of sugar, acid, alkali, fat and surface-active agents on starch. b)Sugar - Stages of sugar, artificial sweeteners, solubility and crystallization, factors affecting crystallisation – crystalline and non-Crystalline candies, caramelization, chemistry of milk sugar, non-enzymatic browning and its preventive measures. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	 Protein a)Properties and components of protein - Coagulation and denaturation of protein, protein concentrates, isolates and hydrolysate and their application, effect of soaking, fermentation and germination on pulse protein. b)Chemistry of protein-Action of heat, acid, and alkali on vegetable and animal protein. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	 Fats and oils a)Physical and chemical properties of fats and oils Hydrogenation, winterization, decomposition of triglycerides, shortening power of fats. b) Changes in fats and oils–Changes during cooking, factors affecting absorption of fat in foods. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	Pigments, Food additives and Leavening agents	12	CO1,	K1, K2, K3, K4
	a) Pigments - Types of plant pigments, water and		CO2,	
	fat soluble pigments, natural colours used in		CO3,	
	foods, pectins, phenolic components, enzymatic		CO4,	
	browning in fruits and vegetables. volatile compounds in fruits and vegetables.		05	
	b) Food additives-Classification and its uses.			
	c) Leavening agents - Types, physical, chemical and biological leavening agents, mechanism of action.			
VI	SELF STUDY FOR ENRICHMENT	-	CO1,	K1, K2, K3, K4
	(Not to be included for External Examination)		CO2,	
	Types of emulsion,		СОЗ,	
	Factors affecting gelatinization,		CO4	
	Chemistry of coagulation of egg,		,	
	Types and prevention of rancidity,		CO5	
	Uses of Leavening agents.			

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

Reference Books

- 1. Vickie, A., Vaclavik Elizabeth, W.Christian. (2014). *Essentials of Food Science*.(4th ed.). Springer Science and Business Media, New York.
- 2. Raheena Begum, M. (2015). *Textbook of Foods*. *Nutrition and Dietetics*. (3rd ed.), Sterling Publishers Pvt. Ltd, New Delhi.
- 3. Avantina Sharm. (2019). *Textbook of Food Science and Technology*. (3rd ed.). CBS Publishers and Distributors.

Web Links

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

Journals

- 1. Journal of food chemistry and nutrition science, Pakistan.
- 2. Food chemistry, Elsevier, United Kingdom.

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment, Group Discussion

Course Designer

Ms.N.GANGA DEVI

SEMESTER I	INTERNALMARKS:40 EXTERNALMARKS					
COURSE		CATECODY	HRS /	CDEDITS		
CODE	COURSE IIILE	CATEGORY	WEEK	CREDITS		
23UND1AC2P	FOOD CHEMISTRY (P)	ALLIED PRACTICAL	4	3		

- To gain the knowledge on chemistry of various nutrients present in food. •
- To understand the physical and chemical changes during cooking.
- To develop skills to judge the quality of food. •

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On successful completion of the course, students will be able to	Cognitive Level
CO1	Identify the structure of starch molecules	K1
CO2	Describe the factors affecting the cooking quality of food	K2
CO3	Predict enzymatic browning in fruits and vegetables	K3
CO4	Infer the changes of fats and oils during temperature modifications	K4
CO5	Determine the role of food additives	K4

Mapping of CO with PO and PSO

Cos	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	1	2	3	3	1	1	1
CO2	3	2	2	1	1	3	2	1	1	1
CO3	3	2	2	1	1	3	3	1	1	1
CO4	3	2	2	1	1	3	3	1	2	1
CO5	3	2	2	1	1	3	3	2	1	1

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation "3" – Substantial (High) Correlation "-" indicates there is no correlation.

List of Experiments

- 1. **Chemistry of starch** Properties of food starches, microscopic examination of uncooked and cooked gelatinized starch, dextrinization.
- 2. **Chemistry of sugar** Stages of sugar cookery, sugar crystallization in preparation of fondant, fudge, and caramel, browning reaction in milk sugar.
- 3. Chemistry of proteins in cereals and pulses Gluten formation, factors influencing texture, digestibility of pulses soaking, germination, addition of sodium bicarbonate, addition of salt, water quality- hard and soft water, pressure cooking, and malting of pulses.
- 4. **Chemistry of proteins in milk and egg** Curdling of milk using lime juice, butter milk, tomato juice. Coagulation of egg white and egg yolk (boiled egg, poached egg, omelete), prevention of Ferrous sulphide formation on the yolk, factors affecting whipping quality of egg white effect of salt, sugar, vinegar, fat and milk
- 5. Chemistry of Fats and Oils Determination of smoking temperature of different fats and oils, effect of temperature of oil on texture and palatability of foods Frying pooris at different temperatures.
- 6. **Chemistry of Plant Pigments** Changes in colour and texture of vegetables due to different methods of cooking, cooking medium and addition of acid/alkali on water-soluble and fat-soluble pigments, enzymatic browning in apples, banana, brinjal and raw banana and its preventive measures.
- 7. **Food additives and Raising agents** Role of MSG (Mono Sodium Glutamate), sodium benzoate and KMS (Potassium bi sulphate) in food preparation and preservation, use of baking soda, baking powder, yeast in baking and food preparation- prepare one dish with each of these, uses of herbs and spices to enhance flavour.

- 1. Shakuntala ManayN. (2013). *Foods: Facts and Principles*. (3rd ed). New Age International Publishers, New Delhi.
- 2. Swaminathan M. (2019). *Advanced Text Book on Food and Nutrition*.(2nd ed). Bangalore Printing and Publishing Co. Ltd, Bangalore.

Reference Books

- 1. Krishna Arora.(2008). Theory of cookery. Frank Brothers & Co.
- 2. Penfield MP and Ada Marie C.(2012). *Experimental Food Science*. Academic Press, SanDiego

Web Links

- https://www.ihmnotes.in/assets/Docs/Books/Theory_of_Cookery.pdf
- http://staffnew.uny.ac.id/upload/132318572/pendidikan/buku-esp.pdf
- <u>https://www.scienceofcooking.com/</u>

Journals

1. Journal of food chemistry and nanotechnology, United Scientific Group, USA

2. Journal of Agricultural and Food chemistry, American chemical society, United States.

Pedagogy:

E-content, Lecture, Power Point presentation, Seminar, Assignment, Demonstration

Course Designer:

Ms. N.GANGA DEVI

SEMESTER- II	INTERNAL MARKS: 25	EXTERNALMARKS:75				
COURSECODE	COURSETITLE	CATEGORY	HRS / WEEK	CREDITS		
22UND2CC2	NUTRITION THROUGH LIFE SPAN	CORE	5	5		

- To learn about nutritional needs of various age group.
- To enable the students to plan menu.
- To acquire knowledge on physiological changes in various stages of life cycle.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Identify national nutritional guidelines for various life stages.	K1
CO2	Describe physiological changes in various stages of life cycle.	K2
CO3	Relate nutritional care plan for all age groups.	К3
CO4	Associate nutritional strategies to combat the nutritional problems.	K4
CO5	Determine menu according to nutritional requirements of different age group.	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	-	3	3	-	3	3
CO2	3	3	3	2	-	3	3	-	3	3
CO3	3	3	3	2	-	3	3	-	3	3
CO4	3	3	3	2	-	3	3	-	3	3
CO5	3	3	3	2	-	3	3	-	3	3

"1" - Slight (Low) Correlation ¬ "2" - Moderate (Medium) Correlation

"3" – Substantial (High) Correlation \neg "-" indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE
I	a) Fundamentals of Nutrition - Basic five	15	CO1.	LEVEL K1. K2. K3. K4
	food groups, nutrient needs - Dietary		CO2,	7 7 - 7
	Reference Intakes, RDA and dietary		CO3, CO4,	
	guidelines, my plate, balanced diet.		CO5	
	b) Menu planning - Definition, principles			
	of menu planning, points to be considered in			
	menu planning, steps involved in planning			
	menu, factors influencing meal planning.			
II	a) Nutrition for Pregnancy – Physiological	15	CO1,	K1, K2, K3, K4
	changes during pregnancy, stages of		CO2, CO3	
	pregnancy, nutritional assessment and		CO4,	
	guidance in prenatal care, importance of pre		CO5	
	and periconceptional nutrition during			
	pregnancy, nutritional problems,			
	complications, food and nutritional			
	requirements, dietary guidelines.			
	b) Nutrition for Lactation – Role of			
	hormones in milk production, factors			
	affecting the volume and composition of			
	breast milk, role of galactogogues, food and			
	nutritional requirements, dietary guidelines,			
	Lactation failure and factors responsible for			
	lactation failure.			
III	a) Nutrition for Infants- Growth and	15	CO1,	K1, K2, K3, K4
	development, importance of breast feeding,		CO2, CO3,	
	advantages of breast feeding, food and		CO4,	
	nutritional requirements. Weaning –		005	
	definition, types of weaning and			
	supplementary foods, points to be			
	considered in introducing weaning foods,			
	problems faced while introducing weaning			
	foods, complication in infant feeding - Low			
	birth weight , artificial feeding, special			
	children.			

	b) Nutrition for Preschoolers – Growth			
	and development, food and nutritional			
	requirements, factors affecting nutritional			
	status, low cost supplementary foods and			
	nutritional problems among preschoolers.			
IV	a) Nutrition for school going children –	15	CO1,	K1, K2, K3, K4
	Growth and development, food and		CO2, CO3,	
	nutritional requirements, packed lunch –		CO4,	
	factors to be considered, sample menu,		005	
	school lunch programmes, nutritional			
	problems.			
	b) Nutrition for adolescent – Growth and			
	development, body composition, puberty,			
	secondary sexual characteristics, food and			
	nutritional requirements, dietary guidelines,			
	nutritional problems.			
V	a) Nutrition for adulthood – Food and	15	CO1,	K1, K2, K3, K4
	nutritional requirements, dietary guidelines,		CO2, CO3,	
	nutritional problems. Nutrition and work		CO4,	
	efficiency.		005	
	b) Nutrition for Elderly –Process of			
	ageing, food and nutritional requirements,			
	dietary guidelines, nutrition related			
	problems, degenerative diseases.			
VI	SELF STUDY FOR ENRICHMENT		CO1,	K1, K2, K3, K4
	Examination)	-	CO2, CO3,	
	Classification of nutrients. Traditional sources		CO4,	
	of lactogogues . Points to be considered while planning packed lunch for a school going		005	
	child. Physiological changes during elderly.			

1. Srilakshmi ,B (2014). Dietetics. New Age International. New Delhi

2. Gajalakshmi ,R (2014). Nutrition Science. CBS Publishers and Distributors Pvt. Ltd

Reference Books

1. Barasi, Mary E, Great Britain (2002). Human Nutrition: Health Perspective Hodder

2. Sari Edelstein (2009). *Life cycle nutrition:An Evidence- based Approach*. Jones and Bartlett Publisher.

3. Swaminathan M (2012). Handbook of Food and Nutrition. Bangalore Publishing Co. Ltd.

4. Gopalan.C, Rama Sastri.V.B and Balasuramanian.S.C (2020). *Nutritive Value of Indian Foods* National Institute of Nutrition (ICMR) Hyderabad.

5.Shubhangini A Joshi. (2021).Nutrition and Dietetics, McGraw-Hill Education (India) Pvt Limited New Delhi..5th ed

6. Ravinder Chadha and Pulkit Mathur.(2015) . Nutrition: A Lifecycle Approach. The orient black swan.

Web Links

- .<u>https://quizizz.com/admin/quiz/5fa0555b365e37001e0c688d/nutrition-through-the-lifecycle</u>
- http://213.55.90.4/admin/home/Dmu%20Academic%20Resource//Health%20Science/Nutr ition%20and%20Food%20Science/2nd%20Year/Nutrition%20T
- <u>https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA==</u>
- https://www.fda.gov/media/135301/download
- https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=NuAs6SreCGryddEfs4kkBA==
- https://egyankosh.ac.in/handle/123456789/31256

Journals

1. Journal of Nutrition and Metabolism, Biomed central, United Kingdom

2. Pregnancy Hypertension, Elsevier B.V, Netherlands

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment, Group discussion.

Course Designers

Ms. S. FATHIMA Ms. T.R. REVATHI

SEMESTER-II	INTERNAL MARKS: 40	EXTERNAL MARKS:60			
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS	
22UND2CC2P	NUTRITION THROUGH LIFE SPAN (P)	CORE PRACTICAL	3	3	

- To gain knowledge on nutritive value of Indian foods.
- To understand the importance of nutrition for various stages of life cycle.
- To plan meal for various stages of life cycle.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Identify nutritive value of various foods	K1
CO2	Explain the importance of RDA for various stages of life cycle	K2
CO3	Prepare meal according to RDA	K3
CO4	Determine the nutrient content of the planned recipe	K4
CO5	Ascertain meal for various stages of life cycle	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	-	3	3	-	3	3
CO2	3	3	3	2	-	3	3	-	3	3
CO3	3	3	3	2	-	3	3	-	3	3
CO4	3	3	3	2	-	3	3	-	3	3
CO5	3	3	3	2	-	3	3	-	3	3

"1" – Slight (Low) Correlation \neg "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation ¬ "-" indicates there is no correlation.

List of Experiments

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

1. Srilakshmi B (2014). Dietetics New Age International. New Delhi

2. Gajalakshmi R (2014). Nutrition Science CBS Publishers and Distributors Pvt. Ltd

Reference Books

1. Barasi, Mary E, Great Britain (2002). *Human Nutrition: Health Perspective* Hodder and Stoughton.

2. Sari Edelstein (2009). Life cycle nutrition. Lones and Bartlett Publisher.

3. Swaminathan M (2012). Handbook of Food and Nutrition. Bangalore Publishing Co Ltd

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

Web Links

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

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment, Group discussion.

Course Designers

- Ms.S.FATHIMA
- Ms.T.R.REVATHI

SEMESTER - II	INTERNAL MARK	EXTE	RNAL MARKS:75	
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
23UND2CC3	FOOD SCIENCE	CORE	2	2

- To obtain knowledge on different food groups and their composition
- To study the different methods of cooking
- To understand the role of food groups in cookery

Course Outcome and Cognitive Level Mapping

СО	CO Statement	Cognitive
Number	On the successful completion of the course, students will be able to	Level
CO 1	Identify foods based on food groups and list their uses.	K1
CO 2	Explain classification, nutritive value and storage of different food groups	K2
CO 3	Relate changes in food due to cooking, processing and factors that affect acceptability, and nutritive value of various food groups	К3
CO 4	Sketch different methods of cooking and select the methods best suited for cooking different foods.	К3
CO 5	Ascertain the selection criteria of different food groups	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	-	2	2	3	3	3	2	-
CO2	3	3	-	2	2	3	3	3	2	-
CO3	3	3	-	2	2	3	3	3	2	-
CO4	3	3	-	2	2	3	3	3	2	-
CO5	3	3	-	2	2	3	3	3	2	-

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation "3" – Substantial (High) Correlation "-" indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE
				LEVEL
I	 a) Fundamentals Food Science Definition of food science, basic five food groups, nutritional classification of foods-energy yielding, body building, protective and regulatory foods. b) Cooking methods Objectives, different types cooking methods-moist, dry heat methods, microwave cooking, combination of cooking methods. Recent methods of cooking-Ohmic cooking and induction cooking -merits and demerits. 	6	CO1 CO2 CO3 CO4 CO5	K1, K2, K3, K4
II	 a) Cereals and Millets Classification of cereals, structure, composition, nutritive value of cereals, milling of parboiling of rice. Nutritional importance of millets-(maize, jowar, ragi, bajra), malting of cereals and role of cereals in cookery. b) Pulses Composition, nutritive value, factors affecting cooking quality of pulses, germination, role of pulses in cookery. 	6	CO1 CO2 CO3 CO4 CO5	K1, K2, K3, K4
III	 a) Vegetables Classification and nutritive value, pigments-fat- soluble, water-soluble, selection of vegetables, cooking of vegetables-changes during cooking. b) Fruits Classification, nutritive value, changes during ripening of fruits, enzymatic browning and methods of prevention. 	6	CO1 CO2 CO3 CO4 CO5	K1, K2, K3, K4
IV	 a) Milk and Milk Products Composition, nutritive value, types of milk products-fermented milk products (Buttermilk, Yogurt) and non-fermented milk products (Skim milk, evaporated milk, sweetened condensed milk, Milk powder, Khoa, Ice cream, Pasteurization, and homogenization. b) Egg, Meat, Poultry and Fish Structure, classification, composition, nutritive value, selection, post mortem changes in meat, and tenderness of meat, cooking and storage. 	6	CO1 CO2 CO3 CO4 CO5	K1, K2, K3, K4

V	a) Fats, Sugar, Spices and Condiments Types, sources-animal fats and vegetable fats, functions, rancidity, smoking point and role of fat or oil in cookery.	6	CO1 CO2 CO3 CO4	K1, K2, K3, K4
	 b) Sugar Types and market forms of sugars, sugar related products, uses in cookery. c) Salt-Types and Uses d) Spices and Condiments Classification, uses of spices in Indian cookery and medicinal properties. 		05	
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Solar cooking method- merits and demerits. Role of millets in cookery. Criteria of selection of fruits. Role of milk in cookery. Stages of sugar cookery.	-	CO1 CO2 CO3 CO4 CO5	K1, K2, K3, K4

1. Potter, Norman. N. (2007). *Food Science*. (5thed). CBS Publications and distributors. New Delhi.

2. Shakuntala Manay. N. (2013). *Foods: Facts and Principles*. (3rded). New Age International Publishers. New Delhi.

3. Swaminathan, M. (2019). *Advanced Text Book on Food and Nutrition*. Volume (2nded). Bangalore Printing and Publishing Co. Ltd, Bangalore.

4. Mahatb, S. Bamji. Kamala Krishnasamy. Brahman. G.N.V.(2020). *Textbook of Human Nutrition*. (3rded.). Oxford and IBH Publishing Co. P. Ltd., New Delhi.

Reference Books

1. Sharma Jyoti, S. (2009). *Applied Nutrition and Food Science*. Akansha Publishing House, New Delhi.

2. Raheena Begum, M. (2015). *Textbook of Foods, Nutrition and Dietetics*. (3rded.). Sterling Publishers Pvt. Ltd, New Delhi.

3. Krause, M. V. Hunesher, M. A. (2013). *Food, Nutrition and Diet Therapy*. W. B. Saunders Company. Philadelphia. London.

4. Vickie, A. Vaclavik Elizabeth, W. Christian. (2014).*Essentials of Food Science*. (4^hed.). Springer Science and Business Media, New York.

5. Avantina Sharma. (2019). *Textbook of Food Science and Technology*. (3rded.). CBS Publishers and Distributors.

Web Links:

- https://www.scienceofcooking.com/
- https://www.brainkart.com/article/Structure-of-cereal-grains_33949/
- https://fruitsandveggies.org/stories/key-nutrients-that-protect/
- https://pubmed.ncbi.nlm.nih.gov
- https://journalofethnicfoods.biomedcentral.com

Journals

1. Food Science and Nutrition, John Wiley and Sons Ltd publisher, United Kingdom.

- 2. Food and Nutrition Research, Co-Action Publishing, Sweden.
- 3. Journal of Food Science Education, Institute of Food Technologists publishing, United States.
- 4. Journal of the Science of Food and Agriculture, Wiley-Blackwell publishing, England.

Pedagogy:

Chalk and talk, Power Point Presentation, Discussion, Assignment, Quiz, Seminar.

Course Designers:

MS. E. AGALYA MS. C. NIVETHA

SEMESTER – II	INTERNAL MARKS – 25		EXTERNAL	MARKS - 75
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDIT
23UND2AC3	MACRO AND MICRO NUTRIENTS	ALLIED	4	3

- To gain knowledge on classification of nutrients.
- To get insight into the role of nutrients in maintaining health of the individual and community.
- To understand the inter-relationship of the various nutrients.

Course Outcome and Cognitive Level Mapping

СО	CO Statement	Cognitive
Number	On the successful completion of the course, students will be able to	Level
CO1	Identify food sources of macro and micro nutrients	K1
CO2	Illustrate functions of macro and micro nutrients	K2
CO3	Relate inter- relationship between health and nutrition	K3
CO4	Predict excess and deficiency effects of various nutrients	K3
CO5	Determine water and electrolyte balance	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	1	3	3	1	3	-
CO2	3	3	2	2	1	3	3	1	3	-
CO3	3	3	2	2	1	3	3	1	3	-
CO4	3	3	2	2	1	3	3	1	3	-
CO5	3	3	2	2	1	3	3	1	3	-

"1" – Slight (Low) Correlation ¬ "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation \neg "-" indicates there is no correlation.

SYLLABUS

UNIT	CONTENT	HOURS	COs	COGNITIVE
Ι	a) Carbohydrates – Nutritional	12	CO1,	K1, K2, K3, K4
	classification, functions, sources, deficiency and excess effects. Dietary		CO2,	
	Fibre – definition, Classification.		CO3,	
	physiological and metabolic effect, role		CO4,	
	of fibre in prevention of diseases.		CO5	
	b) Energy – Units of measurement, determination of energy value of food		005	
	components of energy requirement,			
	measurement of total energy			
	requirements. Energy requirement			
	Basal Metabolic Rate and factors			
	affecting BMR			
II	a) Proteins –Nutritional classification of			
	proteins and amino acids, functions of	12	CO1,	K1, K2, K3, K4
	deficiency and excess effects.		CO2,	
	Evaluation of protein quality. (PER, BV,		CO3,	
	h) Linida Nutwitional alogaification of		CO4,	
	lipids and fatty acids. Essential fatty		COS	
	acids, functions, deficiency and excess		005	
	effects, health benefits of omega fatty			
III	a) Vitamins - Fat Soluble Vitamins- (A D E & K) Euleriens PDA	12	CO1,	K1, K2, K3,K4,
	sources, deficiency and excess effects.		CO2,	
	b) Water Soluble Vitamins - (B		CO3,	
	complex & C) - Functions, RDA,		CO4,	
	sources, deficiency and excess effects.		CO5	
IV	a) Minerals-Macro Minerals- (Calcium,	12	CO1,	
	Phosphorus, Potassium, Sodium) - Functions, RDA, sources, deficiency and		CO2,	K1, K2, K3, K4
	excess effects.		CO3,	
	b) Micro Minerals - (Iron, Iodine,		CO4,	
	Fluorine) - Functions, RDA, sources, deficiency and excess effects.		CO5	
	 b) Micro Minerals - (Iron, Iodine, Fluorine) - Functions, RDA, sources, deficiency and excess effects. 		CO4, CO5	
V	a) Water – Definition, distribution of	12	CO1,	K1, K2, K3, K4
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	water, functions, requirements, sources, water balance, maintenance of water		CO2,	
	balance, distribution of electrolytes,		CO3,	
	maintenance of electrolyte balance.		CO4,	
	b) Nutrient interrelationship – Interrelationship between macronutrients		CO5	
	and vitamins.			
VI	SELF STUDY FOR ENRICHMENT	-	CO1,	K1, K2, K3, K4
	(Not to be included for External		CO2,	
	Examination) Health benefits of dietary fibre.		СОЗ,	
	High biological value protein.		CO4,	
	Toxicity of vitamins. General functions of minerals in human		CO5	
	body. Role of water in human body.			

- 1. Swaminathan, M. (1999). *Handbook of Food and Nutrition*. Bangalore Publishing Co Ltd, Bangalore.
- 2. Srilakshmi, B. (2017). Nutrition Science. New Age International(p)ltd. New Delhi.
- 3. Longvah, T.. Anandhan, R., Bhaskarachary, K. Venkaiah, K. (2017). *Indian Food Composition Table*. National Institute of Nutrition.

Reference books

- 1. Swaminathan, M. (1998). Essentials of Food and Nutrition. Bappeo, Bangalore.
- 2. Vidya, Chintapalli. (1996). *Textbook of Nutrition*. Discovery Book Palace(p) Ltd, Chennai.
- 3. Berdanier, Carolyn, D. (2015). *Advanced Nutrition: Macronutrients, Micronutrients, and Metabolism.* Atlantic Publishers and Distributors. New Delhi.
- 4. Raheena Begum, M. (2009). *Textbook of Foods, Nutrition and Dietetics*. Sterling Publishers. New Delhi.
- 5. Martin Eastwood. (2013). Principles of Human Nutrition. Wiley Publishing.
- Bamji Mahtab, S. (2017). *Textbook of Human Nutrition* (3rd ed.). Oxford & IBH Publishing Co Pvt Ltd. New Delhi.
- 7. Gopalan, C. (2011). *Dietary Guidelines for Indians*. Second Edition National Institution of Nutrition. Hyderabad.

Web links

- <u>https://www.publichealthnotes.com/classification-of-nutrients-type-ii-macro-micro/</u>
- https://openoregon.pressbooks.pub/nutritionscience/chapter/1c-classification-ofnutrients/
- <u>https://www.medicalnewstoday.com/articles/161547#nutrition</u>
- <u>https://www.healthline.com/nutrition/protein-deficiency-</u> symptoms#TOC_TITLE_HDR_6
- <u>https://www.healthline.com/health/mineral-deficiency#What-are-the-symptoms-of-mineral-deficiency</u>

Journals

- 1. Italian Journal of Pediatrics, Biomedical Central Ltd, Springer.
- 2. International Journal of Innovative Research and Reviews Erzurum, Turkey.
- 3. Journal of Food and Nutritional Disorders, London, United Kingdom

Pedagogy

Chalk and talk, PPT, Discussion, Assignment, Demo, Quiz, Seminar.

Course Designers

Ms. E.AGALYA

SEMESTER III	INTERNAL MARKS	S:25 EXTE	EXTERNAL MARKS:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS	
23UND3CC4	DIET THERAPY I	CORE	5	5	

- To know the principles of diet therapy
- To study the metabolic changes of disease conditions
- To understand the modification of normal diet for therapeutic purposes

Course Outcome and Cognitive Level Mapping

CO	CO Statement	Cognitive
Number	On the successful completion of the course, students will be able to	Level
CO 1	Identify the responsibilities, professional ethics and code of conduct	K1
	of dietitian	
CO 2	Explain the principles of diet therapy, drug nutrient interaction and	K2
	special feeding methods	
CO 3	Relate the causes, symptoms and complications of diseases	K3
CO 4	Compute nutritional care for food allergy and children with special	K3
	needs	
CO 5	Ascertain dietary principles in planning and preparing diet for	K4
	various diseases and compute nutritive value	

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	3	3	3	3
CO2	3	3	3	2	3	3	3	3	3	3
CO3	3	3	3	2	3	3	3	3	3	3
CO4	3	3	3	2	3	3	3	3	3	3
CO5	3	3	3	2	3	3	3	3	3	3

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" - Substantial (High) Correlation "-" indicates there is no Correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE
				LEVEL
Ι		15	CO1,	K1, K2, K3, K4
	a) Dietitian		CO2,	
	Definition and classification of dietitian.		CO3,	
	Qualities and responsibilities of dietitian.		CO4,	
	Role of dietitian in hospitals and		CO5	
	community. Professional ethics and code of			
	conduct of dietitian.			
	b) Diet therapy and progressive			
	modifications			
	Definition, principles of a therapeutic diet.			
	Routine Hospital diets and progressive			
	modifications - Clear fluid diet. full fluid			
	diet, soft diet, regular normal diet, bland			
	diet. Specially modified therapeutic diets –			
	High and low calorie, high and low protein.			
	high and low residue diets, high and low-			
	fat diets.			
Π	a) Drug nutrient interaction	15	CO1	K1. K2. K3. K4
	Modification of diet according to medical	10	CO2.	,,,
	prescription – Diet effects on drug		CO3.	
	disposition drug effects on nutrients and		CO4	
	interaction of drugs		CO5	
	b) Special feeding methods		000	
	Enteral and Parenteral feeding- Indications			
	types (oral supplements tube feeding			
	narenteral feeding TPN pre and			
	postoperative diets) methods of			
	administration monitoring and associated			
	complications			
III	a) Nutritional care for diseases of gastro	15	CO1	K1 K2 K3 K4
	intestinal tract	15	CO^2	111, 112, 113, 11
	Pentic ulcer Diarrhoea Constinution		CO3	
	Haemorrhoids and Malabsorption		CO4	
	syndrome – aetiology clinical findings and		CO5	
	dietary management		005	
	b) Nutritional care for febrile condition			
	Metabolic changes during fever and types			
	of fever (acute and chronic) actiology			
	clinical findings and dietary management			
	of Typhoid Influenza Malaria			
	Tuberculosis and HIV			
IV	a) Nutritional care for diseases of hiliary	15	CO1	K1 K2 K3 KA
11	system	15	CO^{2}	111, 112, 113, 117
	Iaundice Fatty liver henatitis cirrhosis and		CO2	
	Henatic coma- actiology clinical findings		CO_{4}	
	and dietary management Cholelithiasis		CO^{-}	
	and Cholecystitis- aetiology clinical		005	
	findings and dietary management			
	intendes and distary manufactions.			

	 b) Nutritional care for obesity and underweight Obesity and overweight- Definition, etiology, types, assessment, complications, prevention and dietary management. Underweight-Definition, aetiology, prevention and dietary management. 			
V	 a) Nutritional care for allergy Definition, food allergens, clinical manifestations, diagnosis of food allergy and dietary management. b) Nutritional care for the children with special needs Down's syndrome, Cerebral Palsy, Autism, Attention Deficit Hyperactivity Disorder – Clinical findings, nutritional care and feeding difficulties.	15	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Indian Dietetic Association, Comparison of enteral and parenteral nutrition, Nutritional care for pandemic fevers, Grading of obesity, Food induced anaphylaxis.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

- 1. Srilakshmi B.(2019). Dietetics.(8th ed)New Age International. New Delhi.
- 2. Sangeetha Karnik. (2010). Nutrition and Diet Therapy.Biotech Pharma Publications.
- 3. Sumati R Mudambi. (2012).Fundamentals of Foods, Nutrition and Diet Therapy. (6 th ed). New Age International, New Delhi.
- 4. De Bruyne, Pinna, Whitney. (2012).Nutrition and Diet Therapy. (8th ed). Library of Congress.
- 5. Avantina Sharma. (2017).Principles of Therapeutic Nutrition and Dietetics.CBS Publishers and Distributors.

Reference Books

- 1. Mahatb, S., Bamji., Kamala Krishnasamy, Brahman, G.N.V., (2020). Textbook of Human Nutrition. (3 rd ed.). Oxford and IBH Publishing Co. P. Ltd., New Delhi.
- 2. Raheena Begum, M. (2015). Textbook of Foods, Nutrition and Dietetics. (3rd ed.). Sterling Publishers Pvt. Ltd. New Delhi.
- 3. Krause, M. V. Hunesher, M. A. (2013). Food, Nutrition and Diet Therapy. W. B. Saunders Company. Philadelphia. London.
- 4. Kathleen ML. and Escott S.(2000) .Krause's Food, Nutrition and Diet Therapy. (9thed.). W.B. Saunders Company Pennsylvania.

Web links

- <u>https://www.sciencedirect.com/topics/medicine-and-dentistry/full-liquid-diet</u>
- <u>https://www.webmd.com/allergies/allergies-elimination-diet</u>
- <u>https://www.iffgd.org/upper-gi-disorders.html</u>
- <u>https://pinnt.com/Enteral-Nutrition.aspx</u>
- <u>https://www.urmc.rochester.edu/childrens-hospital/nutrition/special-needs.aspx</u>

Journals

- 1. Canadian Journal of Dietetic Practice and Research, Dieticians Canada, Canada
- 2. Journal of Human Nutrition and Dietetics, Wiley-Blackwell, England
- 3. Journal of the Academy of Nutrition and Dietetics, Elsevier
- 4. Journal of Human Nutrition and Dietetics, Wiley online library, UK
- 5. Nutrition and Health-SAGE Journals

Pedagogy

Lecture, Chalk and Talk, Seminar, Assignment, E-Content, Power Point Presentation, Quiz.

Course Designer

• Dr. B. THANUJA

SEMESTER III	INTERNAL MARKS:40	INTERNAL MARKS:40 EXTERNAL				
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS		
22UND3CC3P	DIET THERAPY I (P)	CORE PRACTICAL	3	3		

- To understand the modification of normal diet for therapeutic purpose
- To calculate nutritive value based on therapeutic modification
- To acquire the skills of preparing diet for various disease conditions

Course Outcome and Cognitive Level Mapping

r		
CO	CO Statement	Cognitive
Number	On the successful completion of the course, students will be able	Level
	to	
CO 1	Define therapeutic diet and state characteristics of routine hospital diets such as clear liquid diet, full liquid diet and soft diet	K1
CO 2	Explain the basic principles involved in planning diets for different disease conditions.	K2
CO 3	Relate practical knowledge of therapeutic diet to meet the requirement of diet therapy	К3
CO 4	Prepare diets to meet out the quality and quantity requirements for specific disease conditions	К3
CO 5	Infer dietary principles in planning and preparing diet for various diseases and compute nutritive value	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	1	-	3	2	1	2	I
CO2	3	3	3	1	-	3	2	1	2	-
CO3	3	3	3	1	-	3	2	1	2	-
CO4	3	3	3	1	-	3	2	1	2	-
CO5	3	3	3	1	-	3	2	1	2	-

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

List of Experiments

- 1. Planning and Preparation of Therapeutic diets
 - Clear liquid diet
 - Full liquid diet
 - Soft diet
- 2. Planning and Preparation of diet for
 - Peptic ulcer
 - Diarrhoea
 - Constipation
- 3. Planning and Preparation of diet for Fevers
 - Typhoid
 - Tuberculosis
- 4. Planning and Preparation of diet for
 - Obesity
 - Under weight
- 5. Planning and Preparation of diet for
 - Hepatitis
 - Cirrhosis
- 6. Visit to hospital dietary units

1. Srilakshmi B. (2019). *Dietetics*.(8th ed)New Age International, New Delhi.

2. F. P. Antia& Philip Abraham. (2002).*Clinical Dietetics and Nutrition*. (4th ed). Oxford University Press.

Reference Books

1. Barasi, Mary E, Great Britain (2002). *Human Nutrition: Health Perspective* Hodder and Stoughton.

2. Gopalan.C. Rama Sastri.V.B and Balasubramanian.S.C. (2017). *Nutritive Value of Indian Foods* National Institute of Nutrition (ICMR) Hyderabad.

Web links

- <u>https://vikaspedia.in/health/nutrition/dietary-guidelines-1/avoid-overeating-to-prevent-overweight-and-obesity</u>
- <u>https://www.youtube.com/watch?v=aa9bvQtJv6s</u>
- <u>https://www.youtube.com/watch?v=9EUFrKdmd5U</u>

Pedagogy

Lecture, Chalk and Talk, Demonstration, Practical, E-Module, Visit to hospital dietary unit.

- Ms. B.THANUJA
- Ms.C.NIVETHA

SEMESTER III	INTERNAL MARKS: 25	KS:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UND3AC4	NUTRITIONAL BIOCHEMISTRY	ALLIED	4	3

- To acquire knowledge on basic concepts of biochemical reactions
- To understand the biochemical reactions involved in the metabolism of various nutrients in the body
- To comprehend the mode of action of different enzymes in cell

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On Successful Completion of the course, students will be able to	Cognitive Level
CO1	State the structure, classification, properties and functions of macro and micro nutrients	K1
CO2	Illustrate on the cellular functions for maintaining the homeostasis	K2
CO3	Describe enzyme activity in the metabolic action	K2
CO4	Predict the anabolic and catabolic mechanism of nutrients	K3
CO5	Associate the effect of free radicals and gene on nutrient metabolism	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	-	2	3	3	-	2	-
CO2	3	2	3	-	2	3	3	-	2	-
CO3	3	2	3	-	2	3	3	-	2	-
CO4	3	2	3	-	2	3	3	-	2	-
CO5	3	2	3	-	2	3	3	-	2	-

"1" – Slight (Low) Correlation, "2" – Moderate (Medium) Correlation "3" – Substantial (High) Correlation , "-" indicates there is no correlation.

UNIT	CONTENT	HOURS	COS	COGNITIVE
Ι	 a) Cell Introduction, cell organelles, cell membrane, movement of the substances and water through the cell membrane, bioelectric potentials. b) Enzymes Definition, classification of enzymes, Coenzyme, Role of B-vitamins as coenzyme, factors affecting enzyme activity, enzyme inhibition. c)Hormones Protein hormones, steroid hormones. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
II	 a) Protein Amino acids classification, structure, properties, protein structure, peptide linkage, covalent backbone, three-dimensional conformation, quaternary structure of oligomeric proteins. Determination of –N and –C terminal amino acids, protein functions. Hormonal regulation of protein metabolism. Protein metabolism-synthesis of proteins and metabolism of amino acids. b) Nucleotides and nucleic acids Structure of purine and pyrimidines nucleotides, DNA, RNA – structure and types, biosynthesis and catabolism of purine and pyrimidine 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	a) Carbohydrates Classification, structure, properties and functions. Hormonal regulation of carbohydrate metabolism. Carbohydrate metabolism – glycolysis, HMP shunt pathway, TCA cycle, gluconeogenesis from TCA intermediates/ amino acids/ acetyl CoA, concept of glycogenesis and glycogenolysis. Glucose homeostasis.	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

	 b) Lipids Classification, structure, properties, biological significance, Bioenergetics – electron transport and oxidative phosphorylation, redox potential, high energy compounds. Hormonal regulation of lipid metabolism. Lipid metabolism – Alpha, omega, beta oxidation of fatty acids, biosynthesis of fatty acids. 			
IV V	 a) Vitamins Fat Soluble Vitamins – A,D,E,K and its metabolism. Water Soluble – B,C and its metabolism. b) Minerals -Macro Minerals – Calcium, Phosphorus, Sodium, Potassium, Magnesium and its metabolism. Micro Minerals – Iron, Fluorine, Zinc, Iodine, Selenium and its metabolism. a) Free radicals and antioxidants Definition, Formation in biological systems. Antioxidants– definition, classification – enzymatic and non-enzymatic. b) Nutrigenomics Definition, Scope, effects of nutrients on gene expression – direct interactions, epigenetic interactions, genetic variations. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4 K1, K2, K3, K4
VI	SELFSTUDYFORENRICHMENT(Not to be included for External(Not to be included for ExternalExamination)Functions of enzymes,Role of hormones in nutrientmetabolism,Classification of fatty acids,Synergetic mechanism of nutrients,Functions of antioxidants.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

1. Sucheta PDandekai. (2000). Medical Biochemistry. B.I. Churchill Livingstone.

2. Lauralee Sherwood.(2007). Human Physiology(6th Ed). Brooks Cole Publishing Co.

3. AmbikaShanmugam.(2008). *Fundamentals of Biochemistry for Medical students*. Lippincott Williams & Wilkins.

4. Rafi MD.(2015). *Textbook of Biochemistry for Medical Students*. University of Health Sciences. University Press.

Reference Books

1. Patricia Trueman.(2007). Nutritional Biochemistry. MJP Publishers.

2. Mallikarjuna Rao N.(2008). Medical Biochemistry. S. Chandand Company Ltd. NewDelhi.

3. Jain J L.(2008). Fundamentals of Biochemistry. S. Chandand Company Ltd. New Delhi.

4. Robert k Murray.(2009). Harper's Illustrated Biochemistry. McGraw Hill.

5. John E Hall.Guyton&Hall.(2013).*Text Book of Medical Physiology*.Elsevier India Private Limited. New Delhi.

6. Agarwal G R Meerut.(2014). Text Book of Biochemistry. Krishnaprakashan Media (P) Ltd.

7. SatyanarayananU.(2014). Biochemistry. Elsevier India Private Limited. New Delhi.

Web links

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

Journals

- 1. Journal of Nutritional Biochemistry, Elsevier Science Inc, United States
- 2. Biochemistry, American Chemical Society, United States

Pedagogy

E-content, Lecture, Power point presentation, Seminar, Assignment.

- Ms. S.FATHIMA
- Ms. M.VINOTHINI

SEMESTER III	INTERNAL MARKS: 40	EXTERNAL MARKS: 60			
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS	
22UND3AC5P	NUTRITIONAL BIOCHEMISTRY (P)	ALLIED PRACTICAL	4	3	

- To develop skills in handling analytical equipment
- To understand the procedures of qualitative analysis
- To learn the analytical techniques of quantitative analysis

Course Outcome and Cognitive Level Mapping

СО	CO Statement	Cognitive
Number	On Successful Completion of the course, students will	Level
	be able to	
CO1	Identify the chemicals used for qualitative and quantitative analysis	K1
CO2	Illustrate qualitative and quantitative analysis	K2
CO3	Prepare reagents for qualitative and quantitative analysis	K3
CO4	Predict the procedure involved in qualitative and quantitative analysis	К3
CO5	Infer the results	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	3	-	2	3	3	-	2	-
CO2	3	2	3	-	2	3	3	-	2	-
CO3	3	2	3	-	2	3	3	-	2	-
CO4	3	2	3	-	2	3	3	-	2	-
CO5	3	2	3	-	2	3	3	-	2	-

"1" - Slight (Low) Correlation "2" - Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no Correlation.

List of Experiments

- 1. Qualitative tests for Sugars -Glucose, Fructose, Lactose, Maltose, Sucrose, Starch.
- 2. Qualitative tests for Proteins.
- 3. Qualitative tests for Minerals.
- 4. Quantitative estimation of Glucose Benedicts method
- 5. Quantitative estimation of Iron Titration method
- 6. Quantitative estimation of Calcium Titration method
- 7. Quantitative estimation of Ascorbic acid- Colorimetry
- 8. Technique of Chromatography (Paper)
- 9. Electrophoretic pattern of blood proteins (Demonstration)

1. Ambika Shanmugam(2008). Fundamentals of Biochemistry for Medical students. Lippincott Williams Wilkins

2. Pattabiraman .N.T(2001).*Laboratory Manual in Biochemistry*.All India Publishers and Distributors Regd, Chennai

Reference Books

1. Shanmugam.S, Sathishkumar,T, PanneerSelvam. K.(2010).*Laboratory handbook on biochemistry*. PHI learning Private Ltd,Chennai.

2. Evangeline Jones.(2016). Manual of Practical Medical Biochemistry,(2nd ed).Jaypee Brothers Medical Publishers(p) Ltd.

Web links

- https://opentextbc.ca/anatomyandphysiology/chapter/24-4-lipid-metabolism/
- https://www.ncbi.nlm.nih.gov/books/NBK9921/

Pedagogy

E-content, Lecture, Demonstration, Power point presentation.

- Ms. S.FATHIMA
- Ms. M.VINOTHINI

SEMESTER III	INTERNAL MAR	INTERNAL MARKS :25		
COURSE CODE	COURSE TITLE	CATEGORY	HOURS / WEEK	CREDIT
22UND3GEC1	BASICS IN NUTRITION	GENERIC ELECTIVE	2	2

- To gain basic knowledge on classification of nutrients
- To get insight into the role of nutrients in maintaining health
- To understand importance of nutrition education

Course Outcomes

CO Number	CO statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Define nutrition and Recommended Dietary Allowances	K1
CO2	Explain classification of nutrients and objectives of nutritional programmes	K2
CO3	Illustrate the sources, requirement, functions, deficiency and excess effect of nutrients	K2
CO4	Predict the methods of nutritional assessment	K3
CO5	Ascertain techniques involved in nutrition education	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	2	-	3	3	-	3	3
CO2	3	3	2	2	-	3	3	-	3	3
CO3	3	3	2	2	-	3	3	-	3	3
CO4	3	3	2	2	-	3	3	-	3	3
CO5	3	3	2	2	-	3	3	-	3	3

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
Ι	 a)Nutrition and Health- Definition of Nutrition and Health, Importance of nutrition for health, Basic five food group, My plate and the functions of food. b) Nutrients and RDA-Definition and classifications of nutrients, RDA, factors affecting RDA. 	4	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
Π	 a)Carbohydrates – Nutritional classification, functions, requirement, excess and deficiency effects. Role of dietary fibre in human nutrition, b) Protein – Nutritional classification, functions, sources, requirement, excess and deficiency disorders. Amino acids-Classification and functions. c) Lipids – Classification, functions, sources, requirement, excess and deficiency effects. Fatty acids – Classification and functions. 	8	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	 a)Vitamins – Fat soluble vitamins -A, D, E and K - functions, sources, requirements excess and deficiency disorders, Water soluble vitamins – Vitamin C and B vitamins (Thiamine, Riboflavin, Niacin, Pyridoxin, Folic acid, B12) - functions, sources, requirement, excess and deficiency disorders. b) Minerals – Calcium, Phosphorus, Sodium, Potassium, Iron, Iodine, Fluorine - functions, sources, requirement, excess and deficiency disorders. 	8	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	 a) Basics of assessing nutritional status :Direct method -Anthropometric measurements (BMI, WHR, Broca's Index), Biochemical and Clinical assessment. b) Indirect method - Dietary Survey (24-hour dietary recall, food frequency questionnaire, diet history, dietary record), Vital statistics. 	6	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	a) Nutrition education –Definition, tools, steps, importance of nutrition education. Nutrition education for prevention of underweight, obesity, anaemia.	4	CO1, CO2, CO3, CO4,	K1, K2, K3, K4
	b) Nutrition intervention programmes in India - Nutritional Anaemia Prophylaxis Programme, National Prophylaxis Programme against Vitamin A Deficiency Diseases, National Goitre Control Programme, Integrated Child Development Services (ICDS).		CO5	
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Food pyramid, Sources of energy, Functions of water in human body and water balance, Importance of assessment of nutritional status, PEM-Types and symptoms.	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

1.Srilakshmi B.(2021). Nutrition Science.(7th ed) New Age International Publishers. New Delhi.

2.Swaminathan.M. (2018). *Hand book of Food and Nutrition*.Bangalore Printing and Publishing Co Ltd. Bangalore

3.Raheena Begum.M. (2019).A Text Book of Foods. Nutrition and Dietetics.(3rd revised ed). Sterling Publishers Private Limited.

Reference Books

- 1. Gajalakshmi R. (2018). *Nutrition Science*.(2nd ed). CBS Publishers and distributors Pvt Ltd. New Delhi, India.
- 2. IndraniT.K. (2017).*Nursing Manual of Nutrition and Therapeutic Diet*.(2nd ed). Jaypee Brothers Medical publishers (P) Ltd, New Delhi.
- 3. SunetraRoday. (2018).*Food Science and Nutrition*(3rd ed).Oxford University press, New Delhi, India.

Web links

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3995129/
- <u>http://www.tuscany-diet.net/carbohydrates/classification-functions/</u>
- <u>https://www.nia.nih.gov/health/vitamins-and-minerals</u>

Journals

- 1. Journal of the Korean Society of Food Science and Nutrition, Korean Society of Food Science and Nutrition, South Korea.
- 2. Food and Agricultural Immunology, Taylor & Francis, England.
- 3. Nutrition and Food Science, Emerald Group Publishing Ltd, United Kingdom.

Pedagogy

E-content, Lecture, Power Point Presentation, Seminar, Assignment

- Ms.E.AGALYA
- Ms.R.ARTHY

SEMESTER IV	INTERNAL MARKS:25	Ε	XTERNAL	MARKS:75
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23UND4CC5	DIET THERAPY II	CORE	6	5

- To learn role of dietary treatment in the management of disease conditions.
- To know the principles of dietary management.
- To know the role of computers in management of dietary practice.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO 1	Define the causes, symptoms and complications of diseases.	K1
CO 2	Explain the application of dietary principles in the management of	K2
	various diseases and compute nutritive value	
CO 3	Interpret the role of nutraceuticals in the prevention of diseases	K2
CO 4	Apply the steps in diet counselling process	K3
CO 5	Examine the importance of computers in nutrition practice	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	2	3	3	2
CO2	3	3	3	2	3	3	2	3	3	2
CO3	3	3	3	2	3	3	2	3	3	2
CO4	3	3	3	2	3	3	2	3	3	2
CO5	3	3	3	2	3	3	2	3	3	2

"1" - Slight (Low) Correlation "2" - Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

UNIT		CONTENT	HOUR	COs	COGNITIVE
			S		LEVEL
Ι	a. b.	Nutritional care for Diabetes Mellitus: Aetiology and predisposing factors, symptoms, types, diagnostic and screening criteria, complications, food exchange list, glycemic index, glycemic load treatment and dietary modifications. Nutritional care for Hormonal diseases: aetiology, symptoms, and dietary modification for – Cushing's syndrome, Addison's disease, hypothyroidism and hyperthyroidism.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
Π	a. b.	Nutritional care for cardiovascular diseases: Hyperlipidaemia, Hypertension, Atherosclerosis and Congestive cardiac failure - aetiology, clinical findings and dietary management. Nutritional care for Neoplastic Diseases: Cancer – Types, stages and markers. Nutrition in the etiology of cancer. Nutritional effects of cancer and cancer therapy, nutritional care of cancer patients	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
III	a. b.	Nutritional care for diseases of themusculoskeletalsystem:OsteoporosisandGout-meaning,symptoms, causes, treatment and dietarymanagementNutritional care for burns:Types,causes, pathophysiology, medicalnutrition therapy.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	a. b.	Nutritional care for Renal diseases:Nephritis, Nephrosis, Renal failure andUrinary calculi - Predisposing factors,symptoms and dietary management.Dialysis -types, and modification of dietin dialysis.Nutritional care for Inborn errors ofmetabolism:Phenylketonuria,Galactosemia, Fructosuria, Niemann –pick disease– causes, symptoms, anddietary management.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
V	a.	Nutrition care process and Dietary Counseling - Nutrition Care Process: Definition, Steps of Nutrition Care Process. Dietary counselling: clients and counselors, client responsibility, attributes of a successful counselor, steps in counseling process, counseling guidelines.	18	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

b. Computers in Management of Nutrition Practice: General information – data input, data output, data analysis, data communication, clinical care – communication in patient care and nutritional therapy, Computer application in Preparation of dietary charts for patients.			
VISELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Uses of food exchange list, Side effects of cancer treatment, Relate structure of skin with types of burns, Dietary Management after renal transplantation, Application of artificial intelligence and computer applications in dietetics practice	-	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

- 1. Srilakshmi B.(2019). Dietetics.(8th ed)New Age International. New Delhi.
- 2. Sangeetha Karnik. (2010). Nutrition and Diet Therapy.Biotech Pharma Publications.
- 3. Sumati R Mudambi. (2012).Fundamentals of Foods, Nutrition and Diet Therapy. (6th ed).New Age International, New Delhi.
- 4. De Bruyne, Pinna, Whitney. (2012).Nutrition and Diet Therapy. (8th ed). Library of Congress.
- 5. Avantina Sharma. (2017).Principles of Therapeutic Nutrition and Dietetics.CBS Publishers and Distributors.

Reference Books

- 1. Mahatb, S., Bamji., Kamala Krishnasamy, Brahman, G.N.V., (2020).Textbook of Human Nutrition. (3rd ed.). Oxford and IBH Publishing Co. P. Ltd., New Delhi.
- 2. Raheena Begum, M. (2015). Textbook of Foods, Nutrition and Dietetics. (3rd ed.). Sterling Publishers Pvt. Ltd. New Delhi.
- 3. Krause, M. V. Hunesher, M. A. (2013). Food, Nutrition and Diet Therapy. W. B. Saunders Company. Philadelphia. London.
- 4. Kathleen ML. and Escott S.(2000) .Krause'sFood, Nutrition and Diet Therapy. (9th ed.). W.B. Saunders Company Pennsylvania.

Web links

- https://www.nutrition.org.uk/nutritionscience/health-conditions/heart-disease.html
- <u>https://www.medanta.org/severe-burns/</u>
- https://labtestsonline.org/conditions/kidney-disease
- <u>https://www.medicinenet.com/diabetes_mellitus/article.htm</u>
- <u>http://www.fao.org/3/W0795T/w0795t03.htm</u>
- <u>https://vikaspedia.in/health/nutrition</u>

Journals

- 1. Canadian Journal of Dietetic Practice and Research, Dieticians Canada, Canada
- 2. Journal of Human Nutrition and Dietetics, Wiley-Blackwell, England
- 3. Journal of the Academy of Nutrition and Dietetics, Elsevier
- 4. Journal of Human Nutrition and Dietetics, Wiley online library, UK
- 5. Nutrition Research, Elsevier Science Ltd, United States.
- 6. European Journal of Clinical Nutrition

Pedagogy

Lecture, Chalk and Talk, Seminar, Assignment, E-Content, PowerPoint Presentation, Quiz.

- Dr.B.THANUJA
- Ms.C.NIVETHA

SEMESTER IV	INTERNAL MARKS:40		EXTERNA	AL MARKS:60
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
22UND4CC4P	DIET THERAPY II (P)	CORE PRACTICAL	4	4

• To understand the modification of normal diet for therapeutic purpose.

- To acquire the skills of preparing diet for various disease conditions.
- To gain experience in diet counselling for different health conditions.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO 1	Describe knowledge on therapeutic diets	K1
CO 2	Interpret nutrition principles in to the treatment and prevention of diseases.	K2
CO 3	Implement diagnostic and treatment measures through the nutrition care Process.	K3
CO 4	Determine principles and importance of therapeutic diets for various diseases	K4
CO 5	Examine tools for diet counselling	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	2	3	3	2
CO2	3	3	3	2	3	3	2	3	3	2
CO3	3	3	3	2	3	3	2	3	3	2
CO4	3	3	3	2	3	3	2	3	3	2
CO5	3	3	3	2	3	3	2	3	3	2

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation "3" – Substantial (High) Correlation "-" indicates there is no correlation.

List of Experiments

- 1. Planning, preparation and diet counselling for Diabetes Mellitus
 - Insulin Dependent Diabetes Mellitus (IDDM)
 - Non Insulin Dependent Diabetes Mellitus (NIDDM)
 - Gestational Diabetes Mellitus (GDM)
- 2. Planning, preparation and diet counselling for Cardio Vascular Diseases
 - Hypertension
 - Atherosclerosis
- 3. Planning, preparation and diet counselling for musculoskeletal disorders
 - Gout
 - Osteoporosis
- 4. Planning, preparation and diet counselling for renal diseases
 - Nephritis
 - Nephrosis
- 5. Planning, preparation and diet counselling for
 - Burns
 - Cancer

1. Srilakshmi B. (2019). *Dietetics*. (8th ed)New Age International, New Delhi.

2. F. P. Antia& Philip Abraham. (2002). *Clinical Dietetics and Nutrition*. (4th ed). Oxford University Press.

Reference Books

1. Barasi, Mary E, Great Britain (2002). *Human Nutrition: Health Perspective* Hodder and Stoughton.

2. Gopalan.C. Rama Sastri.V.B and Balasubramanian.S.C. (2017). *Nutritive Value of Indian Foods* National Institute of Nutrition (ICMR) Hyderabad.

Web links

- https://www.ncbi.nlm.nih.gov/books/NBK482514/
- <u>https://diabetesjournals.org/care/article/42/5/731/40480/Nutrition-Therapy-for-Adults-With-Diabetes-or</u>
- <u>https://www.jrnjournal.org/</u>

Pedagogy

Lecture, Chalk and Talk, Demonstration, Practical, E-Module.

- Dr. B.THANUJA
- Ms.C.NIVETHA

SEMESTER IV	INTERNAL MARK: 25	EX	TERNAL	MARK: 75
COURSE CODE	COURSE TITLE	CATEGORY	HRS/ WEEK	CREDITS
23UND4AC6	FOOD MICROBIOLOGY	ALLIED	4	3

- To gain understanding of microbiology and its practical applications in daily life. •
- To explore different methods of food preservation •
- To comprehend the significance of microorganisms in the food industry and their • positive impacts.

Course Outcome and Cognitive Level Mapping

CO Number	Co Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Identify the basic microbiology foundational concepts	K1
CO2	Understand the morphological characteristics of various microorganism	K2
CO3	Apply the skills to analyse microbial growth patterns and assess the diverse factors influencing growth within different environmental conditions	K3
CO4	Analyse the appropriate methods for microbial control and ensure food safety and preservation	K3
CO5	Evaluate the beneficial and hazardous effects of microorganisms	K4

Mapping of Co with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	2	2	3	2	2	3	3	3	3	3
CO2	2	2	3	2	2	3	3	2	2	2
CO3	2	2	3	2	2	3	3	2	2	3
CO4	2	2	3	3	2	3	3	3	3	3
CO5	2	2	3	2	2	3	3	3	3	3

"1" – Slight (Low) Correlation ¬ "2" – Moderate (Medium) Correlation ¬ "3" – Substantial (High) Correlation ¬ "-" indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE
-		10	a 6.1	
Ι	 a) Introduction to Microbiology Microscope – Types and uses, Classification of microorganisms – Prokaryotes and Eukaryotes b)Morphology of microorganisms Bacteria, Virus, Fungi, Protozoa and Algae. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
TT	a) Crowth and multiplication of	10	CO1	
ш	 a) Growth and multiplication of microorganisms Growth curve, batch culture and continuous culture, chemostat and turbidostat. b)Factors affecting growth of microorganisms Intrinsic factors -nutrient content, pH, redox potential, antimicrobial barrier and water activity Extrinsic factors - relative humidity, temperature and gaseous atmosphere. 	12	CO1, CO2, CO3, CO4. CO5	K1, K2, K3, K4
III	 a)Microbiology of water Total count, test for E –Coli and Purification of water. Modern methods of purification – Reverse Osmosis, ultraviolet purification, activated carbon. b)Control of microorganisms Temperature – high, low, sterilization, irradiation. Chemical agents – Disinfectant, benzoates, sorbates, propionates, acetates, nitrates, nitrites, sulphur dioxide, sulphites, pickling, addition of sugar or salt, drying. Antibiosis. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4
IV	 a)Microbiology of perishable foods Contamination, spoilage and preservation of vegetables and fruits, milk and milk products, meat and meat products, egg, poultry, baked products and canned products. b)Microbiology of non - perishable foods Contamination, spoilage and preservation of cereal and cereal products, pulses and legumes, Properties of food spoilage Psychrotropes and Thermophiles. 	12	CO1, CO2, CO3, CO4, CO5	K1, K2, K3, K4

V	a)Beneficial effects of microorganisms	12	CO1,	K1, K2, K3, K4
	Fermentation factors controlling		CO2,	
	fermentation in foods, Role of		CO3,	
	microorganisms in fermented foods -		CO4,	
	cheese, sauerkraut, and soy-based foods,		CO5	
	Concept of probiotics, prebiotics,			
	symbiotics, Production and application of			
	microbial enzymes and vitamin			
	b)Hazards of microorganisms			
	Food poisoning, food borne diseases –			
	Salmonellosis, Botulism, Amoebic			
	dysentery.			
VI	SELF STUDY FOR ENRICHMENT		CO1,	K1, K2, K3, K4
	(Not to be included for External		CO2,	
	Examination)		CO3,	
	Synthetic Microbiology,	-	CO4,	
	Environmental friendly batch culture,		CO5	
	Natural Preservatives,			
	Contamination and spoilage of Sugar and			
	sugar Products,			
	Production and application of various			
	organic acid using micro-organisms i.e.			
	citric acid, fumaric acid, lactic acid,			
	benzoic acid, gluconic acid, acetic acid.			

- 1. Frazier William, C. (2014). *Food Microbiology*. (5th ed) McGraw Hill Irwin Companies. New York
- 2. Adams. (2018) *Food Microbiology*. (2nd ed).New Age International Publishers. New Delhi.
- 3. PelczarJr Michael, J. (2014) *Microbiology*. McGraw Hill Education (India) Private Ltd, New Delhi.

Reference Books

- 1. Sugandhar Babu R P. (2008) *Food Microbiology*. Adhyayan Publishers and distributors,
- 2. New Delhi.,
- Vijaya Ramesh k. (2007) *Food Microbiology*. (1st ed).New Age International Publishers. New Delhi.
- 4. Bohra and Parihar. (2012) *Food Microbiology*. Student edition, Jodhpur
- 5. Anathanarayan, (2013) *Textbook of Microbiology*. University Press (India) Pvt. Ltd, Hyderabad.

Web Links

- <u>http://airccse.org/journal/ijscai/papers/3214ijscai01</u>.
- <u>https://www.biologydiscussion.com/microorganisms/microbes-microorganisms/microbes-in-the food-industry-microorganisms-biology/82587</u>
- <u>https://www.rapidmicrobiology.com/test-method/theory-and-practice-of-microbiological-water-testing</u>
- <u>https://academic.oup.com/femsle/article/362/20/fnv151/543071</u>

Journals

- 1. Journal of Microbiology and Infectious Disease, Turkey .
- 2. Journal of Basic Microbiology, Wiley-Blackwell, Germany.
- 3. Journal of Microbiology, Microbiological Society Korea, South Korea.
- 4. Journal Applied Microbiology, Cardiff, UK.
- 5. Journal of Micrbiome, United Kingdom

Pedagogy:

E-content, Lecture, Power point presentation, Seminar, Assignment

Course Designers

• Ms. S. FATHIMA

SEMESTER IV	INTERNAL MARK	S: 40	EXTER	NAL MARKS:60
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UND4INT	INTERNSHIP	INTERNSHIP	-	2

- To acquire knowledge on basic etiquette of a counsellor.
- To handle different areas of counselling.
- To gain knowledge on report writing.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Identify different functional areas in hospital	K1
CO2.	Explain work process followed in dietary department	K2
CO3.	Describe the management of human resources in dietary department	K2
CO4.	Prepare diet according to disease condition	К3
CO5.	Ascertain appropriate diet counselling methods	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	3	2	3	3	2	3	3	2
CO2	3	3	3	2	3	3	2	3	3	2
CO3	3	3	3	2	3	3	2	3	3	2
CO4	3	3	3	2	3	3	2	3	3	2
CO5	3	3	3	2	3	3	2	3	3	2

"1" - Slight (Low) Correlation "2" - Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

DIETARY INTERNSHIP

SYLLABUS

- The Practical work consists of internship in a multispecialty hospital for 15 days.
- Visits to different wards to observe patients requiring special diets.
- Experience in calculating and planning modified diets.
- Supervising and handling the food preparation and service in the dietary department of the hospital.
- Calculating the diet according to medical prescription.
- Accompanying the doctor while visiting the patient.
- Counsel the patient with different health condition.
- Case study- Selecting and observing 5 patients requiring a therapeutic diet in relation to Patient's dietary history income, occupation, food habits and social factors.

Preparation of the report should include

- History of the hospital
- Facilities provided
- Organization structure
- Duties of the dietitian
- Layout of the dietary unit
- Dietary Department facilities
- Records
- Types of services
- Special dietary preparation
- Storage of food
- Handling of leftovers and shortages
- Sanitation and hygiene
- Case study

Text books

1. Shubhangini A Joshi. (2010). *Nutrition and Dietetics*. McGraw Hill Education Private Limited, New Delhi.

2. Anne Payne, Hellen Barker. (2010). *Advancing Dietetics and Clinical Nutrition*. Churchill Livingstone Elsevier, UK

3. Gopalan C, Rama Sastri B V and Balasubramaniyan S C. (2016). *Nutritive value of Indian Foods*. National Institute of Nutrition, Hyderabad.

Reference Books

1. Park. A. (2007). *Park's Textbook of Preventive and Social Medicine*. Bharat Publishers, Jabalpur.

2. C.R. Pennington. (2013). Therapeutic Nutrition – A Practical Guide. Springer, US.

Pedagogy:

E-content, Lecture, Seminar, Assignment, Demonstration

- Ms.S.FATHIMA
- Ms.M.VINOTHINI

SEMESTER IV	INTERNAL MARKS	EXTERNAL MARKS:75		
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UND4GEC2	MEAL PLANNING FOR THE FAMILY	GENERIC ELECTIVE	2	2

- To understand the role of nutrition in different stages of life cycle.
- To gain experience in planning menu for different stages of life cycle.
- To develop skills in organizing and evaluating nutrition projects in the community.

Course Outcome and Cognitive Level Mapping

CO Number	CO Statement On the successful completion of the course, students will be able to	Cognitive Level
CO1	Identify the inter relationship between health and nutrition	K1
CO2.	Explain menu planning principles and RDA for different stages of life cycle	K2
СОЗ.	Illustrate the importance of nutritional requirements and modified diet for various age groups and conditions	K2
CO4.	Predict nutritional problems throughout life cycle	К3
CO5.	Determine dietary principles in menu planning for various lifecycle and conditions	K4

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	3	2	3	2	2	3	2	3	3
CO2	3	3	2	3	2	2	3	2	3	3
CO3	3	3	2	3	2	2	3	2	3	3
CO4	3	3	2	3	2	2	3	2	3	3
CO5	3	3	2	3	2	2	3	2	3	3

"1" - Slight (Low) Correlation "2" - Moderate (Medium) Correlation

"3" – Substantial (High) Correlation "-" indicates there is no correlation.

UNIT	CONTENT	HOURS	COs	COGNITIVE LEVEL
Ι	Principles of Nutrition and Meal planning Classification and functions of Nutrients. Define, malnutrition, over nutrition, under nutrition. RDA. Meal Planning – Definition, Objectives, Principles and Factors affecting Meal Planning. Food guide for selecting an adequate diet.	6	CO1 CO2 CO3 CO4 CO5	K1,K2,K3,K4
II	Nutrition for Pregnancy and Lactation Pregnancy- Physiological changes, complications, food and nutritional requirements. Dietary guidelines. Lactation – role of hormones in milk production, food and nutritional requirements, advantages of breast feeding.	6	CO1 CO2 CO3 CO4 CO5	K1,K2,K3,K4
Ш	Nutrition for Infants and Pre-schoolers Infant -Importance of breast milk, food and nutritional requirements, weaning and supplementary foods. Pre- schoolers - Food habits, food and nutritional requirements, points to be considered while planning a menu. nutritional problems.	6	CO1 CO2 CO3 CO4 CO5	K1,K2,K3,K4
IV	NutritionforSchoolgoingchildrenandAdolescentsSchoolgoingchildren-FoodandNutritionalrequirements,nutritionalproblems.Adolescents-FoodandNutritionalrequirementsandeatingdisorders.	6	CO1 CO2 CO3 CO4 CO5	K1,K2,K3,K4
V	Nutrition during Adulthood and Old age Adulthood - Reference man and Reference woman, Food and nutritional requirements. Old age - Nutritional requirements, nutritional problems and dietary management.	6	CO1 CO2 CO3 CO4 CO5	K1,K2,K3,K4
VI	SELF STUDY FOR ENRICHMENT (Not to be included for External Examination) Basic Five Food Groups. Draw a sample Menu for pregnancy and lactation. Stunting and wasting. Pointed to be considered while planning a packed lunch. RDA for Adult belonging heavy worker.	-	CO1 CO2 CO3 CO4 CO5	K1,K2,K3,K4
Text books

- 1. Srilakshmi B. (2017) *Nutrition Science*. 6th ed. New Age International Publishers, New Delhi.
- 2. Sumati R. Mudambi., Rajagopal M.V. (2021). Fundamentals of Foods, Nutrition and Diet Therapy. New Age International Publishers, New Delhi.
- 3. Swaminathan M. (2010). *Hand book of Food and Nutrition*. Bangalore printing and publishing co., Ltd, Bangalore.
- 4. Raheena Begum M. (2019). A Text Book of Foods, Nutrition and Dietetics. 3rd ed. Sterling publishers private Limited, New Delhi.

Reference Books

1. Gajalakshmi R. (2018). *Nutrition Science*. 2nd ed. CBS Publishers and distributors Pvt Ltd, New Delhi.

2. Indrani T K. (2005).Nursing Manual of Nutrition and Therapeutic Diet. Jaypee Brothers, Medical publishers (p) Ltd, New Delhi.

3. Khumud Khanna etal .(2020). Text book of Nutrition and Dietetics. 2nd ed.Elite Publishing House Pvt. Ltd New Delhi.

Web links

- https://www.ncbi.nlm.nih.gov/books/NBK209825/
- https://www.who.int/nutrition/topics/nutrecomm/en/

Journals

- 1. Nutrition, Elsevier Science Inc, United States.
- 2. Journal of Youth and Adolescence, Springer/Plenum Publishers, United States.
- 3. Journal of Food and Nutrition Research, Food Research Inst, Bratislava, Slovakia

Pedagogy: E-content, Lecture, Power point presentation, Seminar, Assignment, Quiz.

Course Designers

- Ms.E.AGALYA
- Ms.N.GANGA DEVI

SEMESTER IV	INTERNAL MARK	EXTERNAL MARKS:60		
COURSE CODE	COURSE TITLE	CATEGORY	HRS / WEEK	CREDITS
22UND4SEC1P	BASICS IN FOOD PRODUCTION (P)	SKILL ENHANCEMENT	2	2

Course Objectives

- To acquire knowledge on culinary skills in food production.
- To gain knowledge on preliminary techniques.
- To observe the various methods and techniques of cooking.

Course Outcome and Cognitive Level Mapping

	ourse oursens and cognitive hour mapping							
CO	CO Statement	Cognitive						
Number	On the successful completion of the course, students will be able to	Level						
CO 1	Identify the Basic Cooking methods and pre-preparations	K1						
CO 2	Explain the uses of equipment in food production	K2						
CO 3	Apply the practical skills and techniques used to prepare food	K3						
CO 4	Infer the culinary skills in the preparation of food production	K4						
CO 5	Determine the basic preparation of stock, soups, sauces and salads	K4						

Mapping of CO with PO and PSO

COs	PSO1	PSO2	PSO3	PSO4	PSO5	PO1	PO2	PO3	PO4	PO5
CO1	3	2	2	2	3	3	3	2	2	2
CO2	3	3	3	2	3	3	3	2	3	2
CO3	3	3	3	2	3	3	3	2	2	2
CO4	3	3	3	2	3	3	3	2	2	2
CO5	3	3	3	2	3	3	3	2	2	2

"1" – Slight (Low) Correlation "2" – Moderate (Medium) Correlation "3" – Substantial (High) Correlation "-" indicates there is no correlation.

List of Experiments

1. Equipments – Identification, Description, Uses and handling.

2. Basic Cooking methods – Moist heat, dry heat and combination methods

3. Pre- preparation Techniques – Cutting techniques, paring, peeling, grating, grinding, sieving, steeping.

4. Stocks, Types of stock (Basic stock - Brown, white, fish, vegetable) Preparation of stock recipes.

5. Soups, Classification with examples, Basic recipes of Consommé Soup – Classification, Preparation and serving of Soups, common garnishes for soups.

6. Sauces - Basic Mother Sauces (Béchamel, Espagnole, Veloute, Hollandaise, Mayonnaise, Tomato Sauce) Preparation of sauce recipes.

 Salad – Salads and its types, Salad dressings Salad Preparation (Potato Salad, Beetroot Salad, Green Salad, Fruit Salad, Lentil Salad).

Text Books

- 1. Krishna Arora.(2008). Theory of cookery Fronk Bros and Co. Publishers, New Delhi.
- 2. R. Singaravelavan.(2016). 2nd ed. *Food & Beverage Service*. Oxford University press. India.
- 3. Yogambal Ashokkumar.(2009).*Text book of Bakery and Confectionary* Prentice-hall of India Pvt. Ltd
- 4. V. Cessarani and R.Kinton 2002 Practical Cookery Hodder and Stoughton publishers

Reference Books

- 1. Krishna Arora, Theory of Cookery, 2008 Fran Brothers & Company (Pub) Pvt. Ltd.
- 2. Bali, Parvinder. (2013) *Quantity Food Production Operations and Indian Cuisine-*S.oxford, London
- 3. Aggarwal, D.K. (2006). Kitchen Equipment & Design, Aman Publications, New Delhi

Delhi.

- 4. Vikas Singh, (2011) Text Book of food Production (BTK), Aman Pub., N. Delhi.
- 5. Parvinder S. Bali. (2014) *Food Production Operations*, 3rd Edition, Oxford University Press, New Delhi.
- 6. Philip, Thangam E. (2009) Modern Cookery, 5th Edition, Anna Salai, Chennai.

Web links

- <u>https://bngkolkata.com/kitchen-equipment/</u>
- https://www.chelseagreen.com/2023/fundamentals-stocks-broths/
- https://www.researchgate.net/publication/359336449_Chapter_no_2_Soups_21_Classificat ion_of_Soups_with 5_examples_each_22_Consomm'eDefinition_Ingredients_Clarificati on_Recipe_for_one_ltr_five_variation_23_Garnishesh_Accompaniments_for_soup_Con somm'es
- https://hmhub.in/salads-salad-dressings/

Pedagogy

E-content, Lecture, Power Point Presentation, Seminar, Assignment, Visit to Food Processing and Packaging units.

Course Designers

- Ms. T. R. REVATHI
- Ms. R. ARTHY