DR. AMBEDKAR GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

Vyasarpadi, Chennai – 600 039.

(Accredited by NAAC at level "B")

SYLLABUS

B.Sc. (Home Science - Nutrition, Food Service Management & Dietetics)

Under Choice Based Credit System

(With effect from the academic year 2022-2023)

DEPARTMENT OF HOME SCIENCE - NUTRITION, FOOD SERVICE MANAGEMENT & DIETETICS

Dr. Ambedkar Government Arts College (Autonomous)

Vyasarpadi, Chennai – 600 039.

Based on UGC – Learning Outcomes-Based Curriculum Framework
Course Structure under Choice Based Credit System

(For the candidates admitted from the academic year 2022-2023 onwards)

Sem. No	Part No.	Course	Subject code	Course Title	Ins. Hrs/ Week	Credit	Exam Hrs	Marks		Total
								Int	Ext	
I	I	LC - I	22UAFTA1	General Tamil - I	6	3	3	25	75	100
	II	ELC - I	22UACEN1	Communicative English - I	4	3	3	50	50	100
	III	CC - I	22UANDC1	Food Science	5	4	3	25	75	100
	III	CC - II	22UANDC2	Food preservation and processing	4	4	3	25	75	100
	III	AC - I	22UACHA1	Allied Chemistry – I	4	3	3	25	75	100
	III	ACP *	Even Sem.	**Allied Chemistry Practical**	3	-	-	40	60	100
	IV	NME - I	22UAPSN1A 22UAPSN1B (any one)	Emotional Intelligence Enhancing Study Skills	2	2	3	25	75	100
	IV	SBE - I	22UAPLS1	Professional English for Life Science - I	2	3	3	50	50	100
				Total	**30**	**22**				
II	I	LC - II	22UBFTA2	General Tamil - II	6	3	3	25	75	100
	II	ELC - II	22UBCEN2	Communicative English - II	4	3	3	50	50	100
	III	CC - III	22UBNDC1	Nutrition through life cycle	4	4	3	25	75	100
	III	CCP - IV	22UBNDC2	**Practical - Nutrition through cycle**	5	4	3	40	60	100
	III	AC - II	22UBCHA2	Allied Chemistry – II	4	3	3	25	75	100
	III	ACP - III	22UBCHA3	**Allied Chemistry Practical**	3	4	3	40	60	100
	IV	NME - II	22UBPSN2A 22UBPSN2B (any one)	Psychology for Effective Living Promoting Interpersonal Skills	2	2	3	25	75	100
	IV	SBE - II	22UBPLS2	Professional English for Life Science - II	2	3	3	50	50	100
				Total	**30**	**26**				
III	I	LC - III	22UCFTA3	General Tamil - III	6	3	3	25	75	100
	II	ELC - III	22UCLTS1	Language Through Literature - I	4	3	3	50	50	100
	III	CC - V	22UCNDC1	Human Nutrition	5	4	3	25	75	100
	III	CC - VI	22UCNDC2	Human Development	4	4	3	25	75	100
	III	AC - IV	22UCNDA1	Human Physiology	7	5	3	25	75	100
	IV	EVS	22UCEVS1	Environmental Studies	2	2	3	25	75	100
	IV	SBE - III	22UCSBE3	SS III – Personality Enrichment	2	3	3	40	60	100
				Total	**30**	**24**				
IV	I	LC - IV	22UDFTA4	General Tamil - IV	6	3	3	25	75	100
	II	ELC - IV	22UDLTS2	Language Through Literature -II	4	3	3	50	50	100
	III	CC - VII	22UDNDC1	Interior design	4	4	3	25	75	100
	III	CCP-VIII	22UDNDC2	**Practical - Nutrition**	5	4	3	40	60	100
	III	AC - V	22UDNDA2	Biochemistry	7	5	3	25	75	100

	IV	VBE	22UDVBE1	Value Based Education	2	2	3	25	75	100
	IV	SBE - IV	22UDSBE4	SS IV - Computer Basics and Office Automation	2	3	3	40	60	100
	V	Extension	22UDEXT1	Extension Activities	-	1	-	-	-	-
				Total	**30**	**25**				
V	III	CC - IX	22UENDC1	Clinical Nutrition	6	4	3	25	75	100
	III	CC - X	22UENDC2	Therapeutic dietetics	6	4	3	25	75	100
	III	CC - XI	22UENDC3	Quantity food production and service	6	4	3	25	75	100
	III	CC - XII	22UENDC4	Sports Nutrition	6	4	3	25	75	100
	III	CEC - I	*	One from the Elective-I Subjects	6	5	3	25	75	100
				Total	**30**	**21**				
VI	III	CC - XIII	22UFNDC1	Food service Management	6	4	3	25	75	100
	III	CC - XIV	22UFNDC2	Community Nutrition	6	4	3	25	75	100
	III	CCP-XV	22UFNDC3	**Practical - Therapeutic Dietetics**	6	4	3	40	60	100
	III	CEC - II	**	One from the Elective-II Subjects	6	5	3	25	75	100
	III	CEC - III	***	One from the Elective-III Subjects	6	5	3	25	75	100
				Total	**30**	**22**				
				Total Credits	**180**	**140**				

CORE ELECTIVE COURSES:

Elective-I (Any one subject of the following Core Elective chosen by the candidate)		**Elective-II** (Any one subject of the following Core Elective chosen by the candidate)		**Elective-III** (Any one subject of the following Core Elective chosen by the candidate)	
***Sub. Code**	**Core Elective Courses**	****Sub. Code**	**Core Elective Courses**	*****Sub. Code**	**Core Elective Courses**
22UENDE1A	Textile science	22UFNDE2A	Family Resource Management	22UFNDE3A	Basics in Research Methodology
22UENDE1B	Consumer Education	22UFNDE2B	Front Office management	22UFNDE3B	Diet Counseling
22UENDE1C	Extension Education	22UFNDE2C	House Keeping	22UFNDE3C	Nutritional Assessment Methods

NON MAJOR ELECTIVE COURSE:

I Semester (Any one subject of the following Non Major Elective chosen by the candidate)		**II Semester** (Any one subject of the following Non Major Elective chosen by the candidate)	
Sub. Code	**Non Major Elective**	**Sub. Code**	**Non Major Elective**
22UANDN1A	Health and physical fitness	22UBNDN2A	Food Standard and Quality Control
22UANDN1B	Space Designing	22UBNDN2B	Family dynamics
22UANDN1C	Creative Art	22UBNDN2C	Reproductive health care

B.Sc Degree Programme in Home Science - Nutrition, Food Service Management & Dietetics

FIRST SEMESTER				
Course Title		**FOOD SCIENCE**		
Course Code		**22UANDC1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC1	**CORE**	**4**	**5**	**25+75=100**

COURSE OBJECTIVES:

The main objectives of this course is to enable students to :

1. Obtain knowledge of different food groups and the nutrients present in each group
2. Understand the advantages and disadvantages of different methods of cooking and its effect of nutrient availability.
3. Gain experience in the preparation of foods with attention to the preservation of their nutritive value oriented to Indian cooking
4. Enable the students understand the scientific principles governing the acceptability of food preparation.

UNIT 1: INTRODUCTION TO FOOD SCIENCE AND COOKING METHODS 10 hrs

- **Introduction to Food Science**
  Definition of food science, functions of foods, basic four food groups, food pyramid, my plate, food in relation to health.
- **Cooking Methods**
  Objectives of cooking, cooking methods - dry heat and moist heat methods, and solar cooking.

UNIT II: CEREALS, MILLETS AND PULSES 10 hrs

- **Cereals and Millets**
  Structure (wheat grain), composition and nutritive of cereal grains. Parboiling (rice), Effect of cooking on the nutritive value of cereals. Gelatinization - definition and factors affecting gelatinization. Gluten formation and dextrinization. Millets - types, nutritional significance of millets. Role of cereals and millets in cookery.
- **Pulses**
  Composition, nutritive value highlighting soya beans, factors affecting cooking quality, significance of germination, anti- nutritional factors (lathyrism), judicious combination of cereals and pulses, role of pulses in cookery.

UNIT III: VEGETABLES AND FRUITS **10 hrs**

- **Vegetables**
  Classification, composition and nutritive value of vegetables, pigments and effect of cooking on pigments, loss of nutrients during cooking, methods to minimize loss of nutrients, colour, texture, flavor during cooking, storage of vegetables.
- **Fruits**
  Classification, composition, nutritive value, ripening of fruits and enzymatic browning, methods to prevent browning

UNIT IV: FLESH FOODS. EGG, MILK AND MILK PRODUCT **15 hrs**

- **Flesh Foods - Meat, Poultry and Fish**
  Composition and nutritive value of flesh foods. Meat- post mortem changes in meat, factors affecting tenderness and methods of cooking, Fish - classification, nutritive value, selection and methods of cooking. Poultry - classification and nutritive value
- **Eggs**
  Structure and composition, nutritive value, grade, quality, methods of cooking eggs and uses in cookery.
- **Milk and Milk Products**
  Nutritive value (cow's milk), coagulation of milk, homogenization and pasteurization of milk. Milk products - whole and skimmed milk, condensed milk, evaporated milk and milk powder, curd, yoghurt, cheese, paneer, ice cream. Use of milk in cookery.

UNIT V: BEVERAGES, NUTS / OILS SEEDS, FATS / OILS & SUGAR COOKERY 15 hrs

- **Beverages** - classification, methods of preparation coffee of tea and cocoa, malted beverages , uses in cookery
- **Nuts and Oilseeds** - Almond, cashew nut, walnut, groundnut - nutritional significance, toxins
- **Fats and Oils** - Types, nutritive value, sources, hydrogenation, rancidity, smoking point , role in cookery
- **Sugar Cookery**-Types and uses, stages in sugar cookery

PRACTICALS **15 hr**

1. The measurement of food stuffs-use of standard measuring spoons & cups. Determination of edible portion of foods.
2. Cooking of Rice – boiling, straining and pressure cooking, preparation of anyone cereal/millet recipe
3. Pulses and legumes – factors affecting cooking of pulses-soaking, effect of acid, alkali, hard water, preparation of anyone pulse recipe
4. Vegetable and Fruits -effect of cooking on colour and texture of vegetables, addition of acid & alkali, prevention of browning reaction in fruits preparation of anyone vegetable/fruit recipe
5. Milk and Milk products –preparation of paneer and preparation of anyone milk based receipe
6. Egg – factors affecting foaming, preparation of anyone egg recipe
7. Fats and Oils –demonstration of smoking temperature of different fats & oils
8. Sugar - Demonstration of different stages of sugar cookery,

TEXT BOOKS

1. Srilakshmi, B. (2017). Food Science, 7th edition, New Age International Publishers, New

Delhi.
2. Manay, S. and Shadaksharaswamy, M. (2020). Food Facts and Principles, 4th edition, New Age International Publishers, New Delhi.
3. Mudambi, S.R, Rao,S.M and Rajagopal, M.V. (2006). Food Science, New Age International Publishers, New Delhi.
4. M.N. Ahmed, (2005). Food Science and Nutrition, 1st Edition Anmol Publications Pvt. Ltd, New Delhi.

REFERENCE TEXT BOOKS

1. Brown, A, 2004. Understanding Food, Wadsworth, USA.
2. Vaclavik, V & Christian. E.W., 2014 Essentials of Food Science, XXIV edition.
3. Sunetra Roday, 2012 Food Science and Nutrition, Second Edition, Oxford
4. Norman N. Potter and Joseph H. Hotchkiss. (1995). Food Science, 5th Edition Springer, Reprint 2012.
5. Hughes, O and Bennion, M. 1970 Introductory Foods**,** 5th ed., Themacmillan Co., New York
6. Pechkham, G.C. 1969. Foundations of Food Preparation**,** The Macmillan Company, London

WEB LINK AND E- RESOURCES

1.https://millets.res.in/m_recipes/Nutritional_health_benefits_millets.pdf

2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3649719/

3. https://pubmed.ncbi.nlm.nih.gov/29672133/

4.https://www.chp.gov.hk/en/static/90037.html

METHODOLOGY OF TEACHING

Lecture, group discussion, assignments and group activities

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Name and classify the various food groups and identify the suitable method of preparation for different food ingredients.	K1, K2 K3
CO2	Recall and compare the composition and nutritional significance of different food groups and explain the effect of food in relation to health	K1 ,K2, K4
CO3	Outline, examine and explain changes that occur in food groups when subjected to heat, identify measures to minimize food and nutrient loss.	K1, K2 ,K3 K4,
CO4	Pursue higher education in food science by developing skills in demonstrating recipes making use of different food groups and different cooking methods	K2, K3 , K4
C05	Demonstrate technical skills to develop innovative nutritious low cost recipes that minimize wastage of resources and that would help them emerge as entrepreneurs in the food industry	K2, K3,
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	2	1	2	0	2
CO2	3	2	1	2	2	2
CO3	3	3	2	3	3	3
CO4	2	2	3	2	3	2
CO5	2	2	3	2	3	3
Total	13	11	10	11	11	12
Average	2.6	2.2	2	2.2	2.2	2.4

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIRST SEMESTER				
Course Title		**FOOD PRESERVATION AND PROCESSING**		
Course Code		**22UANDC2**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC - II	**CORE**	**4**	**4**	**25+75=100**

COURSE OBJECTIVES:

The objectives of the course are to

1. To gain knowledge on different techniques used in the preservation of foods.
2. To Understand the processing techniques for food products
3. To develop food products

UNIT I : FOOD SPOILAGE **10 hrs**

Food Spoilage - Definition, causes, microorganisms involved in spoilage of bread, fruits and vegetables, meat, fish, egg, milk.

Food preservation - Definition, principles and importance, classification – bactericidal and bacteriostatic methods.

UNIT II : PROCESSING BY HIGH TEMPERATURE **10 hrs**

Processing and preservation by high temperature: blanching, pasteurization, sterilization and UHT processing, canning, extraction cooking, dielectric heating, Dehydration.

UNIT III: PROCESSING BY LOW TEMPERATURE **10 hrs**

Processing and preservation by low temperature – refrigeration, freezing, dehydro freezing. Food irradiation.

UNIT IV : PRESERVATION BY DRYING **10 hrs**

Processing and preservation by drying, concentration and evaporation: various methods sun – drying, tray or tunnel drying, spray drying, drum drying freeze drying, fluidized bed drying, advantages and disadvantages.

UNIT-V : PRESERVATION BY NON - THERMAL TREATMENTS **10 hrs**

Processing and preservation by non – thermal methods: salt, sugar, chemicals, smoking. Food additives: Definition, types and functions, permissible limits and safety aspects. Food packaging - types and uses.

PRACTICALS **10 hrs**

1. Preparation of jams, jellies and squashes
2. Preparation of pickles using fruits and vegetables
3. Preparation of sauces and ketchup

PRESCRIBED TEXTBOOKS:

1. Suganthi.V and Subaratinam.R (2021) Textbook on Food preservation, Dipti Press (OPC) Pvt. Ltd, Chennai

REFERENCE BOOKS

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

WEB LINKS AND E- RESOURCES

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

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

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

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

METHODOLOGY OF TEACHING

Class lecture, use of projectors, assignment, activities

COURSE OUTCOMES (CO):

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

CO	Course Outcomes	K - Levels
CO1	Define and explain the principles of food preservation and relate the role of microorganisms in food spoilage	K1, K2
CO2	Compare, analyse and make use of the different methods of processing involving high and low temperature, and also define and interpret various drying methods	K1, K2, K4
CO3	Classify food additives and develop various food products using natural additives	K2
CO4	Distinguish and translate the knowledge on food packing and various processing technique to create wide variety of biodegradable raw material thereby contributing to preserve the environment and society at large	K4, K2
CO5	Develop jams, jellies and pickles using natural ingredients	K3

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	1	-	-	3
CO2	3	3	3	-	1	3
CO3	3	-	-	3	-	3
CO4	3	2	-	-	1	3
CO5	3	-	3	3	2	3
Total	15	8	7	6	4	15
Average	3	1.6	1.4	1.2	0.8	3

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SECOND SEMESTER				
Course Title		**NUTRTION THROUGH LIFE CYCLE**		
Course Code		**22UBNDC1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CCIII	**CORE**	**4**	**4**	**25+75=100**

COURSEOBJECTIVES

The main objective of this course is to enable students to:

1. Understand the need of the nutritional requirements for different age groups.
2. Develop the acumen in meal planning for meeting with the nutritional requirements of individuals.

UNIT I: PRINCIPLES OF MEAL PLANNING AND NUTRITION DURING ADULTHOOD 10 hrs

Food groups and food exchange list; factors affecting meal planning; dietary guidelines for Indians: food guide, food pyramid, my plate, balanced diets, RDA/EAR

Nutrition for adulthood- Food and nutrient requirements for adult man and woman, ICMR classification of activities based on occupation, reference man and woman, RDA/EAR

UNIT-II NUTRITION DURING PREGNANCY AND LACTATION 15 hrs

Nutrition during pregnancy- Physiological changes in pregnancy, RDA/EAR, nutritional guidelines, nutritional needs, effect of nutritional status on pregnancy outcome, optimal weight gain and its components, nutrition related problems in pregnancy and ways to control them, complications in pregnancy.

Nutrition during lactation - Physiology of lactation, RDA/EAR and nutritional needs of a lactating mother, nutritional guidelines.

UNIT-III NUTRITION DURING INFANCY AND DURING PRESCHOOL PERIOD 10hrs

Nutrition during infancy- Growth and development, growth standards, food and nutrient requirements, breast milk - advantages, disadvantages of bottle feeding and weaning.

Nutrition for preschool children- Growth and development, food and nutrient requirements, Nutritional problems and eating habits

UNIT-IV NUTRITION FOR SCHOOL CHILDREN AND ADOLESCENTS 10hrs

Nutrition for school children- Growth pattern, food and nutrient requirement, healthy food habits, feeding programs and packed lunch.

Nutrition during adolescence- Changes in growth pattern, food and nutrient requirements, food habits, nutritional problems.

UNIT-V NUTRITION FOR OLD AGE **10hrs**

Nutrition for old age- Physiological changes in elderly, food and nutrient requirements, nutritional problems and modification of diet,

PRESCRIBED TEXT BOOKS

1. Srilakshmi, B. (2014). Dietetics, 7th Edition, New Age International Publishers, New Delhi.
2. Gajalakshmi R. (2014). Nutrition Science, CBS Publishers & Distributors Pvt Ltd, New Delhi.
3. Swaminathan, A. (2000). Principles of Nutrition and Dietetics, 5th Edition, Bappco Publication, India.
4. Chadha Ravinder. 2015. Nutrition A Lifecycle Approach, Orient Blackswan Pvt Ltd, India.
5. Brown J E. 2013. Nutrition through the Life Cycle, 5thedition, Cengage Learning, India.

REFERENCE BOOKS

1. Williams S. W. (2002). Nutrition and Diet Therapy, 5th edition, St. Louis: Mosby.
2. Webb, G. P. (2002). Nutrition- A Health Promotion Approach, 2nd edition, Replika Press Pvt. Ltd, India.
3. Judith E Brown. (2017). Nutrition through the Life Cycle, 6th Edition, Cengage Learning, USA.
4. Dietary Guidelines for Indians- A Manual. (2011). 2nd edition, National Institute of Nutrition, Hyderabad.

WEB LINKS AND E- RESOURCES

1. https://www.sciencedirect.com/science/article/pii/S0002937821027289

2. https://iapindia.org/pdf/Ch-043-Nutrition-for-Preschoolers-2%E2%80%935-Years.pdf

3. https://www.unicef.org/india/what-we-do/adolescent-nutrition

4. https://medlineplus.gov/nutritionforolderadults.html

METHODOLOGY OF TEACHING

Lecture, group discussion, case study, video lessons, exhibits, display and assignments. Recipe formulation.

COURSE OUTCOMES (CO):

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define and explain the principles of meal planning by making use of the food pyramid and my plate	K1, K2, k3
CO2	List and explain the nutrient needs of individuals in different stages of family life cycle.	K1,K2,
CO3	Demonstrate skills in developing balanced diets using locally available and cost effective food ingredients for different age groups in the society	K2, K3
CO4	Explain the importance of balanced diets especially for vulnerable groups such as pregnant and lactating mothers, adolescent girls and children by making use of innovative methods of communication	K2, K3
CO5	Apply the knowledge and skills gained in the course to meet personal and family health goals, serve as healthcare educators in private or public health sectors or take part in research	K3
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2, K3, K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3, K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SECOND SEMESTER				
Course Title		**PRACTICAL – NUTRITION THOUGH LIFE CYCLE**		
Course Code		**22UBNDC2**		
Course No	**Course Category Core/Elective/Allied /NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CCP - IV	**CORE**	**4**	**5**	**40+60 =100**

COURSE OBJECTIVES:

The main objectives of this course are:

1. To enable students to plan and prepare balanced diets for various age groups
2. To help students calculate diets to meet the ICMR recommended dietary allowances (RDA/EAR)

UNIT I: PLANNING AND PREPARING BALANCED DIETS DURING ADULTHOOD 15 hrs

- Weights and measures- identification and selection of raw materials (food ingredients) from the four food groups
- Planning and preparation of a balanced diet based on RDA/EAR for an adult man and woman - sedentary, moderate, heavy worker.

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UNIT 2: PLANNING AND PREPARING BALANCED DIETS DURING PREGNANCY AND LACTATION 15 hrs

- Planning and preparation of a balanced diet for a pregnant woman – Nutrient requirements, menu planning and preparation of a balanced diet of pregnant women
- Planning and preparation of a balanced diet for a lactating mother – Nutrient requirements, menu planning and preparation of a balanced diet of lactating mothers

UNIT 3: PLANNING AND PREPARING BALANCED DIETS DURING INFANCY 15hrs

Planning and preparation of weaning fords for infants – liquid, semi-solid and solid

UNIT 4: PLANNING AND PREPARING BALANCED DIETS FOR PRE-SCHOOL CHILDREN AND SCHOOL CHILDREN 15 hrs

- Planning and preparation of diets for pre- school children – menu planning and preparation of balanced diets for pre-school children.
- Nutrition during school age -Nutrient requirements, menu planning and preparation of a balanced diet for school aged children, planning and preparation of a nutritious packed lunch

UNIT 5: PLANNING AND PREPARING BALANCED DIETS DURING ADOLESCENTS AND OLD AGE 15 hrs

- Planning a diet for adolescents - Nutrition during adolescence –Nutrient requirements, menu planning and preparation of a balanced diet for adolescents.
- Planning a diet for a senior citizen – Nutrient requirements, menu planning and preparation of a balanced diet for senior citizens

PRESCRIBED TEXT BOOKS

1. Guthrie H.A. & Others, "Introductory Nutrition", 1986, 6th ed. Times Mirror/Mosby college pub Louis.
2. Anderson L. et al., 1982, "Nutrition in Health and Disease', 17thed, J.B Lippincott Co Philadelphia.
3. Whitney E.N., Hamilton E.N. &Raffes S.R., "Understanding Nutrition", 5th ed. West pub. Co. New York.
4. Recommended Dietary Intakes for Indians, I.C.M.R. 1989.
5. Mudambi, S.R. & M.N. Rajagopal – "Fundamentals of food and Nutrition', 3rd ed. Wiley Eastern Ltc New Delhi- 19.
6. Guthrie, H.A, "Introductory Nutrition", 6th ed., Times Mirror/ Mosby College publ. – St Louis 1989.
7. Worthington Roberts, Bonnie S & others – "Nutrition in pregnancy & Lactation', 3rd ed. Time Mirror Mosby College, St. Louis, 1985

WEB LINKS AND E- RESOURCES

- https://www.nutrition.gov/
- https://www.eatright.org/

METHODOLOGY OF TEACHING

Hands on training on product formulations and preparation of balanced diets , Group Discussion, , Experimental activity.

COURSE OUTCOMES

On successful completion of the study, the student will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	List and explain the nutrient needs of individuals in different stages of family life cycle	K1, K2
CO2	Demonstrate practical's skills in developing balanced diets u by making use of locally available and cost effective food ingredients for different age groups in the society	K2, K3
CO3	Demonstrate skills in preparing model balanced diets for individuals in different age groups and calculate and explain the nutrients present in the diet repapered	K2,K3
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	1	2	0	2
CO2	3	2	3	2	2	2
CO3	3	2	3	2	2	3
Total	9	7	7	6	4	7
Average	3	2.33	2.33	2	1.33	2.33

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2, K3, K4	A (Answer all the questions)	10 2	Short Answer (Two questions from each unit)	20
K1, K2, K3, K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

THIRD SEMESTER				
Course Title		**HUMAN NUTRITION**		
Course Code		**22UCNDC1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC-V	**CORE**	**4**	**5**	**25+75=100**

COURSE OBJECTIVES:

The main objectives of the course is to enable students to

1. Understand the importance of various macronutrients in relation to health.
2. Apply the dietary guidelines for various nutrients and contribute towards a better lifestyle for prevention of non-communicable diseases.
3. Develop skills pertaining to practical experiments.

UNIT I : INTRODUCTION TO NUTRITION **10 Hrs**

History of Nutrition – Development of nutrition as a science, food as a source of nutrients, definition of nutrients, dietary guidelines for good nutrition, signs and symptoms of adequate, optimum and good nutrition, malnutrition (Under nutrition, and over nutrition).

Energy

Units of Energy -kilocalories, kilojoules, conversion of kj to kcal, and determination of energy value of foods using bomb calorimeter. Physiological energy value of food and calorific value.

Basal metabolism, factors affecting BMR - Determination of energy requirements, direct and indirect calorimetry direct calorimetry. Specific dynamic action of food (Thermogenic food in REE), Benedict Roth basal Metabolism Apparatus, determination of energy metabolism, during work-energy requirements for various types of activities, energy, calculation of energy value of foods, Energy requirements for different age groups.

UNIT II : CARBOHYDRATES **20 Hrs**

Carbohydrates -Classification, sources, requirements and functions of carbohydrates in the body, digestion, absorption and metabolism. Dietary fibre- Definition, soluble and insoluble fibres, sources of fibre, Role of fibre in human nutrition. Prebiotic, Probiotic, Synbiotic and Post biotic

UNIT III : PROTEINS AND FAT **15 Hrs**

Protein: Amino acids -. Classification, Sources, Requirements and functions of protein. Protein quality- PER, BV, NPU and NPR, chemical score.

Lipids-Classification, Sources, Requirements and functions, Essential fatty acids- deficiency food sources And Functions, Dietary Lipids and Its Relation to Cardiovascular Diseases.

UNIT IV : VITAMINS **15 Hrs**

Fat Soluble Vitamins

Functions, effects of deficiency, food sources, requirements and hypervitaminosis of vitamins A, D, E and K.

Water Soluble Vitamins

Ascorbic acid and B Complex vitamins- Thiamine, Riboflavin and Niacin- Functions, effects of deficiency, food sources and requirements for different age groups. Importance of folic acid, Pyridoxine, Vitamin B12, Biotin and Pantothenic acid to the body.

UNIT V: MINERALS AND WATER **15 Hrs**

Macro minerals- Calcium, Phosphorous, Magnesium, Potassium, Sodium and Chloride- distribution in the body; functions, effects of deficiency and excess , food sources and RDA.

Micro/Trace Minerals in human nutrition - Iron, Zinc, Iodine, Selenium, Manganese, Chromium, Fluoride and Copper

Distribution in the body; functions, effects of deficiency and excess, food sources and requirements for different age groups.

Water

Water as a nutrient-functions, sources, requirements. Distribution of water in the body,

REFERENCE BOOKS

1. Guthrie H.A. – Introductory Nutrition C.V. Mosby Co. St. Louis.
2. Bogert, J.G.V. Briggs, D.H. Calloway Nutrition and physical fitness (1985), 11thedition – W.B. Saunders Co., Philadelphia, London, Toranto.
3. Wardlaw, G.M. Insel, P.H. – Perspectives in Nutrition (1990) Times Mirror / Mosby College Publishing Co. St. Louis, Toronto, Boston.
4. William, S.R. – Nutrition and Diet Therapy (1985) 5th edition, Mosbey Co. St. Louis.
5. M. Swaminathan "Principles of Nutrition and Dietetics", 1993, Bappco 88, Mysore Road, Bangalore-560 018.
6. Maurice E. Shils, James A. Olson, Moshe Shike "Modern Nutrition in health and disease" (1994) eighth edition, Vol. I & II Lea &febiger Philadelphia, A waverly Company.

WEB LINKS AND E- RESOURCES

1.https://www.verywellfit.com/understanding-malnutrition-2507055

2.https://www.msdmanuals.com/en-in/home/disorders-of-nutrition/overview-of-nutrition/. carbohydrates,-proteins,-and-fats

3. https://www.peacehealth.org/medical-topics/id/ta3868

4. https://study.com/academy/lesson/minerals-functions-food-sources.html

5. https://en.wikipedia.org/wiki/Basal_metabolic_rate

METHODOLOGY OF TEACHING

Class lecture, power point presentations, use of projectors, assignment, activities

COURSE OUTCOMES (CO)

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define the basic concepts of nutrition and identify foods rich in various nutrients	K1, K2
CO2	List and outline the role of nutrients to prevent deficiencies	K1, K2
CO3	Classify and list the functions of nutrients to maintain health	K1, K2, K4
CO4	Distinguish macro and micronutrients to build insights on the role of nutrients to prevent disease	K4 & K3
CO5	Summarise and spell the adequate intake for various age groups	K2, K1
K1–Knowledge,K2-Understand,K3-Apply,K4–Analyze		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	2	3	2
CO2	3	3	2	-	2	3
CO3	3	3	3	1	2	3
CO4	3	3	3	-	1	3
CO5	3	-	3	-	2	3
Total	15	12	14	3	10	14
Average	3	2.8	2.8	1.6	2	2.8

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

BLOOM'S TAXONOMY BASED QUESTION PAPER PATTERN- UG

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

THIRD SEMESTER				
Course Title		**HUMAN DEVELOPMENT**		
Course Code		**22UCNDC2**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC-V!	**CORE**	**4**	**4**	**25+75=100**

COURSE OBJECTIVES

The main objectives of this course are to:

1.Familiarize with the growth process from conception to confinement
2.Understand the physical, psychological and social development of the individual from infancy to old age
3.To analyze the problems faced in each stage of life cycle

UNIT I: INTRODUCTION TO HUMAN DEVELOPMENT 12 Hrs

Definition, stages of human development. Principles of growth and development. Developmental tasks of different stages

UNIT II: PRENATAL DEVELOPMENT AND POST-NATAL 12 Hrs

Birth and the Neonate (newborn)-. Conception – signs and symptoms of pregnancy, prenatal development – stages of development, factors affecting development, birth process – signs of labour, stages, birth injuries, postnatal care – adjustment of the newborn.

UNIT III INFANCY AND BABYHOOD (0-2 YEARS) 10 Hrs

- Characteristics, physical, social, and emotional development, cognitive and language development.
- Effect of stimulation- care of the infant, feeding, toilet training, bathing, clothing, sleeping and immunization, importance of mothering.

UNIT IV: EARLY CHILDHOOD PERIOD AND LATE CHILDHOOD PERIOD 12 Hrs

Early childhood(2-6 years)

- Characteristics, physical, social, emotional, intellectual and language development.
- Nursery School - aims and objectives, building equipment, curriculum program and personnel.

Late Childhood period (6-12 years)

Characteristics, physical, social, emotional, intellectual, language and moral development.

UNIT V: ADOLESCENCE , ADULTHOOD AND OLD AGE AND OLD AGE 14 HRS

- **Adolescence –** Physical and psychological changes, emotional, moral and social development, problems of adolescence and methods to overcome it. Delinquency- Causes, prevention. Problems of Adolescents.
- **Adulthood** – characteristics and developmental tasks.
- **Old Age** – physical and psychological changes, problems of the aged, family attitude towards aged, place of the aged in Indian Society.

PRESCRIBED TEXT BOOK

1. Rajamal P. Devadas. (2006). Text Book on Child Development, 2nd Ed, Macmillan New Delhi, India.
2. Suria Kanthi. (2005). Child Development, Kavitha Publication, India.
3. Hurlock, E.B. (2001). Child Development, 6th Ed, McGraw –Hill, New York.
4. Singh A. (2015). Foundations of Human Development- A life span Approach, 1st Ed, Orient Black swan Pvt Ltd. Mumbai.

REFERENCES

1. Hurlock E.B., (1972). Child Development, New York : McGraw Hill Book company.
2. Hurlock, E.B., (1995): Developmental Psychology - A Life Span Approach, 5th (Ed.) New York: McGraw Hill Book Co.,.
3. Papalia, D.E. (1997). Human Development, New Delhi: Tata McGraw Hill Publishing Company Ltd.
4. Rajammal P. Devadas and Jaya N. Muthu (2002). A Text Book of Child Development, New Delhi: Macmillan Publishers.
5. Singh, A. (2015). Foundations of Human Development: A Life Span Approach. New Delhi: Orient Black Swan.
6. Suriakanthi A., (1997). Child Development – An Introduction, Tamil Nadu: Kavitha Publishers.
7. Swaminathan, M (1998). The First Five Years : A Critical Perspective on Early Childhood Care and Education in India. New Delhi : Sage Publications.

WEB LINKS AND E- RESOURCES

1.https://egyankosh.ac.in/bitstream/123456789/46895/1/Unit-1.pdf
2. https://my.clevelandclinic.org/health/articles/7247-fetal-development-stages-of-growth
3. https://somervillehub.org/early-childhood-hub/preschool/my-developing-preschooler

4. https://ncert.nic.in/textbook/pdf/jehp103.pdf
5. https://nios.ac.in/media/documents/secpsycour/English/Chapter-12.pdf

METHODOLOGY OF TEACHING

Group discussion, Chalk and talk, G-suite, PPT, Assignment

COURSE OUTCOMES (CO):

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define and explain the principles of growth and development	K1. K2
CO2	List the milestones in various stages of lifecycle and identify factors influencing the attainment of the milestones in each stage of life	K1,K3
CO3	Explain and compare the physical, social, emotional cognitive development in different stages of family life	K2 , K4
CO4	Identify the problems specific to various stages of life and explain strategies to solve these problems to enhance the overall wellbeing of the society	K3,
CO5	Apply the course information to start a preschool	K3
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	3	1	2	0	1
CO2	3	3	1	2	0	1
CO3	3	3	1	2	0	1
CO4	3	3	1	3	2	3
CO5	2	2	3	2	2	2
Total	14	14	7	11	4	8
Average	2.8	2.8	1.4	2.2	0.8	1.6

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

THIRD SEMESTER				
Course Title		**HUMAN PHYSIOLOGY**		
Course Code		**22UCNDA1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
AC IV	**ALLIED**	**7**	**5**	**25+75=100**

COURSE OBJECTIVES

The main objectives of this course are:

- To understand the functions of various organs of human system.
- Pursue more knowledge about the human anatomy and the role of nutrition in the human system.
- To know more about the circulation of blood and the regulation of hormone in various system.

UNIT I: CELL, TISSUES, BLOOD AND CIRCULATORY SYSTEM 10 Hrs

Cell, Tissues

Structure of Cell and functions of different organelles. Classification, structure and functions of tissues.

Blood and Circulatory System

Components of blood- RBC, WBC and Platelets and its functions. Erythropoiesis, Blood clotting, Different Blood groups.

Anatomy of the heart and blood vessels, properties of cardiac muscle, origin and conduction of heart beat, cardiac cycle, cardiac output, blood pressure - definition and factors affecting blood pressure, and description of ECG.

UNIT II: NERVOUS SYSTEM AND EXCRETORY SYSTEM 15 hrs

Nervous System

General anatomy of nervous system, functions of the different parts

Excretory System

Structure of kidney, functions of Nephron.

UNIT III: RESPIRATORY SYSTEM 10 Hrs

Respiratory System

Anatomy and physiology of respiratory organs. Gaseous exchange in the lungs, mechanism of respiration.

UNIT IV: DIGESTIVE SYSTEM AND ENDOCRINE SYSTEM 15 Hrs

Digestive System

Anatomy of Gastro-intestinal tract, Structure and functions of Liver and Pancreas. Digestion and absorption of carbohydrates, proteins and fats.

Endocrine System

Functions of hormones secreted by Pancreas, Pituitary gland, thyroid, parathyroid and adrenal glands. Effects of hypo and hyper secretion of these glands.

UNIT V: REPRODUCTIVE AND SYSTEM SENSE ORGANS 20 Hrs

Reproductive System

Anatomy of male and female reproductive organs, Ovarian and Uterine cycle

Sense Organs

Structure and functions of Eye, Ear, Skin. Physiology of Taste and Smell.

REFERENCES

1. Beck, W.S. (1971) Human Design. Harcourt Brace Jovanovich Inc., New York.
2. Best, C. H. and Taylor, N. B. (1980) Living Body. 4th ed. BIP, Bombay.
3. Creager, J. G. (1992) Human Anatomy and Physiology. 2nd ed. WMC BrownPublishers, England.
4. Guyton, A.C. (1979) Physiology of the Human Body. 5th ed. Saunders College ofPublishing, Philadelphia.
5. Subramaniam, S.and Madhavan Kutty, K. (1971) The Text Book of Physiology. Orient Longman Ltd., Madras.
6. Vander, A. J., Sherman, J. H. and Luciano, D. S. (1994) Human Physiology the Mechanisms of Body Functions. 2nd ed. TMH Publishing Co., Ltd., Boston.
7. Waugh A and Grant A. (2012) Ross and Wilson Anatomy and Physiology in Healthand Illness. 11th ed. Churchill and Livingston, Elsevier
8. Wilson, K. J. W. (1987) Anatomy and Physiology in Health and IllnIllness. 6th ed. ELBS,Churchill Livingstone, London.

WEB LINKS AND E- RESOURCES

1.https://ncert.nic.in/textbook/pdf/kebo118.pdf
2.https://bio.libretexts.org/Bookshelves/Human_Biology/Book%3A_Human_Biology_(Wakim_and_Grewal)/16%3A_Respiratory_System/16.2%3A_Structure_and_Function_of_the_Respiratory_System
3.https://www.researchgate.net/publication/355475196_Anatomy_Physiology_of_the_Reproductive_System
4. https://my.clevelandclinic.org/health/articles/21201-endocrine-system
5.https://www.verywellhealth.com/cells-tissues-and-organs-1298169

METHODOLOGY OF TEACHING

Classroom Lecture, Video lectures, Experimental learning, Assignment

COURSE OUTCOMES

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define cell and explain its different function. Classify and explain the functions of tissue. Explain the factors affecting blood pressure.	K1, K2, K4
CO2	Identify and explain the functions of excretory system. Draw and label the structure and explain the functions of nervous system	K1, K2, K3, K4
CO3	Explain the mechanism of respiration	K2
CO4	Explain the process of digestion and absorption of nutrients List and explain the effect of hypo and hyper secretion of hormones involved in endocrine system	K1, K4,
CO5	Distinguish between male and female reproductive system Discuss the structure and function of sense organ	K2 , K4
K1–Knowledge,K2-Understand,K3-Apply,K4–Analyze, K5 – Evaluate, K6 – Create.		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	0	3	1	1
CO2	3	3	0	3	1	1
CO3	3	3	0	3	1	1
CO4	3	3	0	3	1	1
CO5	3	3	0	3	1	1
Total	15	15	0	15	5	5
Average	3	3	0	3	1	1

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)
Assign the value

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FOURTH SEMESTER				
Course Title		**INTERIOR DESIGN**		
Course Code		**22UDNDC1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC –VII	**CORE**	**4**	**4**	**25+75=100**

COURSE OBJECTIVES :

The objectives of the course are to enable students :

1. To understand principles of design and color schemes in interiors
2. To design interior design in spaces for homes, retails, hotels, offices
3. To build students work as an interior designer, interior decorator, visual merchandiser

UNIT I : PRINCIPLES OF DESIGN **10 Hrs**

Design – elements of design – line, shape, size, space, texture, pattern, colour and light, Principles of design – harmony, balance, rhythm, proportion, emphasis.

UNIT II : COLOR **10 Hrs**

Qualities of colour – Hue, value, and intensity, colour harmony, developing color schemes for different rooms. Prangs colour chart. Psychological colour chart aspect

UNIT III: FURNITURE AND FURNISHINGS **10 Hrs**

Selection and arrangement of furniture in different rooms. Different types of furnishing materials – factors considered in their selection. Floor coverings, curtains and draperies, window treatment.

UNIT IV: ACCESSORIES **10 Hrs**

Accessories – selection, Use and care of accessories, pictures, flower arrangement- Types, use and care- flower arrangement for different rooms. Indoor plants- use and care. Interior decoration trends in India

UNIT V: LIGHTING **6 Hrs**

Lighting – types of Lighting – Lighting needs for various activities in rooms

PRACTICALS **14 Hrs**

1. Analysis of design for their qualities
2. Arranging various areas using the different principles of design

3. Special area arrangement-Hotels, Restaurant, Auditoriums, Airports etc.
4. Harmonious combination of colour in different areas

BOOKS & REFERENCES

1. The making of interiors – An introduction- Allen Tate- Harper & Row Publishers, New York, 1987.
2. Interior Design & Decoration, Fourth Edition, Sherrill Whiton- Prentice Hall, 1974.
3. Interior lighting for Designers, Third edition – Gary Gordon &Jamco L. Nuckolls – John Wiley & Sons, New York, 1995.
4. The Encyclopaedia of Decorative Styles – William Hardy & Steve Adams – New Burlington books, London, 1988.

WEB LINKS AND E- RESOURCES

1.https://www.frankelbuildinggroup.com/resources/7-elements-of-interior-design/

2. https://design.tutsplus.com/articles/the-principles-of-design--cms-33962

3. coursesonline.iasri.res.in/mod/page/view.php?id=120926

4. https://study.com/academy/lesson/importance-of-furniture-in-interior-design.html

5. https://www.cityflowers.co.in/blogs/news/9-types-popular-classic-flower-arrangement-styles

6. https://blisslights.com/blogs/blisslights/types-of-indoor-lighting-you-should-know-about

METHODOLOGY OF TEACHING

Group discussion, Chalk and talk, G-suite, PPT, Assignment

COURSE OUTCOMES (CO)

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Relate and illustrate the principles of design and color in interior and exterior of home, office and hotels	K1, K2
CO2	Select and compare various designs to decide the right choice of furniture, window treatment for varied occasions and all spaces	K1, K3
CO3	Show, relate and explain wealth out of waste and indoor planting to save environment	K1, K2
CO4	Find, relate and apply energy saving light to illumine the are as	K1, K3
CO5	Analyse, classify and compare traditional and modern practices in every aspect to solve societal problems	K2, K3, K4

PROGRAMME SPECIFICOUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	2	3	2	3
CO2	3	1	3	3	2	3
CO3	3	-	3	2	3	3
CO4	3	-	1	2	3	3
CO5	3	1	3	3	3	3
Total	15	5	12	13	13	15
Average	3	1	2.4	2.6	2.6	3

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FOURTH SEMESTER				
Course Title		**PRACTICAL - NUTRITION**		
Course Code		**22UDNDC2**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CCP – VIII	**CORE**	**4**	**5**	**40+60=100**

COURSE OBJECTIVES :

The objectives of the course is enable students to

1. Learn qualitative analysis of nutrients
2. Understand quantitative analysis of nutrients

PRACTICAL

1. Qualitative tests- 15 hrs
   a. For sugars: Glucose, fructose, lactose, maltose and sucrose.
   b. For protein- albumin
   c. For minerals-iron, calcium, phosphorous and sulphur
2. Quantitative estimation of reducing sugar. 15 hrs
3. Quantitative estimation of vitamin C.-lime juice 15 hrs
4. Quantitative estimation of calcium. 10 hrs
5. Quantitative estimation of phosphorus. 10 hrs
6. Quantitative estimation of iron. 10 hrs

REFERENCES

1. ICMR. 1978. Laboratory techniques in Nutrition. Hyderabad, NIN.
2. Oser. B.L. 1965. Hawk's Physiological Chemistry. New Delhi,Tata McGraw Hill Publishing Co.
3. Pattabiraman. T.N. 1998. Laboratory Manual in Biochemistry. New Delhi, All IndPublishers and distributors.
4. Varley (1969) Practical clinical Biochemistry' William Heinemarn Medical
5. books-London Ltd., Inter Science books mc,New York

6. Talwar G P, SriVatsava L N and Moudgil KD (1989) Textbook of Biochemistry Human Biology Prentice Hall of India (P) Ltd, New Delhi

WEB LINKS AND E- RESOURCES

1. https://en.wikibooks.org/wiki/Fundamentals of Human Nutrition.
2. https://www.nutrition.gov/.
3. https://www.eatright.org/.

METHODOLOGY OF TEACHING

Class lectures, demonstration, experiment in Laboratory

COURSE OUTCOMES (CO)

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	To identify and test for the sugars present in the solution	K1, K4
CO2	To experiment with foods to find their protein content	K1, K3
CO3	To translate knowledge in matching nutrients present in the foods	K1, K2
K1–Knowledge,K2-Understand,K3-Apply,K4–Analyze		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	2	2
CO2	3	2	3	2	2	3
CO3	3	3	3	2	2	2
Total	9	8	9	7	6	7
Average	3	2.67	3	2.33	2	2.33

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FOURTH SEMESTER				
Course Title		**BIOCHEMISTRY**		
Course Code		**22UDNDA2**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
AC-V	**ALLIED**	**5**	**7**	**25+75=100**

COURSE OBJECTIVES

The main objectives of this course are to:

1) Understand the role of enzymes in metabolism and clinical conditions.
2) Interpret the significance of macronutrient metabolism and thereby understand the implications of disorders resulting from these.
3) Acquire skills in qualitative tests and quantitative estimation of nutrients.

UNIT I: INTRODUCTION TO BIOCHEMISTRY 20 hrs

Definition and relation to nutrition, Enzyme classification, Nomenclature, Factors affecting enzymatic activity, Mechanism of action. Co- enzyme and prosthetic group- role of B vitamins.

UNIT II: CARBOHYDRATES 20 hrs

Structure, general reactions of mono, di, tri and oligo saccharides, interconversion of sugars, metabolism of carbohydrate -glucose oxidation through glycolysis, Krebs-TCA cycle, pentose phosphate pathway, gluconeogenesis.Inborn errors of metabolism - Fructosuria and galactosemia.

UNIT III: AMINO ACIDS 25 hrs

Classification, chemical properties due to amino and carboxyl groups. Chromatographic separation. Proteins-primary, secondary, tertiary structure of proteins, Hydrolysis of proteins-Denaturation, precipitation, coagulation. Nutritional classification of proteins

General pathways of metabolism of amino acids-Deamination, transamination, decarboxylation – urea cycle, fate of carbon skeleton of amino acids.

Inborn errors of metabolism-Phenyl ketonuria, Alkaptonuria, Maple Syrup Urine Disorder

UNIT IV: LIPIDS AND LIPID METABOLISM 20 hrs

Classification of fats, oxidation of fatty acids, Bio synthesis of fatty acids, ketogenesis. Nutritional importance of saturated and unsaturated fatty acids, triacylglycerol, phospholipids and cholesterol.

UNIT V: NUCLEIC ACIDS **20 hrs**

Nucleic acids- Structure and Functions, Inter relationship between carbohydrate, fat and protein metabolism – Hormonal regulation of metabolism.

Clinical terminologies, normal values of common biochemical parameters and interpretations.

REFERENCE BOOKS

1. Conn, E.E. and Stumpf, P.K. (1981) Outlines of Biochemistry. 4th ed. Wiley Eastern Ltd., New Delhi.
2. Harvey, R. and Ferrier, D., Lippincott's Illustrated Reviews: Biochemistry, 6th edition, Lippincott Williams and Wilkins, Philadelphia.
3. Lehninger, A.L. (1993) Biochemistry. 3rd ed. CBS Publishers, New Delhi.
4. Murray, R.K., Granner, D.K. and Rodwell, V. W. (2006) Harper's Illustrated Biochemistry. 27th ed., The McGraw-Hill Companies, Inc., USA.
5. West, E.S., Todd, W.R., Mason, H.S. and Van Bruggen, J.T. (1970) Text book of Biochemistry. 4thed. The Macmillan Co., New York.
6. Shanmugham Ambika (1985) Fundamentals of bio-chemistry to medical students. NVA Bharat Printers, and traders 56, Peters Road, Madras-86.

WEB LINKS AND E- RESOURCES

1.https://en.wikipedia.org/wiki/Biochemistry
2https://www.sciencedirect.com/topics/biochemistry-genetics-and-molecular-biology/carbohydrate-metabolism
3.https://www.sciencedirect.com/topics/medicine-and-dentistry/protein-metabolism
4 . https://www.thoughtco.com/nucleic-acids-373552
5. https://www.medicalnewstoday.com/articles/319704

METHODOLOGY OF TEACHING

Lectures, Group Discussion, Assignments, Groups Activities

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Explain the process of carbohydrate, protein and lipids metabolism and make use of this knowledge to improve health	K2
CO2	Explain and correlate the role of enzymes in carbohydrate, protein and lipid metabolism.	K2
CO3	Compare and explain the explain hormonal regulation of carbohydrate, protein and lipids	K2, K4,
CO4	Demonstrate inter relationship between carbohydrate, fat and protein metabolism	K2,
C05	Examine the causes of inborn errors of metabolism and make use of this knowledge to create awareness among the society	K1, K2,
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO 4**	**PSO5**	**PSO6**
CO1	1	2	1	2	0	3
CO2	3	3	1	2	1	2
CO3	3	3	1	2	2	2
CO4	2	3	1	2	2	1
CO5	2	3	1	2	2	3
Total	11	14	5	10	7	11
Average	2.2	2.8	1	2	1.4	2

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2,K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**CLINICAL NUTRITION**		
Course Code		**22UENDC1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC=IX	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objectives of this course are:

1. To introduce basic patho-physiology of various disorders with specific signs & symptoms.
2. To equip with the fundamental concepts in basic blood profile and other diagnostic measures that are conducted to diagnose a disease.
3. To impart skills to have in-depth knowledge in the management of different disorders and disease conditions

UNIT I: DISEASES OF THE GASTRO-INTESTINAL TRACT 15 hrs

Review of digestion and absorption of proximate principles. Disease of the gastrointestinal tract - etiology, pathophysiology, metabolic changes, symptoms, diagnostic measures and common drugs used in the treatment of Esophagitis, gastritis, ulcers, diarrhea, constipation, ulcerative colitis, malabsorption Syndrome, irritable bowel syndrome, diverticular disease and inflammatory bowel syndrome.

UNIT II: DISEASES OF THE LIVER, GALL BLADDER AND PANCREAS 10 Hours

Functions of liver- Etiology, pathophysiology, metabolic changes, symptoms, diagnostic measures of Hepatitis, Cirrhosis, Hepatic Coma, alcoholic liver disease, cholecystitis, cholelithiasis, pancreatitis.

UNIT III: DISEASES OF THE RENAL SYSTEM 10 Hours

Review of the structure and functions of Kidney- Study of etiology, pathophysiology, symptoms, diagnostic measures of treatment of Nephritis, Nephrotic syndrome, renal failure, dialysis and Renal calculi.

UNIT IV: CARDIOVASCULAR SYSTEM 10 Hours

Study of etiology, pathophysiology, metabolic changes, symptoms, diagnostic measures of cardio-vascular diseases-Hypertension, atherosclerosis, myocardial infarction.

UNIT V : METABOLIC DISORDERS 15 Hours

Disorders of Metabolism -Study of etiology, pathophysiology, metabolic changes, symptoms, diagnostic measures of Diabetes Mellitus and Gout, insulin – types and action

TEXT BOOKS

1. Antia F.P. (2001). Clinical Dietetics and Nutrition, 4th Ed. Oxford University Press, Bombay.
2.Srilakshmi B. (2019). Dietetics, 8th Ed. New Age International Publishers, New Delhi.
3.Mahan K.L. and Raymond. (2017). Krause's Food and the Nutrition Care Process, 14 Ed, W.B. Saunders Company, Philadelphia, Sydney. ISBN: 9780323340755

REFERENCE BOOKS

1. Mahan K.L. and Raymond. (2017). Krause's Food and the Nutrition Care Process, 14 Ed, W.B. Saunders Company, Philadelphia, Sydney. ISBN: 9780323340755
2. Wayne B., (2006). Clinical Nutrition, 4th Ed., Thomson Wadsworth
Shils M., James. A. Olson and Mosha Shike. (1998). Modern Nutrition in Health and Diseases. 9th Ed, Vol I and II, Lea & Fibiger, A Waverly Company, Philadelphia.
3.Wardlaw Gordon M. and Margaret Kessel. (2002). Perspectives in Nutrition, 5th Ed., McGraw Hill, Boston, London, Sydney.
4. Michael J., Marinos E., Olle L and Dowsett J.(2005). Clinical Nutrition, Blackwell publishing, USA.

ONLINE RESOURCES

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7158198/
2. https://www.msdmanuals.com/home/kidney-and-urinary-tract-disorders/kidney-failure/chronic-kidney-disease
3. https://www.ahajournals.org/doi/10.1161/circulationaha.106.171016
4. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5933580/

METHODOLOGY OF TEACHING

Chalk and talk, Poster and pamphlet making, video lessons, assignments, case studies.

COURSE OUTCOMES:

On successful completion of the study, the students will be able to:

CO	Course Outcome	Knowledge Level
CO1	Outline and explain etiology and symptoms of various diseases	K1, K2
CO2	Examine the changes in physiology due to various diseases and spell out the various diagnostic measure	K1, K2
CO3	Explain drug nutrient interactions	K2
CO4	Examine the interaction between etiological factors and development of various disorder and create awareness about the same in the society	K2, K3
CO5	Explain metabolic disorders and list their causes so make use of this knowledge to create awareness to preventive metabolic disorders	K1, K2, K3

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	3	3
CO2	3	2	3	3	3	0
CO3	1	1	1	1	1	1
CO4	1	1	1	1	3	3
CO5	3	1	1	0	3	3
Total	11	8	9	8	13	10
Average	2.2	1.6	1.8	1.6	2.6	2

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**
Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	**Section**	**Marks**	**Description**	**Total Marks**
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2,K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**THERAPEUTIC DIETETICS**		
Course Code		**22UENDC2**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC=X	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learners will be able to

1. Provide comprehensive knowledge on principles and planning of therapeutic diets.
2. Acquire knowledge on nutritional needs of sick persons.
3. Develop capacity and aptitude for taking up dietetics as a profession.

UNIT: I CONCEPT OF DIET THERAPY AND DIETITIAN

a) Principle of therapeutic diets, modification of normal diet, and classification of therapeutic diets, and nutrition care process.

b) Different feeding techniques -enteral and parenteral feeding. –Indications, contraindications and complications,

c) Dietitian- Definition and code of ethics, classification of dieticians in nutritional care.

UNIT: II - DISEASE OF GASTRO INTESTINE TRACT 15hrs

Etiology, symptoms, dietary management of

a) Diarrhoea and constipation

b) Peptic ulcer, Irritable bowel syndrome & inflammatory bowel disease (ulcerative colitis), Crohn's disease and celiac disease.

UNIT: III DISEASES OF LIVER, GALL BLADDER & FEBRILE CONDITIONS 15hrs

Etiology, symptoms, dietary management of

a) Disease of liver & Gall bladder- Hepatitis, cirrhosis, gall stones

b) Febrile conditions - Acute & Chronic (Typhoid, influenza, malaria, tuberculosis, COVID)

.

UNIT: IV METABOLIC DISORDER 15hrs

Etiology, symptoms and dietary management of

a) Obesity and PCOS

b) Diabetes mellitus- types, symptoms and metabolic changes, treatment with diet and insulin, Glycemic index, Glycemic load, carb counting, artificial sweeteners and complications

c) Cardio vascular diseases – hypertension, atherosclerosis

UNIT: V DISEASES OF EXCRETORY SYSTEM AND CANCER 15hrs

Etiology, symptoms, dietary management of

a) Glomerular nephritis, nephrotic syndrome, urinary calculi, renal failure.

b) Cancer – Risk factors and Dietary management

RELATED EXPERIENCE

Internship in dietary unit of a Hospital

RECOMMENDED TEXTBOOKS

(i) Antia F. P. (2002), Clinical Dietetics and Nutrition, 4th edition, Oxford University Press,Chennai.

(ii) Srilakshmi B, Dietetics (2019),8th edition, New Age International Publishing Ltd, New Delhi

(iii)Sharma.A. (2017), Principles of Therapeutic Nutrition and Dietetics, CBS Publishers& Distributors Pvt Ltd, New Delhi.

(iv)Joshi.S.A.(2005), Nutrition and Dietetics, Tata Mc Graw-Hill Publishing Company Limited, New Delhi

(v) IDA.(2018), Clinical Dietetic Manual, 2nd edition, Elite Publishing House, New Delhi

(vi)Bajaj .M (2019) Diet Metrics: Hand Book of Food Exchanges, Notion Press,Chennai

REFERENCES

1. Passmore R. and Davidson S. (1986) Human nutrition and Dietetics. Liming stone publishers
2. Williams .S.R, (2000) Basic Nutrition and Diet Therapy, Mosby publication.
3. Garrow J.S, James W. P.T, (2000), Human Nutrition and Dietetics, 10th edition, Churchill Livingston, London.
4. Guthrie H. A, Picciano M. F (1995), Human Nutrition, Mosby, St. Louis Missorie.
5. Mohan K. L, Krause M.V (2002), Food , nutrition and Diet Therapy, W.B.Saunders Co,Philadelphia.
6. Robinson C.H., Lawler M.R, Cheweth W.L; and Gaswick A.E(1986), Normal and Therapeutic Nutrition ,17th edition, Macmilan Publishers, New York.

WEB LINK AND E- RESOURCES

a. https://www.cdss.ca.gov/agedblinddisabled/res/VPTC2/9%20Food%20Nutrition%20and%20Preparation/Types_of_Therapeutic_Diets.pdf
b. http://www.differencebetween.net/science/health/difference-between-enteral-and-parenteral-nutrition/
c. https://www.medicinenet.com/difference_between_diarrhea_and_dysentery/article.htm
d. https://my.clevelandclinic.org/health/diseases/15587-inflammatory-bowel-disease-overview
e. https://www.hdfclife.com/financial-tools-calculators/bmi-calculator
f. https://classroom.google.com/c/MTIxODQ3MDUyMzg1?cjc=u7jkvh6
g. https://quizizz.com/admin/quiz/5dc18c006374be001b7ff911
h. https://quizizz.com/admin/quiz/5f86377a80af1a001ccb3dc9
i. https://quizizz.com/admin/quiz/56f29b919fb8db76248467b3

METHODOLOGY OF TEACHING

Class lectures, Google classroom, Assignments, E Quiz, YouTube, Case studies, Hospital based learning

COURSE OUTCOME

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Summarize the concepts and principles of diet therapy and the role of a dietitian.	K1, K2
CO2	Apply the principles of dietetics to plan therapeutic diets for gastrointestinal disorders.	K2
CO3	Classify the diseases of liver and febrile conditions based on causes and symptoms and plan diet therapy.	K2
CO4	Assess the grades of obesity, and Describe the symptoms, diagnostic tests and complications for dietary management of diabetes mellitus, cardiovascular diseases and hypertension using diet planning tools	K2, K3
CO5	Gained knowledge and apply the principles of dietetics to plan diseases of excretory system & cancer	K1, K3, K4
K1-Knowledge, K2-Understand, K3 -Apply, K4 Analyse		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	2	2	2	2
CO2	3	3	2	2	1	0
CO3	3	3	2	2	1	0
CO4	3	3	2	2	1	0
CO5	3	3	2	2	1	0
Total	**15**	**15**	**10**	**10**	**6**	**2**
Average	**3**	**3**	**2**	**2**	**1.2**	**0.4**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**
Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K4, K5	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**QUANTITY FOOD PRODUCION AND SERVICE**		
Course Code		**22UENDC3**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC=XI	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learners will be able to:

a. Plan and select raw materials, use of appropriate equipment for various cooking methods
b. Use terminology appropriate to the culinary Industry.
c. Explain the benefits and uses of various culinary equipment's and basic preparations.
d. Store and use foods in the correct way to yield to ensure it meets high standards of the culinary industry

UNIT I: FOOD SERVICE FACILITIES AND EQUIPMENT 15hrs

a) Designing food facilities - Systematic layout planning, basic units in plan design - work centers, section and layout, flow of work.

b) Types of Kitchens – U shaped, L shaped, rectangular, square shaped and straight line.

c) Classification - According to weight / size, order of use and mode of operation. Factors influencing selection of equipment,

UNIT II: FOOD PURCHASE AND STORAGE 15hrs

a) Food Purchase- Method**s** of buyin**g** and factors involved in the selection of food.

b) Storage- General guidelines for storage, types, factors involved in planning and records used.

UNIT III: QUANTITY FOOD PRODUCTION 15hrs

a) Menu planning - Advantages and factors affecting menu planning.

b) Types of menu - French classical menu, A la Carte and Table d' hote menu - advantages and disadvantages

c) Quantity cookery – Standardization, Portion control, Stepping up of recipes

UNIT IV: **STYLES OF SERVICE AND TABLE SETTING 10hrs**

a) Types of Service- English, French, American, Silver, Russian, Grill room, Cafeteria, Gueridon and Flambé

b) Styles of Service –Waiter service - banquet, restaurant and room service. Self-service, Buffet cafeteria and vending.

c)Table Setting - Mise-en-scene, Mise-en-place, Basic rules for laying a table, Cover – definition, A la Carte cover and Table d' hote cover; Duties of a waiter- before guests arrive, when guests arrive, during the meal and after guests leave, rules for waiting at table.

UNIT V: SANITATION AND SAFETY 10hrs

a) Sanitation- Maintaining a clean environment - Structural features - Drainage, water supply, electricity, lighting, ventilation- waste disposal and pest control.

b) Hygiene- Hygiene in food handling - Receiving, storage and production, personnel hygiene, Implementation of HACCP in food service.

PRACTICALS 10 hrs

1. Standardization of selected recipes
2. Stepping up of standardized recipes to 10 servings
3. Demonstration of napkin folds

RECOMMENDED TEXTBOOKS:

1. Sethi.M and Malhan .S (2006), Catering Management – an integrated approach, 2nd edition, Wiley Eastern Limited, New Delhi,
2. Sethi.S and Mohini..S (2005). Institutional Food Management, New Age International Publishers, New Delhi.
3. Singaravelavan, R. (2013). Food and beverage service., Oxford University Press, New Delhi
4. Suganthi, V and Premakumari, C. (2017). Food Service Management, Dipti Press (OPC) Pvt. Ltd, Chennai.

REFERENCES:

1. Bansal,T (2014)Hotel planning, Oxford university press, New Delhi
2. Cousins,J, Lillicrap.D and Weekes. S., (2014), Food and Beverage Service , Hodder Education Service , London
3. Dhawan.V. (2001). Food and Beverage Service, Frank Boss and Co, New Delhi.
4. Gupta C.B. (2017),Management Theory and Practice Sultan chand & sons, New Delhi
5. Kinton.R and Ceserani,V. (1992).The Theory of Catering . ELBS Publishers.
6. Knight J B & Kotschevar LH, (2000) Quantity Food Production Planning & Management 3rd edition John Wiley &Sons..
7. Mahmood A. Khan. (1991). Concepts of Food service Operations and Management, Van Nostrand Reinhold , New York
8. Negi.J (2013) Food and Beverage Service Operation, S. Chand & Company Pvt Ltd, New Delhi
9. Philip T.E, (2010).Modern Cookery for Teaching Trade Volume -1, 6 th Revised Edition, Orient Black Swan, New Delhi
10. Ramaswamy.T (2014). Principles of Management, Himalaya Publication, Mumbai.
11. Verghese .B. (2000). Professional Food and Beverage Service Management, Macmillan India Ltd., Chennai
12. West,B.B.and Wood, L. (1997) Food Service in Institutions, Prentice-Hall, New Jersey.

WEB LINK AND E- RESOURCES:

1. https://www.universalclass.com/.../types-of-service-and-table-settings-in-waiter
2. https://bngkolkata.com/kitchen-layout/
3. https://www.yourarticlelibrary.com/home-science/kitchen/designing-the-layout-of-a-kitchen-with-diagram/86406
4. https://setupmyhotel.com/train-my-hotel-staff/f-and-b/387-french-menu-with-examples.html
5. https://pediaa.com/difference-between-a-la-carte-and-table-d-hote/#:~:text=Table%20d%20hote-,Definition,offered%20for%20a%20set%20price.
6. http://tnschools.gov.in/media/textbooks/11_Food_Service_Mngmnt_Theo__Prac__EM.pdf
7. https://ecepl.com/all/food-waste-management/
8. https://www.ag.ndsu.edu/foodlaw/overview/introhaccp
9. https://quizizz.com/admin/quiz/5cdaab499c4a7b001ac631a4/table-setting-manners
10. https://quizizz.com/admin/presentation/60eaca8fd8dee1001bfbc0cd
11. https://quizizz.com/admin/quiz/5f4853d8dcd35d001b14e8b3
12. https://www.youtube.com/watch?v=6XUfzRVfauk

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, E Quiz, YouTube, Field-based learning

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Recall about designing a food service facility and summarize different types of kitchen	K1, K2
CO2	Classify and categorize different types of catering equipment, Identify various methods of buying food and factors influencing their purchase	K2, K3, K4
CO3	Summarize about types of menu planning and practically experiment with standardization various techniques, portion control, stepping up of recipes	K2, K3, K5
CO4	Spell out and categorize various styles of service and table setting	K2, K4
C05	Illustrate and infer about sanitation and personnel hygiene	K2, K4
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	0	1	0	0
CO2	3	3	1	1	0	0
CO3	3	3	3	3	1	1
CO4	3	3	3	3	1	0
CO5	3	3	3	2	2	2
Total	**15**	**15**	**10**	**10**	**4**	**3**
Avera	**3**	**3**	**2**	**2**	**0.8**	**0.6**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**
Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	**Section**	**Marks**	**Description**	**Total Marks**
K1, K2	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K3, K4, K5	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**SPORTS NUTRITION**		
Course Code		**22UENDC4**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC=XII	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learners will be able to

1. Plan diets for athletes involved in aerobic and anaerobic sports.
2. Understand the benefits of physical activity on different systems in the body.

UNIT I: PHYSICAL ACTIVITY **15 hrs**

Définition – Physical activity, Exercise, Fitness, Physical activity pyramid. Benefits of physical activity. Types of exercise – Aerobic, Anaerobic, Stamina building, Resistance training, Flexibility and Endurance. Effect of exercise on muscles and cardiopulmonary system.

UNIT II: CARBOHYDRATE, PROTEIN AND FAT **15 hrs**

Carbohydrate, Protein and Fat as a source of fuel before, during and after competition and glycogen loading.

UNIT III: VITAMINS, MINERALS AND ENERGY SYSTEM **15 hrs**

Effect of exercise on vitamin and mineral requirements, Female athlete triad. Creatine, Phosphate energy system, Anaerobic and Aerobic Pathway, Factors affecting choice of fuel for excercise

UNIT IV: WATER AND ERGOGENIC AIDS **15 hrs**

Role of water in pre, during and post event meal. Dehydration – causes and effects. Nutritional Ergogenic aids- Energy bar, sports drink, carbohydrate gel, protein supplements and World anti-doping agency.

UNIT V: PLANNING DIETS FOR ATHLETES **15 hrs**

Pre event meal, planning diet for strength and endurance, post event meal, planning diet for special athletic population- Child, diabetes mellitus, vegetarian, aged, disabled and travelling athletes.

PRACTICALS **15 hrs**

1. Preparation of pre-event meal and nutritious health bar
2. Plan diet for athletes in various sports

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1. Fink H.H., Burgoon L.A., Mikesky A.E. Practical applications in Sports Nutrition. Jones and Bartlett Publishers. Sudbery, Massachusetts.
2. Mahan K and Sylvia E. Stump (2000) Krause's Food Nutrition and Diet Therapy, Saunders, USA.
3. McArdle .W.D., Frank. I. Katch, Victor L Katch (2005) Sports and Exercise Nutrition. Lippincott, Williams and Wilkins, Philadelphia
4. Whitney E.R. and Rolfes S.R. (1996) Understanding Nutrition. 7th Ed., West Publishing Company, USA
5. Asker E, Jeukendrup and Michael Gleeson (2004) Sports Nutrition: An introduction to energy production and performance Human Kinetics Ltd., U.S.A
6. Bean A (2000) The complex guide to sports nutrition A&C Black Publishers, London
7. Benardot (2006) Advanced Sports Nutrition, Human Kinetics Ltd., U.S.A.
8. Brouns F and Cargill C (2002) Essentials of sports nutrition John Wiley & Sons Ltd., England
9. Clark N (2003) Sports Nutrition Guidebook, Human Kinetics, U.S.A.
10. Dunford M and Doyle AJ, Nutrition for Sport and Exercise, Thomson Wadsworth, Australia.

WEB LINK AND RESOURCES

1.https://www.gssiweb.org/gssiu_content/pdf/FINAL%20Carbohydrate%20Intake%20Recommendations%20for%20Athletes_6.3.21.pdf
2.https://boxing.nv.gov/uploadedFiles/boxingnvgov/content/HotTopics/Nutrition_for_Athletes.pdf
3.https://www.ernaehrungs-umschau.de/fileadmin/Ernaehrungs-Umschau/pdfs/pdf_2019/11_19/EU11_2019_DGE_engl.pdf
4. https://www.unm.edu/~rrobergs/426ErgogenicAids.pdf
5 https://www.sport-fitness-advisor.com/energysystems.html

METHODOLOGY OF TEACHING

Class lecture, video presentations, assignments, group discussion, visit to stadium

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define, translate and construct diet plans for athletes	K1, K2, K3
CO2	Outline the benefits of exercise to maintain health	K2
CO3	List and explain the role of nutrients with reference to adequate intake for sports persons	K2, K3
CO4	Relate and explain the role of water to prevent hydration in athletes	K1, K2
CO5	Explain energy system with special reference to aerobic and anaerobic pathways	K2, K4

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	1	1	1
CO2	3	3	3	3	1	1
CO3	3	3	2	1	1	2
CO4	3	2	2	1	1	2
CO5	3	3	2	1	1	2
Total	15	14	12	7	5	8
Average	3	2.8	2.4	1.4	1	1.6

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**
Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	**Section**	**Marks**	**Description**	**Total Marks**
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**TEXTILE SCIENCE**		
Course Code		**22UENDE1A**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC-I	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objective of the course is to enable him to:

1. Understand the properties of textile fibre, yarn and fabric
2. Apply knowledge about different types of fabric and structure
3. To create a career related skill with all the technique learned

UNIT I: TEXTILES FIBRES

Classification, general properties, use and care of the following fibres

1. Cellulose fibres – Cotton and

2. Protein fibres – Wool and Silk.

3. Thermoplastic fibres - Nylon and polyester

UNIT II: YARN CONSTRUCTION

a) Yarn spinning – Mechanical and chemical, conventional and non- conventional, wet, dry and melt spinning.

b) Yarns- Classification based on numbering and twisting.

c) Types of yarns- Simple, Complex yarns

UNIT III: FABRIC CONSTRUCTION

1. Weaving- Parts of simple loon and weaving steps.

2. Types of weaves- Basic weaves - plain (basket and rib), twill (left and right hand twill) and satin and sateen weave

UNIT IV: FABRIC FINISHING

1. Basic finishes- Bleaching, tentering, singeing, sizing, mercerizing

2. Special finishes- Calendaring, napping, flocking, water repellency, sanforising, wrinkle resistance and fire retardant.

UNIT V: SURFACE DESIGNING

(i) Dyes- Classification and different methods of dyeing. Difference between dyeing and printing

(ii) Methods of printing- Hand printing- Block, Stencil, batik, tie and dye
Machine printing- Roller printing, screen printing

REFERENCES

1. Corbman B.P., 1987, Textiles- Fibre to Fabric. New York, Mc Graw Hill Book Co.
2. Dorothyseigeithyle., 1976, Modern Textiles. New York, London, John Wiley and sons lnc.
3. Hollen. N and Saddler. J., 1977. Textiles. New York, Mac Millan.
4. Mathews. M. 1974. Practical clothing construction- Part I and II. Thompson and Co Ltd.
5. Tortora P.C. 1976, Understanding Textiles, Mac Millan, London.
6. Vidyasagar. P.V. 1998. Hand Book of Textiles. New Delhi, Mittal Publications,
7. Wingate. I. 1976. Textile Fibres and their selection. Prentice Hall.

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1. Bernard, B. Corbman. (2002). Fibre to Fabric, Mc Graw Hill Company Inc, Singapore.
2. Dantyagi., S. (2004). Fundamentals of Textiles and their Care, V Edition, Orient Longman, India.

WEB RESOURCES

1. https://sewguide.com/textile-fibers/
2. https://en.wikipedia.org/wiki/Weaving
3. https://textilefashionstudy.com/dyeing-printing-differences-between-dyeing-and-printing/
4. https://www.fibre2fashion.com/industry-article/8315/characteristics-and-use-of-man-made-fibres

5 https://en.wikipedia.org/wiki/Textile_manufacturing

METHODOLOGY OF TEACHING

Class lecture, use of projectors, assignment, activities

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Identify and choose the natural and manmade fibers and it's use in day to day life	K1 & K3
CO2	Explain the weaving process and basic weave pattern	K2
CO3	Classify the different methods of spinning	K2
CO4	List and compare basic and special finishes and make use of the on fabrics	K1, K2, K3 K4
CO5	Compare, classify dyes and makes use of this knowledge in fabric printing on clothes with regard to natural and man made	K1, K3, K4
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	2	3	3	3
CO2	3	1	2	3	2	3
CO3	2	0	2	1	2	2
CO4	3	0	1	2	0	1
CO5	3	1	3	3	3	3
Total	**14**	**5**	**10**	**12**	**10**	**12**
Average	**2.8**	**1**	**2**	**2.4**	**2**	**2.4**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**CONSUMER EDUCATION**		
Course Code		**22UENDE1B**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC-I	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learners will be able to

1. Understand the basic rights and responsibilities of consumers
2. Analyse the problems faced by consumer,
3. Develop good buymanship skills in the selection of goods in the market.
4. Aware of the consumer protection laws.

UNIT I: CONSUMERISM AND CONSUMER

a) Consumerism -Definition, concept of consumerism - consumer, producer and market

b) Consumer -Rights and responsibilities of consumer.

UNIT II MARKETS AND CONSUMER BEHAVIOUR

a) Markets: Definition, Types of markets, marketing functions, Channel of Distribution e-marketing.

b) Consumer behaviour- factors influencing consumer behaviour, Consumer decision making, buymanship skills

UNIT III: CONSUMER PROBLEMS

a)Consumer Problems- definition and problem of Consumers, frauds, faulty weights and measures, adulteration and other malpractices – causes and consequences

b) Malpractices- Incorrect weights and measures, food adulteration, misleading advertisement. misbranding, mislabelling, deceptive packing, black marketing and hoarding

UNIT IV: AIDS TO CONSUMERS

a) Brands and Labels- Different brands, importance of branding and labelling.

b) Advertisement Packing- Importance of advertisement and packaging

UNIT V: CONSUMER EDUCATION, GUIDANCE AND LAW

a) Consumer Education- Objectives of consumer education – Consumer rights and responsibilities

b) Consumer Guidance societies- CGSI (Consumer Guidance Society of India), IOCU (International Organisation of Consumer Union)

c) Consumer Laws- Standardization, BIS, Agmark COPRA, Drugs and Cosmetics Act, Essential Commodities Act, MRP Act.

RELATED EXPERIENCE

1. Market survey to analyze various brands of products
2. Simple tests to detect adulteration in common foods.

TEXTBOOKS

a. Kumar, N., (1999), Consumer Protection in India, Himalaya Publishing House. New Delhi.
b. Perumal, R., (1994), Consumer Co.operatives in India - Problems and prospects, Kanishka Publishers and Distributors. New Delhi.
c. Sethi, M and Seetharaman P (2011). Consumerism Strategies and Tactics, CBS Publishers and distributors , New Delhi.
d. Himahcalam.D.(2009), Consumer Protection in India, Associated Publishers Co, Agra

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a. Khetarpaul N., and Grover(2009), I.A Consumer Guide for Home Makers, Agrotech Publishing, Udapur,
b. Shaw. I. C. (2018), Food Safety: The Science of keeping Food Safe, 2nd edition, Wiley-Blackwell.
c. Miller, R.L and Stafford A.V., (2001), Economic Issue for consumer, Belmont wood worth publishers, California
d. Sherlekar, S.A., (1984), Trade Practices and Consumerism, Himalaya Publishing House, Bombay.
e. Sethna, Z., & Blythe, J. (2019). Consumer Behaviour, 4th edition, Sage Publications Ltd.
f. Solomon, M. (2016), Consumer Behaviour: Buying, Having and Being, 12th edition, Pearson.
g. Wells. V, Foxall. G. R., (2012), Handbook of Developments in Consumer Behaviour, Edward Elgar Publishing.

ONLINE WEB RESOURCES

1. http://www.consumer.ftc.gov
2. http://www.ppup.ac.in/download/econtent/pdf/bbm%202Consumerism.pdf
3. https://www.toppr.com/guides/business-economics/meaning-and-types-of-markets/types-of-market-structures/
4. https://youtu.be/d4GElahe7R8
5. https://quizizz.com/admin/quiz/5edced8df003d6001d9383aa
6. https://quizizz.com/admin/quiz/5ae050aeaa0861001e865ea9
7. https://quizizz.com/admin/presentation/5fc0835184719e001c65b03d

METHODOLOGY OF TEACHING

Class lecture, use of projectors, assignment, activities

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Explain consumerism and list consumer rights and responsibilities	K1, K2
CO2	Classify types of market, understand consumer behaviour and effectively apply various types of buymanship skills	K2,K3
CO3	Analyse , categorize problems faced as consumers and deal with unfair trade practices	K2, K3,
CO4	Outline and examine various aids used by consumer	K2, K4
CO5	Examine about various consumer protection forums and apply laws to protect their rights	K2, K3
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	2	0	2	0	0
CO2	3	2	0	2	0	0
CO3	3	2	0	2	1	0
CO4	3	2	0	3	1	0
CO5	3	2	0	2	0	1
Total	**15**	**10**	**0**	**11**	**2**	**1**
Average	**3**	**2**	**0**	**2.2**	**0.4**	**0.2**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 ,	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3.	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIFTH SEMESTER				
Course Title		**EXTENSION EDUCATION**		
Course Code		**22UENDE1C**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC-I	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objectives of the course to enable surdents to **:**

1. To understand basic concept of extension
2. To translate knowledge into practice

UNIT I: INTRODUCTION TO EXTENSION EDUCATION 15 Hrs

Concept of Extension Education: Meaning, objectives and principles of Extension Education and Home Science Extension Education; Role of home science in developing a community. Role of Home Science in National Development.

UNIT II : COMMUNITY DEVELOPMENT 15 HRS

Community Development and Panchayat Raj: Meaning, Principles, Objectives, Scope and Philosophy of community development in India.

UNIT III : EXTENSION SERVICES 15 hrs

Community participation: meaning, importance, factors influencing community participation, recent extension approaches: participatory rural appraisal (PRA), action plays, child-to-child approach, woman-to-woman approach, rapid rural appraisal (RRA).

UNIT IV: COMMUNICATION METHODS 15 hrs

Communication - concept, forms of communication- verbal and non verbal - meaning and significance, communication aids : audio visual aids in extension work – conventional aid - motion pictures, slides, flash cards, graphs, puppet shows and mass media.

UNIT V : EXTENSION PROGRAMMES 15 hrs

Program planning - Meaning and importance, Principles of programme planning, steps involved in programme planning. Evaluation: Meaning and types of evaluation.

REFERENCES

1. Addivi Reddy. (1987). Extension Education. Sree lakshmi press, Andrapradesh.

2. Bhattacharya, S.A. (1970). Community Development - An analysis of the Programme in India', Academic Publishers, Calcutta,.
3. Bhattacharya, S.N. (1983). Rural Development in India and other Developing Countries', New Delhi : Metropolitan Publishers.
4. Dahama O.P. and Bhat Nagar.O.P. (1985). Extension and Communication for Development, New Delhi : Oxford and IBH Publishing Company.
5. Desai, A.R, (1994). Rural Sociology in India. Popular Prakasham publishers.
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8. Patnayak Rama, (1990). Rural Development in India, New Delhi : Vikas Publishing House Pvt. Ltd.,
9. Ray G.L. (1991). Extension Communication and Management, Calcutta :
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11. Sharma, S.K and Malhotra, S.L. (1977). Integrated Rural Development, Abhinar Publications, New Delhi.
12. Shelat, K.N. (1988). Evalution of Rural Development, Kathan Education Communication Unit, Manekbarag.
13. Supe, S.V., (1994): An Introduction to Extension Education, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.

WEB RESOURCES

- http://ecoursesonline.iasri.res.in/course/view.php?id=243
- https://www.slideshare.net/mirakdesai/communication-in-home-science-extension-education
- https://vdocument.in/communication-in-home-science-extension-education.html

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, Field-based learning.

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define extension education and explain the role of Home Science in community development	K1, K2
CO2	Outline the community development programs in India	K2
CO3	Explain community participation, construct methods to solve the problems of rural areas	K2, K3
CO4	List and explain the varied communication methods to reach target population	K1, K2
CO5	Plan and theme t community programs to uplift the rural area	K3, K4
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 – Analyzing		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	0	0	3	3
CO2	2	0	2	3	0	2
CO3	0	0	0	3	0	3
CO4	3	2	0	0	1	3
CO5	3	3	0	3	3	3
Total	**11**	**8**	**2**	**9**	**7**	**14**
Average	**2.2**	**1.6**	**0.4**	**1.8**	**1.4**	**2.8**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**FOOD SERVICE MANAGEMENT**		
Course Code		**22UFNDC1**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC=XIII	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learners will be able to

1. Understand the basic principles of management in food services units.
2. Develop managerial skills among the students.
3. Understand the concept and principles of management.

UNIT I: FOOD SERVICE INDUSTRY **15hrs**

a) Food Service Industry- Definition, History of hotel industry, Types of catering- Commercial (Transport catering, Hotels, Restaurants, Outdoor catering) and Non-commercial / Welfare (Hospital, Institutional - School / College, Orphanage / Old age homes, etc., Industrial catering.). Transport catering– Air, Rail, Sea and Space, Miscellaneous -contract and outdoor.

b) Food Service systems - conventional, commissary, ready–prepared, assembly-.

UNIT II: ORGANISATION AND MANAGEMENT **15hrs**

a) Management -Principle and functions of management, tools of management,

b)Communication –types and barriers,

c) Leadership- qualities, importance and styles of leadership.

UNIT III: PERSONNEL MANAGEMENT **15hrs**

a) Recruitment - Sources of recruitment. Steps involved in selection.

b) Training – Importance and methods of training.

c) Appraisal - Promotion and dismissal of employees.

UNIT IV: FINANCIAL MANAGEMENT **15hrs**

a) Costing- Elements of cost, cost control, pricing and Break even analysis.

b) Book keeping -Principles of double entry, books of account- Journal, trial balance, profit and loss account balance sheet.

UNIT V: LAWS GOVERNING FOOD SERVICE ESTABLISHMENTS **15hrs**

a) Labour laws– industrial dispute act, factories Act, minimum wages act, shops and establishments act.

b) Food laws – sale of goods act, agricultural produce act, prevention of food adulteration act

TEXTBOOKS

- Sethi.M and Malhan .S 2006, Catering Management – an integrated approach, 2nd edition, Wiley Eastern Limited, New Delhi,
- Sethi.S and Mohini..S 2005. Institutional Food Management, New Age International Publishers, New Delhi.
- Singaravelavan, R. (2013). Food and beverage service., Oxford University Press, New Delhi
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2. Cousins,J, Lillicrap.D and Weekes. S., 2014, Food and Beverage Service , Hodder Education Service , London
3. Dhawan.V. (2001). Food and Beverage Service, Frank Boss and Co, New Delhi.
4. Gupta C.B. 2017,Management Theory and Practice Sultan chand & sons, New Delhi
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6. Mahmood A. Khan. 1991. Concepts of Food service Operations and Management, Van Nostrand Reinhold , New York
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8. Verghese .B. 2000. Professional Food and Beverage Service Management, Macmillan India Ltd., Chennai
9. West,B.B. and Wood, L. 1997. Food Service in Institutions, Prentice-Hall, New Jersey.

WEB LINK AND E- RESOURCES

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2. https://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1044&context=jhfm
3. https://www.egyankosh.ac.in/bitstream/123456789/33522/1/Unit-12.pdf
4. https://hmhub.in/characteristics-of-rail-airline-flight-kitchens-and-sea-catering/
5. https://www.corpseed.com/knowledge-centre/food-laws-and-regulations-in-india
6. https://quizizz.com/admin/quiz/5fb632fe43291f001bfe11fe
7. https://quizizz.com/admin/quiz/5e20679d00d14f001ce59baf
8. https://quizizz.com/admin/quiz/615c1585fe26f90022111d53
9. https://quizizz.com/admin/quiz/5eed9ebe7a2759001fcb0ba0
10. https://youtu.be/2Lkb7OSRdGE
11. https://youtu.be/EibibVFEkvk
12. https://docs.google.com/presentation/d/1ld9E9nrBZg2fuOq0dfZu6Gx-_urzRVHHXRJa1etzcfM/edit?usp=sharing
13. https://docs.google.com/presentation/d/1PCgXb20HXTfNzCcllaIHeDteiu1WO5RV/edit?usp=sharing&ouid=116902395789662479038&rtpof=true&sd=true

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, E Quiz, YouTube, Field-based learning

COURSE OUTCOME

CO	Course Outcome	Knowledge Level
CO1	Recall and summarize different types of food service and food service systems	K1, K2
CO2	Explain concept of management and apply various types of communication and leadership	K2,K3
CO3	Spell out and categorize various stages of personnel management	K2, K3,
CO4	Outline and examine management and the role of finance management in food service industry	K2, K4
CO5	Illustrate and infer about various labour and food laws	K2, K4
K1-Remembering/Knowledge, K2-Understand, K3,Apply, K4- Analyze		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	2	0	2	0	0
CO2	3	2	0	2	0	0
CO3	3	2	0	2	2	0
CO4	3	2	3	2	2	0
CO5	3	2	0	2	0	2
Total	**15**	**10**	**3**	**10**	**4**	**2**
Average	**3**	**2**	**0.6**	**2**	**0.8**	**0.4**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	**Section**	**Marks**	**Description**	**Total Marks**
K1, K2	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1,K2, K3	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2,K3, K4	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**COMMUNITY NUTRITION**		
Course Code		**22UFNDC2**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CC=XIV	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objective of the course is to:

1. Gain knowledge about nutritional policies, programs and agencies involved in combating malnutrition.
2. Organizing Nutrition education programs for the community

UNIT I: CONCEPT, SCOPE OF COMMUNITY NUTRITION AND NUTRITIONAL PROBLEMS 15 hrs

Concept and scope of Community nutrition – Definition, concept, scope and multidisciplinary nature of public nutrition.

Nutritional problems affecting the community- Etiology, prevalence, clinical features and preventive strategies for malnutrition related problem and deficiency disorders- Protein energy malnutrition, Obesity, Nutritional anemia, Vitamin A deficiency, Iodine deficiency disorders, Fluorosis. Millennium Development Goals

UNIT II: ASSESSMENT OF NUTRITIONAL STATUS 15 hrs

Assessment of nutritional status-Objectives and importance. Methods of assessment: Direct (Clinical signs and symptoms of nutritional problems.nutritional anthropometry, biochemical tests, and biophysical tests); Indirect -Diet surveys, vital statistics– definition and uses, common vital statistics - mortality rate and morbidity rate.

UNIT III: NUTRITION INTERVENTION 15 hrs

Nutrition education- Objectives, principles and scope of nutrition and health education and promotion. Fortification, enrichment and nutrient supplementation

UNIT IV: NUTRITION POLICY AND PROGRAMS 15 hrs

Nutrition policy and programs-National nutritional policy**,** integrated child development scheme (ICDS), midday meal program, national programs for the prevention of anemia, vitamin a deficiency, iodine deficiency disorders.

UNIT V: NATIONAL AND INTERNATIONAL AGENCIES 15 hrs

International-WHO, FAO, UNICEF. National- FSSAI, ICAR, ICMR, NIN, FNB, CFTRI, NNMB, BGOG, Eat right movement, RUCO

PRACTICALS

1. Planning of low-cost nutritious recipes for infants, preschoolers, pregnant/ lactating mothers for nutrition education.
2. Assessment of nutritional status
1. Anthropometry: Weight and height measurements
2. Plotting and interpretation of growth charts for children below 5 years
3. Identification of clinical signs of common nutritional disorders
4. Dietary assessment: FFQ and 24 hours recall
3. Visit to an ongoing nutrition and health promotion program

REFERENCES

1. Wadhwa A and Sharma S (2003). Nutrition in the Community- A textbook. Elite Publishing House Pvt. Ltd. New Delhi.
2. Park K (2011). Park's Textbook of Preventive and Social Medicine, 21st Edition. M/s Banarasidas Bhanot Publishers, Jabalpur, India.
3. Jellife DB, Jellife ERP, Zerfas A and Neumann CG (1989). Community nutritional assessment with special reference to less technically developed countries. Oxford University Press. Oxford.
4. WHO (2006). Child Growth Standards: Methods and development: height-for-age, weight-for-age, weight-for-length, weight-for-height and body mass index-for-age (http://www.who.int/childgrowth/standards/en/).
5. Srilakshmi. (2006). Nutriton Science, New Age International (P) Ltd. Publishers, New Delhi.

WEB RESOURCES

1.https://www.sciencedirect.com/topics/food-science/nutrition-assessment

2. https://www.unicef.org/rosa/stories/10-proven-nutrition-interventions

3.https://www.researchgate.net/publication/333866257_National_Nutrition_Programmes_in_India

4 https://www.godigit.com/health-insurance/nutrition/nutritional-problems-in-india

METHODOLOGY OF TEACHING

Classroom Lecture, Video lectures, Class Discussion, Hands on activities, Assignment, Case Presentation

COURSE OUTCOMES

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define concept and scope of community nutrition in the society.	K1, K3
CO2	Assess the nutritional status among the community. Explain the importance of nutrients to prevent various nutritional deficiency disorders in community.	K1, K2, K4, K5
CO3	Classify and explain the role of national and international agencies in combating malnutrition	K2, K4
CO4	Conduct a survey on undernutrition and overnutrition among the students.	K4, K6
CO5	Interpret and discuss how effectively community nutrition programmes can help the public to combat malnutrition.	K2, K1, K6
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 – Evaluating, K6- Creating.		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	1	3	1	3
CO2	3	3	1	3	1	3
CO3	3	3	1	3	1	3
CO4	3	3	1	3	1	3
CO5	3	3	1	3	1	3
Total	**15**	**15**	**5**	**15**	**5**	**15**
Average	**3**	**3**	**1**	**3**	**1**	**3**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**PRACTICAL – THERAPEUTIC DIETETICS**		
Course Code		**22UFNDC3**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CCP-XV	**CORE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The objectives of the course is to enable students to:

1. Gain knowledge and develop skills and techniques in planning and preparation of therapeutic diets.
2. Understanding the medical history of the patients and nutritional assessment – anthropometric measurements
3. Apply dietetics principles in preparation of food for patients.
4. Planning, preparation and service of diets based on nutrition focused physical assessment and computation of nutritive value

PRACTICALS **60hrs**

Planning, Calculation of nutrient content, Preparation and Service of diets for

1. Fevers – Typhoid and Tuberculosis
2. Peptic Ulcer
3. Diarrhoea and constipation
4. Viral hepatitis
5. Cirrhosis of liver
6. Obesity
7. Diabetes Mellitus
8. Hypertension
9. Atherosclerosis
10. Glomerular nephritis and nephrotic syndrome

REFERENCES

1. Antia, F.B. (2010), Clinical Nutrition and Dietetics, Oxford University Press, London.
2. Davidson, S and Passmore, R., (1977), Human Nutrition and Dietetics, ELBS, London.
3. Joshi .S. (2002), Nutrition and Dietetics, Tata McGraw Hill Publishing Co., New Delhi.
4. Sri Lakshmi. B., 2011 Dietetics, New Age International Pub. Co, Chennai.

5. Williams. S.R., (1986), Essentials of Nutrition and Diet Therapy. Toronto, Times Mirror/ Mosby college Publishing.
6. Vimala.V,(2009) Advances in Diet Therapy Practical Manual, New Age International Pub co, New Delhi
7. Kathleen M &, Sylvia E, (2012), Stump Krause's Food and Nutrition Therapy**,** Elsevier Saunders, Missouri.
8. Shils M, E., etal(1999), Modern Nutrition in Health and Disease 9th edition, Lippincott, Williams & Wilkin

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, Field-based learning.

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Apply knowledge to plan and construct menu for balanced meal	K3, K6
CO2	Demonstrate skills in preparing, serving and evaluation of therapeutic diets for one self and hospital kitchen	K2
CO3	Demonstrate skill in management of a dietary department	K2
CO4	Interpret nutritional status for diet counseling and use this knowledge to enhance health of the society	K2
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 – Evaluating, K6- Creating.		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	2	3	2	3
CO2	3	3	3	3	2	3
CO3	3	3	3	3	3	3
CO4	3	3	2	3	2	3
Total	**12**	**12**	**10**	**12**	**9**	**12**
Average	**3**	**3**	**2.5**	**3**	**2.25**	**3**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low
2 – Medium
3 – High
0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**FAMILY RESOURCE MANAGEMENT**		
Course Code		**22UFNDE2A**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC -II	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

1. Recognize the importance of wise use of resources to achieve one's goals.
2. Gain knowledge in various aspects in home economics.
3. Apply the principles in da - to - day management

UNIT I : MANAGEMENT PRINCIPLES **18 hrs**

Management– Definition, principles and elements involved in management,
Process - Planning, controlling and evaluation. Motivation in management.

UNIT II : CONCEPT OF MANAGEMENT **18 hrs**

Management Concepts - Values, goals and standards- Introduction. Standard, goals and values – their interrelatedness
Standard of Living – Definition, constituent – means for raising the standard of living of families.

UNIT III: MANAGEMENT MOTIVES **18 hrs**

Decision Making – Steps, importance, types of decisions, resolving conflicts in group decisions.
Resources – Human and non-human resources. Characteristics of Resources, factors affecting the use of resources

UNITIV : TIME AND ENERGY MANAGEMENT **18 hrs**

Family - Concept, role, stages of family life cycle, role of women
Time Management - Time Demands during different stages of the family life cycle, Factors to be consider in making time and activities plans.
Energy Management - Work simplification Definition, techniques and Mundel's classes of changes.
Fatigue - Concept, types - Physiological and psychological fatigue.

UNIT V : MONEY MANAGEMENT **18 hrs**

Family Income - Definition, Types - Money, Real and Psychic income, various ways of improving the income of the family

Budget -Definition and meaning, importance of budgeting, steps, factors affecting the budget. Engles's Law of Consumption.

Savings – Meaning, objectives, Needs for savings in the family, types of savings institutions and schemes.

TEXT BOOKS

1. Garg.N & Gupta.S(2008), Textbook of Family Resource Management, 9th Edition.
2. Sylvia M. Tamil A & Moore J. (2016), Family Resource Management, 3rd Edition,.
3. Varghese, M.A.,. Ogale N.N, and Srinivasan, K. (1992), Home Management,2 nd edition, New Age InternationalPrivate Limited
4. Mullick..P (1995). Text book of Home Science, Kalyani Publishers, New Delhi.
5. Seetharaman P, Batra S, Mehra P (2015) An IFRM, CBS Publishers and Distributers Pvt Ltd, Chennai

REFERENCE BOOKS

1. Nickell.P. and Dorsey. J.M. (1960) Management in Family Living , John Wiley and Sons, Inc, New York,
2. Singal Savita Prof. and GandotraVeena Prof. Family Resource Management.
3. Kaur. H & Macneil. C. (1989). Theory and Practice of Home Management, Surjeet Publications.

WEB RESOURCES

1.https://www.sweetstudy.com/questions/what-is-family-resource-management-and-why-is-it-important-to-todays-american-family-goldsmith-e.-b.-and-goldsmith-e.-b.-2003.-resource-management.-in-j.-j.-ponzetti-jr.-ed.-international-encyclopedia-of-marriage-and-family-2nd-ed..-farmington-m

2. https://www.verywellfamily.com/how-to-plan-a-family-budget-5213227

3, https://www.toolshero.com/management/14-principles-of-management/

4, https://www.todaysoftmag.com/article/1952/time-management-and-energy-management-in-testing

5.https://www.techtarget.com/searchbusinessanalytics/definition/decision-making-process

6. http://ecoursesonline.iasri.res.in/mod/page/view.php?id=122101

7.https://www.yourarticlelibrary.com/home-management/human-management-resources-human-and-non-human-resources/47785

METHODOLOGY OF TEACHING

Lecture, video lessons, assignment, activities

COURSE OUTCOMES

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Plan and relate the principles and concept of management	K1, K2
CO2	Apply and examine the knowledge gained about managerial skills to take right decisions	K3, K4
CO3	List and make use of the knowledge of resource to protect the environment	K1, K3
CO4	Plan to use time and energy efficiently to achieve goals	K3
CO5	Prepare budgets to use money efficiently	K1, K3
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	3	3	3	3
CO2	3	3	3	3	3	3
CO3	3	1	3	2	2	3
CO4	3	1	3	3	3	3
CO5	3	3	3	3	3	3
Total	**15**	**11**	**15**	**14**	**14**	**15**
Average	**3**	**2.2**	**3**	**2.8**	**2.8**	**3**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	**Section**	**Marks**	**Description**	**Total Marks**
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2,K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**FRONT OFFICE MANAGEMENT**		
Course Code		**22UFNDE2B**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC - II	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objective of the course is enable students to

1. To understand the varied dimensions of a food service industry with special reference to front office
2. To study the concepts of organization, communication and operational procedures in front office

UNIT I: CLASSIFICATION OF HOTELS **18 hrs**

Classification of hotels based on star category, size, ownership and other categories. Types of rooms

UNIT II: HOTEL ORGANIZATION AND FUNCTIONS **18 hrs**

Organization pattern in a large, medium and small sized hotel. Functions of receptionist, job description of front office manager, assistant front office manager, assistant manager, reservation manager, lobby manager, front office assistants, night manager, night clerk, bell captain and bellboy.

UNIT III: HOTEL TARIFF STRUCTURE **18 hrs**

Tariff, basis of charging, tariff fixation, room tariff card- group rate, volume rate , executive business service rates, tour group whole sale rate, discounted rate, crib rate ,extra bed rate, family rate, crew rate corporate rate and student faculty programme.

UNIT IV: FRONT OFFICE AND GUEST HANDLING **18 hrs**

Stages of guest contact with the hotel-the guest arrival, preparing, and receiving, registration procedure-systems of registration, rooming of guest, group arrival, VVIP guest arrival and greeting. Activities of front desk during stay- mail and message handling, safe deposit boxes.

UNIT V: GUEST ACCOUNTING **18 hrs**

Basics of keeping accounts, guest ledger ,city ledger- accounting entries, front office cashiering, guest accounting process, night auditing- night audit duties, night audit process, night audit report and departure procedure

REFERENCE BOOKS

1. Ahmed Ismail (2004). Front office operations and management, Delmar Publications
2. Baker.S, Bradley. P and Huyton. J (1996) Principles of hotel front office operations , cassell publications
3. Andrews.S (1982) , Hotel Front office training manual , Tata mc Graw Hill publishing company Ltd, New Delhi
4. Chakravarty. B.K (1999). Hotel Management Theory APH publishing corporation, Ansari Road, New Delhi-110002
5. Chon K and Raymond. T S (2001) . Welcome to hospitality- An introduction- II nd Edition, Delamar publication
6. Raghubalan G, Raghubalan .S(2001). Hotel housekeeping operations and management, Oxford University Press

WEB RESOURCES

1. http://paramjamwal.blogspot.in/2013/11/duties-and-responsibilities-of.html
2. http://www.hotelhousekeeping.org/Hotel-Housekeeping-Duties.html
3. http://hotel-industry.learnhub.com/lesson/7885-importance-of-housekeeping

COURSE OUTCOMES

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define and Illustrate the organizational structure of front office department and categories the list of duties of front office staffs	K1, K2, K4
CO2	Summaries and apply the course information to develop skills to effectively manage the front department	K2, K3
CO3	Explain hotel tariff structure based on category of hotels and explain the principles of accounting	K2
CO4	Select and apply skills to guest handling	K1, K3
CO5	Discover front office management as professional career in food service institutions through the knowledge and skills gained in the course or pursue research in the same	K4
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	2	3	1	1
CO2	3	3	2	3	1	1
CO3	3	3	3	3	1	1
CO4	3	3	2	3	3	1
CO5	3	3	2	3	1	1
Total	**15**	**15**	**11**	**15**	**7**	**5**
Average	**3**	**3**	**2.2**	**3**	**1.4**	**1**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**HOUSE KEEPING**		
Course Code		**22UFNDE2C**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC - II	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objectives of this course is to enable students to :

1. Know the organizational structure of a housekeeping department.
2. Understand the layout and functions of housekeeping department
3. To identify and understand the various cleaning equipment's and methods.

UNIT I: ORGANISING THE HOUSEKEEPING DEPARTMENT 18 hrs

a. Introduction, Layout of the housekeeping department, Organization of a housekeeping department

b. Job description of housekeeping personnel, Manning-Recruitment and selection, Qualities of housekeeping staff

UNIT II: ROOMS AND FLOORS-PRACTICES AND PROCEDURES 18 hrs

a. Briefing and scheduling of staff, Knowledge of rooms, Rules on a guest floor

b. The Maids Cart , Cleaning a room

c. Preparing a room report

UNIT III: FLOOR LINEN ROOM 18 hrs

a. Equipment, Procedures for requisitioning fresh linen

b. Procedures for requisitioning guest and cleaning supplies

c. Storage Tips, Records Kept in floor Linen room

UNIT IV: LINEN AND UNIFORM ROOM 18 hrs

a. Linen room, storage conditions

b. Equipment and accessories for linen and uniform rooms

c. Types of uniforms used, types of linen used, par stocks, inventory control

d. Stock taking, exchange of linen and uniform, housekeeping supply room

UNIT V: HOUSEKEEPING PRACTICES 18 hrs

a. Budgeting, Lost and found procedure

b. Cleaning methods, cleaning agents- solvents grease absorbents, disinfectants, antiseptics, soaps, detergents, polishes & storage. Stain removal techniques. Cleaning equipment - Selection of equipment and types of equipment needed in housekeeping department

UNIT V: PEST CONTROL **18 hrs**

Pest control, control of odors.

TEXT BOOKS

1. Branson, J.C. and Lennox, M (1992). Hotel, Hostel and Hospital Housekeeping, Arnold Heinnaman, U.S.A.
2. Lillicrap, D.R and Cousins, J.A (1994), Food and beverage service, London.

REFERENCE BOOKS

1. Faulkner,R. and Faulkner,S. (1997), lnside Today's Home, Rinehart Publishing company, New York.
2. Binnie,R and Boxal, D.J, (1992), Housecraft Principles and Practice, Pitman Publishing, London.

WEB RESOURCES

1. http://paramjamwal.blogspot.in/2013/11/duties-and-responsibilities-of.html
2. http://www.hotelhousekeeping.org/Hotel-Housekeeping-Duties.html
3. http://hotel-industry.learnhub.com/lesson/7885-importance-of-housekeeping

METHODOLOGY OF TEACHING

Chalk and talk, PowerPoint presentation, Group discussion, Video lessons, Assignments

COURSE OUTCOMES

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define and Illustrate the organizational structure of housekeeping department and categorise the list of duties of housekeeping staff	K1, K2, K4
CO2	Summarize and apply the course information to develop skills to effectively manage the housekeeping department	K2, K3
CO3	Explain the rules on the guest floor and demonstrate interpersonal skills to effectively manage the housekeeping department	K2
CO4	Select and apply measures related to pest control, stain removal and room cleaning techniques in the commercial sector and translate the same to households in the society	K1, K2 K3
CO5	Discover housekeeping as professional career in food service institutions through the knowledge and skills gained in the course or pursue research in the same	K4
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	2	1	2	0	0
CO2	2	2	3	2	1	0
CO3	2	1	1	1	3	0
CO4	3	2	3	1	2	3
CO5	3	3	3	3	2	3
Total	**13**	**10**	**11**	**9**	**8**	**6**
Average	**2.6**	**2**	**2.2**	**1.8**	**1.6**	**1.2**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2, K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**BASICS IN RESEARCH METHODOLOGY**		
Course Code		**22UFNDE3A**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC-III	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learner will be able to

1. Understand the concept of research
2. Learn about the tools used in data collection
3. Obtain knowledge about measures of data
4. Apply various techniques to present the data collected
5. Develop skills in report writing

UNIT I: RESEARCH AND RESEARCH PROBLEM 15hrs

a) Research- meaning and types.

b) Research problem- selection and identification of research problem

UNIT II: SAMPLING DESIGN 15hrs

Sampling – Definition, census and sample survey, characteristics, different types of sampling design - Probability and Non- Probability sampling

UNIT III:METHODS OF DATA COLLECTION 15hrs

Data- primary data and secondary data, tools used - interview schedule, questionnaire, selection of appropriate method for data collection

UNIT IV: MEASURES OF CENTRAL TENDENCY AND DISPERSION 15hrs

1. Measures of central tendency - Mean, Median, Mode - definition and significance

b) Measures of dispersion- , Standard deviation - definition and significance

UNIT V: PRESENTATION OF DATA AND REPORT WRITING 15hrs

a) Classification of Data -meaning, objectives and types

b) Tabulation of Data-importance, parts of a table, general rules of tabulation and types

c) Diagrams and Graphs-definition, general rules, types of diagrams and graphs,

d) Report writing- steps in report writing,

RECOMMENDED TEXTBOOKS

1. Kothari, C.R, (2014). Research methodology methods and techniques, New Age International publishers, New Delhi.
2. Gupta .S.P ,(2019) Statistical methods, Sultan Chand and sons , New Delhi
3. Pannerselvam R.(2014) Research Methodology, 2nd Edition, PHI Learning, New Delhi
4. Napoleon D. and Narayanan B.B.S. (2014) Research Methodology- As theoretical Approach, Laxmi Publications, Bangalore
5. Tripathi.P.C (2014). Research Methodology in Management and Social Science. Sultan Chand & Sons, New Delhi

REFERENCES

1. Kumar, R. (2005) Research Methodology: A Step by Step Guide for Beginners. Sage Publications, New Delhi.
2. Black, J.A. & Champion, D. J. (1976) Methods and Issues in Social Research, John Wiley and Sons. New York
3. Sharma, K.R (2002) Research Methodology. National Publishing House, Jaipur,
4. Sharma K,S (2016) Research Methodology and Biostatistics: A Comprehensive Guide for Health Care Professionals, Elsevier India, Gurgaon

WEB LINK AND E- RESOURCES

- https://www.discoverphds.com/blog/types-of-research
- https://bbamantra.com/research-problem/
- https://www.healthknowledge.org.uk/public-health-textbook/research-methods/1a-epidemiology/methods-of-sampling-population
- http://www.stats.gla.ac.uk/steps/glossary/sampling.html
- https://www.mygreatlearning.com/blog/types-of-data/#:~:text=There%20are%20two%20types%20of,ordinal%2C%20discrete%2C%20and%20Continuous.
- https://www.lkouniv.ac.in/site/writereaddata/siteContent/20200424121624037 0priyamka_SDS_COLLECTION_OF_DATA.pdf
- http://www.dspmuranchi.ac.in/pdf/Blog/Classification_and_Tabulation_of_Data_1..pdf
- https://www.differencebetween.com/difference-between-graphs-and-vs-diagrams/
- https://www.lboro.ac.uk/media/wwwlboroacuk/content/library/downloads/advicesheets/Report%20writing.pdf
- https://quizizz.com/admin/quiz/5ebf47a9097629001d4dd62d
- https://quizizz.com/admin/quiz/6170dd47f1cb49001de95eff
- https://www.youtube.com/watch?v=z3Zn4lmhMJE
- https://www.youtube.com/watch?v=AdH5vfobH5E
- https://www.youtube.com/watch?v=64ELhoTvzk0

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, E Quiz, YouTube, Field-based learning

COURSE OUTCOME

CO	Course Outcome	Knowledge Level
CO1	Analyze the process of undertaking social science research	K1, K2
CO2	Outline the sources of data, methods of data collection and recommend the statistical tools for representing the data collected	K2,K3
CO3	Explain and apply methods of data collection	K3, K4,
CO4	Apply and analyze central tendency and dispersion	K2, K5
CO5	Create a research report by interpreting the results of research	K2, K6
K1-Remembering, K2-Understand, K3,Apply, K4- Analyse, K5- Evaluate& K6-Create		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	0	1	0	0
CO2	3	3	0	1	0	0
CO3	3	3	0	1	0	0
CO4	3	3	0	1	0	0
CO5	3	3	0	1	0	0
Total	**15**	**15**	**0**	**5**	**0**	**0**
Average	**3**	**3**	**0**	**1**	**0**	**0**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K3, K4, K5, K6	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**NUTRITIONAL ASSESSMENT METHODS**		
Course Code		**22UFNDE3B**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC-III	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The learners will be able to

- Introduce the students to the application of techniques for nutritional assessment and undertake nutrition based community surveys.
- Use appropriate assessment techniques for different age groups.
- Understand the significance of these parameters in various disorders/diseases

UNIT I: NUTRITION OVERVIEW

Objectives and goals of nutritional assessment, adequate/optimum nutrition, signs and symptoms of malnutrition-undernutrition and over nutrition.

UNIT II: ANTHROPOMETRIC ASSESSMENT

Anthropometric assessment, circumference measurements and body fat measurements- principle and techniques. Interpretation of these parameters with standard reference values for all ages.

UNIT III:BIOCHEMICAL ASSESSMENT & CLINICAL SIGNS

Biochemical Assessment- To study about estimation of common parameters used in the assessment of community surveys

Clinical Signs- To learn about clinical signs of commonly observed deficiency disorders of nutrients.

UNIT IV: DIETARY SURVEYS

Dietary surveys- to estimate nutrients using 24-hour recall and food frequency questionnaires. To learn the use of appropriate software for nutrient estimation in the diets of people.

UNIT V: INTERVENTION STUDIES

InterventionStudie**s** -Introduction, Principles of Experimental design, types of trial (clinical, therapeutic, prophylactic & community) and ethical consideration.

PRACTICALS

- To take up a small community based nutrition project and apply the principles of nutritional assessment.

RECOMMENDED TEXTBOOKS

- Srilakshmi B (2019), Dietetics,,8th edition, New Age International Publishing Ltd, New Delhi
- Srilakshmi B, (2021) Nutrition Science,,7th edition, New Age International Publishing Ltd, New Delhi
- Das.S, (2020) Textbook of Community Nutrition ,Academic Publishers, Kolkata
- Bamji.M.S, Krishnaswamy.K & Brahmam.G.N.V (2019) Textbook of Human Nutrition, 4th edition, Oxford and IBH Publishing, New Delhi

REFERENCES

1. Guthrie H.A. (1989) Introductory Nutrition. 7th Edition, Times Mirror/Mosby College Publishing, St. Louis.
2. Bogert, J.G.V. Briggs, D.H.& Calloway, (1985) Nutrition and physical fitness , 11th edition – W.B. Saunders Co., Philadelphia, London, Toranto.
3. Wardlaw, G.M &. Insel, P.H. (1990) Perspectives in Nutrition,Times Mirror / Mosby College Publishing Co. St. Louis.
4. Shils, M.E,. Olson J. A& Shike .M (1994) Modern Nutrition in health and disease Vol. I & II, 8th, Lea & Fibiger, Philadelphia.
5. Schlenker, E.D. and Long, S. (2007). Williams' Essentials of Nutrition & Diet Therapy, 9th edition. Mosby Elsevier, Canada.
6. Insel, P., Ross, D., McMahon, K. & Bernstein, M. (2014). Nutrition, 15th edition. Jones & Bartlett Learning, USA.
7. Gibney, M.J., Margetts, B.M., Kearney, J.M. & Arab, L. (2013). Public Health Nutrition. John Wiley & Sons Inc., New Delhi.

WEB RESOURCES:

a. https://www.medicalnewstoday.com/articles/179316#what-is-malnutrition
b. https://wwwn.cdc.gov/nchs/data/nhanes3/manuals/anthro.pdf
c. https://www.researchgate.net/publication/272095154_Study_Designs_in_Medicine
d. https://quizizz.com/admin/quiz/6294066bb68bce001d7bbf81
e. https://youtu.be/mP1LiyD0P_A
f. https://youtu.be/YvaBYDMyiu4
g. https://youtu.be/mP1LiyD0P_A
h. https://youtu.be/0w6lsGn_Msw

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, E Quiz, YouTube, Field-based learning

COURSE OUTCOME

CO	Course Outcome	Knowledge Level
CO1	Illustrate and examine objectives of nutritional assessment and nutritional status	K1, K2
CO2	Outline the anthropometric assessment and interpret data collected with gold standard	K2,K3
CO3	Explain and categorize methods of biochemical and clinical assessment	K3, K4,
CO4	Apply and analyze dietary assessment in a community setup	K2, K5
CO5	Summarize about intervention studies and its ethical implications	K2
K1-Remembering, K2-Understand, K3,Apply, K4- Analyse, K5- Evaluate& K6-Create		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

	PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	3	1	2	0	3
CO2	3	3	1	2	0	3
CO3	3	3	1	2	0	3
CO4	3	3	1	2	1	3
CO5	3	3	1	2	0	3
Total	**15**	**15**	**5**	**10**	**1**	**15**
Average	**3**	**3**	**1**	**2**	**0.2**	**3**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1, K2	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K3, K4, K5, K6	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SIXTH SEMESTER				
Course Title		**DIET COUNSELLING**		
Course Code		**22UFNDE3C**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
CEC-III	**CORE ELECTIVE COURSE**	**4**	**6**	**25+75=100**

COURSE OBJECTIVES:

The main objective of the course is to enable students to:

1. Understand the psychology of the patient
2. Develop diet counseling skills
3. Create awareness among the communities about the importance of Diet and good health

UNIT I: DIETICIAN ROLE & RESPONSIBILITIES 18 hrs

Role of a dietician in a hospital and community- types, ethical code and responsibility, team approach to nutritional care

UNIT II: DIET COUNSELLING & NUTRITION EDUCATION 18 hrs

Basic skills in diet counselling, nutrition education with the help of food pyramid, my plate, food exchange list

UNIT III: COMMUNICATION IN DIET COUNSELLING 18 hrs

Concepts and principles in communication and their application in developing skills in counselling. Barriers of communication, Use of communication aids, communication and interviewing skills.

UNIT IV: PSYCHOLOGY OF FEEDING THE PATIENTS 18 hrs

Psychological influence of food choice and eating behaviour, psychology of patients, importance of psychology in health care, establishing rapport with patient and family members, patient follow up

UNIT V: CLINICAL INFORMATION & DIETARY INTAKE 18 hrs

Methods of eliciting clinical information- medical history, assessment of diet profile.

Techniques of obtaining relevant dietary information - 24 hour recall method, food diary, list of food likes and dislikes, lifestyle;,

Case study assessment and evaluation.

REFERENCE

1) Charles,J. G and Bruce, F. R. (2021) Counselling Psychology, American Psychological Association, Washington.

2) Srilakshmi B. (2019). Dietetics, 8th Ed. New Age International Publishers, New Delhi.

WEB RESOURCES

1. https://thebiostation.com/bioblog/dietary-counseling/
2. https://my.clevelandclinic.org/health/articles/10681-the-psychology-of-eating
3. https://www.hsph.harvard.edu/nutritionsource/healthy-eating-pyramid/
4. https://beingthedoctor.com/the-indian-version-of-healthy-eating-plate/

COURSE OUTCOMES

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Demonstrate and spell diet counselling ethics, principles, policies in different settings to create a positive outcome on the well-being of individual	K1, K2
CO2	Identify and build interpersonal relations, interaction, attitude, behaviour to communicate effectively and make use of methods to enhance wellness	K3
CO3	Compare and infer the psychological factors influencing feeding pattern, habits, and choice of patients	K2
CO4	Apply the principle to educate the individuals on healthy food choices	K1, K2
CO5	Spell, outline, list various methods to elicit clinical information, organise and list the dietary intake for a balanced and healthy lifestyle	K1, K2, K3, K4
K1 - Remembering, K2 - Understanding, K3 - Applying, K4 - Analyzing, K5 - Evaluating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	2	1	1	1	3
CO2	3	2	2	3	3	3
CO3	3	2	1	1	3	3
CO4	3	2	1	1	1	3
CO5	3	2	1	1	3	3
Total	**15**	**10**	**6**	**7**	**11**	**15**
Average	**3**	**5**	**1.2**	**1.4**	**2.2**	**3**

Level of Correlation between PSO's and CO's (*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)**.**

Values assigned above indicated:

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN
UG Degree Pattern

Knowledge Level	**Section**	**Marks**	**Description**	**Total Marks**
K1, K2 , K3 K4	A (Answer all the questions)	10 X 2	Short Answer (Two questions from each unit)	20
K1, K2, K3. K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 x 5	Question (a) OR (b) from the same Unit and same K Level	25
K2,K3, K4, K5.	C (Answer any three question from five questions)	3 X 10	One questions from each unit (No unit missing)	30
Grand Total				**75**

NON MAJOR ELECTIVES

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetic

FIRST SEMESTER				
Course Title		**HEALTH AND PHYSICAL FITNESS**		
Course Code		**22UANDN1A**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
NME 1	**NME**	**2**	**2**	**25+75=100**

Course Objective

The objectives of this course are to enable students to :

1) Understand the importance of health and physical fitness
2) Know the effect of exercise on health.
3) Understand the utilization of nutrients during exercise and physical activity.

UNIT I: **HEALTH AND PHYSICAL ACTIVITY** **6 hrs**

Definition of health, physical activity, physical fitness and balanced diet. Factors influencing health, food pyramid and my plate

UNIT II: ENERGY REQUIREMENT AND ITS BALANCE **6 hrs**

Foods supplying energy, proximate principles and energy utilization. Energy requirements for adults.

UNIT III : EXERCISE AND ENERGY **6 hrs**

Types of exercise – Aerobic and anaerobic, energy requirement during exercise.

UNIT IV : ENERGY IMBALANCE **6 hrs**

Obesity and underweight – Definition, causes, types, assessment and complications of obesity.

UNIT – V : BENEFITS OF PHYSICAL ACTIVITY **6 hrs**

Importance of physical activity, positive lifestyle modification.

METHODOLOGY OF TEACHING:

Class lecture, use of projectors, assignment, activities, group discussion, video

REFERENCE BOOKS

1. Srilakshmi .B 2017 Food Science, New Age international (p) limited ,Chennai
2. Mosses.K.A. 1995 An introduction to exercise Physiology, Poompuhar Publications, Chennai.
3. Willlams.D.,Cardle.M ,Frank , I.K, Victor, L.K (1991). Exercise Physioplogy, 4th Ed, Lippincott Williams Wilkins, Maryland.
4. Wolinsky, I Driskell,J.E. 1997. Sports Nutrition-Vitamins and trace Elements. CRS Press , Boca Raton
5. Park,K.(2002). Preventive and Health Medicine .Banaridas ,Bhanot Publishers, Jabalpur.
6. Guyton A.C (1992), Human Physiology and Mechanism of Disease,Vthed, WB Sundus Company, London
7. Wardlow,G.Minsel P.M (199), Perspectives In Nutrition, II ed, Mosby Publishers, U.S.A
8. Largen V.L Bence, D.L (2000) Guide to good food The good hart-Willcox co, Inc, Tinley Park, Ilinosis
9. Suganthi,V (2017)Exercise Physiology And Sports Nutrition, New Age Publication

WEB LINKS AND E- RESOURCES

1.https://www.precisionnutrition.com/all-about-energy-balance
2 https://www.health.harvard.edu/exercise-and-fitness/does-exercise-really-boost-energy-levels
3. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3733182/
4 https://www.healthline.com/nutrition/10-benefits-of-exercise

COURSE OUTCOMES

On successful completion of the study, the student will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	List and explain the various factors affecting health and physical fitness	K1, K2.
CO2	Explain the types of exercise and energy usage in different exercise and demonstrate an understanding of the benefits of physical exercise	K2
CO3	Identify the cause of obesity and apply this knowledge to prevent obesity in oneself and the society and its complications.	K1, k3
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	0	2	0	2	0	2
CO2	1	2	0	2	0	2
CO3	1	1	0	2	0	3
Total	2	5	0	6	0	7
Average	0.66	1.6	0	2	0	2.33

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIRST SEMESTER				
Course Title		**SPACE DESIGNING**		
Course Code		**22UANDN1B**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
NME 1	**NME**	**2**	**2**	**25+75=100**

COURSE OBJECTIVES

To enable students to

1. Recognize the family's needs in relation to housing
2. Realize the responsibilities involved in the establishment of houses
3. Understand the application of anthropometric measurements in space designing for various activities
4. Learn simple techniques of scale drawing of house plans

UNIT 1: IMPORTANCE OF HOUSING **8 Hrs**

Importance of housing in fulfilling the functions of the family, factors affecting housing choices-location, climate, availability of desirable housing area, cost, life style , needs of the family, soil, spaciousness, flexibility

UNIT II: ALLOCATION OF SPACE FOR VARIOUS ACTIVITIES IN THE HOME 8 Hrs

Allocation of space for various activities in the living room, bedroom, dining room and kitchen, floor plans for different income groups

UNIT III: HOUSEHOLD STORAGE, LIGHTING AND ELECTRICITY **6 Hrs**

Storage requirements in different rooms, types of lighting and fixtures, safety measures related to electricity and handling electrical equipment

UNIT IV : SAFETY IN THE HOME **4 Hrs**

Causes and prevention of accidents

UNIT V: HOUSEHOLD CARE **4 Hrs**

Pest control and first aid at home

REFERENCE BOOKS:

1, Agan,T(1976) the House , Its plan and use. Philadelphia, J.B Hippincoll

2.Kicklighter,C.E and Kicklighter,J.C(1989). Residential building . New York, the good heart-Willcox, co inc
3.Deshpande,R.S Build Your own house, Poona , United Book Cooperation
4. Humphery,H(1980) Household book, New York,P.FColliernard son and Cooperation
5. Rao G. H (1992) Plan for small houses , Madras, IndraGopinath& co
6. Rao G. H (1992) Plan for duplex houses , Madras, IndraGopinath& co
7. Rao, G (1993). Sketch plan for houses, Madras ,IndraGopinath Publishers.

WEB LINKS AND E- RESOURCES

1. https://www.thespruce.com/building-your-own-house-1821301
2. https://www.roomsketcher.com/floor-plans
3. http://npic.orst.edu/health/index.html
4. https://www.rospa.com/home-safety/advice/general/preventing-accidents-in-the-home

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, Field-based learning, Power-point presentation and video classes.

COURSE OUTCOMES (CO):

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Plan and select a suitable environment to lead a happy peaceful life	K2, K3
CO2	Develop different rooms in a house to satisfy wants and needs the family	K3
CO3	List and examine the materials used to save the environment	K1
CO4	Demonstrate and show methods to prevent accidents at home	K2
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	-	-	2	-	3
CO2	3	-	-	-	2	3
CO3	3	-	-	-	-	3
CO4	3	-	1	-	2	3
Total	12	-	1	2	4	12
Average	3	-	0.33	0.66	1.33	3

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

FIRST SEMESTER				
Course Title		**CREATIVE ARTS**		
Course Code		**22UANDN1C**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
NME 1	**NME**	**2**	**2**	**25+75=100**

COURSE OBJECTIVES

To enable the students to

1. To understand the importance of accessories for home.
2. To develop skill in creative designs.
3. To develop aesthetic sense in the creation of art objects
4. To learn the skills of painting on glass, pot, title, ceramic and fabric.

UNIT I: PAINTING ON GLASS **6 hrs**

Glass Painting - Synthetic/ stained glass painting, embossed, crystal glass and broken glass painting.

UNIT II: PAINTING ON MATERIALS **6 hrs**

Pot painting - Crackled medium, one stroke painting and sculpting of pot painting, ceramic painting.

UNIT III: PAINTINGON FABRICS **6 hrs**

Fabric painting - Free hand painting - simple filling gradation, dry stroke,wet stroke, shading and stroke pulling.

UNIT IV: TRADITIONAL PAINTING **6 hrs**

Block Printing –Painting using blocks.

UNIT V: PRINTS **6 hrs**

Print- Vegetable Prints and finger Prints, fruit and vegetable carving.

REFERENCE BOOKS

1. Goldstein H and Goldstein .V. (1986) Arts in Everyday life .Oxford and IBH Publishing Co., New Delhi

2. Enaksh .B (1981)Decorative Design and Craftsmanship of India ,Torapprawala sons and co Ltd .Mumbai.
3. Guild, R. (1991) Complete Home Decorator, Octopus Limited, London.
4. Townsherd.J (1976) Home Decorating for you. New English Library, London.

WEB LINKS AND E- RESOURCES

1. https://www.youtube.com/watch?v=OOltQXah95I
2. https://www.youtube.com/watch?v=F0YZFwOvk3Q
3. https://www.youtube.com/watch?v=zR_GUBSp2to
4. https://www.youtube.com/watch?v=2ZrGKoR8z9w

METHODOLOGY OF TEACHING

Class lectures, Group Discussion, Assignments, video lecturers

COURSE OUTCOMES (CO)

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

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Demonstrate vegetable carving and communicate the concept of carving effectively	K3
CO2	List the various non - toxic materials required for painting	K1
CO3	Illustrate and prepare traditional and modern painting on fabric as well on materials	K2
CO4	Translate the learned skills through display at events	K3
CO5	Discover the inner potential skills of oneself through art	K4
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	**2**	**-**	**3**	**3**	**-**	**3**
CO2	**3**	**-**	**3**	**-**	**-**	**3**
CO3	**1**	**-**	**3**	**-**	**3**	**3**
CO4	**3**	**-**	**3**	**-**	**2**	**3**
CO5	**-**	**-**	**-**	**-**	**3**	**2**
Total	**9**	**-**	**12**	**3**	**8**	**14**
Average	**1.8**	**-**	**2.4**	**0.6**	**1.6**	**2.8**

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXONOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SECOND SEMESTER				
Course Title		**FOOD STANDARD AND QUALITY CONTROL**		
Course Code		**22UBNDN2A**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
NME ll	**NME**	**2**	**2**	**25+75=100**

COURSE OBJECTIVES:

The objectives of the courses to enable students to :

1. To understand safe food handling practices.
2. To gain knowledge on personal hygiene.

UNIT I : ENVIRONMENTAL HYGIENE **6 hrs**

Environmental Hygiene: Site, structure, ventilation, lighting, water supply and waste disposal

UNIT II : FOOD HANDLING **6 hrs**

Safe food handling: Safety in food procurement, storage, handling and pre preparation, preparation, HACCP.

UNIT III: FOOD HAZARDS **6 hrs**

Food hazards- Physical, chemical and microbiological. Food toxicants, additives and adulteration, various hazards in foods. Usage of detergents and sanitizers.

UNIT IV: PERSONAL HYGIENE **6 hrs**

Personal hygiene: Importance of personal hygiene for food handlers

UNIT V: FOOD STANDARD AND LAW **6 hrs**

Food standards and laws - Food standards and laws to ensure food quality and food safety

REFERENCE BOOKS

1 Nambiar. V., 2004. Food Contamination and Safety, Anmol Publication Pvt .Ltd. NewDelhi.
2.Sethi, M., 2004. Institutional Food Management, New Age International Publishers Ltd New Delhi.

WEB LINKS AND E- RESOURCES

1.https://www.foodsafety.gov/
2.https://www.dovepress.com/food-hygiene-practice-and-its-determinants-among-food-handlers-at-univ-peer-reviewed-fulltext-article-IJGM
3. https://blog.smartsense.co/food-safety-education-month-hazards-prevention
4. https://www.slideshare.net/FAOoftheUN/personal-hygiene-in-food-productio

COURSE OUTCOMES

On successful completion of the study, the student will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Explain the factors that determine food safety and outline measures to ensure food safety	K1. K2
CO2	Identify the hazards in foods	K3
CO3	Outline and classify standards and laws to prevent food from adulteration and contamination	K4, K2
C04	Spell methods to preserve foods for longer duration	K1
C)5	Explain safe and hygienic handling from preparation to consumption and make use of the knowledge to educate the society about food safety	K2
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFICOUTCOMES (PSO) –COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	-	-	2	-	3
CO2	3	-	1	-	-	3
CO3	3	-	-	2	-	3
CO4	3	-	-	-	-	3
CO5	3	-	-	-	-	3
Total	15	-	1	4	-	15
Average	3	-	0.2	0.8	-	3

Level of Correlation between PSO's and CO's

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SECOND SEMESTER				
Course Title		**FAMILY DYNAMICS**		
Course Code		**22UBNDN2B**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
NME ll	**NME**	**2**	**2**	**25+75=100**

COURSE OBJECTIVES

The main objectives of this course are to enable students to:

1. Develop a scientific attitude towards behavioral patterns in individual, family and community life.
2. Understand factors leading to adjustments in marriage.

UNIT - I INTRODUCTION TO FAMILY DYNAMICS 5 HOURS

Family Dynamics – Meaning, Significance of family dynamics in contemporary society.

UNIT - II MARRIAGE 10 HOURS

Meaning, preparation, motives, functions and types of marriage. Personality development in relation to marriage. Factors affecting marriage relationship – religion, socio economic status, careers. Adjustment in marriage – physiological, domestic, social, in-laws relationship. Role of counseling- Pre marital& marital.

UNIT - III FAMILY 10 HOURS

Meaning, family as the basic social institution, significance of family, Types, characteristics of family. Parenthood – duties, styles of parenting, child rearing techniques. Small family norm.

UNIT – IV FAMILY CRISIS: 5 HOURS

Meaning, causes, types and consequences – Death, divorce, desertion, suicide, prolonged illness, imprisonment, unemployment, dowry, alcoholism, drug addiction, war separation, economic inflation, economic depression.

UNIT – V ORGANIZATIONS DEALING WITH ISSUES RELATED TO FAMILY DYNAMICS 5 HOURS

Organisations dealing with issues related to Family Dynamics - International organizations

TEXT BOOK REFERENCES

1. Berk L.E., (2004). Child Development, New Delhi : Pearson Longman.

2. Hurlock, E.B., (1995). Developmental Psychology - A life span approach, 5th Edition, New York : McGraw Hill Book Co.
3. Kakar, Sudhir, (2012). The Inner world: A Psychoanalytical Study of Childhood and Society in India. Oxford University Press, Oxford.
4. Nanda V.K., (1998): Priniciples of Child Development, New Delhi : Anmol Publications Pvt. Ltd.,
5. Rajammal P. Devadas and Jaya N.Muthu,(1996): A Text Book of Child Development, New Delhi : Macmillan Publishing House.
6. Suriakanthi A., (1997): Child Development – An Introduction, Sivakasi: Kavitha Publishers.

WEB LINKS AND E- RESOURCES

1.https://en.wikipedia.org/wiki/Marriage
2. https://www.udel.edu/academics/colleges/canr/cooperative-extension/fact-sheets/surviving-family-crisis/
3. https://www.verywellfamily.com/types-of-parenting-styles-1095045
4.https://theinternationalpsychologyclinic.com/the-10-most-common-family-problems-and-how-to-deal-with-them/
5. http://www.strongbonds.jss.org.au/workers/families/dynamics.html

METHODOLOGY OF TEACHING

Lecture, Group Discussion, Assignments, Groups Activities

COURSE OUTCOMES (CO)

On successful completion of the course, students will be able to:

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Define family dynamics and demonstrate scientific attitude towards behavioural patterns in individuals, family and community life.	K1, K2
CO2	Classify and compare different types of families in a society	K2, K4
CO3	Explain the dynamics of marriage with regard to types, adjustments, factors affecting relationships and role of counselling and apply knowledge gained in marital life	K2, K3
CO4	Identify various child rearing techniques and parenting styles and explain its impact of the behavior of children	K2,K3
CO5	Summarize the various types of crises that families face in in the society and identify national and international organizations that address these issues to help build a harmonious society	K2,K3
K1 – Remembering , K2 Understanding , K3 Applying ,K4 Analysing , K5- Evaluating , K6- Creating		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	3	2	2	2	0	2
CO2	3	2	2	1	0	0
CO3	3	2	2	3	2	3
CO4	3	2	2	2	0	3
CO5	3	2	1	2	0	3
Total	15	10	9	10	2	11
Average	3	2	1.8	2	0.4	2.2

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**

B.Sc Degree Programme in Home Science- Nutrition, Food Service Management & Dietetics

SECOND SEMESTER				
Course Title		**REPRODUCTIVE HEALTH CARE**		
Course Code		**22UBNDN2B**		
Course No	**Course Category Core/Elective/Allied/NME/SSE**	**No of Credits**	**No. of hrs/week**	**Total Marks (Int + Ext)**
NME ll	**NME**	**2**	**2**	**25+75=100**

COURSE OBJECTIVES:

The main objectives of this course are to:

1. Explain reproductive systems and changes that occur during adolescence
2. Understand the physiology of pregnancy, child birth and safe sex
3. Know the importance of nutrition during pregnancy

UNIT I MALE AND FEMALE REPRODUCTIVE SYSTEMS 6 HRS

Anatomy of male and female reproductive organs, Ovarian and Uterine cycle

UNIT II PHYSICAL CHANGES DURING ADOLESCENCE 8 HRS

Adolescence- characteristics of adolescence, pubertal changes- and its effect on their behavior. Importance of personal care and hygiene.

UNIT III PREGNANCY AND CHILD BIRTH 6 HRS

Pregnancy- stages, child birth- stages and types complications in pregnancy

UNIT IV TEENAGE PREGNANCY , SAFE SEX AND SEXUALLY TRANSMITTED DISEASES 5 HRS

Teenage pregnancy - factors that lead to teenage pregnancy and complications, Safe sex- measures. Sexually transmitted diseases - syphilis, gonorrhoea, HIV AIDS, Hepatitis B.

UNIT V IMPORTANCE OF DIET DURING PREGNANCY 5 HRS

Importance of good nutrition during pregnancy. Planning healthy diets during pregnancy

Reference Books

1. Suria Kanthi (2011). Child Developmental Introduction, Kavitha publication, India, 4th edition.
2. Baratha, G. (2007). Basics of Human Development, Saradalaya press, Coimbatore, India.
3. Hurlock, E.B. (2001). 6th Edition, Child Development, McGraw –Hill, New York.
4. Srivatsava and Rani,S. (2014). Textbook of Human Development, 1st Edition, Chand & Company, New Delhi, India.

WEB LINKS AND E- RESOURCES

1.https://www.healthline.com/health/sexually-transmitted-diseases
2.https://birthingbetter.org/problems-in-pregnancy-and-childbirth/?gclid=Cj0KCQjwzLCVBhD3ARIsAPKYTcRq99G15Vc2b5_XEDYB0KQcgfPkERQAkvW9hB9hNBIje_jw83MJF3gaArDcEALw_wcB
3. https://americanpregnancy.org/healthy-pregnancy/pregnancy-health-wellness/diet-during-pregnancy/

METHODOLOGY OF TEACHING

Group discussion, Chalk and talk, G-suite, PPT, Assignment

COURSE OUTCOMES

On successful completion of the study the students will be able to

CO	COURSE OUTCOME	KNOWLEDGE LEVEL
CO1	Explain the anatomy of male and female reproductive organs, Ovarian and Uterine cycle.	K2
CO2	Classify primary and secondary characterizes in adolescence, and explain sexually transmitted diseases and the importance of safe sex and	K2, K4
CO3	Explain the process of pregnancy and child birth and outline and explain the nutritional needs during pregnancy	K2
CO4	Make use of the knowledge gained to create awareness about the importance of reproductive health care in the society	K3
K1–Knowledge,K2-Understand,K3-Apply,K4–Analyze		

PROGRAMME SPECIFIC OUTCOMES (PSO) – COURSE OUTCOME (CO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)						
	PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	2	2	0	2	0	1
CO2	2	2	0	2	0	1
CO3	2	2	o	2	0	1
CO4	2	2	0	2	0	1
CO5	2	2	0	2	0	3
Total	10	10	0	10	0	7
Average	2	2	0	2	0	1.4

Level of Correlation between PSO's and CO's

(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value

1 – Low

2 – Medium

3 – High

0– No Correlation

BLOOM TAXANOMY BASED QUESTION PAPER PATTERN

UG Degree Pattern

Knowledge Level	Section	Marks	Description	Total Marks
K1,K2,K3,K4	A (Answer all the questions)	10 × 2	Short Answer (Two questions from each unit)	20
K1, K2, K3,K4	B (**INTERNAL CHOICE**) EITHER (a) OR (b)	5 × 5	Question (a) and (b) from the same Unit and same K Level	25
K2,K3, K4, K5	C (Answer any three question from five questions)	3 × 10	One question from each unit (No unit missing)	30
Grand Total				**75**