POST GRADUATED DEPARTMENT OF NUTRITION AND DIETETICS

B.Sc., NUTRITION AND DIETETICS

Syllabus

(2020 – 2023 onwards)

JAMAL MOHAMED COLLEGE (Autonomous)

Accredited (3rd Cycle) with 'A' Grade by NAAC

(Affiliated to Bharathidasan University)

Tiruchirappalli – 620020, Tamil Nadu, India

PROGRAMME OUTCOMES – SCIENCE

Undergraduates will be able to

- Discuss current scientific facts, concepts, fundamental principles and scientific theories in solving societal problems and make informed decisions in scientific contexts.
- Transcribe scientific ideas, arguments and practical experiences and demonstrate laboratory skills in handling new scientific techniques and equipment's safely and ethically.
- Recognize the benefits and limitations of science and its application in technological developments.
- Demonstrate an ability to pursue higher education as an independent learner and becomes entrepreneurs in the relevant discipline.
- Devise strategies to meet community requirements and serve as responsible citizens.

PROGRAMME SPECIFIC OUTCOMES

B.Sc Nutrition and Dietetics

At the end of the Programme the Students will be able to

- Recognize the interrelationship between food, nutrition and health and the food choices to make that will optimize the health and prevents diseases.
- Utilize nutrition care process to make decisions to identify nutrition-related problems, and determine and evaluate nutrition interventions.
- Describe the governance of nutrition and dietetics practice, such as the scope of Nutrition and Dietetics practice and the Code of Ethics for the profession of Nutrition and Dietetics; and describe inter-professional relationships in various practice settings.
- Organize the translation of food, nutrition and diet towards promotion of health and nutritional wellbeing of society, bearing social responsibility and ethics.
- Deduce careers opportunities as caring, innovative nutritionists, dietitians and entrepreneurs and meet the complex needs of the evolving health care system.

B.Sc. NUTRITION AND DIETETICS

SEM	COURSE CODE	Part	COURSE	COURSE TITLE	Ins. Hrs /Week	CREDIT	MARKS		TOTAL
							CIA	ESE	
I	20U1LT1/LA1/LF 1/LH1/LU1	I	Language – I	Language – I	6	3	25	75	100
	20UCN1LE1	II	English - I	English - I	6	3	25	75	100
	20UND1CC1	III	**Core – I**	Food science	5	5	25	75	100
	20UND1CC2P		**Core – II**	Food science Practical	3	2	25	75	100
	20UND1AC1		**Allied –I**	Human Physiology	5	4	25	75	100
	20UND1AC2P		**Allied –II**	Human Physiology Practical	3	2	25	75	100
	20UCN1AE1	IV	AEC-I	Value Education	2	2	-	100	100
			TOTAL		**30**	**21**			**700**
II	20U2LT2/LA2/LF 2/LH2/LU2	I	Language – II	Language – II	6	3	25	75	100
	20UCN2LE2	II	English – II	English – II	6	3	25	75	100
	20UND2CC3	III	**Core – III**	Nutrition : Life Cycle Approach	6	5	25	75	100
	20UND2CC4P		**Core – IV**	Nutrition : Life Cycle Approach Practical	3	2	25	75	100
	20UND2AC3		**Allied – III**	Fundamentals of Nutrition	4	3	25	75	100
	20UND2AC4P		**Allied –IV**	Fundamentals of Nutrition Practical	3	2	25	75	100
	20UCN2SE1	IV	Skill Enhancement Course - I @	Soft Skills Development	2	2	-	100	100
			TOTAL		**30**	**20**			**700**
III	20U3LT3/LA3/LF 3/LH3/LU3	I	Language– III	Language– III	6	3	25	75	100
	20UCN3LE3	II	English – III	English – III	6	3	25	75	100
	20UND3CC5	III	**Core– V**	Diet Therapy-I	4	4	25	75	100
	20UND3CC6P		**Core– VI**	Diet Therapy-I Practical	3	2	25	75	100
	20UND3AC5		**Allied– V**	Nutritional Biochemistry	4	3	25	75	100
	20UND3AC6P		**Allied–VI**	Nutritional Biochemistry Practical	3	2	25	75	100
	20UND3GE1	IV	Generic Elective I #		2	2	-	100	100
	20UCN3AE2		AEC-II	Environmental Studies	2	2	-	100	100
			TOTAL		**30**	**21**			**800**
IV	20U4LT4/LA4/LF 4/LH4/LU4	I	Language–IV	Language–IV	6	3	25	75	100
	20UCN4LE4	II	English– IV	English– IV	6	3	25	75	100
	20UND4CC7	III	**Core– VII**	Diet Therapy-II	5	5	25	75	100
	20UND4CC8P		**Core - VIII**	Diet Therapy- II Practical	3	2	25	75	100
	20UND4AC7		**Allied– VII**	Food Microbiology	5	3	25	75	100
	20UND4AC8P		**Allied–VIII**	Food Microbiology Practical	3	2	25	75	100
	20UND4GE2	IV	Generic Elective – II#		2	2	-	100	100
	20UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
		TOTAL			**30**	**21**			**700**
V	20UND5CC9I	III	**Core – IX**	Diet Therapy Internship	6	5	25	75	100
	20UND5CC10		**Core – X**	Physical Facilities for Food Service	5	5	25	75	100
	20UND5CC11		**Core – XI**	Food Preservation and Bakery Techniques	5	5	25	75	100
	20UND5CC12P		**Core - XII**	Food Preservation and Bakery Techniques Practical	5	5	25	75	100
	20UND5DE1A/B		DSE – I **		5	4	25	75	100
	20UND5SE2PA/B	IV	Skill Enhancement Course II @		2	2	-	100	100
	20UND5SE3PA/B		Skill Enhancement Course – III @		2	2	-	100	100
	20UND5EC1		**Extra Credit Course - I**	General Intelligence for competitive examinations	**-**	**4***	**--**	**100***	**100***
			TOTAL		**30**	**28**			**700**
VI	20UND6CC13	III	**Core– XIII**	Food Service Management	5	5	25	75	100
	20UND6CC14		**Core– XIV**	Public Health Nutrition	5	5	25	75	100
	20UND6CC15P		**Core - XV**	Food Service Management Practical	5	5	25	75	100
	20UND6CC16		**Core - XVI**	Food Product Development and Quality Control	5	5	25	75	100
	20UND6DE2A/B		DSE II **		5	4	25	75	100
	20UND6DE3A/B		DSE III **		4	4	25	75	100
	20UCN6AE3	IV	AEC-III	Gender Studies	1	1	-	100	100
	20UND6EC2		**Extra Credit Course - II**	Nutrition and Dietetics for competitive examinations	**-**	**4***	**--**	**100***	**100***
	20UNDAECA		**Extra Credit Course for all**	Online Course	**-**	**1***	**--**	**-**	**-**
			TOTAL		**30**	**29**			**700**
GRAND TOTAL					**180**	**140**	**-**	**-**	**4300**

*Not considered for grand total and CGPA

 # Generic Elective for other major departments

SEM	COURSE TITLE
III	Nutrition for Health and Wellbeing
IV	Nutrition for Women

@ Skill Enhancement Courses

SEM	**Elective No.**	**COURSE CODE**	**COURSE TITLE**
V	II	20UND5SE2AP	Computer Application in Nutrition and Dietetics Practical
		20UND5SE2BP	Food Adulteration Practical
V	III	20UND5SE3AP	Techniques in Bakery Practical
		20UND5SE3BP	Interior Design Practical

**** Discipline Specific Elective**

SEM	DSE No.	COURSE CODE	COURSE TITLE
V	I	20UND5DE1A	Food Chemistry
		20UND5DE1B	Functional Foods
VI	II	20UND6DE2A	Life Span Development
		20UND6DE3B	Food Packaging
VI	III	20UND6DE3A	Home Science Extension
		20UND6DE3B	Family Resource Management

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20UND1CC1	Core –I	FOOD SCIENCE	5	5	100	25	75

Course out comes:

At the end of the course, students will be able to

1**.** understand the use of four food groups in daily life

2**.** apply various cooking methods of foods

3**.** explain the nutrient in foods and the specific functions in maintaining health.

4**.** apply food science knowledge to describe the functions of ingredients in the food.

5**.** understand medicinal properties of spices

UNIT-I

15hours

Introduction to Food science:

1.1 Food - Definition: Food, Food Science**.** Basic Four, Functions of food –Energy yielding, Body Building and Protectivefoods.

1.2 Cooking Methods: Objectives of cooking, advantages of cooking, preliminary treatment to the foods,cooking methods-Moist, Dry and Combination methods of cooking**.**

UNIT-II

15hours

Cereals, Millets and Pulses:

2.1 Cereals: Structure, composition and nutritive value – Rice, Wheat and Millets- ragi, bajra, jowar and maize Cereal starch-Effect of moist heat &Dry heat, factors affecting gelatinization, Changes in cooked starch, Cereal protein- Gluten, factors affecting gluten formation- Role of cereals in cookery.

2.2. Pulses: Types**,** Composition and Nutritive value, cooking process- soaking, germination, advantages of germination, fermentation ,Toxic constituent **,**Role of pulses incookery.

UNIT-III **15 hours**

Milk and Animal products:

3.1. Milk: Nutritive value**.** Milk products**,** Effect of heat, acid and enzymes on milk, role of milk in cookery**.**

3.2. Egg : Structure, nutritive value, quality of egg, factors affecting foam formation and coagulation of egg**.** Role of egg in cookery

3.3. Fleshy foods: Meat- Structure, nutritive value, postmortem changes, ageing and tenderizing of meat**,** factors affecting cooking quality of meat**. Poultry:** Classification, nutritive value**. Fish:** Classification, nutritive value, selection of fish and role of fish in cookery.

UNIT-IV

15hours

Vegetables and Fruits:

4.1. Vegetables: Classification, nutritive value**.** Changes occur during cooking of vegetables, Role of Vegetables incookery.

4.2. Fruits: Classification, nutritive value, Ripening of fruits, Enzymatic browning reaction and itspreventive measures.

4.3. Pigments: Classification- water soluble and insoluble**.** Effect of heat, acid, alkali and fat on pigments present in fruits and vegetables.

UNIT-V

15hours

Other food groups:

5.1. Nuts,Fats and Oil seeds: Nuts- almonds, coconut, groundnut, walnut**. Oil seeds-**Flaxseed, Pumpkin seed, Gingelly seed**.** Fats and oils-butter, margarine, sesame oil, coconut oil, groundnut oil and their importance. Effects of heat on cooking of fat, Role of Nuts, fats and oils incookery.

5.2. Sugar: Nutritive value,crystallization factors affecting crystallization, stages of sugar cookery, Role of sugars in cookery.

5.3 Beverages: Classification - coffee, tea, fruitbeverages, soup and malted beverages**. Spices and condiments** –medicinal properties of Indian spices, #role of spices incookery#

#. . . . . # Self Study portion

TextBooks:

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

New Delhi,(2010).

2**.** Norman N. Potter,Joseph H. Hotchkiss, "Food Science", 5th edition, CBS Publishers & Distributors Pvt**.** Ltd**.** (2007).

UNIT- I Chapter I T. B-1, Chapter XVIII T. B-2

UNIT-II Chapter II, III, T. B-1, Chapter XII, XIII, XIV T. B-2

UNIT-III Chapter V, VI, VII T. B-1, Chapter XII, XIII, XIV T. B-2

UNIT-IV Chapter VII T. B-1

UNIT-V Chapter IV IX XI XII T. B-1

ReferenceBook:

1. MohiniSethi, Food Science Experiments and Applications, 2nd Edition, CBS publishers anddistributors Pvt Ltd, New Delhi, 2011.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**		**Hours**			**Credits**	
I	**20UND1CC1**			**FOOD SCIENCE**		**5**			**5**	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓		✓	✓		✓		✓	✓	
CO4	✓			✓		✓			✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 34, Relationship : Moderate										

Prepared by:
1. B. Rajalakshmi
2.A. Yasmin Fathimaa

Checked by:
Dr. A. Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	**Code**	**Course**	**Title of the Course**	**Hours**	**Credits**	**Max. marks**	**Internal marks**	**External marks**

I	**20UND1CC2P**	**Core – II**	**FOOD SCIENCE PRACTICAL**	**3**	**2**	**100**	**20**	**80**

Course outcomes:
At the end of the course, students will be able to

1**.** know the basic principles of cooking

2**.** understand different experimental procedure of the preparation of different foods

3**.** identify the changes that occur during cooking of different food groups

4**.** prepare and evaluate the recipes based on the principles

5**.** understand the medicinal values of food prepared by using spices and condiments

LIST OF PRACTICALS

1.INTRODUCTION TO LABORATORY: (a) Laboratory rules (b) Familiarizing with laboratory equipments, weighing methods and preliminary preparation for cooking. (c)testing quality of prepared food (sensory attributes)-Hedonic scale-9 point scale

2. CEREALS:(a)Experiments: (i) Microscopic examination of raw and cooked starch granules of different cereals(ii)Gel formation in different cereal starch: cooking time and gelatinisation temperature. (iii) Determination of Gluten content in Wheat, Maida and rice flour- percentage of water absorption,weight of wet and dry gluten**. (b)Recipes:**(i) Cereal preparations using by various cooking methods (Boiling, steaming- any 2 recipes on each methods)

3. PULSES: **(a)Experiments:** (i) Germination of few pulses-soaking and germination (ii)Factor affecting the quality of pulses- Use of hard water, soft water, sodium bi Carbonate, vinegar; pressure cooking .

(b)Recipes: (i) Preparation of few pulse based recipes-use germinated and soaked pulse forms for the preparation (any 2 recipes on each forms)

4. VEGETABLES AND FRUITS: (a)Experiments: (i) Effect of heat and pH on vegetable pigments like: chlorophyll, carotenoids, anthocyanin, anthoxanthin**.** (ii) Browning reaction in vegetables and fruits and methods of its prevention**.(b)Recipes:** (i) Preparation of vegetables and fruits based recipes (any 2 recipes on each group)

5. MILK COOKERY: (a)Experiments: (i) Effect of prolonged heat, acid and enzyme on cooking milk**.** (ii) Preparation of Milk products-curd, paneer, whey water. **(b)Recipes:**(i) Preparation of milk recipes-non fermented and fermented recipes.

6. EGG COOKERY: (a) Experiments: (i) Quality of egg-Floating test, candling and test for interior quality**.** (ii)Boiled egg – Hard (30minutes) and Soft (10minutes) cooked egg**.** (iii)Effect of acid and salt in egg white and yolk foam **(b)Recipes:** (i) Preparation of scrambled, poached egg, custards (double boiling method), omelette, egg curry**.**

7. SUGAR:(a) Experiments: (i) Identify the stages of sugar cookery using food thermometer-refined sugar and country's jaggery powder (Thread test, cold water test, plate test, temperature test)**(b)Recipes:**(i) Sweet preparations - chocolate fudge, peanut brittle, laddu, mysorepak and Athirasam

8. FATS AND OILS:(a) Experiments: (i) Smoking point temperature of different fats and oils (gingelly oil, groundnut oil & coconut oil) (ii) Frying poori at different smoking temperature **(b)Recipes**:(i) Preparation of few fat fried snacks- shallow fry and deep fat fry methods

9. BEVERAGES: (a) Experiments: Preparation and evaluation of (i) Coffee (Filter and instant method) (ii) Tea **(b)Recipes** (i) Soup (ii) fruit and milk based drinks (iii)malted beverages-any 2 recipes on each class.

10. SPICES: (a)Recipes :Preparation of medicinal value foods by using spices and condiments-Turmeric milk, Rasam, Panagam,Cinnamon tea and detoxifying drink.

REFERENCE BOOKS:

1. Mohinisethi-Food Science Experiments And Applications, 2nd Edition, CBS publishers and dpistributorspvtltd,Newdelhi, 2011.
2. B. Srilakshmi-Food science Laboratory Manual, Scitech Publications (India) Pvt Lt, 2003.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
I	**20UND1CC2P**	**FOOD SCIENCE PRACTICAL**	**3**	**2**

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓		✓		✓	✓		✓	
CO3	✓	✓				✓	✓			
CO4	✓	✓	✓			✓	✓	✓		
CO5	✓	✓		✓		✓	✓		✓	
Number of Matches= 30, Relationship : Moderate										

Prepared by: **Checked by: Dr. V. Kavitha**
1. B. Rajalakshmi
2. A. Yasmin Fathimaa

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	**20UND1AC1**	**Allied - I**	**HUMAN PHYSIOLOGY**	**5**	**4**	**100**	**25**	**75**

Course outcomes:

At the end of the course, students will be able to

1. understand the composition and functions of blood and lymph
2. understand the physiology of Respiratory system and Cardiovascular system
3. integrate the physiological functions of the digestive system and excretory system
4. apply the physiological concepts of the reproductive system and endocrine system
5. analyse the vital organ functions in respect to maintenance of human health

UNIT-I **15 hours**

Blood and lymph:

1.1 Blood- composition and functions, RBCs, WBCs, Platelets- structure and functions**.** Coagulation of blood(mechanism only), bleeding time &coagulation time (meaning only)**.** Blood grouping and Rh factors**.**

1.2 Lymph and lymphatic system – #structure and functions#.

UNIT –II **15 hours**

Respiratory and cardiovascular system:

2.1 Respiratory system – structure and functions of respiratory tract, process of respiration, transport

and exchange of gases.

2.2 Heart- structure and functions**.** Cardiac cycle, cardiac output, factors affecting cardiac output,

heart rate, pulse rate, blood pressure- measurement through sphygmomanometer and factors affecting blood pressure, Electrocardiogram (ECG).

UNIT –III **15 hours**

Digestive and Excretory System:

3.1 Digestive system – structure and functions of gastrointestinal tract, structure of villi, physiology

of digestion, movements of intestine**.** Liver – structure and its functions

3.2 Excretory system –structure and functions of kidney, structure of nephron, # composition of urine, factor affecting formation of urine#, micturition**. Skin-** Structure and functions (list only).

UNIT-IV **15 hours**

Reproductive and Endocrine System:

4.1 Reproductive system: structure and functions of male and female reproductive system, spermatogenesis, oogenesis and menstrual cycle.

4.2 Endocrine system – structure and function of pituitary, thyroid, parathyroid, and Pancreas and

adrenal glands.

UNIT –V **15 hours**

Nervous system and special senses:

5.1 Nervous system- structure and functions- nerve cell, brain and spinal cord**.** Autonomic nervous

system – sympathetic and parasympathetic nervous system and functions (list only).

5.2 Ear, Eye, Nose and Tongue- structure and functions of ear, eye, nose and tongue (concept only)

#. . . . . # self study

Text Books

1. K**.** Sembulingam, and Prema Sembulingam Essentials of Medical Physiology, Jay Pee Brothers Medical Publishes (p) Limited, New Delhi, Second Edition,(2010).
2. Ross and Wilson, Anatomy and Physiology in Health and Illness, Library Cataloguing in Publication Eleventh Edition, (2010).

UNIT I	Chapter- VI-XXVII.T. B. 1, Chapter- VI, T. B. 2
UNIT II	Chapter-V, X T. B. 2
UNIT III	Chapter- XII, XIII, T. B. 2
UNIT IV	Chapter-IX, XVIII, T. B. 2
UNIT V	Chapter-VII, VIII ,T. B. 2

REFERENCE BOOKS

1. S. M .Subramanian and Mathavan kutty, Text book of Physiology, Chand andCompany, New Delhi (2001).
2. K**.** Sembulingam and Prema Sembulingam, Essentials of Medical Physiology,Jay Pee Brothers Medical Publishes (p) Limited, New Delhi, Second Edition, (2000).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code			Title of the Paper			Hours			Credits
I	20UND1AC1			HUMAN PHYSIOLOGY			5			4
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓		✓		✓	✓		✓	
CO3		✓	✓	✓			✓	✓	✓	
CO4	✓	✓		✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 40, Relationship : High										

Prepared by:
1. J. Harine Sargunam
2. Dr. M. Angel

Checked by:
D. Bhuvaneswari

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20UND1AC2P	Allied - II	HUMAN PHYSIOLOGY - PRACTICAL	3	2	100	20	80

Course Outcomes:

At the end of the course, students will be able to

1. Know the composition of Blood

2. Understand the features of tissues, muscles and organs.

3. Acquire skills in estimating the haemoglobin and measuring the blood pressure.

4. Determine the normal and abnormal value of blood constituent

5. Demonstrate the organ functions using apparatus

LIST OF PRACTICALS

1. Histology of tissues- columnar, cubical, ciliated, squamous and stratified squamous.

2. Histology of muscles- cardiac, striated and non-striated.

3. Microscopic structure of organs- stomach, liver, ovary and pancreas.

4. Estimation of haemoglobin by Shali's method.

5. Measurement of blood pressure using Sphygmomanometer

i. Before and after exercise.

ii At different positions standing, sitting and reclined.

6. Determination of pulse rate.

7. Determination of blood group.

8. Bleeding time, clotting time and enumeration of Red Blood Cells - Demonstration.

9. Enumeration of White Blood Cells.

10. Visit to a clinical laboratory.

REFERENCE:

1. Wright. S, Applied Physiology, OU Publishers, India, 13th Edition, (2008)

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**		**Hours**			**Credits**	
I	**20UND1AC2P**			**HUMAN PHYSIOLOGY - PRACTICAL**		**3**			**2**	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	

CO3	✓		✓	✓	✓	✓		✓	✓	✓
CO4	✓			✓	✓	✓			✓	✓
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 38, Relationship : High										

Prepared by: **Checked by: B. Rajalakshmi**

1. **Dr. M. Angel**
2. **J. Harine Sargunam**

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
II	**20UND2CC3**	**Core - III**	**NUTRITION: LIFE CYCLE APPROACH**	**6**	**5**	**100**	**25**	**75**

Course out comes:

At the end of the course, students will be able to

1**.** understandto use the food groups and RDA to plan the balanced diet

2**.** understandthe nutritional needs during pregnancy and lactation.

3**.** describethe growth and development of infancy and importance of breast feeding

4**.** knowthe need of nutritional requirement to school going children, Adolescence and to overcome their nutritional problems.

5**.** understandthe physio and psychosocial changes during old age and to overcome their health problems

UNIT I

15 hours

RDA AND MEAL PLANNING:

1.1 RDA-Definition, RDA FOR INDIAN (2010), General Principles of deriving RDA (list only), factors affecting RDA & its uses.

1.2 Balanced Diet & meal planning- five food groups, food guide pyramid, balanced diet, food exchange lists, principles of planning meal, steps involved in planning a menu.

UNIT II

15 hours

PREGNANCY & LACTATION:

2.1 Pregnancy –Physiological changes, nutritional requirements, dietary guidelines, general dietary problems-nausea, vomiting, heart burn, weight gain during pregnancy pica**.** Complications during pregnancy- Anaemia, Gestational Diabetes, Constipation, Odema,Hypertension.

2.2 Lactation–structure of Mammary gland, physiology of lactation & role of hormones in milk production**.** Nutritional requirements, dietary guidelines, lactation failure –factors responsible for lactation failure.

UNIT III **15 hours**

INFANCY& PRESCHOOL CHILDREN

3.1 Infancy- Growth &Development, Nutritional Requirement, Breast Milk-Colostrums, Transition milk, Foremilk, Hind milk**.** Advantages of breast milk to the infant, Artificial feeding.

3.2 Preschool Children- Growth & development nutritional requirements, food requirements, feeding problems, feeding disorders, # midday meal programme # ICDS- Objectives.

UNIT IV **15 hours**

SCHOOL GOING & ADOLESCENCE:

4.1 School going children- Growth & development nutritional requirement, importance of breakfast, family meals, dietary guidelines, packed lunch, school lunch programme, and diet related problems-Underweight, Obesity, Constipation, Dental caries.

4.2 Adolescence- growth & development, nutritional requirements, dietary guidelines, nutritional problems- obesity, eating disorders- anorexia nervosa, bulimia nervosa, binge eating

UNIT V

15 hours

ADULT & ELDERLY

5.1 Adult- Indian reference man & women, Nutritional requirement of adult in relation to activity pattern, dietary guidelines, #low cost balanced diet#.

5.2 Elderly- Physiological, psychological and socio-economicaspects influencing nutritional intake**.** Process of ageing, Nutritional Requirement, dietary guidelines, Nutritionalrelated problems- osteoporosis, obesity, anaemia. **#. . . . . # Self - study portion.**

TEXT BOOKS

1. B. Srilakshmi,Dietetics, Sixth edition, New Age International Pvt**.** Ltd (2010)**.**
2. B. Srilakshmi,Nutrition Science, Fourth edition, New Age International Pvt**.** Ltd (2012)**.**

UNIT I Chapter – II T. B. 1 Chapter – II T. B. 2
UNIT II Chapter – VI, VIIIT. B. 1
UNIT III Chapter – III, IVT. B. 1
UNIT IV Chapter – V, VI T. B. 1
UNIT V Chapter – II, IX T. B. 1

Reference Book

1. E. M**.** Shills,A. J Olson, Shike, Lea and Febiger, Modern Nutrition in Health and Diseases, LippincottWilliams and Wilkins publishing, 2006**.**
2. L. K Mahan, M. T Arlin, Krause's, Food,Nutrition and Diet Therapy, Eleventh edition, W. B. SaunderCompany, London, 2000.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**	**Title of the Paper**	**Hours**	**Credits**
II	**20UND2CC3**	**NUTRITION: LIFE CYCLE APPROACH**	**6**	**5**

Course Outcomes	Programme Outcomes (POs)	Programme Specific Outcomes (PSOs)

(COs)	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓		✓		✓	✓		✓	
CO3		✓	✓	✓			✓	✓	✓	
CO4	✓	✓		✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 40, Relationship : High										

Prepared by:
1. **D. Bhuvaneswari**
2. **R. R. Sangeetha**

Checked by:
J. Harine Sargunam

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
II	**20UND2CC4P**	**Core - IV**	**NUTRITION: LIFE CYCLE APPROACH PRACTICAL**	**3**	**2**	**100**	**20**	**80**

Course outcomes:

At the end of the course, students will be able to

1. knowthe principles of menu planning for different age groups
2. describethe nutrient need for different age group
3. acquireskills in planning menu for different age groups
4. identifythe food source based on the requirement and able to prepare a menu for physiologic stress period and throughout lifecycle
5. design, standardize and prepare weaning food for Infancy.

LIST OF PRACTICALS

Introduction to meal planning & portion controlling

I. Planning, calculate nutritive value and preparation of whole day menu for following age groups

- **i.** Pregnancy
- **ii.** Lactation
- **iii.** Infancy-weaning food
- **iv.** Preschool children (1-6 years)
- **v.** School children (7-12 years)
- **vi.** Adolescence (13-17 years)
- **vii.** Adult man & women
- **viii.** Elderly

II. A Diet Survey based on Dietary Habits by indirect method.

Visit to an Anganwadi centre- Midday Meal Programme- **case study**

REFERENCES BOOKS

1. Swaminathan,M**.** Advanced text book on Food and Nutrition,,Second Edition, An mol PublicationPvt,Ltd,. 2004**.**
2. MahtabS. Bamji, Prasad Rao, N. Vinodini Reddy**.** Textbook of Human Nutrition, Second Edition, Oxfordand IBH Publishing Co**.** Pvt .Ltd, , 2003**.**
3. Srilakshmi, B**.** Nutrition Science, New Age International [p] ltd, New Delhi, 2002.
4. Bahasahe and B**.** Dosa, Hand book of nutrition and diet

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**				**Hours**		**Credits**
II	**20UND2CC4P**			**NUTRITION: LIFE CYCLE APPROACH PRACTICAL**				**3**		**2**
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

CO3	✓	✓	✓		✓	✓	✓	✓		✓
CO4	✓	✓	✓		✓	✓	✓	✓		✓
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 42, Relationship : High										

Prepared by:
1. D. Bhuvaneswari
2. R. R. Sangeetha

Checked by
Dr. V. Kavitha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
II	**20UND2AC3**	**Allied - III**	**FUNDAMENTALS OF NUTRITION**	**4**	**3**	**100**	**25**	**75**

Course Outcomes

At the end of the course, students will be able to

1**.** understandthe role of nutrients in human health

2**.** providescientific knowledge on the signs and symptoms of nutrient deficiency and Toxicity

3**.** acquireknowledge in energy determination and expenditure

4**.** able to differentiate the functions and deficiency of vitamins**.**

5**.** knowthe role of water and electrolyte balance in the human body

UNIT-I

CARBOHYDRATES:

1.1 Carbohydrates-Nutritional classification and functions (list), sources and requirements, digestion and absorption and utilization.

1.2 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.

PROTEINS:

1.3 Protein- Nutritional classification and functions, sources and requirements, digestion and absorption and utilization.

1.4 Protein quality evaluation methods-NPU, BV, PER (Definition & formula). Nutritional problems due to excess and deficit intake of protein.Aminoacids-Essential and non- aminoacids.

UNIT-II

LIPIDS:

2.1 Lipids- classification and functions, sources and requirements, digestion, absorption andutilization.

2.2 Nutritional problems due to excess and deficit intake of lipids. Essential fatty acid- Definiton and functions (list).

UNIT-III

ENERGY METABOLISM:

3.1 Energy –Definition;Unit of measurement-calorie & joule. Measurement of energy value of foods by Bomb calorimeter.Thermic effects of foods.

3.2 Basal metabolic rate-Definition,factors affecting basal metabolic rate,methods for determination of energy expenditure-direct and indirect colorimetry. Calculation of energy requirements for an individual.(Atwater's Rosa,Benedict's Roth Apparatus)

UNIT-IV

VITAMINS:

4.1 Classification of vitamins-fat and water soluble vitamins**.** Fat soluble vitamins (A, D, E &K)-functions(list), requirements and food sources**.** Nutritional problems due to deficiency or excess intake of fat soluble vitamins.

4.2 Water soluble vitamins (B_1, B_2, B_3, B_6, B_{12} , Vitamin C) - functions, requirements and food sources**.**

UNIT-V

MINERALS, WATER AND ELECTROLYTE:

5.1 Minerals: Macrominerals- calcium, phosphorus, magnesium, sodium, potassium & chloride Functions(list), requirements, food sources, deficiency and toxicity.

5.2 Micro minerals& Trace minerals: Iron, copper, zinc, manganese, iodine, fluoride, selenium, cobalt, chromium & nickel- Functions(list), requirements, food sources, deficiency and toxicity.

5.3 Water-Distribution, functions of water & electrolytes**.** Water balance and water intoxication.

TEXT BOOKS

1. Srilakshmi, Nutrition Science, New Age International (P) Ltd, New Delhi, Fifth Edition, (2008).
2. AmbikaShanmugam, Fundamentals of Biochemistry for Medical Students, New Age Publishing Pvt. Ltd. , New Delhi, Seventh Edition, (1986).

UNIT I Text book – 1 Chapter – III, IV, VII

UNIT II Text book –1 Chapter – V

UNIT III Text book –1 Chapter – VI

UNIT IV Text book – 1 Chapter – XIV, XV, XVI, XVII, XVIII, XIX

UNIT V Text book – 1 Chapter – X, XI, XII,XIII,XX

REFERENCE BOOKS

1. Joshi. A. S, Nutrition & Dietetics, Third Edition, Tata McGraw Hill Education Pvt**.** Ltd. , New Delhi,2010**.**
2. Sathyanarayana and U**.** Chakrapani, Biochemistry, Third Edition,Uppala Author – Publisher Interlinks, Vijayawada, (2010).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
II	**20UND2AC3**	**FUNDAMENTALS OF NUTRITION**	**4**	**3**

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3	✓	✓	✓		✓	✓	✓	✓		✓
CO4	✓	✓	✓		✓	✓	✓	✓		✓
CO5	✓				✓	✓				✓
Number of Matches= 40, Relationship : High										

Prepared by: **Checked by: A. Yasmin Fathimaa**
1. J. Priya
2. Dr. M. Angel
Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
II	**20UND2AC4P**	**Allied-IV**	**FUNDAMENTALS OF NUTRITION PRACTICAL**	**3**	**2**	**100**	**20**	**80**

Course Outcomes

At the end of the course, students will be able to

1. know the source of food content
2. understandthe identification of different types of sugars, proteins and minerals**.**
3. know the principles of analytical instruments
4. demonstrate competency in the use of standard techniques of food analysis
5. acquireskills to analyse various nutrients.

1. Qualitative tests for Carbohydrates, Proteins and Minerals.

Qualitative analysis for Carbohydrates in food samples.

a) Monosaccharide – Glucose and Fructose

b) Disaccharide – Lactose and Sucrose

c) Polysaccharide - Starch

2**. Qualitative analysis for protein in food samples**

a) Albumin

b) Casein

3**.** Estimation of Moisture content in the given sample**.** (Hot air oven method)

4**.** Preparation of ash samples for mineral analysis.

5**. Qualitative analysis for minerals in food samples.**

a) Calcium

b) Iron

c) Phosphorus

6**.** Estimation of glucose.

7**.** Estimation of ascorbic acid.

REFERENCE BOOKS:

1. Sadasivam, S**.** and Manickam, A**.** Biochemical Method ,Second Edition New AgeInternational P**.** Ltd.,Publishers, New Delhi,2003.
2. Raghuramulu, N. , Madhavannair, K**.** and KalyanaSundaram, A Manual of Laboratory Techniques, Indian Council of Medical Research,National Institute of Nutrition, Hyderabad, 2013.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**				**Hours**		**Credits**
II	**20UND2AC4P**			**FUNDAMENTALS OF NUTRITION PRACTICAL**				**3**		**2**
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

CO3	✓	✓	✓		✓	✓	✓	✓		✓
CO4	✓	✓	✓		✓	✓	✓	✓		✓
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 42, Relationship : High										

Prepared by: **Checked by D. Bhuvaneswari**
1. J. Priya
2. Dr. M. Angel

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
III	**20UND3CC5**	**Core-V**	**Diet Therapy -I**	**4**	**4**	**100**	**25**	**75**

Course Outcome

1. Aware about the role and responsibilities of dietitian and diet counseling process
2. Apply various methods and techniques in the therapeutic modification of diet
3. Relate the principles of diet for Allergy, burns, obesity and underweight
4. Modify dietary management for Gastrointestinal disorder and Malabsorption syndrome
5. Describe the dietary treatment for liver, gall bladder and pancreatic disorder

UNIT – I

12hours

Basic Concepts in Dietitics:

1.1 Definition of dietetics, dietitian, goals of diet therapy. Types of dietitian, role and responsibilities of dietitians, qualification, and professional code of ethics.

1.2 **Diet counselling –** clients and counselors, client responsibility, attributes of a Successful counselor, steps in counselling process, counselling guidelines.

1.3Therapeutic adaptations of the normal diet, Routine hospital diets –Regular, clear fluid diet. full fluid, soft. Specially modified therapeutic diet- High fibre diet, High calorie low calorie, High and low protein, bland, high and low residue diets and sodium restricted diet.

UNIT- II
12hours
Special feeding methods and diet in deficient, febrile condition

2.1 **Special feeding methods**– Enteral feeding – methods- nasogastric, gastrostomy and jejunostomy, types of food, infusion techniques. Parenteral feeding – principles, TPN-formula and complications. Pre and post-operative diet.

2.2 **Febrile condition -** Etiology, types, dietary management - Fevers of short duration-Typhoid, influenza and long duration - Tuberculosis

2.3 **Deficient condition-** Dietary modification, diet planning, and preventive measures for-#PEM, Iron deficiency anaemia and Vitamin A deficiency#.

UNIT- III

12hours

Diet for burns, Allergy, obesity and underweight

3.1 Burns – types, assessment, physiological changes in burns, degree of burns and dietary treatment. **Allergy -** definition, types, symptoms, diagnostic tests and elimination diet.

3.2 Obesity-etiology, assessment, theories, grades of obesity, Complications, Dietary Management and dietary guidelines**.**

3.3Underweight – etiology, signs and symptoms, dietary management and dietary guidelines.

UNIT- IV

12hours

Diet for Gastro Intestinal diseases and Malabsorption syndrome

4.1 **Upper gastro intestinal tract disorders–**etiology, symptoms, diagnosis, dietary management and dietary guidelines for gastritis and peptic ulcer.

4.2 **Lower gastro intestinal tract disorders –**etiology, types, dietary management and dietary guidelines for constipation, diarrhoea and dysentery.

4.3 **Malabsorption syndrome:** etiology, clinical symptoms and Dietary treatment for Lactose intolerance, steatorrhoea, celiac disease, short bowel syndrome and tropical sprue.

UNIT- V

12hours

Diet for liver, gall bladder and pancrease

5.1 **Liver**- Etiology, signs and symptoms, dietary management, diet planning and dietary guidelines for fatty liver, hepatitis, cirrhosis, hepatic coma.

5.2 **Gall bladder** – Etiology, signs and symptoms, dietary management for cholecystitis and cholelithiasis.

5.3 **Pancreas**- Etiology, signs and symptoms, dietary management for pancreatitis – Acute and chronic pancreatitis.

 # # Self - Study portion

TEXT BOOKS:

T.B.1SrilakshmiB.(2011).,Dietetics,SeventhEdition,NewAgeInternational (P)Ltd.Publishers,
Chennai.

T.B.2.MahanL.KandArlinM.T(2012),FoodandtheNutritioncareprocess,ThirteenthEdition,W.B.Saunder Company,London.
T.B.3JoshiS.A(2008),NutritionandDietetics,SecondEdition,TataMc.GrawHillPublication, NewDelhi.

UNIT-I	Chapter–XXIV T.B.1 Chapter–VIII,XI T.B.2	
UNIT-II	Chapter–XII Chapter–XXXX, XXXXIV T.B.2	T.B.1
UNIT–III	Chapter–XXXIX	T.B. 2
UNIT-IV	Chapter–XXXIX, XXXXI	T.B.2
UNIT–V	Chapter–IX	T.B.2

REFERENCEBOOKS

1. Robinson(1990).,NormalandTherapeuticNutrition,SeventeenthEdition,Oxford&LBM Publishing,Bombay.
2. Mahtab.S,BamjiPrasadRaoNandVinodiniReddy(2003).,TextbookofHumanNutrition,SecondEdition,OxfordandIBHPublishingCo.,Pvt.,Ltd
3. ShilsM.E,OslonJ.A,ShikeM.,&RossA.C.(2006),ModernNutritioninHealth&Disease,TenthEdition,LippincottWilliamsandWilkins.

Web source: 1. www.idaindia.com

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**			**Hours**		**Credits**		
III	20UND3CC5		Diet Therapy -I			4		4		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes(PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√	√		√		√		√	√	√
CO2	√	√		√	√		√	√	√	
CO3	√		√		√	√	√	√	√	√
CO4	√			√	√	√			√	√
CO5	√	√	√		√		√	√	√	√
Number of Matches= 36, Relationship : HIGH										

Prepared by:
Dr. V. Kavitha

Checked by:
1.Rajalakshmi.B
2. Harine sargunam.J

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50

Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
III	**20UND3CC6P**	**Core-VI**	**Diet Therapy -I Practical**	**3**	**2**	**100**	**25**	**75**

Course Outcomes

1. Able to plan and modify the diet for the deficiency disorder and diseases
2. Appraise the diet principles in the management of disease condition
3. Acquire skills in imparting diet counseling for the treatment of disease condition

I. Planning, preparations and calculations of diet with modification for the following condition

1. **Routine hospital diet** - Clear fluid, full fluid diet and Soft
2. **Deficiency condition** -Low and medium cost diets for PEM, Vitamin A and Iron deficiency.
3. **Energy modification** – Burns (Stage I&II) , Obesity and underweight conditions
4. **Febrile condition** - Fevers – typhoid , tuberculosis
5. **Diet for gastrointestinal disorder**- Gastritis, Peptic ulcer Diarrhea , dysentery ,constipation
6. **Diet for Liver disorder**- Hepatitis, Cirrhosis

II. Assessment and activities

1. Prepare a diet model and education material- chart and pamphlets for the above specified deficiency disorder and disease condition

2. Submit case study report for the above specified deficiency disorder and disease condition
3. Group project submission for any one disease condition.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**			**Hours**		**Credits**		
III	**20UND3CC6P**		**Diet Therapy -I Practical**			**3**		**2**		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes(PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√	√		√		√		√	√	√
CO2	√	√		√	√		√	√	√	
CO3	√		√		√	√	√	√	√	√
CO4	√			√	√	√			√	√
CO5	√	√	√	√	√	√	√	√	√	√
Number of Matches= 38, Relationship : HIGH										

Prepared by: **Checked by**

1. Dr. V. Kavitha

1.Rajalakshmi.B

2. Harine sargunam.J

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
III	**20UND3AC5**	**Allied – V**	**Nutritional Biochemistry**	**4**	**3**	**100**	**25**	**75**

Course Outcomes:

1. Gain knowledge on metabolism of carbohydrate, protein and lipids
2. Acquire knowledge on functions and mode of action of different hormones.
3. Relate metabolism of different nutrients with dietary intake.
4. Suggest preventive measures to overcome metabolic abnormalities.
5. Get an insight into interrelations between various metabolic pathways.

UNIT-I

12 hours

Carbohydrate metabolism:

1.1 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. #Role of liver in Carbohydrates Metabolism#

1.2 Diabetes Mellitus-Types and metabolicchanges of Diabetes Mellitus.

1.3 Inborn error of metabolism: Glycosuria, Fructosuria, galactosemia, glycogen storage diseases

UNIT-II

12 hours

Protein metabolism:

2.1 Protein – Amino acid pool, General pathway of Protein metabolism.

2.2 Protein Metabolism - Anabolism of protein-protein turn over and formation of peptide linkage.

Catabolism of protein- Oxidative Deamination, Transamination, Transdeamination, Urea Cycle.

2.4 Inborn error of metabolism: Maple syrup urine disease, Hurtnup syndrome, phenylketonuria, albinism,

cystinuria, alcaptonuria,Wilson'sdisease.

UNIT-III

12 hours

Lipid metabolism:

3.1 Metabolism of Lipid-Beta Oxidation of Fatty acid, ketogenesis, ketosis. Synthesis of Triglycerides, Fatty

acids and Cholesterol. #Role of fat in Lipid metabolism#.

3.2 Plasma Lipoproteins: Functions and metabolism of Lipoprotein.

3.3 Disorder of Lipoproteins- Hyperlipoproteinemias and Hypolipoproteinemias.

UNIT-IV

12 hours

Liver and Kidney function test

4.1 Bile -Formation and functions of Bile acids and bile salts, bile pigments.Jaundice

4.2 Liver Function Test- Test for bile pigment and bile salts in blood and urine-Van den Bergh reaction,

Fouchet's test, Hay's test. Test for Urobilinogen- Schlesinger's test. Test for altered protein fraction

production- Cephalin –cholesterol flocculation test and Thymol turbidity test.

4.4 Renal Function Tests: Inulin clearance test, Urea Clearance test, Clearance test,Concentration test, Addis test, Mosenthal test

UNIT-V

12 hours

Enzymes and Hormones:

5.1 Enzymes and coenzymes: Definition and mechanism of action

5.2 Role of Hormones: Thyroxine, Insulin, glucagon, Epinephrine, Corticoid, Androgens, Estrogen,

progesterone

Self- Study portion

TEXT BOOKS:

T.B.1. AmbikaShanmugam, Fundamentals of Biochemistry for Medical Students, Seventh Edition, New Age Publishing Pvt.Ltd, New Delhi (1986).

T.B.2. A.C. Deb, Fundamentals of Bio chemistry, Fifth Edition , New Central Book Agency(P)td., (1992).

T.B.3. U. Sathyanarayana and U. Chakrapani, Textbook of Biochemistry, Third Edition, Books andAllied (P) Ltd, Kolkata (2010).

UNIT-I	Chapter –XVII	T.B.1
UNIT-II	Chapter -XXI	T.B.1
UNIT-III	Chapter -XIX	T.B.1
UNIT-IV	Chapter-XXVII, XXVIII	T.B.1

UNIT-V Chapter- IV, XXVI T.B.1

REFERENCE BOOKS:

1. E.S. WestTodd, W.R. Mason and J.T. Van Bruggen, Text book of Biochemistry, FourthEdition, Amerind Publishing Co Pvt Ltd., (1974).
2. T.M. Devlin, Text Book of Biochemistry (with Clinical corrections), Second Edition, John Wiley and sons (1986).
3. S. Ramakrishnan, K.G. Prassanan and R. Rajan, Text book of Medical Biochemistry, SecondEdition, Orient Longman limited (1989).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester	**Code**		**Title of the Paper**		**Hours**		**Credits**		
III	**20UND3AC5**		**Nutritional Biochemistry**		**4**		**3**		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes(PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√		√		√	√				√
CO2	√	√	√		√	√	√	√	√	√
CO3	√	√	√	√	√	√	√	√	√	√
CO4	√	√	√		√	√	√	√		√
CO5	√	√	√	√	√	√	√	√	√	√
Number of Matches= 42, Relationship : High										

Prepared by
J.Priya

Checked by:
1. Dr.V.Kavitha
2. Dr.A.Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
III	**20UND3AC6P**	**Allied – VI**	**Nutritional Biochemistry Practical**	**3**	**2**	**100**	**25**	**75**

Course Outcomes:

1. Acquire skill in collection of blood and urine samples for test
2. Competence to perform quantitative and qualitative analysis of
3. Perform quantitative estimation of cholesterol.
4. Competence to perform quantitative estimation of urea, creatinine in blood.

1. Qualitative analysis of Urine for Sugar, Protein, 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.

BOOK REFERENCES:

T.B.1 Practical Biochemistry (Laboratory manual) for pharmacy students,RituMahajan,Vayu education ofIndia, New Delhi, First Edition,2009.

T.B.2Biochemistry & Clinical pathology (Theory & Practical), K.K.Pillai & J.S.Qadry, CBSPublishers & Distributors, New Delhi, First edition(Reprint)(2008) .

T.B.3 Varley's Practical Biochemistry, Alan H Gowenlock, CBS Publishers & Distributors, New Delhi,Sixth edition(2008) .

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code		Title of the Paper			Hours		Credits		
III	**20UND3AC6P**		**Nutritional Biochemistry Practical**			**3**		**2**		
Course Outcomes (COs)	Programme Outcomes (POs)									
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√		√		√	√				√
CO2			√		√		√		√	√
CO3	√	√	√	√	√	√	√	√	√	√
CO4			√		√		√		√	√
CO5	√	√	√	√	√	√	√	√	√	√
Number of Matches= 35, Relationship : Moderate										

Prepared by:
1. J.Priya

Checked by
1.Dr.V.Kavitha
2.Dr.A.Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
III	**20UND3GE1**	**GE – I**	**NUTRITION FOR HEALTH AND WELLBEING**	**2**	**2**	**100**	**-**	**100**

Course out comes:

1. Understand the importance of nutrients in food.
2. Explain the nutrient in foods and the specific functions in maintaining health.
3. Apply the principles of nutrition in various deficiency conditions.
4. Describes the various food source and its requirements in human body.
5. Know the importance of functional foods in human health.

UNIT-I

10 hours

Introduction to nutrition:

1.1. Food as source of nutrients, functions of food, definition of nutrition and health, nutrients & energy, adequate, optimum & good nutrition, malnutrition, Basic five food groups.

1.2. Carbohydrates - Definition, Classification, Sources, daily requirements, functions, deficiency and #excess of carbohydrates on health#.

UNIT-II

10 hours

2.1. Proteins- Definition, Classification, Sources, daily requirements, functions, Types of Amino acids, deficiency and excess of proteins on health.

2.2. Lipids -Definition, Classification, sources, daily requirements, functions. Role and nutritional significances of PUFA, MUFA, SFA, omega -3 fatty acid.

UNIT-III

10 hours

3.1. Minerals & Trace Elements: Requirements, sources, deficiency and excess (Calcium, Sodium, Potassium, Phosphorus, Iron, Fluoride, Zinc, Iodine)

3.2. Dietary Fibre-Classification, sources, role of dietary fibre on health.

UNIT-IV

10 hours

4.1. Vitamins – Types- water soluble and fat soluble vitamins, requirements, sources, deficiency and excess.

4.2. Water - Functions, daily requirements, Water balance.

UNIT-V

10 hours

5.1. Functional Foods and Nutraceuticals: Introduction, Definition, Classification of functional Foods and its health benefits.

5.2. Nutraceutical components and health benefits: Role of Nutraceutical components on health – Polyphenols - flavonoids, catechins, tannins, Lycopene, curcumin.

 # self study..#

Text Book:

1. B. Srilakshmi, "Food Science", New Age International Pvt. Ltd., Chennai (2006).
2. B. Srilakshmi, Nutrition Science, Sixth Edition, New Age International (Pvt) Ltd, New Delhi (2007).
3. Anjana Agarwal and A. Shobha Udipi, Textbook of Human Nutrition, First Edition, Jaypee Brothers Medical Publishers (p) Ltd, (2014).
4. B. Srilakshmi, Dietetics, Seventh Edition, New Age International (P) Ltd. Publishers, Chennai,2011.

REFERENCE BOOK:

1. Hari Niwas Mishra, Rajesh Kapur, Navneet Singh Deora, Aastha Deswal, "Functional Foods", New India Publishing Agency, India(2016).
2. Robert E C Wildman Handbook of Nutraceuticals and Functional Foods (2001).
3. Potter,N.N, Food Science, AVI Publishing company, INC, Westport, Connecticut, (1996).

UNIT- I	Chapter	T.B- 4, 2 & 3
UNIT-II	Chapter	T.B- 2 & 3
UNIT-III	Chapter	T.B-1 2 & 3
UNIT-IV	Chapter	T.B-1 2 & 3
UNIT-V	Chapter IV IX	T.B-1

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**			**Hours**		**Credits**		
III	**20UND3GE1**		**Nutrition for Health and Wellbeing**			**2**		**2**		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

CO4	✓	✓		✓		✓		✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓		✓	✓
Number of Matches= 44, Relationship : Moderate										

Prepared by:

A.Yasmin Fathimaa

Checked by:

D.Bhuvaneswari

R.R.Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
IV	20UND4CC7	CORE-VII	DIET THERAPY - II	5	5	100	25	75

Course out comes:

1. Understand the pathogenesis and causes of diabetes mellitus
2. Able to plan a diet for hypertension and atherosclerosis patient.
3. Describe the etiological factors of kidney disease.
4. Explain the dietary modification and nutritional problems of cancer therapy.
5. Know about the functional foods and its role in disease.

UNIT I: Dietary Management for Diabetes Mellitus

15 hours

1.1 Diabetes Mellitus – Pathogenesis, types, etiological factors, symptoms, diagnostic tests, complications. Gestational diabetes.

1.2 Treatment of diabetes –Insulin and oral hypoglycemic drug, Dietary modification and guidelines, Glycemic index, glycaemic load, food exchange list- meaning and its uses.

UNIT II: Dietary Management for Cardio Vascular Disease

15 hours

2.1 Cardio vascular diseases - Pathogenesis , types , etiological factors, complications, dietary modification and diet planning for the hyperlipidemia, Atherosclerosis, Ischemic Heart Disease, Congestive Cardiac Failure, Hypertension.

UNIT III: Dietary Management for Kidney

15 hours

3.1 Glomerulonephrities, Nephrotic Syndrome -pathogenesis, etiological factors, symptoms, dietary modification.

3.2 Acute and chronic Renal Failure, Nephorolithiasis- Pathogenesis, etiological factors, symptoms, dietary modification. Kidney transplantation and Dialysis.

UNIT IV Dietary Management for Cancer and AIDS

15 hours

4.1 Cancer – Etiology, types, mechanism of cancer formation, dietary modification and nutritional problems of cancer therapy.

4.2 AIDS - Pathophysiology, etiology, stages of HIV infection, #mode of transmission#, clinical manifestation and dietary management.

UNIT V: Diseases of Metabolic, Musculoskeletal Disorders and Functional Foods

15 hours

5.1 Hypothyroidism, Hyperthyroidism, PCOD, Arthritis, Osteoporosis- etiological factors, symptoms, diagnostic tests, dietary modifications and guidelines.

5.2 Special conditions – autism, epilepsy, muscular dystrophy - etiological factors, symptoms and dietary Modifications and guidelines.

5.3Functional foods– Definition, classification, uses of functional foods in the prevention and treatment of – Obesity, Diabetes mellitus, Cardiovascular diseases, Cancer.

#.....#self study

TEXT BOOKS

T.B 1. Antia, F.P, Clinical dietetics and Nutrition ,4th Edition, Oxford University Press, Delhi,2002.

T.B 2. Joshi, S.A, Nutrition and Dietetics,2nd edition, TATA McGraw Hill publications, New Delhi.2008.

T.B 3. Srilakshmi. B, Dietetics, 5th Edition, New Age International (P) Ltd. Publishers, Chennai, 2011.

T.B 4. Swaminathan, M. Essentials of Food and Nutrition Vol. I and II BAPPCO., The Bangalore Printing and Publishing co., ltd., No.88, Mysore Road, Bangalore

T.B 5. Mahan L.K and Arlin M.T (2000), Food and the Nutrition care process, Thirteenth Edition, W.B. Saunder Company, London

UNIT I	Chapter – XVIII	T.B 1
	Chapter – IX	T.B 2
	Chapter – VIII	T.B 4
UNIT II	Chapter – XV	T.B 1
	Chapter – X	T.B 2
	Chapter – VIII	T.B 4
UNIT III	Chapter – XIX	T.B 1
	Chapter – XI	T.B 2
	Chapter – VIII	T.B 4
UNIT IV	Chapter – XVII	T.B 1
	Chapter – XIII	T.B 2
	Chapter – VIII	T.B 4
UNIT V	Chapter –XXII	T.B 1
	Chapter – XV, XVI	T.B 2

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
IV	**20UND4CC8P**	**Core-VIII**	**DIET THERAPY – II PRACTICAL**	**3**	**2**	**100**	**25**	**75**

Semester	Code	Title of the Paper	Hours	Credits
IV	**20UND4CC7**	**DIET THERAPY – II**	**5**	**5**

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√		√	√	√	√		√	√	√
CO2		√	√	√	√		√	√	√	√
CO3		√	√		√		√	√		√
CO4		√	√		√		√	√		√
CO5	√	√	√	√	√	√	√	√	√	√
Number of Matches= 38, Relationship : High										

Prepared by

1. R.R.Sangeetha

Checked by

1.Rajalakshmi.B

2.Harine

Sargunam.J

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
III	**20UND3GE1**	**GE – I**	**NUTRITION FOR HEALTH AND WELLBEING**	**2**	**2**	**100**	**-**	**100**

Course outcomes:

1. Know the principle of planning therapeutic diet
2. Understand the nutritional needs for chronic disease.
3. Acquire the skills to calculate the nutritive value for disease condition.
4. Know the difference between normal diet and therapeutic diet.
5. Gain knowledge about the special condition diet such as autism, epilepsy.

I. Planning, preparation and calculation of following diets:

a. Diet for Diabetes Mellitus – Type I, Type II and gestational diabetes. Using food exchange list
b. Diet for cardio vascular system disease – Hypertension, Atherosclerosis
c. Diet for renal disease – Glomerulonephrities, Nephrotic Syndrome, Nephorolithiasis
d. Diet for Cancer
e. Diet for AIDS
f. Diet for thyroid disorder – Hyperthyroidism, Hypothyroidism
g. Diet for Osteoporosis

II. Assessment and activities:

a. Prepare a diet model and education material – chart and pamphlets for any one special condition - autism, epilepsy, muscular dystrophy
b. Select any one functional food and prepare a recipe with that food.

TEXT BOOKS

T.B. 1 Antia, F.P, Clinical dietetics and Nutrition, 4th Edition, Oxford University Press,Delhi,2002.

T.B. 2 Srilakshmi. B, Dietetics, 5th Edition, New Age International (P) Ltd. Publishers, Chennai, 2005.

T.B. 3 Nutrient Requirement and Recommend Dietary Allowances for Indians by Indian council of Medical research, National Institute of nutrition, Hyderabad, 2010.

T.B. 4 Dietary Guidelines for Indians, National Institute of Nutrition, Hyderabad, 2004.

T.B. 5 Swaminathan, M. Essentials of Food and Nutrition Vol. I and II BAPPCO.,The Bangalore Printing and Publishing co., ltd., No.88, Mysore Road, Bangalore.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code		Title of the Paper			Hours			Credits	
IV	20UND4CC8P		Diet therapy – II practical			3			2	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes(PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1		√	√		√		√	√		√
CO2	√	√	√		√	√	√	√		√
CO3	√	√	√		√	√	√	√		√
CO4	√	√	√		√	√	√	√		√
CO5			√		√			√		√
Number of Matches= 34, Relationship : Moderate										

Prepared by

1. R.R.Sangeetha
Rajalakshmi.B

Checked By

1.

2. Harine
Sargunam.J

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
IV	20UND4AC7	Allied –VII	Food Microbiology	5	3	100	25	75

Course outcomes:

1. To acquire the basic knowledge in microbial of foods
2. To gain knowledge about the microbial activity of foods
3. To acquire the basic knowledge about microbial growth and sterilization
4. To understand the relevance of microbial spoilage of various foods and its intoxication
5. To know about the microbial activity of soil and water.

UNIT-I Introduction to microbiology and microbes

15 hours

1.1 Microbiology: History, microscope- types and uses, classification of micro-organism.

1.2 Bacteria: Morphological characteristics- structure, size, classification based on shape, motility, nutrition, reproduction, respiration. Bacterial diseases and its prevention- cholera, typhoid.

1.3 Virus: Morphological characteristics- size, classification, structure, host specificity, resistance, replication, viral diseases and its prevention-hepatitis, poliomyelitis.

UNIT – II Mould, Yeast, Protozoa

15 hours

2.1 Mould: Morphological characteristics – classification, reproduction. Economic importance of mould in industries. Mould diseases and its prevention-mycetoma.

2.2 Yeast: Morphological characteristics – size, sources, shapes, classification, reproduction. Economic importance of yeast in industries. Yeast diseases and its prevention-candidosis.

2.3 Protozoa: Morphological characteristics- structure, motility, reproduction. Protozoal diseases- amoebic dysentry, malaria.

UNIT-III Factors Affecting Microbial Growth & Sterilization15 hours

3.1 Factors Affecting Growth - Intrinsic Factors, Nutrient Content, pH, Redox Potential, Antimicrobial Barrier and Water Activity.

3.2 Extrinsic Factors: Relative Humidity, #Temperature and Gaseous Atmosphere#

3.3 Sterilization- physical agent- electricity, light, radiation, filtration and desiccations. Chemical agents-types and mode of action

UNIT-IV Food Spoilage

15 hours

4.1Spoilage -definition, fitness or unfitness of food for consumption, causes of spoilage, classification of foods by ease of spoilage.

4.2Spoilage in various food stuffs: Cereals and cereal products- flour, bread- mouldiness, ropiness and red bread, fruits and vegetables products-market diseases, milk and milk products-gas production, proteolysis, colour and flavor changes,

Meat-spoilage under aerobic and anaerobic conditions, fish-factors influencing the spoilage, egg-changes caused by micro-organisms.

UNIT-V Environmental microbiology

15 hours

5.1 Soil microbiology- role of micro-organism in nitrogen fixation cycle.

5.2 Water microbiology- bacteriology of water, test for E.coli, water borne diseases and their control (list only).

5.3 Air microbiology –Droplet infection, airborne diseases and their control (list only).

#.....#Self-study portion

TEXT BOOKS

T.B.1. Joshua, A.k, "Microbiology", 4th edition, Popular Book Depot, Chennai, Reprint 2001.

T.B.2. Fazier, W.C.,"Food Microbiology", 4th edition,TataMcGraw Hill Book Company, New Delhi, 2008

T.B.3. Pelczar and Krieg,"Microbiology", 5th edition,Tata-McGraw Hill Book Co., London, 2006.

T.B.4.J.D.SPanwar and Amit kumarjain, "Fundamentals of microbiology",S.R.Scientific Publication, 2012.

REFERENCE BOOKS

1.Salle, A..J.,"Fundamental Principles of bacteriology", 7th edition,Tata McGraw Hill Book Company, New Delhi, 2007.

2.VijayaRamesh.K,"FoodMicrobiology",MJP Publishers,2007.

3.M.R.Adams and M.O.Moss ,"Food microbiology", New Age International (P) Ltd., publishers, New Delhi,2005

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**			**Hours**		**credit**		
IV	**20UND4AC7**		**FOOD MICROBIOLOGY**			**5**		**3**		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√	√		√		√		√	√	√
CO2	√	√		√			√	√	√	√
CO3	√		√		√	√		√	√	√

CO4	√			√	√	√	√		√	√
CO5	√	√	√		√	√	√	√	√	√
Number of Matches= 35, Relationship : MODERATE										

Prepared by: **Checked by**

J.Priya

D.Bhuvaneswari

R.R.Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
IV	20UND4AC8P	Allied – VIII	FOOD MICROBIOLOGY PRACTICAL	3	2	100	25	75

Course Outcomes

1. Ability to relate the theoretical knowledge with the current situation of microbes in environment
2. Provide frame work to examine the relevance of microbial spoilage of various foods.
3. Apply the food safety and quality control in suggest situation.

1. Demonstration of the different parts of microscope, their use and care.Study of oil immersion lens.
2. Basic sterilization methods.
3. Preparation of Bacterial smears: staining-simple and Gram's staining.
4. Examination of unstained organisms-Hanging drop preparation method.
5. Identification of important bacteria, moulds and yeast in food (by using slides/cultures)-E-coli, rhizopus, penicillium, mucor, aspergillus, yeast.
6. Bacteriological examination of milk by methylene blue reduction test.
7. Demonstration of bacterial count in the given sample by using colony counter.
8. Preparation of Media (only demonstration)
9. Study of sterilization equipments – Autoclave, Hot air oven.

Related Experience: Visit to a microbiology lab.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code		Title of the Paper			Hours		Credits		
II	20UND4AC8P		FOOD MICROBIOLOGY PRACTICAL			3		2		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme specific Outcomes (POs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO 2	PSO3	PSO4	PSO 5
CO1	√			√		√		√	√	√
CO2	√	√		√		√	√	√	√	√
CO3	√		√		√	√		√		
CO4	√		√	√	√		√		√	√
CO5	√	√	√		√	√	√	√	√	√
Number of Matches= 34, Relationship : MODERATE										

Prepared by:

J.Priya

D.Bhuvaneswari

Checked by

R.R.Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
IV	20UND4GE2	GE-II	NUTRITION FOR WOMEN	2	2	100	-	100

Course out comes:

1. Understand the role of nutrients in women's health
2. Understand the nutritional needs during pregnancy and lactation
3. Apply the dietary guidelines for women
4. Acquire knowledge about needs of nutritional requirements during menstrual cycle
5. Understand physiological changes in elder women

UNIT – I

6 hour

Nutrition during Adolescent Girls

1.1 Physiological and psychological changes and development of adolescent girls.
1.2 Nutritional requirements and dietary guidelines for adolescent girls during menstrual cycle.
1.3 Nutritional problem in adolescent girls-Anemia, obesity Thyroid and PCOD.

UNIT – II

6 hours

Nutrition during Adult Women

2.1 Indian reference women, Nutritional requirements of adult women in relation to activity pattern.
2.2 Food habits and conception pattern of working women
2.3Nutritional requirements for working women, Pre conceptual nutrition

UNIT-III

Nutrition during pregnancy

6 hours

3.1Physiological changes, Nutritional requirements and dietary guidelines during pregnancy.
3.2 General nutritional problems -Nausea, vomiting, heartburn, avoidance, craving-complication-anemia, constipation, hypertension, GDM and odema.

UNIT-IV

6 hours

Nutrition during Lactation

4.1. Nutrition requirement, Nutritional risk, Dietary guidelines during lactation.
4.2. Breast feeding-types of milk - Colostrum, Transition milk, foremilk, hind milk. Advantages of breast feeding to mother.

UNIT-V

Nutrition during Elderly

6 hours

5.1. Physical and psychological changes, Nutritional requirements and dietary guidelines during elderly.
5.2. Nutrition related problem of old age – constipation, obesity, osteoporosis and Alzheimer's disease. #Importance of physical activity#.

#.....#Self-study portion

TEXT BOOK

T.B.1 Debra A. Krummel, P. M. Kris-Etherton, Nutrition in Women's Health, AN ASPEN publication, (1996).

T.B.2 B. Srilakshmi, "Dietetics", New Age International Pvt. Ltd., Seventh edition,Chennai (2014).

UNIT- I	Chapter IV,V	T.B.1
UNIT-II	Chapter VI	T.B.2
UNIT-III	Chapter VII	T.B.2
UNIT-IV	Chapter III, Chapter VIII	T.B.2
UNIT-V	Chapter IX	T.B.2

Web Source:

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

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**				**Hours**		**Credits**
IV	**20UND4GE2**			**NUTRITION FOR WOMEN**				**2**		**2**
Course Outcomes (COs)	Programme Outcomes(POs)					Programme Specific Outcomes(PSOs)				
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3		✓	✓	✓	✓	✓	✓	✓	✓	✓
CO4	✓	✓	✓	✓	✓	✓	✓		✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 48, Relationship : High										

Prepared by:
A.Yasmin Fathimaa

Checked by:
D.Bhuvaneswari
R.R.Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the course	Hours	Credits	Max. Marks	Internal marks	External marks
V	**20UND5CC9I**	**Core – IX**	**DIET THERAPY INTERNSHIP**	**6**	**5**	**100**	**20**	**80**

Course outcomes:

At the end of the course, students will be able to

1. develop skills in planning and preparing therapeutic diets.
2. learn techniques in diet counseling and feeding of patients.
3. plan and prepare appropriate diets for therapeutic conditions
4. acquire skill in planning and preparation for diet counselling.
5. learn the role and responsibilities of dietitian

I .List of Practical work consists of internship in a multispecialty hospital for 10-15 days

1. Visits to the different wards to observe patients requiring special diets.
2. Experience in calculating and planning modified diets.
3. Supervising and handling the food preparation and service in the dietary department of the hospital
4. Nutritional status assessment
5. Case study- Selecting and observing three patients requiring a therapeutic diet in relation to Patient's dietary history - income, occupation, food habits and social factors.
6. Calculating the diet according to medical prescription.
7. Accompanying the doctor while visiting the patient.
8. Counselling and patient education

II. Preparation of the report should include

i. History of the hospital, Location and Facilities provided
ii. Layout of the kitchen and Work organization
iii. Organization structure and Duties of the dietitian
iv. Nutritional status assessment, special dietary calculation and case study report
v.

References Books:

1. Passmore, D, P, Break, J.P, Human Nutrition and Dietetics, English Language Book Society, Livingston, 2008.

2. Rose, M.S, A Laboratory handbook for Dietetics, 4th edition, McMillan publishing.2007

3. Mahan, L.K. and Stump, S.E., Krause‟s Food, Nutrition and Diet Therapy 11th Edition, W.B. Sunders Co.2015.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**			**Hours**		**Credits**
V	**20UND5CC9I**			**Diet Therapy Internship**			**6**		**5**
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓		✓	✓		✓		✓	✓	
CO4	✓			✓		✓			✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 34, Relationship : Moderate										

Prepared by:
Dr.V.Kavitha

Checked by
1. B.Rajalakshmi
2. J.Harinesargunam

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the course	Hours	Credits	Max. Marks	Internal marks	External marks
V	20UND5CC10	CORE X	PHYSICAL FACILITIES FOR FOOD SERVICE	5	5	100	25	75

Course outcomes

At the end of the course students will be able to

1.gain knowledge on ideal food service layout

2.gain knowledge in handling equipment and maintenance

3.develop skills in menu planning for quantity preparation

4.gain knowledge on systems, types and styles of food service in catering establishments.

5.gain knowledge about the employable opportunities in food service institutions.

UNIT-I **(15 hours)**

Ideal food plant layout

1.1Layout of food plants- Space allocation for the various areas, Work simplification.

1.2Kitchen space- Size and type of kitchen, layout of kitchen, work centers in the kitchen layout.

1.3Storage space- Types of storage, planning

1.4Service area- Location and planning.

UNIT-II **(15hours)**

Equipments and Materials

2.1Equipments- Classification of equipments, factors involved in selection of equipment, care andmaintenance of equipment.

2.2Materials used – Strength and limitation of base materials used in the manufacture of equipment- Aluminium, iron, steel, stainless steel, copper, brass, and glass, plastic.

2.3Finishes- Mechanical and applied.

UNIT-III **(15 hours)**

Quantity food purchase, receiving and storage

3.1 Purchase – food buyer, duties of purchasing officer, Purchasing procedure, objectives of foodspecification, methods of purchasing, forms used in purchasing control.

3.2 Receiving - procedures and forms.

3.3.**Storing and issuing-** objectives, types of store records and store issues.

UNIT-IV **(15 hours)**

Quantity food preparation

4.1 Menu planning- Menu origin, functions of menu, menu planning, qualities of menu planner,principles involved in planning menu.

4.2 Menu- Types of menu, Indian – South and North Indian, Western menu- Mediterranean Menu- Italian and French cuisine

4.3 Quantity Food production: Standardization of recipes, Portion control, and #Utilization of leftover foods#.

UNIT-V **(15 hours)**

Service system, Cost control and Employability

5.1 Food service system-Types of food service – Conventional systems, Commissary systems, Cook chill and Cook freeze system, assembly line service system.

Styles of service – Formal and Informal styles of service.

5.2 Cost control, elements of cost – Food cost, Labour cost and overhead expenses, costing of dishes and meals, methods of pricing items.

5.3 Employability – Role and Responsibilities of Food Service Dietitian.
(IDA, guidelines 2018)

#.....# Self - study portion.

TEXT BOOKS

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

2.Mohini Sethi- Institutional Food Management, New age international (p) limited PublishersNew Delhi, reprint 2005.

3.Mohini Sethi and Malham - Catering Management and integrated approach, John Wiley &Sons, eastern limited, New Delhi, Reprint 2007.

UNIT I Chapter I, II T.B.1

Chapter VIII T. B.3

UNIT II Chapter VII, VIII, IX T. B.2

Chapter IX T. B.1

UNIT III Chapter XIII, XIV T.B. 2

UNIT IV Chapter XV T.B. 2

Chapter II, V T. B.1

UNIT V Chapter II, VI T. B. 1

Chapter XIX T. B. 3

Chapter XX, XXI T. B. 2

REFERENCE BOOKS

1. Kotschevar L H and Terrell M E, Food Service Planning Layout and Equipment, 2nd Edition,John Wiley and sons, New York, 1977.
2. Kinton . R and Ceserani V, The Theory of catering, Arnold – Heinemam, 1985.
3. Jag Mohan Negi, Food and beverage management and cost control, Kanishka Publishers,New Delhi, 2009
4. Sudhir Andrews, Text book of Food and Beverage Management, Tata Mc Graw- HillPublishing Company limited, New Delhi, 2008.

NET REFERENCE

5. http://idaindia.com/

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester	**Code**		**Title of the paper**			**Hours**			**Credits**	
V	**20UND5CC10**		**PHYSICAL FACILITIES FOR FOOD SERVICE**			5			5	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓		✓	✓	✓	✓
CO2			✓	✓	✓		✓	✓	✓	✓
CO3		✓	✓	✓	✓	✓	✓	✓	✓	✓
CO4		✓	✓	✓	✓		✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches= 43: High										

Prepared by

1.B.Rajalakshmi

Checked by

1.Dr.V.Kavitha

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the course	Hour	Credit	Max. Marks	Internal marks	External marks
V	20UND5CC11	CORE-XI	FOOD PRESERVATION AND BAKERY TECHNIQUES	5	5	100	25	75

Course outcomes:

At the end of the course the students will be able to

1. Develop the knowledge on various methods of food preservation.
2. Acquire the science of bakery
3. Acquire skills to develop the processed food
4. Gain knowledge about principles and methods of food packaging.
5. Know the different types bread and cake preparation method

UNIT- I **15 hours**

Principles and Preservation of Foods using Sugar and Salt Concentrates

1.1 Principles of Food Preservation: Definition, importance of food preservation, Basic principle and techniques of food preservation. Food spoilage-definition, types, preventive methods.

1.2 Preservation of Fruits as Sugar Concentrates: Jam, Jelly, Marmalade, Preserves, Candies, Crystallized and Glaced Fruits, Factors affecting jelly formation.

1.3 Pickling - Principles, #types and spoilages encountered in pickles#.

UNIT-II **15 hours**

Preservation by using High and Low Temperature

2.1. Preservation by Drying and Dehydration: Principle, Methods, Pre-treatment of foods Factors affecting preservation by drying and dehydration.

2.2. Preservation by Use of Low Temperature:

a) **Refrigeration-** Principle working system; cold storage defects.

b) **Freezing –** Principle of freezing, methods of freezing, advantage and disadvantage.

2.3. Preservation by Use of High Temperature: Canning -Principle, basic process, types ofspoilage in canned foods and aseptic canning. Pasteurization methods.

UNIT-III **15 hours**

Preservation by Using Chemicals and Radiation

3.1. Preservation by Using Chemicals: Mechanism of microbial inhibition, Inorganic andorganic preservatives, antibiotics and other developed chemical preservatives.

3.2. Preservation by Use of Radiation: - Principles, kinds of ionizing radiations, units of measurement, Permissible level of irradiation for roots and tubers and application.

UNIT- IV **15 hours**

Introduction and Role of Ingredients in Bakery

4.1. Introduction of Bakery - Definition, Principles and Classification of baked products, Permutation formula - ^{o}C to ^{o}F and ^{o}F to ^{o}C, major and minor equipment required for starting a small bakery unit.

4.2. Role of Major and Minor Ingredients in Baking:

a) Role of flour (gluten), fat and egg in baking

b) Leavening agents- Definition, types (physical, biological and chemical) and role in baking

c) Sugar- sources, types and role in baking

4.3. Role of Minor Ingredients- milk, water, salt, flavors, and colours

UNIT-V **15 hours**

Bakery items Packaging for Preserved Foods

5.1. Bread: Types, methods, faults, and improvers. Prevention of bread spoilage

5.2. Cake: Ingredients, types, methods, faults and icing or cake decorations. **Biscuits and Cookies**: Ingredients, types, various methods.

5.3. Food Packages: Definition of packaging, package functions, packaging materials and specific uses.

#..... # Self - study portion.

TEXT BOOKS:

1. **V**.W. Desrosier, The Technology of Food Preservation, AVU Publishing co., West Port, Conneticut(1967).
2. V.A .Vaclavik & E.W. Christian, Essentials of food Science, 2nd edition, Springer New Delhi-1 (2003).
3. S.R. Mudambi, S.M Rao & M.V. Rajagopal, "Food Science", New Age International Pvt. Ltd. Publishers New Delhi(2007).
4. B. Sivasankar, Food Processing & Preservation, Prentice hall of India Pvt.Ltd, New Delhi(2002).
5. Yogambal Ashok kumar, " Theory of Bakery and confectionery", PHI Learning private Limited, New Delhi, (2009).
6. John Kingslee, "A Professional text to Bakery and Confectionary". New age international (p) Limited, publishers, New Delhi, (2006).

UNIT I Text Book 1 Chapter I

Text Book 3 Chapter I, XVI

UNIT II Text Book 1 Chapter IV, V & VI

Text Book 2 Chapter XVII

Text Book 1 Chapter VII & XIII

Text Book 2 Chapter XVII

Text Book 4 Chapter XVI 53

UNIT III Text Book 1 Chapter VIII, XI & XII

Text Book 3 Chapter XVII

Text Book 4 Chapter VIII, XVII

Text Book 2 Chapter XVIII & XIX

UNIT IV Text Book 5 Chapter I

Text Book 6 Chapter I, XVI

UNIT V Text Book 5 Chapter I

Text Book 6 Chapter I, XVI

REFERENCE:

1. Lal.B.Siddappa, G.G.&Tandon, G.N. "Preservation of fruits and Vegetables" ICAR, New Delhi, 1967.
2. Dearosier, V.W3.,"The Technology of food preservation", AVU Publishing co., West Port, Conneticut. 1967.
3. D.Bhuvaneswari and V.Kavitha, "Easy to Bake" Divakar Publications, Trichy,(2017).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**	**Title of the Paper**	**Hours**	**Credits**
V	**20UND5CC11**	**Food Preservation and Bakery Techniques**	**5**	**5**

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	

CO3	✓		✓	✓		✓		✓	✓	
CO4	✓			✓		✓			✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 34, Relationship : Moderate										

Mapping	**1-29%**	**30-59%**	**60-69%**	**70-89%**	**90-100%**
matches	**1-14**	**15-29**	**30-34**	**35-44**	**45-50**
relationship	**Very poor**	**Poor**	**Moderate**	**High**	**Very high**

Prepared by:

D.Bhuvaneswari

Checked by:

1. Dr.A.Sangeetha

2. S.Sheerin

Semester	Code	Course	Title of the course	Hour	Credit	Max. Marks	Internal marks	External marks
V	20UND5CC12P	CORE-XII	FOOD PRESERVATION AND BAKERY TECHNIQUES PRACTICAL	5	5	100	25	75

Course out comes:

At the end of the course the students will be able to

1. Prepare different types of preserved product from fruits and vegetables
2. Know the functions and different types of packaging materials.
3. Know the techniques to prepare various kinds of bread
4. Prepare various types of cakes and know icing methods.
5. Prepare different types of pastry, biscuits and cookies

List of Practical

FOOD PRESERVATION

1. Preparation of Selected Jams, Jellies, Marmalades, Preserves, Squashes, Ketchup and Sauce. Use refracto meter to check the sugar concentration for the prepared recipes.
2. Pickling: Preparation of -Fermented Pickle: Sauerkraut, Unfermented Pickle: Lemon, Tomato, Mango, Garlic Pickles.
3. Preparation of dehydrated products Vathals, Vadams, Chutney Powder.
4. Knowing the functions of different packages by using Bottling , Aluminium Foil and Polyethylene materials for packing the above prepared products. Analysis the gauze thickness of selected packaging materials.

5. Visit and submission of report about a well-established bottling unit.

BAKERY

1. Bread - Plain Bread, Fruit Bread Croissants, Pizza, Sweet Bun, Spice Bun
2. Cakes – Sponge cake, Eggless Cake, Christmas cake, Muffin cake, Birthday Cake with Icing.
3. Pastry –Puff pastry, Danish pastry
4. Biscuits –Ginger Biscuits, Ragi Biscuits, Salt Biscuits
5. Cookies – Butter Cookies, Melting Moments, Dutch Cookies,
6. Visit and submission of report about a well-established bakery.

TEXT BOOKS

1. Yogambal Ashok kumar, " Theory of Bakery and confectionery", PHI Learning privateLimited, New Delhi, (2009).
2. John Kingslee, "A Professional text to Bakery and Confectionary". New age international (p) Limited, publishers, New Delhi, (2006).
3. D.Bhuvaneswari and V.Kavitha, "Easy to Bake" Divakar Publications, Trichy,(2017).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
V	20UND5CC12P	FOOD PRESERVATION AND BAKERY TECHNIQUES PRACTICAL	5	5

Course	Programme Outcomes	Programme Specific Outcomes

Outcomes (COs)	(POs)					(PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓		✓		✓	✓		✓	
CO3	✓	✓				✓	✓			
CO4	✓	✓	✓			✓	✓	✓		
CO5	✓	✓		✓		✓	✓		✓	
Number of Matches= 30, Relationship : Moderate										

Mapping	**1-29%**	**30-59%**	**60-69%**	**70-89%**	**90-100%**
matches	**1-14**	**15-29**	**30-34**	**35-44**	**45-50**
relationship	**Very poor**	**Poor**	**Moderate**	**High**	**Very high**

Prepared by: **Checked by:**

D.Bhuvaneswari **1. Dr.A.Sangeetha**

2. S.Sheerin

Semester	Code	Course	Title of the course	Hours	Credits	Max. Marks	Internal marks	External marks
V	20UND5DE1A	DSE 1*	FOOD CHEMISTRY	5	4	100	25	75

Course out comes:

At the end of the course, students will be able to

1. explain the properties and reaction of various food components
2. gain sufficient knowledge about chemistry of starch.
3. apply the products with minimum nutritional loss based on the knowledge of food chemistry
4. understand the properties of fats and lipids and rancid reaction in food
5. explain the reactions of volatile compound during cooking

Unit-I **15 hours**

Physico -chemical properties of foods

1.1 Definition of food chemistry, Moisture in Foods, Water Bonding, Water Activity in Foods
1.2 Definition-True Solutions, Dispersions, Sols, Gel, Colloids and Emulsion**.**

Unit-II **15 hours**

Chemistry of Carbohydrates & Starch

2.1. Classification- Monosaccharide, disaccharides, oligosaccharides, polysaccharides.

2.2. Starch- amylase, amylose and amylopectin. Changes of carbohydrates on cooking.

Unit-III **15hours**

Chemistry of Proteins

3.1. Classification of protein, Physical and Chemical properties.

3.2. Component of Protein in wheat, milk, egg. Changes of protein during cooking.

Unit-IV **15hours**

Chemistry of Fats and Lipids

4.1. Classification of lipids, Physical properties- melting point, refractive index, smoking point and turbidity point.

4.2. Chemical properties – Iodine number, polenske value, peroxide value and saponification number. Changes in fats and oil – Rancidity, lipolysis, flavour reversion.

Unit-V **15 hours**

Chemistry of Vegetables and Fruits

5.1. Classifications, Pigments in fruits and vegetables- Carotenoids, chlorophylls, anthocyanins, anthoxanthins .

5.2. Enzymatic Browning in Fruits and Vegetables. Changes of volatile sulphur compounds during cooking of vegetables.

#.....# Self – study portion

TEXT BOOKS

1.Lillian Hoagland Meyer , "Food chemistry", CBS publishers & distributors PVT.LTD , New Delhi(2004)
2.B.Srilakshmi, "Food Science", New age international (P) limited, publishers(2015)
3.H.K.Chopra, P.S.Panesar ," Food chemistry", Narosa Publishing House (2010)

UNIT I Text Book 1 Chapter I, III Text Book 3 Chapter I, III

UNIT II Text Book 1 Chapter III, Text Book II ChapterII

UNIT III Text Book 1 Chapter IV, Text Book 2 Chapter VI

UNIT IV Text Book 1 Chapter II, Text Book 1 Chapter V

UNIT V Text Book 2 Chapter XVI, Text Book 1 ChapterVII

REFERENCE:

1.Shakuntala Manay, Shadaksharaswamy. M "Foods, Facts and Principles", New Age International Pvt Ltd Publishers, 2nd Edition (2000)

2.Swaminathan, M. "Food Science, Chemistry and Experimental Foods", Bappco Publishers,Bangalore. (2005)

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
V	20UND5DE1A	FOOD CHEMISTRY	5	4

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	√		√	√		√	√	√	√	√
CO2	√	√	√	√	√	√	√		√	
CO3	√			√		√		√	√	√
CO4	√	√	√	√	√	√	√		√	
CO5	√	√		√		√		√		
Number of Matches = 35, Relationship: High										

Prepared by:
A.YasminFathimaa

Checked by:
1. J.Priya
2. J.HarineSargunam

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
V	20UND5DE1B	MBE	FUNCTIONAL FOODS	5	4	100	25	75

Course outcomes: At the end of the course, students will be able to

1. gain knowledge about functional foods and Nutraceuticals
2. have thorough understanding about the health effects
3. to develop Comprehensive understanding of different Nutraceuticals and functional foods
4. to understand the potential of various functional foods in promoting human health
5. to recognize factors that increase the risk of developing metabolic syndrome.

UNIT :1 Introduction, Definition, Global market demand

1.1 Introduction, Definition and difference between Nutraceuticals and functional foods, types of Nutraceuticals compounds and their health benefits, current scenario of functional foods in Indian and Global market

1.2 Plant metabolites – classification, primary and secondary metabolites in plants. Role of secondary metabolites in foods a) Terpenoids b)Phenols and Polyphones c) Sulphur containing compounds d) Nitrogen containing alkaloids.

UNIT : 2 Nutraceuticals

2.1 Types of nutraceutical compounds – Phytochemicals, phytosterols and other bioactive compounds and Synbiotics, lipids (Conjugated Linoleic Acid, omega-3 fatty acids, fat replacers), vitamins, peptides and proteins, carbohydrates (dietary fibers, oligosaccharides, and resistant starch)

2.2 Prebiotics, Probiotics and minerals; their sources and role in promoting human health.

UNIT 3: Functional Foods

3.1 Role of functional ingredients and their health benefits in (i) Cereal and cereal products, (ii) Milk and milk products, egg, oils, meat and products, sea foods, nuts and oilseeds, fruits and vegetables, herbs and spices, beverages (tea, wine etc),

3.2 Fermented foods – their health benefits and role in conditions like cardiovascular diseases,hypertension and Diabetes. Future prospects of functional foods and nutraceuticals and their potential for use in improving health. Development in processing of functional foods. Formulation and fabrication of functional foods.

UNIT 4:

4.1 Application of herbs and spices as functional ingredients

Role of Herbs and spices in Health and its Efficacy status

Ashwagandha (Withania Somnifera), Green tea (camellia sinensis), Garlic (Allium sativum) Neem (Azadirachta indica), Shallot (Allium cepa), Ginger (Zingiber officinale), fennel (Foeniculum vulgare), omum (Trachyspermum ammi), turmeric (Curcuma longa), Tulsi (ocimum Sanctum), kaasinikeerai (Cichorium intybus), Indian gooseberry (Phyllanthus emblica), Burn Plant (Aloe barbadensis)

UNIT 5:

5.1 Safety and Efficacy of Functional Foods

Safety concerns for active ingredients, Interaction with food constituents, Effect of processing, Dietary Exposure, Safety assessment: nutritional and toxicological, Efficacy assessment and importance of efficacy evidence, Scientific Substantiation of Health Claims prescribed by FSSAI,

5.2 Regulatory Aspects of Functional Foods and Nutraceuticals

Regulatory aspects- International and national regulatory aspects of functional foods in India, ICMR guidelines for Probiotic foods and nutraceutical products.

Reference Books:

1. Mishra. Hari. N, Kapur, R, Deora.N.S , Deswa .A. Functional Foods. New India Publishing Agency, 2016
2. Arun Bhunia. B.R. Fundamental Food Microbiology, CRC Press. 2008
3. Mary K Schmidl and Theodore P.Labuza, Essential of Functional Foods. Springer.India Private Limited. 2000
4. Mazza. G Functional Foods: Biochemical and Processing Aspects. Technomic publishing Co., Culinary and Hospitality Industry Publications Services.1998

5. Israel Goldberg, Functional Foods: Designer Foods, Pharma Food, Nutraceuticals. Culinary and Hospitality Industry Publications. 2001
6. Robert E. C Wildman. Handbook of Nutraceuticals and Functional Foods. CRC Press. 2001.

UNIT-I Net Reference www.ajpcr.com/vol3Issue1/265.pdf
www.ncbi.nlm.nih.gov/pubmed/-
www.nutrition.org/content/136/6/1636s.longwww.bodybuilding.com/store/cla.htmlwww.whfoods.com/genpage.php?tname=nutrient
www.eufic.org/article/en/expid/basics-functional-foods-
Ref Book-1 Chapter-I,II
UNIT-II Net Reference www.sphinxsai.com/vol.3No.1/pharm- Jan-Mar11/pdf/JM11
UNI –III Net Reference www.medicinet.com
UNIT-III Ref Book-1 Chapter–XV
Ref Book–2 Chapter–X
Net Reference www.medicinet.com
UNIT-IV Net Reference www.ashwangandha.com
www.herbwisdom.com/herb-ashwafgandha.html
UNIT-V Net Reference www.Pitt.edu/~super7/45011-46001/45161 Net Reference www.ipv.pt/millenium/mellineum
RefBook–2 Chapter –V

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**			**Hours**		**Credits**
V	**20UND5DE1B**			**FUNCTIONAL FOODS**			**5**		**4**
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	

CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓		✓	✓		✓		✓	✓	
CO4	✓			✓		✓			✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 34, Relationship : Moderate										

Prepared by:
Dr. A. Sangeetha

Checked by:
Dr. V. Kavitha
Ms. J. Priya
D. Bhuvaneswari

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
V	20UND5SE2AP	SBE-II	COMPUTER APPLICATION IN NUTRITION AND DIETETICS PRACTICAL	2	2	100	-	100

Course Outcomes:

At the end of the course, the students will enable to

- understand the basic operation of computer.
- develop the practice of browsing in internet about nutrition.
- utilize the tools of MS word.
- prepare the presentation in MS Power point.
- utilize the MS excel in tabulation for nutritive value calculation.

1. Basic technique in computer-Working with files and folders. **Control panel:** Installation of new programs, changing password and security options.

2. Internet & Working with E-mail: Basics of Internet, browsing nutrition related contents and downloading image. - creating e-mail ID, composing, sending and receiving mails.

3. Application of Ms Word in Nutrition related content framing

Starting, creating, editing, saving, print previewing and printing a document, tabulating nutrient content of foods, working with chart, text alignment, word converted to PDF.

4. Application of Ms Power point in presentation with animation

Starting, Creating, Inserting pictures and slides, transition and effects, creating slide show presentation with animations on nutrition related topics.

5. Application of Ms Excel for dietary calculation

Starting Excel, working with spread sheet, tabulating data, Formulation Bar diagram, Pie diagram, Line diagram from the data.

Reference

1. Harshad Kotecha, Windows 98, Dreamtech Press, New Delhi (2001).
2. R.K. Taxali, PC Software for windows 98 (made simple) - Tata McGraw Hill Publishing company Limited New Delhi (2001).
3. K. Pradeep Sinha and Priti sinha, Computer Fundamentals-Concepts, systems and applications, Third Edition, BPB Publications, New Delhi (2003).

4. L.Kathleen Mahan, Sylvia Escott-Stump, Krause's Food Nutrition and Diet Therapy, Eleventh Edition (2001).

5. Peter Norton, Introduction to computers, Sixth Edition, Tata McGraw Hill Education Private Limited New York (2008)

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**						**Hours**	**Credits**
V	**20UND5SE2AP**		**COMPUTER APPLICATION IN NUTRITION AND DIETETICS PRACTICAL**						**2**	**2**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	√		√	√	√	√	√		√	√
CO2	√		√	√	√	√	√	√	√	
CO3	√	√				√		√		√
CO4	√	√	√		√		√			√
CO5	√		√	√	√		√		√	
Number of Matches=32, Relationship=Moderate										

Prepared by:

1. S.Sheerin

Checked by:

1. Dr. V. Kavitha

2. Dr. A. Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matching	1-14	15-29	30-34	35-44	40-45
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
V	20UND5SE2BP	SBE-II	FOOD ADULTERATION PRACTICAL	2	2	100	-	100

Course Outcomes:

At the end of the course the students will enable to

1. educate known about common food adulterants and their detection
2. gain knowledge in the legislator aspects of adulteration
3. learn about standards and composition of foods and role of consumer
4. acquire skill in analysis of adulterants in various food
5. enable the students to use the different chemical additives in foods products

Testing any one of the foods adulterants in the different food group

1. Cereal and Cereals products
   i. Ninhydrin Test
2. Pulse and Legume Products
   i. Dye test
3. Milk and Milk products
   i. Lacto meter test, Sodium-bi-carbonate, Urea & Detergent test
4. Oil and Fats
   i. Edible Oil test
5. Sweetening Agents
   i. Molasses method (or) Invert sugar test
6. Spices & Masala powder
   i. Brick, Metanil Yellow & Aniline Dyes test
7. Other Product
   i. Mineral acid test & Other Product (Exhausted test (tea), Chicory test (coffee))

Reference Book:

1. FSSAI, Manual of Methods of Analysis of Foods Instruction manual-part I, (2012)
2. FSSAI, DART (detect adulteration with rapid test), (2015)
3. FSSAI, Manual of Methods of Analysis of Foods, Food additives (cereals, pulses, fruits and vegetables, spices, oils and fats), Food Safety And Standards Authority Of

India Ministry Of Health And Family Welfare, Government Of India, New Delhi, (2016)

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester	Code		Title of the Paper						Hours	Credits
V	20UND5SE2BP		FOOD ADULTERATION PRACTICAL						2	2
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	√	√	√	√		√	√	√	√	√
CO2	√	√	√	√			√	√	√	
CO3	√		√		√	√		√		√
CO4	√			√	√	√				√
CO5	√	√	√	√		√	√		√	
Number of Matches=34, Relationship=Moderate										

Prepared by:

1. S.Sheerin

Checked by:

1. Dr. V. Kavitha

2. Dr. A. Sangeetha

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matching	1-14	15-29	30-34	35-44	40-45
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the course	Hour	Credit	Max. Marks	Internal marks	External marks
V	20UND5SE3AP	SBE-III	TECHNIQUES IN BAKERY PRACTICAL	2	2	100	-	100

Course outcomes:

At the end of the course the students will be able to

1. Prepare the bread using various common dividing and panning techniques
2. Prepare high ratio cakes and product finishes such as icing
3. Prepare high flaked puff pastry
4. Prepare different types of biscuits
5. Prepare variety of cookies

List of Practical

1. Bread - Fruit bread Pizza and Sweet bun
2. Cakes – Sponge cake,Muffin cake, Birthday cake with Icing.
3. Pastry –Puff pastry
4. Biscuits – Ragi biscuits, Salt biscuits
5. Cookies – Butter cookies, Melting moments

TEXT BOOKS

1. John Kingslee, “A Professional text to Bakery and Confectionary”. New age international (p) Limited, publishers, New Delhi, (2006).
2. D.Bhuvaneswari and V.Kavitha, “Easy to Bake” Divakar Publications, Trichy,(2017).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
V	20UND5SE3AP	TECHNIQUES IN BAKERY PRACTICAL	2	2

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓		✓	✓	✓	✓		✓	
CO3	✓	✓				✓	✓			
CO4	✓	✓	✓		✓	✓	✓	✓		
CO5	✓	✓		✓		✓	✓		✓	
Number of Matches= 32, Relationship : Moderate										

Prepared by: **Checked by:**

D.Bhuvaneswari **1. Dr.M.Angel**

2. S.Ashma Banu

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
matches	1-14	15-29	30-34	35-44	45-50
relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the course	Hour	Credit	Max. Marks	Internal marks	External marks
V	20UND5SE3 BP	SBE-III	INTERIOR DESIGN PRACTICAL	2	2	100	-	100

Course out comes:

At the end of the course the students will be able to

1. Know the use of various elements and principles in the design
2. Identify drawing tools and mediums used and their respective functions
3. Use various accessories to decorate the room
4. Develop an art of flower arrangement style
5. Develop skill in layout design for Interiors

List of Practical

1. Design – Harmony, Emphasis, Proportion, Balance, Rhythm
2. Colour- Prang Colour System
3. Accessories- types and care of accessories
4. Flower arrangement- types
5. Floor covering for different rooms

TEXT BOOKS:

1. Rendering with Pencil and Ink‖ by Gill Robert W., Published by Thomos and Hudson, New Delhi

2. Interior Design‖ by Ahmed A. Kasu , Published by Sunrise Publisher, New Delhi

3. Architectural Aesthetics‖ by Sangeet Sharma, Abhishek Publication, 57-59, Sector 17, Chandigarh

4. Learning Curves‖ by Klara Sjolen and Allan Mcdonalds by Perfect Paperback Publishers.

5. The Complete Book of Drawing‖ by Barrington Barber by Perfect Paperback Publishers.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**		**Hours**	**Credits**
V	**20UND5SE3BP**		**INTERIOR DESIGN PRACTICAL**		**2**	**2**
Course Outcomes (COs)	Programme Outcomes (POs)				Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓		✓	✓	✓	✓		✓	
CO3	✓	✓				✓	✓			
CO4	✓	✓	✓		✓	✓	✓	✓		
CO5	✓	✓		✓		✓	✓		✓	
Number of Matches= 32, Relationship : Moderate										

Prepared by: **Checked by:**

D.Bhuvaneswari **1. Dr.M.Angel**

2. S.Ashma Banu

Mapping	**1-29%**	**30-59%**	**60-69%**	**70-89%**	**90-100%**
matches	**1-14**	**15-29**	**30-34**	**35-44**	**45-50**
relationship	**Very poor**	**Poor**	**Moderate**	**High**	**Very high**

Semester	Code	Course	Title of the course	Hours	Credits	Max. Marks	Internal marks	External marks
VI	20UND 6CC13	CORE - XIII	FOOD SERVICE MANAGEMENT	5	5	100	25	75

Course outcomes

At the end of the course student will be able to

1.gain knowledge about various types of food service.

2.gain knowledge about the entrepreneurship in food service management

3.gain knowledge about the Principles and functions of Management.

4.understand about personnel Management, financial management and legal aspects of catering.

5.realize the importance of sanitation and hygiene in food service institutions.

UNIT-I **(15 hours)**

Food service industry

1.1 Different types of institutional food service in operation- Classification based on Functional – i.e., profit oriented, service oriented and public health facility oriented and theirobjectives.

1.2 Entrepreneurship in Food service industry- Food Entrepreneurs-definition, need, Government requirements, developing the business plan, resources needed, marketing.

UNIT-II **(15 hours)**

Management and organization

2.1Management – Definition, Principles and functions of Management; Leadership-Qualities of agood Leader, styles of leadership.

2.2Organization-Definition, process, types of organization, Tools of Management Organization chart, Job description, Job specification, Work schedule and Job analysis.

UNIT-III **(15 hours)**

Personnel management

3.1Personnel management- Definition, Sources of personnel, Criteria for selection of personnel, orientation, training, motivation, supervision, importance of good human relations.

3.2Employee facilities - Fringe benefits, Labour policies and legislation – Labour laws governingfood service establishments; Performance appraisal of employees.

UNIT-IV **(15 hours)**

Financial management

4.1Definition, Aspects of financial management- Financial accounting and managementaccounting, Application of management accounting in catering operations.

4.2Accounting system – Accounting techniques-single and double entry system, advantages.Types and Book of accounts.

UNIT –V **(15 Hours)**

Fuel management, safety, Hygiene and sanitation

5.1 Fuels - Types, advantages of fuel in relation to economy in quantity cookery, fuel saving economy in food service institutions**.**

5.2 Safety: # Accidents in food service establishments, safety procedure #.

5.3 Hygiene and sanitation - Definition, importance, environmental hygiene and sanitation, hygiene in food handling, personnel hygiene; importance of pest and rodent control in foodservice units.

#..... # Self - study portion.

TEXT BOOKS

1. Mohini Sethi and Malham -Catering Management and Integrated approach, John Wiley & Sons,eastern limited, New Delhi, Reprint 2007.
2. Mohini Sethi, Institutional Food Management, New age international (p) limited PublishersNew Delhi, reprint 2005.
3. West's and Woods ,Introduction to food service, 2nd Edition, Mac Millan Publishing, NewYork, 1998.
4. Sudhir Andrews, Text Book of Food and Beverage Management, Tata Mcgraw - HillPublishing Company Limited, New Delhi,2008.

UNIT I Chapter I T. B.1

UNIT II Chapter X T. B. 1

UNIT III Chapter XI T.B. 1

Chapter XXIX T. B. 1

UNIT IV Chapter XXI T. B. 2

UNIT V Chapter XXX T. B. 2

REFERENCE BOOKS

1. Bhushan, V.K. "Business organization and management", Sultan Chand and Co., 1973.
2. Longree, K and Balaker, B.C. "Sanitary techniques in food service", Johy Wiley and sons, New York, 1979.
3. Bobby George, Sandeep chatterjee,"Food and Beverage Service and Management",1st edition, Jaico Publishing House New Delhi,2008.
4. Vikas Ahlluwalia,"Food hygiene and toxicology", Paragon international Publishers, New Delhi, 2007.

NET REFERENCE

5.http://hdl.handle.net/123456789/33544

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester	**Code**		**Title of the paper**			**Hours**			**Credits**	
VI	**20UND6CC13**		**FOOD SERVICE MANAGEMENT**			5			5	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1		✓	✓	✓	✓		✓	✓	✓	✓
CO2			✓	✓	✓			✓	✓	✓
CO3		✓	✓	✓	✓		✓	✓	✓	✓
CO4	✓	✓	✓	✓	✓		✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of matches:41:High										

Prepared by

1.B.Rajalakshmi

Checked by

1.Dr.V.Kavitha

2.Dr.A.Sangeetha

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
VI	20UND6CC14	CORE - XIV	PUBLIC HEALTH NUTRITION	5	5	100	25	75

Course outcomes

At the end of the course, students will be able to

1. understand the terms related to health and malnutrition.
2. gain knowledge on the assessment of nutritional status of the community.
3. understand the nutritional problems in the community.
4. know the role of national and international organizations towards combatting nutritional problems.
5. learn and implement nutrition education in the community.

UNIT-I **15 hours**

Health, Nutrition and Malnutrition

1.1 **Definition** – Health, Nutrition, Community, Family and Village.

1.2 **Malnutrition**- Meaning of optimum nutrition, under nutrition and over nutrition.

1.3 **Causes of malnutrition**– Viscious cycle of malnutrition, factors contributing of malnutrition in the community – food habits, customs and practices, availability of food, socio-economic factors, ignorance, social- cultural factors, housing and hygienic conditions. #Food fads and fallacies#.

UNIT-II **15 hours**

Assessment of nutritional status of the community

2.1 **Direct and Indirect Assessment**- anthropometry, biochemical, clinical and diet survey.

2.2 **Characteristics of community**- demography, vital statistics, morbidity and mortality, Infant Mortality Rate (IMR), Maternal Mortality Rate (MMR). Current Scenario of IMR and MMR.

UNIT-III **15 hours**

Nutritional problems confronting the community

3.1 **Protein Energy Malnutrition**- Prevalence, etiology, clinical features and prevention through food.

3.2 **Iron Deficiency Anemia**- prevalence, etiology, clinical features, prophylaxis programme and prevention through food sources.

3.3 **Iodine Deficiency Disorder**- prevalence, etiology, clinical features and prevention through food sources.

3.4 **Fluorosis**- prevalence, etiology, clinical features and prevention.

3.5 **Vitamin A deficiency**- prevalence, etiology, clinical features, prophylaxis programme and prevention through food sources.

3.6 **Vitamin D deficiency** - prevalence, etiology, clinical features and prevention through food sources.

UNIT-IV **15 hours**

Role of national and international organizations

4.1 **State level Feeding Programme** – School Lunch Programme, Mid Day meal programme and Integrated Child Development Services.

4.2 **National organizations** - Indian Council of Medical Research, National Institute of Nutrition, National Nutrition Monitoring Bureau, Central Food Technological Research Institute, Defence Food Research Laboratory, and National Institute of Public Cooperation and Child Development.

4.3 **International organizations** – World Health Organisation, Food and Agriculture Organisation, United Nations International Children's Emergency Fund, United Nations Educational Scientific and Cultural Organisation, Cooperative for Assistance and Relief Everywhere and World Bank.

UNIT-V **15 hours**

Nutrition education

5.1 Meaning, nature and importance of nutrition education to the community.

5.2 Channels of Nutrition education, principles of planning, executing and evaluating nutrition education programmes, Problems in conducting nutrition education programmes.

#.... # Self - study portion.

TEXT BOOKS

1. Park, Social and Preventive medicine, Twentieth edition,Banarsidas Bhanot Publishers (2009).
2. Swaminathan N, Essentials of Food and Nutrition,Vol I, The Bangalore Printing and Publishing Co, Ltd (2008).
3. Swaminathan N, Essentials of Food and Nutrition, Vol II The Bangalore Printing and Publishing Co, Ltd (2008).
4. Srilakshmi B, Nutrition Science, Fourth edition, New Age International Pvt. Ltd (2010).

UNIT I	Chapter – XI & Chapter – XII T.B. 1
	Chapter – XVII T.B. 2
UNIT II	Chapter - XXII T.B. 2
UNIT III	Chapter – IX ,Chapter – XI, XII and XIII T.B. 4
UNIT IV	Chapter – XXIV T.B. 4
UNIT V	Chapter – XXV T.B.4

REFERENCE BOOKS

1. Shukla, P.K., Nutritional problems of India, Prentice hall, India (1982).
2. Senha, H.K. Challenges in rural development, Discovery publishing (2014).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
VI	20UND6CC14	PUBLIC HEALTH NUTRITION	5	5

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	√		√	√	√	√	√	√	√	√
CO2	√	√	√	√	√		√	√	√	
CO3	√	√	√		√	√	√	√		√
CO4	√	√		√	√	√		√	√	√
CO5	√	√	√	√	√		√	√		√
Number of Matches= 41, Relationship : HIGH										

Prepared by:

Dr.M.Angel

Checked by:

1. J.Harine Sargunam

2. N.Asifa Jabeen

Percentage of changes made: 4%

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the course	Hours	Credits	Max. Marks	Internal marks	External marks
VI	20UND6CCP15	CORE – XV	FOOD SERVICE MANAGEMENT PRACTICAL	5	5	100	20	80

Course outcomes

At the end of the course student will be able to

1.gain knowledge about Common ingredients used in various regions of Indian and Western menu

2.gain knowledge about menu planning, compiling of different regions .

3.acquire skills in preparing different types of menu.

4.gain skills in the standardization, serving size and cost calculation of the recipes.

5 acquire skills through internship training in the food service unit.

Quantity cookery:

1. Common ingredients for Indian – south and north Indian menu, Western menu- and Mediterranean Menu- Italian and French cuisine

2. Planning, compiling and preparation of menus for different regions
   a. Indian Menu -south and north Indian - Thali meals and mini meals
   b.Western Menu- Mediterranean - Italian and French cuisine- breakfast, dinner menu.

3. Standardization of selected recipes and their preparation, calculation of cost and serving size per yield.

4. Preparation standardized recipes of south and north indian menu for 10 members.

5.Demonstration of Table setting and Napkin fold –

Table setting - Ala carte, Table de hote, Breakfast High tea and lunch cover.

Napkin fold - Basic napkin folds

6.Internship training to any one of the food service units –

a) College Hostel / College cafeteria for 10 days

REFERENCE BOOKS

1. West's and Woods 'Introduction to food service, 2nd Edition, Mac Millan Publishing, NewYork, 1998.
2. Mohini Sethi,. Institutional Food Management, New age international (p) limited Publishers New Delhi, reprint 2005.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes

Semester	**Code**		**Title of the paper**			**Hours**				**Credits**
VI	**20UND6CCP15**		**FOOD SERVICE MANAGEMENT PRACTICAL**			5				5
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓		✓	✓	✓	✓
CO2			✓	✓	✓			✓	✓	✓
CO3			✓	✓	✓	✓		✓	✓	✓
CO4		✓	✓	✓	✓		✓	✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Number of Matches=40: High										

Prepared by

1.B.Rajalakshmi

Checked by

1.Dr.V.Kavitha

2.Dr.A.Sangeetha

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the course	Hours	Credits	Max. marks	Internal Marks	External Marks
VI	20UND6CC16	Core-XVI	FOOD PRODUCT DEVELOPMENT AND QUALITY CONTROL	5	5	100	25	75

Course outcomes

At the end of the course, students will be able to

1. learn the concept of food product development.
2. learn about different food packaging and labeling technique.
3. acquire knowledge on food standards and food laws.
4. gain knowledge to assess the quality of food.
5. develop skill on sensory evaluation of food.

UNIT – I **15 hours**

Introduction - Food Product Development

1.1 **Food Product Development** – Definition, food needs and consumer preferences, Steps involved in food product development. Extrusion, parching, puffing, Canning and Bottling.

1.2 **Customized Food Processing Techniques** – Food for defense services, space foods, sports foods, health foods, designer foods, value added foods and convenience foods.

1.3 **Food Packaging** -Definition, Importance, Basic principles in food packaging. **Food Labelling** – Definition, types of labeling, Standards and regulations for nutrition labeling

UNIT II Food Standards and Food Laws **15 hours**.

2.1 **Food Standards** : Meaning and importance. **Quality control** - Definition of quality control, principles of quality control.

2.2 **National Food Laws**: Indian Standards of India (ISI), Bureau of Indian standards (BIS), Agriculture marketing (AGMARK), Fruit Product Order (FPO), Meat product order (MPO), Milk and milk product regulation (MMP).

2.3 Food Safety and Standards Authority of India (FSSAI) – Functions and duties, responsibilities of food safety regulators.

UNIT – III **15 hours**

Patent and International Food Laws

3.1 Hazards Analysis critical control point (HACCP) – Need for HACCP, Benefits of HACCP.

Quality systems – BS5750 and ISO9000 series.

3.2 Intellectual Property Rights and Patenting of Foods – Indian Patent, International Patent.

3.3 International Food Laws: Food and Agriculture Organization (FAO), Codex Alimentarious, World Trade Organization (WTO), Prevention of food Adulteration Act (PFA), Export Inspection Council.

UNIT – IV **15 hours**

Quality factors of foods

4.1. **Appearance factors** : size, shape, colour, gloss. **Textural factors** : brittleness, tenderness, consistency, astringency.

4.2 **Flavour** : sensation of flavor, taste, odour, feel; flavor intensifiers – mono sodium glutamate; flavouring extracts – vanilla.

4.3. **Criteria's for sensory tests:** Reasons for testing food quality, trained panel members – selection of panel, types of panels, testing laboratory, preparation of samples, #evaluation card#.

UNIT – V **15 hours**

Sensory and Objective Evaluation

5.1 **Types of Sensory Evaluation**: **Difference tests** – paired comparison test, duo-trio-test. **Rating tests** – Ranking test, single sample (monadic) test, two-sample difference test, multiple sample difference test, hedonic rating test, numerical scoring test, composite scoring test. **Sensitivity test** – sensitivity –threshold test, Dilution test.

5.2 **Types of Objective Evaluation**: **Physico - chemical tests** – pH, percentage of salt, concentration of sugar, butyrometer, Microscopic examination.

5.3 **Physical methods** – weight, volume, specific volume, index of volume, specific gravity, moisture, wettability, cell structure, measurement of colour. **Textural evaluation** – percent sag.

#.....# Self-study portion.

Percentage of changes made: 6%

TEXT BOOKS

1.Hand book of Packaging Technology – EIRI Board of Consultants and Engineers, India Research Institute, (2007).

2.Fellow. P.J., Food Processing Technology principles and practices. Fourth Edition, Woodhead publishing in an imprint of Elsevier, England, (2017).

3.B. Srilakshmi, Food Science, New Age International Publishers, New Delhi, (2010).

4.Norman. N. Potter and Joseph. H. Hotchkiss, Food Science – CBS Publishers, (1996).

5.Desrosier and Desrosier, Technology of Food Preservation – CBS Publishers, Fourth edition, (1999).

UNIT I Chapter XIV T.B.1

Chapter – V T.B.4

UNIT II Chapter – XIII T.B.3

Net Ref - www.fssai.gov.in

UNIT III Chapter XIII T.B 3

UNIT IV Chapter – XIII T.B.3

UNIT V Chapter – VI T.B.3

REFERENCES BOOKS

1.Ranganna S, Handbook of Analysis and Quality Control for Fruit and Vegetable products, 2nd Ed. Tata-McGraw- Hill, (2001).

2.Fuller Gordon., New Food Product Development, Second edition. CRC Press, Baco Raton, Florida, (2005).

3.Sudhir Gupta., Handbook of Packaging Technology, Engineering India Research Institute. New Delhi, (2007).

4.Lyon, D.H, Francombe, M.A, Hasdell, T.A, Lawson. K, "Guidelines for Sensory Analysis in Food Products Development and Quality Control", Chepman and Hall, London, (2002).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**			**Hours**		**Credits**		
VI	**20UND6CC16**		**Food Product Development and Quality Control**			**5**		**5**		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	√		√	√		√		√	√	√
CO2	√	√	√	√	√	√	√		√	
CO3	√			√		√		√	√	√
CO4	√	√	√	√		√	√		√	
CO5	√			√		√		√		
Number of Matches = 32, Relationship: Moderate										

Prepared by:

J. Harine Sargunam

Checked by:

1. Dr. A. Sangeetha

2. D. Bhuvaneswari

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the course	Hour	Credit	Max. Marks	Internal marks	External marks
VI	20UND6DE2A	DSE-II	LIFE SPAN DEVELOPMENT	5	4	100	25	75

Course out comes:

At the end of the course the students will be able to

1. Understand the field of human development: concepts, scope, dimensions and interrelations
2. Know the management of pregnancy, prenatal and postnatal care
3. Acquire the knowledge about the different stages of infancy
4. Understand developmental stages of early and late childhood
5. Know the physical and psychological changes, problems faced by the adolescents, adulthood and old age

UNIT I **15 hours**

Child development and Prenatal Development

1.1. Principles and Stages – Continuous development –Sequential Development – Stages of growth and development – Maturation and learning – Direction of growth.

1.2. Prenatal development – conception, signs of pregnancy, periods of prenatal development, In-vitro fertilization.

UNIT II **15 hours**

Prenatal and Postnatal care

2.1. **Prenatal care** – management of normal pregnancy – hygiene, diet and medical supervision, Psychological care and hazards during pregnancy. **Labour**- signs of labour, stages of labour, types of birth, multiple pregnancy.

2.2. **Postnatal care**- prevention of gynecological complications. Adjustment of the new born to temperature, breathing, feeding and elimination.

UNIT III **15 hours**

Infancy

3.1. Infancy – Development – physical and motor, social, emotional cognitive and language, minor ailments.

3.2. Effect of stimulation – care of infants, feeding, toilet training, bathing, clothing, sleep. Immunization schedule.

UNIT IV **15 hours**

Early and late childhood

4.1. Early childhood (preschool stage 2-6 years) – physical and motor development, emotional, social, cognitive and language development, creativity, importance of play, importance of family relationship. Importance of preschool education.

4.2. Late childhood (elementary school period 6-12 years) – developments – physical, social, emotional, cognitive and language. Children with special needs – identification and rehabilitation. Role of special school.

UNIT V **15 hours**

Adolescence, Adulthood and Old Age

5.1. Adolescence (12 – 18 years) – physical, emotional, intellectual and motor development, personal adjustment and maladjustment. Delinquency – causes, prevention and rehabilitation.

5.2. Adulthood (18-60 years) – characteristics and development tasks. Physical, Psychological, social and vocational development.

5.3. Old age (60 years and above) – physical and psychological changes, problems of the Aged people. #Diet care during old age. #

#.....# self -study portion

TEXT BOOKS

1. Sushila srivastava and K. Sudha Rani, Text Book of Human development A life span

developmental approach, First Edition, S. Chand & company pvt (2014).

UNIT- I - Text book – 1 Chapter – I, III

UNIT –II - Text book – 2 Chapter – IV, V

UNIT-III - Text book – 2 Chapter – VI

UNIT - IV- Text book – 2 Chapter – VII, VIII, IX

UNIT –V - Text book – 2 Chapter – X, I, XII, XIII

REFERENCE BOOKS

1. A.C.Harris, Child development. St. Paul: West Pub. (1986)

2. R.M. Lerner, and F. Hultsch, Human development: A life-span perspective (pp.247-253),

New York: McGraw Hill Book Co. unit VI, Unit VII (1983).

3. P. Mussen, J.J. Conger, J.Kagan, and A.C. Huston, Child Development and Personality.

New York: Harper and Row. Unit I pp 12-18 (1990).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**			**Title of the Paper**				**Hours**		**Credits**
VI	**20UND6DE2A**			**LIFE SPAN DEVELOPMENT**				**5**		**4**
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓		✓	✓	✓	✓		✓	✓	
CO4	✓			✓		✓	✓		✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 36 , Relationship : Moderate										

Prepared by:

D.Bhuvaneswari

Checked by:

1. J.Harine Sargunam

2. M.Nelofer

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
matches	1-14	15-29	30-34	35-44	45-50
relationship	Very poor	Poor	Moderate	High	Very high

SEMESTER	Code	Course	Title of the Course	Hours	Credits	Max. mark	Internal marks	External marks
VI	20UND6DE2B	DSE-II	FOOD PACKAGING	5	4	100	25	75

Course out comes:

At the end of the course, students will be able to

1. understand the different packing materials available.
2. explain the new advances and State-of the art in food packing.
3. apply how to use appropriate packaging materials for varied food products.
4. understand the use of various techniques in food packaging.
5. explain the regulations followed in food packaging.

UNIT – I **15 hours**

Introduction of Food Packaging

1.1. Functions and requirements for effective food packaging. Types of packaging- rigid, semi rigid, flexible.

1.2. Types of container-primary, secondary and Tertiary.

UNIT – II **15 hours**

Food Packaging Materials

2.1. Metal and metal cans, Glass and glass containers in food packaging.

2.2. Paper, paper board and fiberboard. Plastics and Laminates, retortable pouches and trays.

UNIT-III

Packaging techniques and Performances **15 hours**

3.1. Aseptic packaging, modified atmosphere packing and controlled atmosphere packaging.

3.2. Vaccum packaging, shrink packaging, Bio active packaging and Nanotechnologies in food packaging.

UNIT-IV **15 hours**

Modern Packaging techniques

4.1. Tetra packaging, Nitrogen filling packaging, ozone packaging.

4.2. Ventilation of packages, cushioning materials used during packaging.

UNIT–V **15 hours**

Edible packaging and Packaging Points

5.1. Edible packaging, concepts and its importance, Packaging points.

5.2. Standardization of packaging, #Biodegradable packaging materials#

#..... # Self study portion

1. Norman N. Potter "Food Science" 5th edition, CBS Publisher and Distributors Pvt.Ltd. (2007)

2. Niir Board, Hand Book on Modern Packaging Industries, Asia Pacific Business Press Inc.

3.Doney Sun Lee, Food Packaging Science and Technology, CRC Press (2008).

NET REFERENCE

http://eagri.org/eagri50/HORT381/pdf/lec09.pdf

UNIT I Textbook1 Chapter – XX1

UNIT II Text book 1 Chapter – XX1

UNIT III Text book 1 Chapter – XXI
https://www.sciencedirect.com/science/article/pii/S1658077X16300765

UNIT IV Text book 1 Chapter – XXI,

http://eagri.org/eagri50/HORT381/pdf/lec09.pdf

UNIT V Text book 1 Chapter – XXI

http://eagri.org/eagri50/HORT381/pdf/lec09.pdf

REFERENCE BOOKS

1.Fuller and John, Modern Restaurant Service, Hutchinson, London (1983).

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	**Code**		**Title of the Paper**			**Hours**		**Credits**		
VI	**20UND6DE2B**		**FOOD PACKAGING**			**5**		**4**		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	√		√	√		√		√	√	√
CO2	√	√	√	√	√	√	√		√	
CO3	√			√		√		√	√	√
CO4	√	√	√	√		√	√		√	
CO5	√			√		√		√		
Number of Matches = 32, Relationship: Moderate										

Prepared by: **Checked by:**

A.Yasmin Fathimaa **1. J.Harine sargunam**

2. Dr. M.Angel

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
VI	20UND6DE3A	DSE- III	SPORTS NUTRITION	4	4	100	25	75

Course outcomes

At the end of the course, students will be able to

1. understand the importance of nutrition during sports.
2. gain knowledge on the role of carbohydrates during exercise and sports.
3. understand the role of lipids as an energy source for sports.
4. know the role of protein, vitamins, minerals and antioxidants in achieving fitness
5. learn about the water balance and performance influencing factors.

UNIT I **18 hours**

Introduction to sports nutrition

1.1 Energy Systems in sports

Meaning of sports nutrition. Different types of sports. Energy systems- anaerobic and aerobic. Energy substrate for activities of different intensity and duration.

1.2 Body Composition of athletes and requirements of meals

Pre event meals. Meal pattern before, during and after the event. #Weight and body composition of athletes #.

UNIT II **18 hours**

Role of Carbohydrates in sports

2.1 Role of macronutrients –Carbohydrate

Carbohydrate reserves. Carbohydrate as energy source for sports and exercise. Carbohydrate requirements, carbohydrate loading and performance.

2.2 Consumption of carbohydrate–

Consumption of carbohydrate in pre exercise, duration and recovery period. Role of dietary fibre in sports.

UNIT III **18 hours**

Role of lipids in sports

3.1 Role of lipids as an energy source for sports – Fat stores, oxidation of fats, factors affecting fat oxidation (intensity, duration, training status and carbohydrate feeding).

3.2 Consumption of fats – Fat requirements and utilisation. Role of saturated and unsaturated fat on the athletic performance.

UNIT IV **18 hours**

Role of proteins, vitamins and minerals in sports

4.1 **Protein and amino acid requirements -** Protein and amino acid requirements during sports. Protein supplementation.

4.2 **Importance of micronutrients for sports –** Vitamin and minerals requirements. Role of vitamins, minerals and antioxidants. Dietary supplements and ergogenic aids (Mechanical,nutritional, pharmacological, physiological and psychological) – concept.

UNIT V **18 hours**

Role of Water and electrolytes in sports

5.1 **Water and electrolyte balance –** Fluid and electrolyte balance in sports and exercise; Water recommendation for athletic performance. Sports anaemia.

5.2. **Performance – influencing factors –** Female athlete triad, stress, type of exercise, gender influence and weight loss, caffeine and athletic performance. Dietary guidelines for a sports person.

#.... # Self - study portion.

TEXT BOOKS

1. BalaramThapar, Health and Physical Fitness, Rajat publications, New Delhi(2010).
2. Paul Insel, R. Elaine Turner and Don Ross, Nutrition, Third Edition, Jones and Bartlett Publishers (2007).
3. Eleanor D, Schlenker and Sara Long Roth, Essentials of Nutrition and Diet Therapy, Tenth Edition Library of Congress Cataloging-in- Publication Data (2011).
4. Smolin and Grosvenor , Nutrition Science and Application, Library of Congress Catalogingin– Publication Data (2008).
5. Anjana Agarwal and A. Shobha Udipi, Textbook of Human Nutrition, First Edition, Jaypee Brothers Medical Publishers (p) Ltd, (2014).

6. Srilakshmi B, Nutrition Science, Fourth edition, New Age International Pvt. Ltd (2010).

UNIT I https://en.wikipedia.org/wiki/Sports_nutrition

Chapter–XXIII, T.B. 6

UNIT II Chapter–VIII, T.B. 2

Chapter-XIV, T.B. 3

http://www.sportsnutritionworkshop.com/files/38.spnt.pdf

UNITIII Chapter-VIII, T.B. 2

Chapter-XIV, T.B. 3

UNIT IV Chapter– VIII, T.B. 2

Chapter -XIII, T.B. 4

Chapter -XIII, T.B. 5

UNIT V Chapter -XIV, T.B. 5

REFERENCE BOOKS

1. Bucci, L., Nutrients as Ergogenic Aids for Sports and Exercise, Boca Raton, FL.:CRC Press (1993).
2. Don MacLaren., Advances in Sport and Exercise Science : Nutrition and Sport , ChPublished by Churchhill Livingstone, Elsevier (2007).
3. Bruce Reider, Sports Medicine: The school age athlete, Published by W.B. Saunders (1996).
4. Dan Banardot, Nutrition for Serious Athletes, Human Kinetics(2000).
5. Judy A Driskell , Ira Wolinsky Energy-Yielding Macronutrients and Energy Metabolism in Sports Nutrition, Edited by, CRC Press (2000).
6. Satyanarayan, K; Nageshwar Rao. C; Narsinga Rao,B.S.; Malhotra, M.S. Recommended Dietary Intakes for Indian Sportsman and Women, Hyderabad, National Institute of Nutrition (1985).
7. Brouns Fred and Caustan – Cargill, Essentials of Sports Nutrition – 2nd edition, John Wiley and Sons,England(2002).
8. Burke Louse and Deakin Vicky,Clinical Sports Nutrition, McGraw – Hill Pvt. Ltd. Australia (2006).
9. Summerfield Lianne M, Nutrition Exercise and Behaviour An integrated approach to weight management,Belmount (USA). Wadsworth/Thompson Learning (2001).
10. Wolinksy Ira, Nutrition in Exercise and Sports, CRC press Boca Raton(1998).

Percentage of changes made: 100%

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme

Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
VI	20UND6DE3A	SPORTS NUTRITION	4	4

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	√		√	√	√	√	√	√	√	√
CO2	√	√	√	√	√		√	√	√	
CO3	√	√	√		√	√	√	√		√
CO4	√	√		√	√	√		√	√	√
CO5	√	√	√	√	√		√	√		√
Number of Matches= 41, Relationship : HIGH										

Prepared by:

Dr.M.Angel

Checked by :

1. B.RajaLakshmi

2. A.Yasmin Fathima

New paper - Percentage of Changes made : 100%

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
VI	20UND6DE3B	DSE - III	TRADITIONAL FOODS	4	4	100	25	75

Course Outcomes :

At the end of the course, students will be able to

1. Have basic knowledge about various traditional foods available regionally, worldwide
2. Acknowledge on the nutritive components foods , cooking methods
3. Have in depth knowledge on functional properties which are available, which can be applied along with the dietary management.
4. Acquire a sound knowledge on diversities of foods, food habits and patterns in India with focus on traditional foods.

Unit-I

Historical Perspectives

1.1 Food production and accessibility – subsistence foraging, horticulture, agriculture and pastoralization.

1.2 origin of agriculture, earliest crops grown, Evolution of crops

1.3 Food as source of physical sustenance.

Unit-II

Food as religious and cultural symbols

2.1 Importance of food in understanding human culture – variability, diversity, from basic ingredients to food preparation.

2.2 Impact of customs and traditions on food habits, heterogeneity within cultures (social groups) and specific social contexts – festive occasions, specific religious festivals, mourning etc. Kosher, Halal foods; foods for religious and other fasts.

Unit-III

Traditional Food Patterns in India

3.1 Typical breakfast, meal and snack foods of different regions of India.

3.2 Regional foods of India that have gone Pan Indian / Global. Popular regional foods; Traditional fermented foods, pickles and preserves, beverages, snacks, desserts and sweets, street foods;

3.3 Commercial production of traditional breads, snacks, ready-to-eat foods and instant mixes, frozen foods – types, commercial production and packaging of traditional beverages such as tender coconut water, neera,

lassi, buttermilk, dahi. Commercial production of intermediate foods – ginger and garlic pastes, tamarind pastes, masalas (spice mixes), idli and dosa batters.

Unit-IV

Traditional Food Patterns Around the world:

4.1 Typical breakfast, meal and snack foods of different parts of the world.

4.2 Regional foods that are Popular around the world; Comparison of the accustomed cooking methods

4.3 Methods of cooking in Traditional Foods – Boiling, Braising, Blanching Roasting, Stewing, Steaming.

Unit-V

Health Aspects:

5.1 Comparison of traditional foods with typical fast foods / junk foods – cost, food safety, nutrient composition, bioactive components; energy and environmental costs of traditional foods.

5.2 Traditional foods used for specific ailments /illnesses.

5.3 Organic foods and Functional foods , types of organic and Functional foods foods, identifying organic foods, organic food and preservatives, Advantages of Traditional foods with functional properties .

Text Books:

1. Sen, Colleen Taylor "Food Culture in India" Greenwood Press, 2005.
2. Davidar, Ruth N. "Indian Food Science A Health and Nutrition Guide to Traditional Recipes,East West Books, 2001.

Reference :

https://journalofethnicfoods.biomedcentral.com/

New paper (100% changes made)

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper	Hours	Credits
VI	20UND6DE3B	TRADITIONAL FOODS	4	4

Course Outcomes(COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓		✓	✓		✓		✓	✓	
CO4	✓			✓		✓			✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 34, Relationship : Moderate										

Prepared by: **Checked by:**

N. Asiffa Jabeen **Dr.V.Kavitha**

Note:

Mapping	1%-29%	30%-59%	60%- 69%	70%-89%	90%-100%
Matching	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Semester	Code	Course	Title of the Course	Hours	Credits	Max. Marks	Internal marks	External marks
VI	20UND6EC2	Extra Credit Course - II	NUTRITION AND DIETETICS FOR COMPETITIVE EXAMINATIONS	-	4	100	-	100

Course Outcomes:

At the end of the course, students will be able to

1.Acquire knowledge in the field of food science and food service management

2.Analyse the nutrition and diet approach in the span of life

3.Know the concept of Textiles and Apparel design

4.Apply the principles of resource management and interior design

5.Know stage of human development and aware about the purpose of extension education

UNIT- I

Food Science and Food Service Management

Food science and nutrition- Properties of food – physical and chemical properties. Quality evaluation of foods- objectives and subjective. food preservation and application. Food pigments and additives.

1.1 Food service management- Food standards, microbiological safety of food, HACCP, food packaging. Perspectives of food service-menu planning, food cost analysis. New product development, Food service management of institutional level-hospital, educational institutions, social and special institutions.

1.2 Research methods- fundamental issues, concept, need relevance, scope and ethics in research.

UNIT-II

Nutrition And Dietetics

2.1 Food groups – balanced diet, food pyramid, macro and micro nutrition. Nutrients-role of nutrients in the body, nutrient deficiencies and requirements for Indians. Public health nutrition

2.2 Nutrition through life span-physiological changes, growth and development from conception to adolescence, nutritional needs and dietary guidelines.

2.3 Community nutrition, sports nutrition, nutrition in emergencies and disasters. Nutritional assessment-methods and techniques. Clinical and therapeutic nutrition. Diet counseling and management. Research methods- research designs, principles and purpose of research.

UNIT- III

Textiles and Apparel designing

3.1 Textiles - Textile terminologies- fibre, yarn, weave, fabric etc., classification of fibers, yarns and weaves. Different methods of fabric construction-woven, knitted and non woven fabrics, their properties and end uses. Textiles finishes-classification, processing and purposes of finishes. Dyeing and printing-classification, method of block printing, tie and dye, batik, roller printing, screen printing, discharge, and heat transfer printing and digitized printing.

3.2 Textile Testing and quality control-need of testing, sampling method, techniques of testing fibres, yarn, fabrics and garments. Recent developments in textiles and apparels- nano textiles, technical textiles, occupational clothing, zero waste designing, up cycling and recycling.

3.3Apparel designing : Body measurements-procedure, need, figure types and anthropometry. Equipments and tools used or manufacturing garments-advancements and attachments used for sewing machine. Types of machines used and their parts. Elements and principles of design and its application to apparel. Illustrations and parts of garments. Care and maintenance of clothing-principles of washing, laundry agents, storage techniques case labels and symbols.

UNIT- IV

Resource management and Interior design

4.1 Resource Management - Management-concept, approaches, management of time, energy, money, space, motivating factors, motivation theories, decision making. . Functions of management-planning, supervision, controlling, organizing, evaluation, family life cycle-stages, availability and use of resources.

4.2 Human resource management- functions, need, human resource development challenges, functions, manpower planning, training need assessment, training methodologies, training evaluation

4.3 Interior design- Design fundamentals – elements of art, principles of design, principles of composition. Colour - dimensions of colour, psychological effects of colour, colour schemes, factors affecting use of colour. Space planning and design-housing need and important, principles of planning spaces, types of house plans, economy in construction, planning for different income groups. Building regulations-norms and standards, zoning, housing for special groups and areas, housing finance.

UNIT V

Child /Human development and extension education

5.1 Child development: Principles of growth and development care during pregnancy and pre-natal and neonatal development. 2. Theories of human development and behavior. 3. Early childhood care and

education – activities to promote holistic development. 4. Influence of family, peers, school, community and culture on personality development. 5. Children and persons with special needs, care and support, special education, prevention of disabilities, rehabilitation.

5.2 Extension education: Historical perspectives of extension–genesis of extension education and extension systems in India and other countries, objectives of extension education and extension service, philosophy and principles of extension programme development

5.3 Curriculum development and planning for extension education and development activities. Training, skill development and capacity building for human resource development methods of training, entrepreneurship development.

TEXT BOOKS:

1. B. Srilakshmi, Nutrition Science, Fifth Edition, New Age International (P) Ltd, New Delhi (2008).
2. AmbikaShanmugam, Fundamentals of Biochemistry for Medical Students, Seventh Edition, New Age Publishing Pvt.Ltd., New Delhi (1986).
3. B.Srilakshmi,Dietetics, Sixth edition, New Age International Pvt. Ltd (2010).
4. B.Srilakshmi,Nutrition Science, Fourth edition, New Age International Pvt. Ltd (2012).
5. MohiniSethi and Malham-Catering Management and integrated approach, JohnWiley& Sons,eastern limited, New Delhi, Reprint 2007

REFERENCE BOOKS :

1. Williams,S.R.,Nutrition and Diet Therapy, 6th Edition,Times Mirror / Mosby College Publishing, St. Louis, 1989.
2. Kotschevar LH and Terrell ME, Food Service Planning Layout and Equipment, 2nd Edition, John Wiley and sons, New York, 1977.
3. https://gradeup.co/ugc-net-home-science-syllabus

New paper (100% changes made)

Semester	Code	Title Of The Paper	Hours	Credits
VI	20UND6EC2	**Extra Credit** **Nutrition and Dietetics For Competitive Exam**	-	4

Course Outcomes(COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓		✓	✓	✓	✓	
CO2	✓	✓	✓	✓		✓	✓	✓	✓	
CO3	✓		✓	✓		✓		✓	✓	
CO4	✓			✓		✓			✓	
CO5	✓	✓		✓	✓	✓	✓		✓	✓
Number of Matches= 34, Relationship : Moderate										

Prepared By

N.Asiffa Jabeen

Checked By

Dr.A. Sangeetha

Dr.V. Kavitha

Note:

Mapping	1%-29%	30%-59%	60%- 69%	70%-89%	90%-100%
Matching	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High