



**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS),
Sivakasi**

(Affiliated to Madurai Kamaraj University, Reaccredited with "A" Grade by NAAC,
College with Potential for Excellence by UGC & Mentor Institution under UGC PARAMARSH)

NAAC SSR Cycle IV (2015-2020)

**1.1. CURRICULUM DESIGN AND
DEVELOPMENT**

**1.1.1. CURRICULUM DEVELOPMENT AND
IMPLEMENTATION**

SYLLABUS

THE STANDARD FIREWORKS RAJARATNAM

COLLEGE FOR WOMEN (AUTONOMOUS)

(Reaccredited with 'A' Grade by NAAC and
College with Potential for Excellence by UGC)

SIVAKASI - 626 123.

Affiliated to Madurai Kamaraj University, Madurai.



Programme Scheme, Scheme of Examinations and Syllabi
(With effect from June 2014)

DEPARTMENT OF NUTRITION AND DIETETICS
(UG PROGRAMME)

Curriculum Design & Development Cell

B.P. [Signature]
HOD

A. Keena Beniti
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COE

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAFKASI – 626 123.**

*(An Autonomous Institution, Affiliated to Madurai Kamaraj University
Nationally Re-accredited with 'A GRADE' by NAAC
College with Potential for Excellence by UGC)*

**DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc. DEGREE PROGRAMME IN NUTRITION AND DIETETICS**

**RULES AND REGULATIONS, PROGRAMME SCHEME AND SCHEME OF
EXAMINATION GOVERNING THE B.Sc. DEGREE PROGRAMME IN
NUTRITION AND DIETETICS
(FOR THOSE ADMITTED IN JUNE 2014 AND LATER).**

I. Programme Objectives:

The objectives of the programme are

1. To familiarize the learners with the basics in nutrition and dietetics
2. To give an exposure about the importance of food in relation to health
3. To formulate strategies for change for empowering the individual, the family and the community
4. To enable the learner to apply the knowledge gained to plan both normal and therapeutic diet.
5. To provide preventive, promotive and therapeutic care in hospitals.
6. To develop food technologists and food service managers in various establishments.
7. To gain knowledge on the innovations in the field of nutrition and dietetics.

II. Eligibility condition for admission:

Candidates seeking admission to the B.Sc. Nutrition and Dietetics must have passed the Higher Secondary Examination, conducted by the Board of Higher Secondary Education, Government of Tamil Nadu or any other examination accepted by the syndicate of the Madurai Kamaraj University as its equivalent with Home science, Nutrition and Dietetics, Botany and Zoology / Biology and Chemistry as core subjects in Part III.

III. Duration of the Programme:

The duration of the programme is three academic years. Each Academic Year consists of two semesters. The duration of a semester is 90 working days.

IV. Attendance:

The rules regarding the attendance for regular classes for the candidates to appear for the End Semester Examination are framed as given below

- a) Each student must put in a minimum attendance of 68 days (75% of 90 days per semester) so as to become eligible to appear for the End Semester Examination.

Shortage of attendance:

- b) Those students with an attendance of 67 days and less but 59 days and above (65%) can be permitted to appear for the End Semester Examinations provided they get the Condonation Certificate from the Principal stating the proper reasons for their absence on payment of penalty as per MKU to the College Office within 5 days after the last working day.
- c) In case of attendance with 58 days and less but 45 days and above (50%), the students cannot appear for the End Semester Examinations of that semester but can appear for those courses in the next semester examinations by obtaining special permission from the Principal providing necessary documents supporting the reasons for absence on payment of penalty as per MKU.
- d) Students with an attendance of 44 days and less should repeat the whole semester

Attendance for Part V

A Student of the first or second year undergraduate class should put in a minimum attendance of 75% for each semester (Total No. of hours as fixed by the concerned Officers / Staff in-charge) in any one of the Co-Curricular activities namely N.C.C. / N.S.S. / Physical Education / Youth Red Cross to be eligible to get the degree.

In case of shortage of attendance the student has to complete the required attendance before the completion of the U.G Programme. If she fails to do so the student can appear for the End Semester Examination; but she is ineligible to get the degree.

V. Evaluation Procedure:

Evaluation of each theory course will be 25 % Continuous Internal Assessment (CIA) and 75 % End Semester Examination. Evaluation of each Practical Course will be 40 % Continuous Internal Assessment (CIA) and 60 % End Semester Examination Evaluation. Project will be 100 % End Semester Examination. A mark statement will be issued to every student at the end of every semester.

VI. Passing Minimum:

For a pass in each course, a student should secure a minimum of 35% marks in the End Semester Examination and a minimum of 40% marks in End Semester Examination aggregate (i.e., CIA and End Semester Examination marks put together).

For a pass in each value added course, a student should secure a minimum of 40% marks in the summative examination.

VII. Eligibility Condition for getting the Degree:

A candidate undergoing the B.Sc., Degree programme in Nutrition and Dietetics will be eligible for the award of B.Sc., degree in Nutrition and Dietetics; if she completes the entire programme and passes all the examination prescribed for the programme.

VIII. Classification of Successful Candidates:

CGPA	GRAD E	Classification of Final Results	CGPA	GRAD E	Classification of Final Results
9.500-10.000	O+	First Class	7.000-7.499	A++	First Class
9.000-9.499	O		6.500-6.999	A+	
8.500-8.99	D++		6.000-6.499	A	
8.000-8.499	D+	First Class	5.500-5.999	B+	Second Class
			5.000-5.499	B	
7.500-7.999	D		0.000-4.999	U	Re-appear

IX. Awards of Ranks:

Candidates who qualify themselves for the respective degree programme passing all the examinations in the first attempt and secured first class are eligible for ranking.

For Each Major:-

I }
II } From the CGPA (Cumulative Grade Point Average)
III } gained in the Core Courses and Allied Courses only.

$$CGPA = \frac{\sum_i C_i G_i}{\sum_i C_i}$$

Where

- C_i - Credits earned for course I in any semester
- G_i - Grade point, obtained for any semester
- ∑_i - Summation of all courses cleared in all semester

X. Other Provisions:

1. Those who are absent for the exam should be mentioned AA in the Mark sheet.
2. If there is a charge of Malpractice on a student she should be quit out from the Examination hall and given chance during the next semester only.
3. The courses she has already appeared during that semester will not be considered.
4. A student can appear for any number of arrear courses.
5. Repeat examination would be conducted for the final semester paper within months after the publication of final semester result.
6. Revaluation is permitted.

XI. Transitory Provisions:

Students from other institutions shall be considered if they have already written and passed all the courses covered till the previous semester. If any of the courses have not been cleared, they have to appear for those subjects along with the current semester subjects also. Equivalence of Completed Courses and Course to be completed should be decided by the Chairman of the Board of Studies.

Those students who have discontinued in the middle of the programme may be admitted in the respective semester if they want to rejoin and complete programme; provided they had not got their transfer certificate.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN
SIVAKASI**

B.Sc. Nutrition and Dietetics- Allotment of Hours and Credits
(For those admitted in June 2014 and later)

Subject		Semester						Total	
		I	II	III	IV	V	VI		
Part I: Tamil Language Course		6(3)	6(3)	6(3)	6(3)	-	-	12	
Part II: English Language Course		6(3)	6(3)	6(3)	6(3)	-	-	12	
Part III: Major and Allied Courses									
a) Major	Theory	Course I	4(4)	5(5)	4(4)	5(5)	6(5)	6(5)	
		Course II	3(3)	-	3(3)	-	5(5)	5(5)	
		Course III	-	-	-	-	5(5)	5(5)	
	Practical	Lab I	3(*)	3 (4)	3 (*)	3 (4)	6(5)	6(5)	
		Project	-	-	-	-	3(*)	3(3)	
b) Allied	Theory	4 (4)	4(4)	4(4)	4(4)	-	-		
	Practical	2 (*)	2(2)	2(*)	2 (2)	-	-		
Total		11	15	11	15	20	23	95	
Part IV Non Major/Value Added Courses									
Peace Education		2(2)	-	-	-	-	-		
Environmental Studies		-	2(2)	-	-	-	-		
i) NME I / Basic Tamil I		-	-	2(2)	-	-	-		
ii) NME II / Basic Tamil II		-	-	-	2(2)	-	-		
1.Computer Literacy		-	2(2)	-	-	-	-		
2. Soft Skill Enhancement		-	-	-	2(2)	-	-		
3. Career Guidance and Subject Viva		-	-	-	-	2(2)	-		
4. Women Studies		-	-	-	-	2(2)	-		
5. Self Employment / Job Oriented Courses – Theory		-	-	-	-	-	2(2)		
6. / Self Employment / Job Oriented Courses- Practical / Field Work / Project							2(2)		
Library and Information Science					-	1(*)	1(*)		
Total		2	4	2	4	4	4	20	
Part V: Extension Activities–Physical Education & Social Awareness Programme									
NSS/NCC/Physical Education/Extension Activities/Youth Red Cross/Social Service League		1(*)	1(1)	-	-	-	-	1	
TOTAL								140	

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR
WOMEN SIVAKASI**

Department of Nutrition and Dietetics (UG Programme)

(For those admitted in June 2014 and later)

Sem.	Course Code	Course Title	Teaching Hours Per Week	Credits	Duration of Exam(Hrs)	Marks Allotted		
						Internal	External	Total
Major & Allied Courses								
I	14UND11	Food Science	4	4	3	25	75	100
	14UND12	Principles of Nutrition	3	3	3	25	75	100
	14UND1A	Human Development	4	4	3	25	75	100
II	14UND21	Nutritional Biochemistry	5	5	3	25	75	100
	14UND2A	Human Physiology	4	4	3	25	75	100
I & II	14UND2L	Lab - I	3+3	4	3	40	60	100
	14UND2AL	Allied Lab – I	2+2	2	3	40	60	100
III	14UND31	Nutrition Through Life Cycle	4	4	3	25	75	100
	14UND32	Food Safety and Quality Control	3	3	3	25	75	100
	14UND3A	Food Preservation	4	4	3	25	75	100
IV	14UND41	Food Microbiology	5	5	3	25	75	100
	14UND4A	Family Resource Management	4	4	3	25	75	100
III & IV	14UND4L	Lab- II	3+3	4	3	40	60	100
	14UND4AL	Allied Lab- II	2+2	2	3	40	60	100
V	14UND51	Therapeutic Diet	6	5	3	25	75	100
	14UND5EA	Elective –I	5	5	3	25	75	100
	14UND5EB	Elective –II	5	5	3	25	75	100
	14UND5L	Lab- III	6	5	3	40	60	100
VI	14UND61	Therapeutic Diet and Counseling	6	5	3	25	75	100
	14UND62	Food Service Management	5	5	3	25	75	100
	14UND6EC	Elective- III	5	5	3	25	75	100
	14UND6L	Lab– IV	6	5	3	40	60	100
V & VI	14UND6P	Project	3+3	3	3	-	100	100
Elective Courses								
V	14UND5E1	Community Nutrition	5	5	3	25	75	100
	14UND5E2	Food Packaging	5	5	3	25	75	100
	14UND5E3	Extension Education	5	5	3	25	75	100
	14UND5E4	Functional Foods and Nutraceuticals	5	5	3	25	75	100
VI	14UND6E1	Textiles and Clothing	5	5	3	25	75	100
	14UND6E2	Food Biotechnology	5	5	3	25	75	100
Non major Electives								
III	14UND3N	Introduction to Food and Nutrition	2	2	3	25	75	100
IV	14UND4N	Health and Fitness	2	2	3	25	75	100
Job Oriented Course								
VI	14USE70	Embroidery and Handicrafts	2	2	3	25	75	100
VI	14USE70L	Embroidery and Handicrafts Lab	2	2	3	40	60	100

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR
WOMEN, SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
CORE COURSE (MAJOR)
SEMESTER I
14UND11- FOOD SCIENCE
(For those admitted in June 2014 & later)**

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of credits	: 04

Objectives:

To enable the students to

1. understand the scientific principles underlying food preparation.
2. obtain knowledge of different food groups.
3. gain knowledge on the nutritive value of food.
4. develop skill and techniques in food preparation and conservation of nutrients and palatability using desirable cooking methods.

UNIT – I (12 hrs)

Food- Definition, classification based on functions. Basic five food groups. Cooking- definition, objectives, cooking methods – Moist heat, dry heat and combination methods of cooking and microwave cooking.

UNIT – II (12 hrs)

Cereals – Nutritive value of rice, wheat and locally available millets-ragi, oats, bajra and jowar. Cereal cookery- Gelatinization, factors affecting gelatinization. Parboiling - Methods and advantages. Pulses – Nutritive value, toxic substances, germination process and its advantages.

UNIT – III (12 hrs)

Vegetables – Nutritive value, classification, pigments and selection. Fruits- Classification, nutritive value, browning reaction- enzymatic and non enzymatic. Milk and Milk products – Nutritive value, kinds of milk, pasteurization, homogenization of milk and uses of milk in cookery.

UNIT – IV (12 hrs)

Fleshy foods: Meat – Nutritive value, tenderness of meat and Rigor mortis. Poultry – Classification and nutritive value. Fish – Classification, nutritive value and selection. Egg – structure, nutritive value, selection, functions of egg in cookery and factors affecting foaming.

UNIT – V (12 hrs)

Fats and oils - Emulsion, rancidity and smoking point. Spices and condiments- Role of spices in cookery. Beverages – classification and functions. Sugar cookery – Stages of sugar cookery.

Self study area: Food processing

Text Book:

1. Srilakshmi B. Food Science, New Age International (P) Ltd Publishers, Fifth edition, 2010.

Unit – I	Page no: 1-3, 6-7 and 13-23.
Unit – II	Page no: 31-32, 37-40, 42-43, 46-47, 50-53, 67-72 and 73-77.
Unit – III	Page no: 101-103, 115-116, 110-112, 121- 122,170-177, 180,196-197 and 204-207.
Unit – IV	Page no: 123-124, 128-135, 141-142, 144, 148-149, 151- 152 and156-163.
Unit – V	Page no: 159, 214, 232-237 and 257-258.

References:

1. Srilakshmi B. Food Science, New Age International (P) Ltd Publishers, Fifth edition, 2010.
2. Swaminathan M., Food Science and Experimental foods, Ganesh and Co., Mafras, Reprint 1979.
3. Manay Shakunthala, N and Shadaksharaswamy M. Foods facts and Principles, New Age International (P) Ltd Publishers, Reprint 2005.
4. Swaminathan M. Essentials of Food and Nutrition, Vol I & II Bappo Publications, 1996.
5. Mudambi, S. R. and Rao, S. M. (1986). Food Science, Wiley Eastern Limited, New Delhi, Bangalore.

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DEPARTMENT OF NUTRITION AND DIETETICS
B. Sc NUTRITION AND DIETETICS
CORE COURSES (MAJOR)
SEMESTER I
14UND12 – PRINCIPLES OF NUTRITION
(For those admitted in June 2014 & later)

Contact hours per week : 03
Total number of hours per Semester : 45
Number of Credits : 03

Objectives:

To enable the learners to

1. gain a basic knowledge of the different, nutrients and their role in maintaining health of the community.
2. understand the basic principles of nutrition.
3. know the functions, metabolism and effects of deficiency of nutrients.
4. understand the link between nutrition and health.

Unit – I (9 hrs)

Concept of Nutrition- Definitions of nutrition, over nutrition, under nutrition and malnutrition, signs of good and poor nutrition. Carbohydrates- Classification, functions, and sources. Dietary fiber- Definition, classification, sources and role of fiber in human nutrition.

Unit – II (9 hrs)

Protein- Functions, nutritional classification of protein, amino acids, sources. Evaluation of protein quality – Biological value of protein. Lipids- classification, function, sources; Essential fatty acids – Definition, functions, sources, effects of deficiency, mono and poly unsaturated fatty acid.

Unit – III (9 hrs)

Energy- Definition, Definition of Unit – kilo calorie, energy value of foods. Direct Calorimetry- Bomb calorimeter, indirect calorimetry- Benedict's Oxy- Calorimeter. Basal metabolism – Definition, measurements of basal metabolism, factors influencing basal metabolism and Total energy needs of the body.

Unit – IV (9 hrs)

Vitamins: Fat Soluble Vitamins - Vitamin A, D, E and K- Functions, sources and effects of deficiency. Water Soluble Vitamins - Thiamine, riboflavin, niacin, ascorbic acid, folic acid, vitamin B6 and vitamin B12 - Functions, sources and effects of deficiency.

Unit – V (9 hr)

Minerals: Macro minerals- Calcium and Phosphorous- Functions, sources and effects of deficiency. Micro minerals- Iron, iodine, copper, fluorine and zinc- Functions, sources and effects of deficiency. Sodium and Potassium – Functions and sources.

Self study area: Nutrient absorption.

Text Book:

UG N&D - 9

1. Srilakshmi B. (2007), Nutrition Science, New Age International, New Delhi, III Edition.

Unit – I	Page no: 1-2, 21-25, 32-34 and 36-39.
Unit – II	Page no: 45- 46, 51-53, 55- 57, 59-65,109-114, 116-117 and125-126.
Unit – III	Page no: 67-80 and 85-88.
Unit – IV	Page no: 222-228,211-214,218-219, 235-241,243-244,246-248,249-253,255-260,262-266,281-286,268-276,278-281and 291-293
Unit – V	Page no: 144- 147, 152-161,165-166,171-172,174-178, 182-192, 195-208, 324-325 and 327-329.

References:

1. Gopalan C., and Vijayaragavan K., (1971). Nutrition, Atlas of India ICMR, New Delhi.
2. Krause M.V., and Mahan, (1984). Food, Nutrition and Diet Therapy E.B., Saunders Co., Philadelphia, VII edition.
3. Swaminathan M., (2009). The Advanced Text Book on Food and Nutrition, Vol.2., The Bangalore printing and publishing co-limited , Bangalore.

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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc. NUTRITION AND DIETETICS
CORE COURSES (ALLIED I)
SEMESTER I
14UND1A – HUMAN DEVELOPMENT
(For those admitted in June 2014 & later)**

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of credit	: 04

Objectives:

To enable the students to

1. understand the development aspects – physical, motor, social, language, emotional, cognitive and moral.
2. know the various techniques of child development.
3. obtain knowledge about the behaviour pattern of the individual and various factors influencing them.
4. understand the importance of family relationship.

Unit I (12 hrs)

Concept of growth and development - Principles governing growth and development, development tasks of different stages, stages of life span, techniques of studying child development—observation, interview, questionnaire and case study.

Unit II (12 hrs)

Pregnancy - Signs and symptoms, conception, period of pre - natal development – period of ovum, embryo and fetus. Pre- natal care, discomforts and complications of pregnancy. Lab our – signs, stages, types of birth and postnatal care.

Unit III (12 hrs)

Infancy - Meaning and immunization of the baby. Baby hood – physical, motor, social, emotional, mental and language development.

Unit IV (12 hrs)

Childhood- Early childhood development – physical, motor, social, emotional, cognitive, language. Late childhood development – physical, motor, social, emotional, cognitive, language and moral. Play –Types, values and causes of behaviour problem.

Unit V (12 hrs)

Adolescence and old age- Adolescence – Physical development, emotional and social development. Delinquency – causes and prevention. Old age – physical, psychological changes and social problems of old age.

Self study area: Child rearing practices

Text Book:

1. Elizabeth B.Hurlock (1953). Developmental Psychology A Life – Span Approach,Tata McGraw – Hill Publishing Company Limited, New Delhi, V edition.

Unit -V Page no: 390-393,397-399 and 403-415.

2. Suriakanthi, A., (1997). Child development – An Introduction, Kavitha Publications, Gandhigram, Tamil Nadu. IV edition.

Unit- I Page no: 1, 2, 4, 8, 11and 14.

Unit -II Page no: 30- 32 and 37-.40.

Unit- III Page no: 59, 65-72 and 80-81.

Unit- IV Page no: 84-106, 112-116, 163-174.

Unit- V Page no: 189-193 and 198-201.

References:

1. Rajammal P., Devades, N. Jaya, (1996). A text book on child development Macmillan Limited.

2. Suriakanthi, A (1997). Child development – An Introduction, Kavitha Publications, Gandhigram, Tamil Nadu.

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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
CORE COURSE (MAJOR)
SEMESTER II
14UND21 – NUTRITIONAL BIOCHEMISTRY
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per Semester	: 75
Number of Credits	: 05

Objectives:

To enable the learners to

1. develop an understanding of the principles of biochemistry (as applicable to human nutrition)
2. bring exposure in major nutrients and physiologically important compounds.
3. apply the knowledge acquired to human nutrition and dietetics.
4. acquire knowledge on metabolism of nutrients.

Unit I (15 hrs)

Carbohydrates - Structure and metabolism general reactions as mono and disaccharides. Metabolism- TCA cycle. Definition of Glycolysis, glycogenolysis, gluconeogenesis.

Unit II (15 hrs)

Proteins - structures, classification, and metabolism. Amino acids- deamination, transamination, decarboxylation and urea cycle. Enzymes – classification, factors regulating enzyme activity and coenzymes.

Unit III (15 hrs)

Lipids- Structures, functions, properties and metabolism. Fatty acids- Saturated and unsaturated fatty acids, Beta – oxidation of fatty acid, ketone bodies, ketosis, ketogenesis.

Unit IV (15hrs)

Vitamins- Biochemical role of fat soluble vitamins (Vit A, D, E and K) and water soluble vitamins (Vit B₁, B₂, B₃, C and niacin). Minerals - Biochemical role of sodium, potassium, calcium, iron, iodine, copper and zinc.

Unit V (15 hrs)

Acid base balance – acidosis, alkalosis. Inborn errors of metabolism – glycogen storage disease, phenyl ketonuria, alkaptonuria and Lactose intolerance.

Self study area: Hormones

Text Book:

1. Ambiga Shanmugam, (2006). Biochemistry for Medical Students. Nagaraj and company private limited, Chennai.

Unit – I	Page no: 1-30,423-432.
Unit – II	Page no: 85-103,135-144,543-556.
Unit – III	Page no: 47-64 and 490-498.
Unit – IV	Page no: 155-206 and 651-679.
Unit – V	Page no: 349-371.

References:

1. Conne. E.E., and Stump P.K., (1968). Outlines of Biochemistry, Wiley Eastern Private Ltd., New Delhi.
2. Deb, A.C., (2004), Fundamentals of Biochemistry, New Central Book Agency Pvt., Ltd., Kolkatta.
3. William P.J., (1972). An introduction to Bio – chemistry, Van Nostrand Co., Inc, London.
4. West, E.E., W.R. Mosen. R.S. and Van Bruggon J.S., (1986). Text book of Bio – chemistry. The Macmillan Company, New York.

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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc. NUTRITION AND DIETETICS
CORE COURSES (ALLIED I)
SEMESTER II
14UND2A – HUMAN PHYSIOLOGY
(For those admitted in June 2014 & later)**

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of credit	: 04

Objectives:

To enable the learners to

1. understand the structure and functions of various organs of the body.
2. obtain a better understanding of the principles of nutrition through the study of physiology.
3. know the functioning mechanism of various organ.
4. gain knowledge on the physiological aspects of special senses.

Unit I **(12 hrs)**

Circulatory system – Blood- composition and functions, blood grouping, Rh factors and blood coagulation. Heart – Structure, functions, heart rate and cardiac output.

Unit II **(12 hrs)**

Digestive system – Structure, digestion and absorption of carbohydrates, proteins and fats. Excretory system – Structure and functions of kidney, nephron, formation and composition of urine.

Unit III **(12hrs)**

Respiratory system – Lungs - structure, mechanism of respiration in man, transport of gases in blood - transport of oxygen, transport of carbon-dioxide.

Unit IV **(12 hrs)**

Nervous system - Spinal cord structure and functions, Brain – Structure and functions cerebrum and cerebellum. Autonomic nervous system – Sympathetic and parasympathetic. Sense organs - Structure of eye, ear, and skin.

Unit V **(12 hrs)**

Endocrine gland - Pituitary, thyroid, parathyroid and adrenal glands islets of langerhans- functions. Reproductive system -Structure of male and female reproductive organs, puberty, menstrual cycle and menopause.

Self study area: Blood composition

Text Book:

1. Arumugam, N. (2005), Text Book of Human Physiology, Saras Publications

Unit – I Page no: 196-206,210-211,215-217,220-226 and 239-245

Unit – II Page no: 74-108 and 276-283.

Unit – III Page no: 158-162 and 166-173

Unit – IV Page no: 360- 380, 384-386 and 394-399

Unit – V Page no: 294-324,492-514.

References:

1. Balinsky, B.L., (1981). An Introduction to Embryology, Holt Saunders, New York.

2. Ganong, W.F., (2001). Review of Medical Physiology, 20th Edition, McGraw Hill Medical Publishing Division, New York.

3. Thrence, A. Rutgers, (1961). Elementary to Human Physiology – a Text Book of under Graduate, John Wiley Sons, New York.

4. Taylor, B., (1975). A Text in Human Physiology, Asia Publishing House, Bombay.

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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
CORE COURSES (MAJOR)
SEMESTER II
14UND2L – Lab – I
(For those admitted in June 2014 & later)**

Contact hours per week	: 06
Total number of hours per semester	: 90
Number of credits	: 04

Food Science:

Objectives:

To enable the learners to

1. gain knowledge of various methods of cooking foods.
2. gain knowledge on experimental and recipe making.
3. know the measuring methods of foods.
4. understand different food groups and their composition.

Practical:

- I** a) Grouping of foods – Based on Basic 5
b) Measuring of food – Solid, Liquid and butter like products.
- II** Cereals:
- a) Experimental cookery of cereal:
i) Steaming, boiling and pressure cooking.
b) Preparation - Ragi puttu, ragi leaf cake, Idli, dosa, dhokla, tomato and lemon rice.
- III** Pulses:
- a) Experimental cookery of dhal – soaked, un-soaked and sprouted - Effect of cooking grams in hard water, soft water and with baking soda.
b) Preparation - Sambar, Kootu, Medu Vada and greengram dhal payasam and Groundnut Pakoda.
Cereal Pulse Combination – Kitchedi and sambar bath.
- IV** Vegetables and Fruits:
- a) Experimental Cookery of Vegetables and fruits.
i) Fruits – Enzymatic browning and its prevention.
b) Preparations – Vegetables- Avial, poriyal, vegetable briyani and vegetable cutlet.
Fruits – fruit salad and milk shakes.

V Milk and Milk products:

- a) Experimental cookery – Coagulation of milk proteins.
- b) Preparation – payasam, mour kozhambu, pannier and ice cream,

VI Flesh foods:

- a) Experimental Cookery of flesh foods
 - i) Factors affecting coagulations of egg protein and foaming.
 - ii) Experimental Cookery - Factors affecting cooking time and texture of egg.
- b) Preparation – Egg-Poached egg, omelette, scrambled egg, fried egg, custard. Meat- Mutton gravy and cutlet.

VII Fats and oils:

- a) Experimental cookery – Determination of smoking point of common fats and oils.
- b) Preparation – Poori and potato chips.

Nutritional Biochemistry:

Objectives:

To enable the learners to

1. develop skill in qualitative and quantitative estimation of nutrients.
2. know the analyzing procedure of sugar, amino acids and protein.
3. understand the blood glucose level.
4. acquire knowledge on urine estimation.

Practical:

- a. Qualitative analysis of sugars, amino acids.
- b. Demonstration: Estimation of blood glucose.
- c. Demonstration: Separation of amino acids by paper chromatography.
- d. Demonstration: Human Serum and urine analysis
- e. Visit to any clinical lab

Note: For University practical examination questions must be from qualitative analysis of sugar and amino acids.

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CORE COURSES (ALLIED I)
SEMESTER II
14UND2AL – ALLIED LAB – I
(For those admitted in June 2014 & later)**

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of credits	: 02

Human Physiology:

Objectives:

1. To know the structure of human organs.
2. To acquire knowledge on microscopic structure of various gland.
3. To understand the process of blood coagulation and blood pressure.
4. To know about blood grouping system.

Practical:

- a. Study of blood – WBC, RBC counts and Estimation of haemoglobin.
- b. Blood group identification.
- c. Measuring of blood pressure.
- d. Determination of coagulation time of blood & bleeding time.
- e. Structure of heart, digestive system, kidney, reproductive organs - ovary, uterus and testis.
- f. Microscopic structure of various endocrine glands – thyroid, pituitary and adrenal.

Human Development:

Objectives:

1. To know various techniques involved in assessing the child development.
2. To develop skill in observing child development.
3. To understand the attitudes of adolescents.
4. To analysis the problems of old age.

Practical:

- a. Visit to nursery school to study the preschoolers.
- b. Observations in developments of preschoolers – Physical, Motor, social, emotional, and language developments for 4 weeks.
- c. Study on adolescent's attitudes towards adult & adult's attitudes towards adolescents.
- d. Survey on problems of old age.

Allot 2 hours for Practical.

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CORE COURSE (MAJOR)
SEMESTER III
14UND31- NUTRITION THROUGH LIFE CYCLE
(For those admitted in June 2014 & later)**

Contact hours per week	: 04
Total number of hours per Semester	: 60
Number of Credits	: 04

Objectives:

This course will enable the students to

1. acquire knowledge about the principles of planning diets for various stages of life cycle.
2. understand the process of growth and development from birth until old age.
3. develop ability to plan balanced diets for various activity groups and various socio – economic group.
4. understand the physiology of pregnancy and lactation and how these influence nutritional requirements.

Unit I (12 hrs)

Meal Management - Introduction, balanced diet, food pyramid and Recommended Dietary Allowances (RDA). Basic principles of meal planning, points to be considered in planning diet and steps in meal planning.

Unit II (12 hrs)

Nutrition in pregnancy - nutrient requirements, complications in pregnancy and meal planning. Nutrition in lactation - nutrient requirements, physiology of lactation, composition of breast milk, advantages of breast milk, Differentiation between breast feeding and artificial feeding and meal planning.

Unit III (12 hrs)

Nutrition during infancy - nutrient requirements, Weaning- importance of weaning foods, types of supplementary foods. Nutrition during Preschool Children- nutritional requirements, factors affecting nutritional status, nutritional related problems and diet planning.

Unit IV (12 hrs)

Nutrition during school going age - nutrient requirements, packed lunch, and diet planning. Nutrition in adolescence - nutrient requirements, eating disorders, nutritional problems, and diet planning.

Unit - V:**(12 hrs)**

Nutrition in adulthood - nutrient requirements, changes in consumption pattern-physical, mental and social changes influencing meal pattern. Nutrition in old age - nutrient requirements, physical, biological and psychological changes influencing meal pattern and nutritional problems of old age.

Text Book:

1. Srilakshmi B., (2011). Dietetics, New Age International (P) Limited Publications, New Delhi.

Unit – I Page no: 1-2, 4-13.

Unit – II Page no: 37-45, 48-49, 110- 118, 122-125 and 127-133.

Unit – III Page no: 34-37, 53-58 61-63 and 66-81.

Unit – IV Page no: 87-88, 91-93, 97-99 and 101-107.

Unit – V Page no: 13-15,138- 143 and 145-149.

References:

1. Nato, A.B and Heslin, J.A. (1986). Nutritional care of the adult, Macmillan Publishing Co., New York.
2. Swaminathan, M. (1988). Advanced text book on food and Nutrition, Bangalore, vol 1 and 2 Edition.
3. Antia F.P Clinical Dietetics' and Nutrition, III Edition, Oxford University Press, Bombay 1989.
4. ICMR- Nutritive value of Indian Foods, 1989.
5. Fundamentals of foods and Nutrition - Mudambi SR and Rajagopal M Y, Wiley Eastern Ltd.

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DEPARTMENT OF NUTRITION AND DIETETICS
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CORE COURSE (MAJOR)
SEMESTER III
14UND32 – FOOD SAFETY AND QUALITY CONTROL
(For those admitted in June 2014 & later)

Contact hours per week	: 03
Total number of hours per Semester	: 45
Number of Credits	: 03

Objectives:

To enable students to

1. study about quality control and common food standards.
2. gain knowledge on food laws.
3. gain knowledge on food safety.
4. acquire knowledge on food adulteration.

Unit I **(9 hrs)**

Quality Control- Objectives, principles of quality control and stages of quality control in food industry. Food Safety- Definition, factors affecting food safety and importance of food safety. Food Hazards- Physical, Chemical, Biological hazards associated with food.

Unit II **(9 hrs)**

Sensory Assessment - Sensory assessment on food quality – appearance, color, flavour, texture, and taste. Different methods of sensory analysis- Difference test- Paired comparison and duo-trio test, Rating test- Ranking and Hedonic rating test, Sensitivity test- Threshold and dilution test, descriptive test and preparation of score cards.

Unit III **(9 hrs)**

Food laws – FPO, BIS, PFA, Consumer Protection Act, ISO and AGMARK. Food Standard- Cereals, pulses, fruits, vegetables, egg, fleshy foods and beverages. International food standards and principles of HACCP.

Unit IV **(9 hrs)**

Food Additives- Definition, functions, thickeners, emulsifiers, firming agents, food colors, flavours, leavening agents, preservatives and their uses. Anti-oxidants, anti-caking, anti-foaming, flour improvers, sequestering and curing agents.

Unit V **(9 hrs)**

Food Adulteration- Types- intentional and incidental adulteration, tests to detect common adulterants. Bio-fortification- Genetically modified foods. Bio – fortification, Nutraceuticals – Definition and their role.

Self study area: Novel foods

Text Book:

1. Srilakshmi.B, Food Science, 2007, New Age International (P) Limited, Publishers, New Delhi, 4th edition.

Unit II Page no: 286-288, 291-294, 297- 298 and 300-301.

Unit III Page no: 327-339.

Unit V Page no: 392-393, 397-403 and 408-423

2. Shakunthla Manay.N. Shadaksharaswamy.M.(2005). Foods Facts and Principles,New Age International Publishers

Unit. IV page no: 452-456.

Unit I page no :438,449-451.

References:

1. Bominic, W.S. Wong Wong, (2000). Mechanism and theory in food chemistry, CBS publishers and Distributors.
2. Hester, R.E and Harrison, R.M., (2001). Food Safety and Food Quality, Edited By Royal Society of Chemistry.
3. Mahindra S.N., (2000). Food safety - A- techno legal analysis, Tata McGraw company publications.

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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
CORE COURSES (ALLIED II)
SEMESTER III
14UND3A – FOOD PRESERVATION
(For those admitted in June 2014 & later)

Contact hours per week	: 04
Total number of hours per Semester	: 60
Number of Credits	: 04

Objectives:

To enable learners to

1. Understand the principles of preservation.
2. Know the importance of food preservation.
3. Learn about the methods of preservation.
4. Contribute proper utilization of foods and prevent wastes.

Unit I **(12 hrs)**

Food preservation- Definition, importance, principles and methods.
Food spoilage- Definition and causes. Preservation by using preservatives:
chemical and natural preservatives and their role in preservation.

Unit II **(12 hrs)**

Preservation by addition of salt - Pickling, sauerkraut, curing of meat and fish. Preservation by addition of sugar- jams, jellies, marmalades and fruit preserves- procedure, common defects and their causes. Packed fruit juices and beverages- squashes and carbonated beverages.

Unit III **(12 hrs)**

Preservation by use of high temperature - Use of high temperature for food preservation. Pasteurization, canning – procedure, containers used for canned products and spoilage of canned foods.

Unit-IV **(12 hrs)**

Preservation by use of low temperature - Refrigeration and cool storage- factors and importance in refrigerated storage. Freezing –methods, factors affecting quality of frozen foods and effect of freezing on foods.

Unit V **(12 hrs)**

Preservation by Dehydration and drying – Methods – sun drying, mechanical drying, freeze drying, osmotic drying and microwave drying-

advantages and disadvantages. Preservation by Irradiation- Definition, sources of radiation, and irradiation process.

Self study area: Advanced preservation techniques

Text Book:

1. Sivasankar, B., (2005). Food processing and preservation, Prentice-Hall of India private limited, New Delhi-110001, Third printing.

Unit – V Page no: 431.

Unit – I Page no: 197-198,167-168,165-166.’

2. Shakuntala Manay, Foods facts & principles, 2008, New Age international (P) limited, Publishers- New Dalhi

Unit – II Page no: 347.

Unit – V Page no: 386-389.

3. Sudesh Jood and Neelam Khetarpaul, (2002). Food Preservation, Agrotech publishing Academy, Udaipur,First printing.

Unit – I Page no: 7-8, 14-18, 54-63, 95- 96,

Unit – II Page no: 95-96 and45-49

Unit – III Page no: 40-45.

Unit – IV Page no: 26-34.

Unit – V Page no: 27-39.

4. Modi.H.A.(2009).Microbial Spoilage of Foods, Avishkar Publishers and Distributers.

Unit - I Page no: 154

Unit- III Page no: 91.

References:

1. Desrosier, N.W., (2004). The Technology of food preservation, The AVI Publishing Co., Inc West Post Connecticut, Indian Reprint.

2. Fellows P., (2003). Food Processing Technology, Principles and Practice, Woodhead publishing limited, Cambridge, England, Second edition.

3. William C. Frazier and Dennis C. Westhoff, (1995). Food Microbiology, Tata McGraw – Hill Publishing Company Limited, New Delhi. 6th reprint.

4. Finley J.W. and Richarson, T. (2003). Chemical changes in food during processing, CBS Publishers and Distributors.

Study material will be provided.

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B.Sc NUTRITION AND DIETETICS
CORE COURSES (MAJOR)
SEMESTER IV
14UND41 – FOOD MICROBIOLOGY
(For those admitted in June 2014 and later)**

Contact hours per week	: 05
Total number of hours per Semester	: 75
Number of credit	: 05

Objectives:

To enable the learners

1. To understand the scope of food microbiology.
2. To gain knowledge on the role of micro organism in health and disease.
3. To understand food spoilage and food borne diseases.
4. To maintain the quality in food industries.

Unit I (15 hrs)
Bacteria- General characteristics, Molds and Yeast- General characteristics and industrial importance. Viruses- General characteristics.

Unit II (15 hrs)
Primary sources of microbes in foods. Control of micro organisms - disinfection, physical agents – light and desiccation .Removal of microbes – filtration, sedimentation. Chemical agents and antibiotics.

Unit III (15 hrs)
Food spoilage - Contamination of foods and microbes in the spoilage of foods and their prevention. Spoilage of cereals & cereal products, vegetables & fruits, sea foods, meat, egg, poultry, canned foods and milk and milk products.

Unit IV (15 hrs)
Public health hazards due to food contamination, food borne infections and intoxications - symptoms, mode and sources of transmission, methods of prevention; detection of food borne disease outbreak.

Unit V (15hrs)
Importance of microbes in foods- fermented foods and fermenting agents. Cereal - pulse mixtures, milk products, soy products, alcoholic beverages- Beer and wine.

Text Book:

1. Frazier, W.C. and Westhoff, D.C., (1988), Food Microbiology, 4th Edition, Mc Graw Hill, New York.

Unit – I Page no: 17-34 and 36-42.

Unit – II Page no: 89-90 and 148-156.

Unit – III Page no: 173-185, 196-211, 218-239,243-253,255-266,268-274,276-297 and 300- 308.

Unit – IV Page no: 401-412,428-429.

Unit – V Page no: 330-341, 365, 371-375.

References:

1. Hobbs, B.C. and Robert, D., (1993). Food Poisoning and Food Hygiene, Edward Arnold, London.
2. Modi.H.A.(2009).Microbiological Spoilage of Foods, Avishkar Publishers and Distributers.
3. Dubey, R.C.,(2010). A Text Book of Microbiology, S.Chand and Company Ltd. New Delhi.

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B.SC., NUTRITION AND DIETETICS
CORE COURSES (ALLIED II)
SEMESTER IV**

14UND4A -FAMILY RESOURCE MANAGEMENT

(For those admitted in June 2014 &later)

Contact hours per week	: 04
Total number of hours per semester	: 60
Number of credits	: 04

Objectives:

To enable the students to

1. understand the significance of resource management.
2. know the principles of resource management.
2. apply the principles in the management of resources.
4. acquire knowledge on work simplification.

Unit I **(12 hrs)**

Concept of resource management – Definition, management process- planning, controlling, supervision, directing, guiding and evaluating. Family resources- Meaning, types – human and non - human resources.

Unit II **(12 hrs)**

Decision Making – Meaning, importance, types and process of decision making. Work Simplification- Definition, importance, techniques – Process chart, operation chart and cycle graph technique and Mundel's classes of change.

Unit III **(12 hrs)**

Design– Types and elements of design. Principles of design – Emphasis, harmony balance, proportion and rhythm. Color – Qualities of color. Hue, value and intensity, color chart and harmonies.

Unit IV **(12 hrs)**

Time Management time management process –planning, controlling and evaluation.
Money Management: Family income- Types and sources. Budget- Meaning, Types of budget, planning a budget for different income groups, advantage of budgeting, factors affecting family budget

Unit V **(12 hrs)**

Furniture – furnishing materials. Accessories-types selection and use, picture mounting. Lighting – Importance, and types of lighting. Flower arrangement- Styles in Flower arrangement, care and selection of flowers.

Self study area: Retail manageme

Text Book:

1. Varhese, M.A., Ogale N.N. and Srinivas, K. (1985). Home Management, New Age International (P) Limited, Publishers, New Delhi.

Unit – I Page no.4-7, 7-13 and 40-52.

Unit – II Page no.27-33, 40-44and 27-39.

Unit – III Page no.33-37, 17-25 and 53-65.

Unit – IV Page no.78-82, 84-87 and 48-55.

Unit – V Page no.66-82.

2. Premlatha Mullick, (2000). Text book of Home science, Kalyani Publication, New Delhi

Unit-I Page no: 8-11.

Unit-IV Page no: 20-22.

Unit-V Page no: 89-91 and 92-96.

References:

1. UGC's Net – Lectureship/ JRF
2. Rao, P.S., and Rao, V.S.P., (1997). Personnel Human Resource Management, New Delhi, Konark Publishers Pvt., Ltd.

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SIVAKASI
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B.Sc., NUTRITION AND DIETETICS
CORE COURSE (MAJOR)
SEMESTER IV
14UND4L-Lab- II
(For those admitted in June 2014 & later)

Contact hours per week	: 06
Total number of hours per Semester	: 90
Number of Credits	: 04

Objectives:

To enable the students to

1. know about cost foods and seasonal foods.
2. plan and prepare a diet for various income group.
3. prepare normal diet for various age group.
4. plan and prepare packed lunches and weaning mix .

Nutrition through Life Cycle

Practical:

1. Planning, preparing and serving a meal for low income family, middle income family and high income family.
 - a. Planning and preparing an indigenous weaning mix.
2. Planning, preparing and serving a meal for preschool children.
3. Planning, preparing and serving a meal for a school going child (boy and a girl).
 - (a) Planning and preparing any five packed lunches.
 - (b) Planning, preparing and serving a meal for an adolescent (Boys and Girls).
4. Planning, preparing and serving a meal for an adult (sedentary, moderate and heavy worker)
5. Planning, preparing and serving a meal for an old age.
6. Planning, Preparing and serving a meal for an expectant mother.
7. Planning, preparing and serving a meal for a lactating mother.

Food Microbiology:

Objectives:

1. To understand the microscopic structure of micro organism.
2. To acquire knowledge on methods of staining.
3. To study about equipments in microbiology laboratory.
4. To identify the micro organism in food sample.

Practical:

1. Identification of spotters on yeast, mould and pathogenic bacteria.
2. Examination of Unstained organism – Hanging Drop Preparation.
3. Examination of Stained Organisms- Simple Staining and Gram's Method of Staining.
4. Study of Equipments in a microbiology Lab.
5. Examination of micro organisms in pickle, canned foods, meat and soft drinks.

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SEMESTER IV
14UND4AL – ALLIED LAB- II
(For those admitted in June 2014 & later)**

Contact hours per week	: 04
Total number of hours per Semester	: 60
Number of Credits	: 02

Food Preservation:

Objectives:

To enable the learners to

1. know various preservation methods.
2. acquire knowledge on preservatives.
3. develop skill in preparing preserved foods.
4. gain knowledge on organoleptic evaluation.

Practical:

1. Preparation of preserves – Squash, jams, jellies and marmalades.
2. Preparation of fruit beverages – carbonated beverages, clarified juice – Pomegranate, apple, orange and sweet lime.
3. Preparation of pickles (tomato, mixed vegetable and garlic pickle).
4. Drying of vegetables (cluster beans, carrot, onion, peas and potato vathal and vadams, sago, beaten rice and rice vadam).
5. Rehydration of vegetables- cluster beans, carrot, onion, peas and potato.
6. Sensory evaluation of the processed foods.
7. Visit to any food processing Unit.

Note: Practical should be done either as demonstration or in group. For each practical allot 2 hours.

Family Resource Management:

Objectives:

To enable the learners to

1. acquire knowledge various types of table setting.
2. gain knowledge on flower arrangement.
3. get clear idea about budget.
4. make different types of accessories.

Practical:

1. Picture mounting – wall hacking pictures, photo prime.
2. Flower arrangement- Types flower arrangement.
3. Accessories - To make different types of accessories with using locally available materials.
4. Planning a budget for different income group.
5. Preparation of prang colour chart.
6. Identification of colour harmony.

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CORE COURSE (MAJOR)
SEMESTER V
14UND51– THERAPEUTIC DIET
(For those admitted in June 2014 & later)**

Contact hours per week	: 06
Total number of hours per Semester	: 90
Number of Credits	: 05

Objectives:

To enable the students to

1. know the principles of diet therapy.
2. acquire knowledge on various diseases.
3. understand the modification of normal diet for therapeutic purpose.
4. understand the role of dietitian.

Unit I (18 hrs)

Dietitian and therapeutic diets: Dietitian – Role and qualities. Diet therapy – Definition, purposes of a therapeutic diet and types of hospital diet – clear fluid, full fluid, soft, bland and regular diet. Special feeding methods - Oral feeding, tube feeding, parental feeding and TPN.

Unit II (18 hrs)

Diseases of the Gastro intestinal tract: Peptic, gastric and duodenal ulcer, diarrhoea, constipation- Causes, symptoms and dietary management.

Unit III (18 hrs)

Obesity – Causes, assessment, types and dietary management. Underweight – Causes and dietary management. Febrile conditions – Acute, chronic – Typhoid, TB and Malaria – Causes, symptoms and dietary management.

Unit IV (18 hrs)

Disease of liver and gall bladder: Jaundice, viral hepatitis, cirrhosis and cholelithiasis - causes, symptoms and dietary management.

Unit V (18 hrs)

Sports Nutrition - Energy system- aerobic and anaerobic energy system and Nutritional requirements for athletes. Space Nutrition- Physiological changes and nutrition in space and types of space foods.

Self study area: Hypertension

Text Book:

1. Srilakshmi B., (2011). Dietetics, New Age International (P) Limited Publications, New Delhi.

Unit – I Page no. 171, 187-195 and 407-408.

Unit – II Page no.280-282 and 284-291

Unit –III Page no. 212-213, 214-216, 222-224,226-229,234-236 and 242-245.

Unit – IV Page no. 296-305.

Unit – V Page no. 293-402.

2. Srilakshmi B. Food Science, New Age International (P) Ltd Publishers, Fifth edition, 2010.

Unit – V Page no. 417-418.

References:

1. Joshi, S.A., (2004). Nutrition and Dietetics, Tata McGraw Hill Publishings, New Delhi.

2. Raheena, Begum, (1989). A textbook of Foods, Nutrition and Dietetics, Sterling Publishings, New Delhi.

3. Antia, F.P., Clinical Dietetics and Nutrition, Oxford University Press, Delhi, 2001.

4. Mahan, L.K., Arlin, M.T., Krause's Food, Nutrition and Diet Therapy, W.B. Saunders Company, London, 8th edition, 1992.

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CORE COURSE (MAJOR)
SEMESTER V
14UND5L – Lab- III
(For those admitted in June 2014 & later)

Contact hours per week	: 06
Total number of hours per Semester	: 90
Number of Credits	: 05

Therapeutic Diet

Objectives:

1. To gain knowledge about therapeutic diets.
2. To plan diet for various diseases.
3. To gain practical exposure on hospital diet
4. To develop skills in preparation of foods for various diseases

Practical:

- 1) Preparation of therapeutic hospital diets-clear liquid, full liquid, soft and regular diets.
- 2) Planning diet for
 - a) Gastro intestinal tract diseases:
 - i) Peptic ulcer
 - ii) Constipation
 - iii) Diarrhoea
 - b) Underweight
 - c) Obesity
 - d) Febrile condition
 - i) Tuberculosis
 - ii) Typhoid
 - iii) Malaria
 - e) Liver and Gall bladder:
 - i) Jaundice
 - ii) Cirrhosis of liver
 - f) Meal planning for athletes.
 - g) Suggestion for space nutrition.

Visit to Hospitals for Dietetics practical.

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CORE COURSE (MAJOR)
SEMESTER VI
14UND61 – THERAPEUTIC DIET AND COUNSELING
(For those admitted in June 2014 & later)**

Contact hours per week	: 06
Total number of hours per Semester	: 90
Number of Credits	: 05

Objectives:

To enable the student to

1. understand the role of dietitian in preventive, promotive and curative health care.
2. make appropriate dietary modifications for various disease conditions.
3. acquire knowledge on diet counseling.
4. counsel the patient based on the patho physiology.

Unit I (18 hrs)

Diabetes mellitus- Types, etiology, symptoms, diagnosis, complications and dietary management. Metabolic disorders - Gout, hypo and hyperthyroidism - Causes, symptoms and dietary management.

Unit II (18 hrs)

Disease of Cardiovascular systems- Hypertension, atherosclerosis and congestive heart failure- Etiology, symptoms and dietary management. Relationship between dietary fat and development of cardiovascular diseases.

Unit III (18 hrs)

Diseases of kidney and urinary tract- Nephritis – etiology, symptoms and dietary treatment, nephrotic syndrome – causes, symptoms and dietary management, urolithiasis – etiology, symptoms and dietary management, renal failure – causes, symptoms, dietary treatment and dialysis.

Unit IV (18 hrs)

Food Allergy – Types of reaction, symptoms, diagnosis and treatment. Cancer – risk factors, nutritional requirements and role of foods in prevention of cancer. Burns - Physiological changes, nutritional care and management.

Unit V (18 hrs)

Diet counseling- Objectives, assessment of patient needs, establishing rapport, counseling relationship, resources and aids to counseling, diet prescription.

Self study area: Diet in alcoholism

Text Book:

1. Srilakshmi B., (2004). Dietetics, New Age International (P) Limited Publications, New Delhi.

Unit – I Page no. 307-314, 318-319 and 329-333.

Unit – II Page no.246-271.

Unit – III Page no.335-359.

Unit – IV Page no. 362-366, 373-378 and 382-389.

Unit – V Page no. 409-410.

2. Swaminathan M., (2009). The Advanced Text Book on Food and Nutrition, Vol.2. The Bangalore printing and publishing co-limited , Bangalore.

Unit I- Page no 224-228 and 270-272.

References:

1. Antia, F.P., Clinical Dietetics and Nutrition, Oxford University Press, Delhi, 2001.

2. Mahan, L.K., Arlin, M.T., Krause's Food, Nutrition and Diet Therapy, W.B. Saunders Company, London, 8th edition, 1992.

3. Williams, S.R. Nutrition and Diet therapy, Times Mirror/Mosby College Publishing, St. Louis, seventh edition, 2000.

4. Raheena, Begum, A textbook of Foods, Nutrition and Dietetics, Sterling Publishers, New Delhi, 1989.

5. Dave,Indu, The basic essentials of counseling, Sterling publishers pvt. Ltd. New Delhi, 1984.

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CORE COURSE (MAJOR)
SEMESTER VI
14UND62 – FOOD SERVICES MANAGEMENT
(For those admitted in June 2014 & later)

Contact hours per week	: 05
Total number of hours per Semester	: 75
Number of Credits	: 05

Objectives:

To enable the students to

1. understand the different types of food service and styles.
2. understand the functioning of food service institutions.
3. develop skills in setting up food service units.
4. become conscientious caterer and food service administrator.

Unit I **(15 hrs)**

Catering industry - classification of food service institutions- Functions of profit oriented, service oriented and public health facility oriented. Service of foods - Self service, tray service and waiter-waitress service. Table setting- Rules and types- western, modern and Indian.

Unit II **(15 hrs)**

Food plant layout –Layout of food plants- space allocation for the various areas and flow of traffic through receiving, storage, preparation, service and dish washing areas. Arrangement of Equipments in work centers: optimum working heights, lighting and ventilation. Equipments- Selection and classification of major equipments.

Unit III **(15 hrs)**

Quantity food purchasing and storage- Procedures and records involved in purchasing, receiving, storing, and issuing of food materials. Quantity food production and service - Standardization of recipes – definition, objectives, format and its use. Portion control, menu planning- types - ala carte, table de hote and cyclic menu. Use of leftover foods.

Unit IV **(15 hrs)**

Management- Definition and functions of management. Tools of management - Organization chart, Job description, Job specification. Personnel management - Recruitment, selection, orientation and training, of employees and labour laws- Payment of wages Act, ESI Act and Employees Provident Fund Act

Unit V**(15 hrs)**

Financial management- Principles and methods of food cost control, factors affecting food cost, labor cost, operating cost and overhead cost. Hygiene and sanitation- Definition personnel hygiene food handling Use of computers in food service establishment- receiving, storage, preparation and serving.

Self study area: Waste management.

Text Book:

1. Mohini Sethi, (2004). Institutional Food Management –New Age International (P) Limited, Publishers, New Delhi. I Edition.

Unit I	Page no: 8-14, 397-407 and 449-473.
Unit II	Page no: 139-146 225-232; 237;147-170 and 257-362
Unit III	Page no: 308-328; 330-343,356-360,384-393 and 441-447.
Unit IV	Page no: 23-25, 47-57; 65-76; 656-663; 670-676; 692- 702 and 712-713,717-720.
Unit V	Page no: 737-748 and 523-564.

References:

1. Mohini Sethi. Surjeet Malhan(2004).Catering Management An Integrated Approach New Age International (P) Limited, Publishers, New Delhi. II -Edition.
2. Malhotra, R.K., (2002). Food Service & Catering Management, Anmol Publication, New Delhi.
3. Branson, J.C. and Lennon, M.Hotel, Hostel and Hospital Housekeeping, EiLBS (Publication) V Edition 1992.
4. Palacio, J.P. Harger, V., Shugart, G. and Theis, M. West's Introduction to food service, MacMillan Publication Co., New York, XVII Edition, 1944.
5. Kotschevar, L.H. and Teerell, M.E., Food service planning, Layout and Equipment, MacMillan Publication co., New York, III Edition, 1985.
6. Splaver, B.R. Successful Catering, Van Norstrand Reinhold, New York, III Edition, 1985.
7. Lillicap, D.R and Cousins, J.A. Food and Beverage Service, ELBS, IV Edition, 1994.

THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc., NUTRITION AND DIETETICS
CORE COURSE (MAJOR)
SEMESTER VI
14UND6L- Lab– IV
(For those admitted in June 2014 & later)

Contact hours per week	: 06
Total number of hours per Semester	: 90
Number of Credits	: 05

Therapeutic Diet and Counseling

Objectives:

1. To know the therapeutic diet
2. To develop skills in diet planning.
3. To gain knowledge on hospital diet.
4. To develop skills in preparation of foods for various diseases.

Practical:

- 1) Planning and preparation of diets for
 - a. Diabetes mellitus.
 - b. Hypertension.
 - c. Atherosclerosis.
 - d. Nephritis and nephritic syndrome.
 - e. Cancer.
 - f. Gout.
 - g. Burns.

- 2) Dietetic internship for fifteen days in a reputed hospital.

Food Service Management:

Objectives:

1. To gain knowledge on standardization of recipes.
2. To develop skills in menu planning for various occasion.
3. To acquire knowledge on quantity cookery.
4. To understand the basic principles of management in food services units.

Practical:

- 1) Standardization of recipe at least 2 dishes in each of the following category
 - a. Cereals and Pulses
 - b. Vegetables.
 - c. Fruits.

- d. Meat, chicken and other flesh foods.
 - e. Sugar and Jaggery.
 - f. Milk and its products.
 - g. Nuts and Oil seeds.
- 2) To plan and prepare menu for various occasions.
 - 3) Quantity Cookery: Preparation of South Indian, North Indian and Western menu for 25 members.
 - 4) Visit to well-organized food services units.
 - 5) Quantity preparation and sale.
 - 6) Table setting.
- ◆ Catering internship for a period of 2 weeks in a reputed catering institution preferably a hotel.

Note:

- ◆ For practical examinations students have to
 1. Calculate the food cost and profit for 15/20/25 portions.
 2. Prepare and display single portion.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN
SIVAKASI.**

DEPARTMENT OF NUTRITION AND DIETETICS

B.Sc., NUTRITION AND DIETETICS

SEMESTER VI

CORE COURSE – (MAJOR)

14UND6P- PROJECT

(For those admitted in June 2014 and later)

Contact hours per week : 06

Total number of hours per semester : 90

Number of Credits : 03

Objectives:

To help the students to

1. gain knowledge on planning the normal diet.
2. make appropriate dietary modification for various diseases and disorders.
3. know the role of dietician in hospitals.
4. Acquire knowledge on diet counseling.

Rules Governing Project Report

1. During the sixth semester, the students have to undertake a group project by selecting a problem of their choice pertaining to the course. Each group shall contain a maximum of two students.
2. The project work report should be submitted on or before the date specified by the Head of the Department in the Sixth Semester
3. Each group should submit two copies of their project report for evaluation.
4. The project report shall carry a total of 100 marks. The project report will be valued by the Guide / Internal Examiner for 40 marks. It is valued by the External Examiner for 40 marks and 20 marks will be awarded for viva voce and presentation conducted by the Guide / Internal Examiner and External Examiner.
5. The project report shall be evaluated separately by the Guide / Internal Examiner and the External Examiner. The *Viva-Voce* examination shall be conducted jointly by the Guide / Internal Examiner and External Examiner.
6. For a pass in the project, each student should secure a minimum of 40% of marks.
7. If a student fails to get a minimum pass mark, she may be permitted to resubmit her project report once again within the period of six months after the publication of results.
8. If a student fails to submit the project report within the stipulated time the candidate can submit the same on the date announced by the controller of examinations on payment of fine prescribed by the Principal.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc., NUTRITION AND DIETETICS
ELECTIVE COURSES (MAJOR)
SEMESTER V
14UND5E1 – COMMUNITY NUTRITION
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per Semester	: 75
Number of Credits	: 05

Objectives:

To enable the students to

1. know about the application of basics of nutrition in the community.
2. gain knowledge of national and international organization.
3. understand the nutritional problems prevailing in our country.
4. acquire knowledge on implementation of various government policies and programs to prevent deficiency disorders.

Unit I **(15 hrs)**

Concept of community nutrition and ecology of malnutrition – meaning and scope of community nutrition. Malnutrition – Prevalence, ecology of malnutrition -Dietary factors, economic, socio cultural and environmental factors. Vicious and virtuous cycle.

Unit II **(15 hrs)**

Assessment of nutritional status in a community – direct and indirect methods – merits and demerits. Anthropometric assessment, clinical examination, biophysical measurement, laboratory and biochemical assessment, dietary assessment and vital health statistics.

Unit III **(15 hrs)**

Nutrition education- Meaning, objectives, methods, and role of International agencies in promoting nutrition education.

Unit IV **(15 hrs)**

Organizations - Role of National, International and Voluntary organizations to improve the nutritional status of the people – ICAR, ICMR, NIN, CFTRI, FAO, WHO, UNICEF, UNESCO.

Unit V

(15hrs)

National programmes - Schemes and programmes of various nutritional problems in India – Prophylaxis programme,(vitamin-A, anaemia, Iodine deficiency), Mid day meal programme and ICDS.

Self study area: Nutrition and Infection

Text Book:

1. Srilakshmi. B, (2002). Nutrition Science, New Age International (P) Limited, Publishers, New Delhi, 110002, Third Edition.

Unit- I Page no: 2, and 92-104.

Unit -II Page no: 333-357.

Unit -IV Page no: 365-380

Unit -V Page no: 358-364.

2. Swaminathan M., (2009). The Advanced Text Book on Food and Nutrition, Vol.2., The Bangalore printing and publishing co-limited , Bangalore.

Unit III Page no 367-373

References:

1. Agarwal A.N, (1981). Indian Economy, Problems of development and planning, Publications, New Delhi.
2. Jelliffe D.B.L., (1996). The Assessment of Nutritional Status on the Community, WHO, Geneva.
3. Mclarea D.S., (1983). Nutrition in the community, John Wiley & Sons, New Delhi.
4. Srilakshmi, B. (2007). Food Science, New Age International (P) Limited, Publishers, New Delhi, 110002, Fourth Edition.

Study material will be provided

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc., NUTRITION AND DIETETICS
ELECTIVE COURSES (MAJOR)
SEMESTER V
14UND5E2– FOOD PACKAGING
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per Semester	: 75
Number of Credits	: 05

Objectives:

1. To understand the need for food packaging.
2. To acquire knowledge on recent trends in packaging materials.
3. To learn about nutritional labeling.
4. To gain knowledge on food packaging applications during transportation.

UNIT I (15 hrs)

Food packaging- Definition, functions, characteristics of packaging material. Food packages – bags, pouches, wrappers, tetra packs-applications.

UNIT II (15 hrs)

Packaging materials - Introduction, purpose, requirements, types of containers. Modern packaging materials and forms-Glass containers, metal cans, composite containers, aerosol containers, rigid plastic packages, semi rigid packaging and flexible packaging.

UNIT – III (15 hrs)

Packages of radiation stabilized foods- Introduction, rigid containers, flexible containers. Radiation- measurement of radiations. Biodegradable packaging material – biopolymer based edible firm.

UNIT – IV (15 hrs)

Packages of dehydrated products- metallization, multilayer films, Aseptic packaging, retortable containers, modified and controlled atmosphere packaging, shrink and cling film packaging, micro-oven able containers, other package forms .

UNIT – V (15 hrs)

Packaging of finished goods- Weighing, filling, scaling, wrapping, cartooning, labeling, marking and trapping. Labeling: Standards, purpose, types of labels, labeling regulation barcode, nutrition labeling, health claims, and mandatory labeling provision.

References:

1. Vijaya Khader, Text book of food science and technology, Indian council of Agricultural research New Delhi, 2001.
2. Stanley Sacharous. Roger C Griffin. Principles of food packaging 2nd Ed. Avi pubCo. Westport.
3. F.A. & Paine. H.Y. Leonard hill. a hand book of food packaging. Blackie Sons Ltd London.
4. Sacharows. S. Handbook of packaging materials. Avi Pub Co. Westport.
5. Croshy N.T. Food packaging materials. Applied Science pub Ltd. London.
6. Paine F.A. The packaging media. Blackie & Sons Ltd. London.
7. NIIR. Food packaging technology Handbook, Delhi.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
ELECTIVE COURSES (MAJOR)
SEMESTER V
14UND5E3- EXTENSION EDUCATION
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of credits	: 05

Objectives:

To enable the students to

1. know the basics of Extension Education
2. understand the techniques involved in community health.
3. develop skill in the use of methods and media.
4. acquire knowledge on community development programmes.

Unit I **(15 hrs)**

Extension Education – meaning, principles, objectives, steps in extension education process and qualities of extension educator.

Unit II **(15 hrs)**

Community Development – principles of community development, objectives, interrelationship between community development and extension education. Community development programme and Panchayat Raj System.

Unit III **(15 hrs)**

Communication development – key elements involved in communication – cone of experience, techniques of communication-mass media, folk media and literature.

Unit IV **(15 hrs)**

Extension Education – programme planning and evaluation - Extension programme – definition, planning, principles, steps in planning. Evaluation – meaning, steps in evaluation.

Unit V **(15 hrs)**

Developmental programmes: Health and Nutrition Programmes - objectives and role in development. Functions of supportive agencies in developmental programmes. Women empowerment - principles and agencies of entrepreneurship development and self employment

Self study area: NGO

Text Book:

1. Dahama. O.P. and Bhatnagar O.P., (1995). Extension Education and Communication for Development, Oxford & IBH Publishing Co., New Delhi.

Unit – I Page no: 19-27, 88-94.
Unit – II Page no: 545-547.
Unit – III Page no: 347-352, 455-460.
Unit – IV Page no: 490-493.

2. Khanka S.S, Entrepreneurial Development, S.Chand & Company & limited, New Delhi.

Unit – V Page no: 18-20.

3. Rathindranath pramanik, Ashim kumar Adhikary. Gender inequality and women empowerment, Abhijeet Publication, Delhi.

Unit – V Page no: 160-165.

4. Rengarajan L, Entrepreneurial Development, Sree Ranga Publications, Rajapalayam.

Unit – V Page no: 39-41, 51-57.

5. Reddy, Adivi. A. (1995). Extension Education, Sree Lakshmi Press, Bapatla.

Unit – I Page no: 9-10.
Unit – II Page no: 298, 319-321.
Unit – III Page no: 111-113, 91-92.
Unit – IV Page no: 127-130, 160-164.

References:

1. Leagans, J.P, (1961), Extension Education for Community development, Directorate of Extension, Ministry of Food and Agriculture, Government of India, New Delhi.
2. Supe, S.V, (1985). An Introduction to Extension Education, Oxford & IBH Publishing Co., New Delhi.

Study material will be provided

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
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DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
ELECTIVE COURSES (MAJOR)
SEMESTER V
14UND5E4 – FUNCTIONAL FOODS AND NUTRACEUTICALS
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per Semester	: 75
Number of Credits	: 05

Objectives:

1. To know the bio active molecules in foods.
2. To acquire knowledge on anti nutritional factors.
3. To know about functions of nutraceuticals.
4. To understand the link between nutraceuticals and disease prevention

UNIT-I **(15hrs)**

Introduction to nutraceuticals as a science historical perspective, classification, scope and future prospects. Applied aspect of the Nutraceuticals Science. Sources of bioactive molecules in plant foods. Relation of Nutraceuticals Science with other Sciences- Medicine, Human physiology, genetically modified foods

UNIT-II **(15hrs)**

Functional Foods- Applications of herbs to functional foods- Concept of free radicals and antioxidants. Effect of processing on Nutrients. Soy proteins and soy isoflavones in human health;. Functional foods from wheat and rice and their health effects.

UNIT-III **(15hrs)**

Properties, structure and functions of various Nutraceuticals - Glucosamine, Octacosanol, Lycopene, Carnitine, Melatonin and Ornithin alphaketoglutarate. Use of proanthocyanidins, grape products, flaxseed oil as Nutraceuticals.

UNIT-IV **(15hrs)**

Functional Foods – Sources and role of isoprenoids, isoflavones, flavonoids, carotenoids, Tocotrienols ,polyunsaturated fatty acids, sphingolipids, terpenoids. Vegetables ,Cereals, milk and dairy products as Functional foods. Health effects of common beans, *Capsicum annum*, mustards, garlic, grape, citrus fruits and sea foods.

UNIT-V

(15hrs)

Nutraceuticals bridging the gap between food and drug. Nutraceutical rich supplements - Caffeine, Green tea, and *Spirulina* . Anti-nutritional Factors present in foods. General idea about role of Probiotics and Prebiotics as nutraceuticalsm .

References :

1. Handbook of Nutraceuticals and Functional Foods Edited by Robert E.C.Wildman, Routledge Publishers.
2. Nutraceuticals by L. Rapport and B. Lockwood, Pharmaceutical Press.
3. Methods of Analysis for Functional Foods and Nutraceuticals Edited by W.Jeffrey, Hursts, Routledge Publishers.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
ELECTIVE COURSES (MAJOR)
SEMESTER VI
14UND6E1-TEXTILES AND CLOTHING
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of credits	: 05

Objectives:

To enable the learners to

1. study the science of textiles.
2. know about different textiles fibres.
3. select clothing appropriate for various family members.
4. learn the techniques involved in garment constitution.

Unit –I (15 hrs)

Fibre – Definition, classification, natural fibre- cotton, silk, wool.
Manmade fibres – rayon and acetate and Synthetic fibre- nylon.

Unit – II (15 hrs)

Yarn - Definition, Twists and counts of yarns, types of yarns – single, ply, cable, cord, texturized and novelty yarns, NUB, slub, ratine, boucle, corkscrew, chennile, blends and mixtures.

Unit –III (15 hrs)

Fabric constructions- Weaving – definition, parts of loom, weaving process, types of weaves - Basic weaves and fancy weaves – pile, satin, dobby, jacquard. Non- owen methods – knitting, knotting, lacing, braiding, and felting.

Unit – IV (15hrs)

Textile finishing- Need and importance of finishing fabrics, basic finishes, special finishes, mechanical – singering, tendering, calendaring, napping, shrinkage control, chemical finishes – scouring, bleaching, mercerizing, sizing, water proof and fire proof.

Unit -V (15 hrs)

Dyeing & Printing: Dyeing – definition and classification, methods of dyeing – stock dyeing, yarn dyeing, piece dyeing, cross and Union dyeing. Printing – Hand and machine printing - block, stencil, roller, screen, tie and dye, resist print and batik.

Self study area: Stain Removal

Text Book:

1. Premlata Mullica, (2000), Text book of home science. Kalyani Publishers, New Delhi.

Unit – I Page no: 137-159.

Unit – III Page no: 160-169.

Unit – IV Page no: 170-174.

Unit – V Page no: 175-177.

2. Durga Ganguly et al., (2006), Text book of home science. Orient longman Publishers, New Delhi.

Unit – I Page no: 193-195.

Unit – II Page no: 212-215,195-198.

Unit – IV Page no:198-203.

References:

1. Corbmann B.P, "Textiles- Fibre to Fabric", International student's edition, Mc Graw Hill, 6th edition.

2. Joseph; (2003). Introductory textile science. New Age International (p) Limited, Publishers. New Delhi.

3. Hess, (2005). Textile fibers and their uses. Oxford University press, New Delhi.

4. Jaishree S.Metha, (2013), hand book of Textile. Pointer Publishers, Jaipur.

Study material will be provided.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc NUTRITION AND DIETETICS
ELECTIVE COURSES (MAJOR)
SEMESTER VI
14UND6E2 – FOOD BIOTECHNOLOGY
(For those admitted in June 2014 & later)**

Contact hours per week	: 05
Total number of hours per semester	: 75
Number of credits	: 05

Objectives

To enable the students to

1. understand the basic principles of biotechnology.
2. apply the knowledge of biotechnology for the development of new food products.
3. acquire knowledge on genetically modified foods.
4. understand the concept of nutraceuticals.

UNIT-I **(15 hrs)**

Introduction to biotechnology- Genetically modified foods- Definition, examples of GM foods, advantages, disadvantages and safety aspects of foods produced by genetic engineering.

UNIT-II **(15 hrs)**

Food fermentation- Concept of microbial fermentation; fermentation process: Dual and multiple fermentation, continuous fermentation and batch fermentation; factors controlling fermentation.

UNIT-III **(15 hrs)**

Fermented food products- Beer, wine, vinegar, sauerkraut, temph, soya sauce, cheese and bread: Preparation.

UNIT-IV **(15 hrs)**

Enzymes in food processing industries- Principles of enzyme immobilization: Types of immobilization techniques and their importance; Immobilized enzymes in food processing.

UNIT-V **(15 hrs)**

Functional foods and Nutraceuticals- Introduction and concept definition; Classification and therapeutic role of Nutraceuticals.

References:

1. Mary, k. Schmidl and Theodore, P. Labuza, Essentials of functional foods, Culinary and Hospitality Industry Publication Services, 2000.
2. Israel Goldberg, Functional foods, Pharma foods and Nutraceuticals, Culinary and hospitality Industry Publication Services, 2001.
3. Robert Easy Wildman, Handbook of Nutraceuticals and functional foods, Culinary and Hospitality Industry Publication Services, 2001.
4. Owen Pward, Fermentation Biotechnology Principles, Processes and Products, Prentice H New Jersey, 1989.
6. Frazier and West Hoff, Food Microbiology, Tata Mc Graw Hill Publishing Company Ltd, New Delhi, 1995.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
NON MAJOR ELECTIVE I (OPEN OPTION)
SEMESTER III
14UND3N - INTRODUCTION TO FOOD AND NUTRITION
(For those admitted in June 2014 & later)
(Eligible for All Departments except Parent Department)**

Contact hours per week	: 02
Total number of hours per semester	: 30
Number of credits	: 02

Objectives:

To enable the students to

1. understand the principles of nutrition.
2. acquire knowledge on functions of nutrients.
3. learn about deficiency diseases.
4. acquire knowledge on recommended dietary allowances.

UNIT – I (6 hrs)

Concept of Nutrition- Definitions of nutrition, over nutrition, under nutrition and malnutrition, food, functions of foods, basic five food groups. Cooking- objectives, moist heat, dry heat and combination methods of cooking.

UNIT – II (6 hrs)

Carbohydrates- Classification, functions and sources. Dietary fiber- Definition, classification, sources, role of fiber in preventing diseases.

UNIT – III (6 hrs)

Protein – Nutritional classification of protein, functions, sources. Lipids – Classification, functions and sources.

UNIT – IV (6 hrs)

Minerals –Definition of macro and micro minerals, Calcium, phosphorus, iron, iodine, fluorine and sodium – Functions, sources, and deficiency diseases.

UNIT – V (6 hrs)

Vitamins: Fat soluble vitamins - Vitamin A, D, E and K- Functions, sources and effects of deficiency. Water soluble vitamins - Thiamine, riboflavin, niacin, ascorbic acid, and folic acid- Functions sources and effects of deficiency.

References:

1. Mangala Kango Normal Nutrition (Fundamental & Management) RBSA Publishers S.M.S Highway Jaipur – 302003 L, 2003.
2. Srilakshmi B. Food Science, New Age International (P) Ltd Publishers, Fifth edition, 2010.
3. Swaminathan M. Essentials of Food and Nutrition, Vol I & II Bappo Publications, 1996.

Study material will be provided.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
B.Sc. NUTRITION AND DIETETICS
NON MAJOR ELECTIVE II (OPEN OPTION)
SEMESTER IV
14UND4N- HEALTH AND FITNESS
(For those admitted in June 2014 & later)**

Contact hours per week	: 02
Total number of hours per semester	: 30
Number of credits	: 02

Objectives:

To enable students to

1. learn about the terms related to health and fitness
2. acquire knowledge about role of food and exercise for sound health.
3. understand the importance of health for quality living.
4. comprehend the interaction between fitness and nutrition.

UNIT I **(6 Hrs)**

Health- Definitions, concept of health, changing concepts, dimensions of health, concept of well being, spectrum of health, determinants of health, ecology of health, right to health, responsibility for health and indicators of health.

UNIT II **(6 Hrs)**

Health promotion- Definition - food, Nutrients and Nutritional status. relationship between health and nutrition. Functions of foods, Basic five and food guide pyramid.

UNIT III **(6 Hrs)**

Health improvement: Balanced diet - Definition, functions and factors affecting diet. Health education – Definition, objectives, scope, importance and principles of health education. Personal hygiene- Definition and importance of personal hygiene for improving health.

Unit-IV **(6 Hrs)**

Physical fitness- Definition, system related to physical fitness, factor affecting physical fitness, values of physical fitness. Assessment of physical fitness- Body Weight, Height, BMI, Broka Index, Waist circumference, Hip Circumference, Waist to Hip Ratio.

Unit-V**(6 Hrs)**

Exercise performance- Energy expenditure during physical activity, carbohydrate metabolism and performance, fat metabolism and performance, effect of exercise on protein requirements. Exercise programmes: aerobic and anaerobic exercise fuel for exercise, Exercise to maintain fitness, Effective for weight contrast, - dieting or exercise.

References:

1. K. Park Test book of preventive and social medicine, 15th edition, MIS Banarsidas Bhano Publishers, Jabalpur, 1997.
2. Srilakshmi B., (2007), Food Science, New Age International Pvt. Ltd, New Delhi. IV edition.
3. Srilakshmi. B, (2002). Nutrition Science, New Age International (P) Limited, Publishers, New Delhi, 110002, Third Edition.
4. Melvin H. Williams, Nutrition for Health, fitness and Sports, 7th edition, MC Graw Hill international Edition, 2005.
5. Micheal J. Gibney, Ian A Macdonald and Helan M. Roche, Nutrition and Metabolism, Blackwell Publishing Company, Bangalore, Reprint 2004.

Study material will be provided.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
SELF EMPLOYMENT COURSE
SEMESTER VI
14USE70-EMBROIDERY AND HANDICRAFTS
(For those admitted in June 2014 & later)**

Contact hours per week	: 02
Total number of hours per semester	: 30
Number of credits	: 02

Objectives:

To enable the students to

1. know the embroidery technique.
2. acquire the knowledge on handicrafts.
3. learn crochet and knitting.
4. know the procedure for zari, zardosi, Mirror and Bead work.

Unit I (6 hrs)

Hand embroidery stitches- outline stitches - Running , stem, chain, blanket variations. Knot stitches – single knot, double knot, french knot, bullion knot. Filling stitches – satin, long and short, fishbone.

Unit II (6 hrs)

Traditional embroidery stitches - Embroidery of Kashmir, Phulkari of Punjab, Gujarat – katch and Kathiawar, embroidery of Rajasthan, kasuti of Karnataka, chicken work of Lucknow, kantha of Bengal.

Unit III (6 hrs)

Crochet and knitting & tatting- Crochet – definition, types, methods and procedure. Knitting – definition, types, methods and procedure. Tatting – definition, types, methods and procedure.

Unit IV (6 hrs)

Surface ornamentation- Bead work, zari work, Mirror work, Kutch work, Zardosi work, Cross stitch, sequence & smocking.

Unit V (6 hrs)

Handicrafts- Paintings- materials and procedure of painting – various techniques of paintings - glass painting - fabric painting - pot painting.

References:

1. Craft, (2004). Stitches and Sizzles, Creative publishing international, Minnesota.
2. Dorothy Wood., (2008). Cross Stitch, Hermes House Publication, London
3. Nirmala C., (1995). Embroidery design for children garments, Navneet Publicatio, Ahmadabad.

Study material will be provided.

**THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN,
SIVAKASI
DEPARTMENT OF NUTRITION AND DIETETICS
SELF EMPLOYMENT COURSE
SEMESTER VI
14USE70L - EMBROIDERY AND HANDICRAFTS PRACTICAL
(For those admitted in June 2014 & later)**

Contact hours per week	: 02
Total number of hours per semester	: 30
Number of credits	: 02

Objectives:

To enable the students to

1. know the construction of different types of stitches.
2. know about the different hand embroidery stitches.
3. acquire knowledge on handicrafts work.
4. know about the different methods painting.

List of experiments

1. Preparation of hand embroidery samples by using the outline stitches.
2. Preparation of hand embroidery samples by using the filling stitches.
3. Preparation of hand embroidery samples by using the loop stitches.
4. Preparation of hand embroidery samples by using the knot stitches.
5. Preparation of traditional embroidery stitches.
6. Preparation of fabric painting samples.
7. Preparation of samples of bead work, zari and sequence work.
8. Preparation of samples of mirror work, zardosi and cross stitch.
9. Preparation of glass painting and pot painting samples.
10. Preparation of tatting samples.
11. Preparation of crochet samples.
12. Preparation of knitting samples.

Submission of record note book.