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Syllabus for
Degree of Bachelor of Science
Food Science and Nutrition
(Faculty of Home Science)

With effect from
Academic Year 2013-14

ShreematiNathibaiDamodarThackersey Women's University
1, NathibaiThackersey Road, Mumbai – 400 020.

Degree of Bachelor of Science
Food Science and Nutrition
(Faculty of Home Science)

Specialization: Food Science and Nutrition

Sub Specialization: Food Science and Nutrition

SEMESTER I

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
	English I(c)	4	3	1	25	75	100
	Applied Science (c)	4	2	2	25	75	100
	Design & Aesthetics (a)	4	2	2	25	75	100
	Life Span Development (a)	4	4	-	25	75	100
	Environment Studies (d)	4	4	-	25	75	100
	TOTAL	**20**	15	5	125	375	**500**

SEMESTER II

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
	English II (c)	4	3	1	25	75	100
	Human Physiology (c)	4	3	1	25	75	100
	Textile Sc. & Apparel Design (a)	4	2	2	25	75	100
	Fundamentals of Food Science and Nutrition(a)	4	2	2	25	75	100
	Extension & Communication (a)	4	3	1	25	75	100
	TOTAL	**20**	13	7	125	375	**500**

SEMESTER III

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
	Nutrition for Life Span (a)	4	-	4	100	-	100
	Consumer Studies (b)	4	4	-	25	75	100
	Family Dynamics (a)	4	3	1	25	75	100
	Media Skill Development (b)	4	3	1	25	75	100
	Fabric Ornamentation and Accessory Design (b)	4	-	4	100	-	100
	TOTAL	**20**					**500**

SEMESTER IV

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
	Advanced Chemistry (b)	4	2	2	25	75	100
	Food Microbiology (b)	4	2	2	25	75	100
	Human Nutrition -I (a)	4	4	-	25	75	100
	Food Analysis (a)	4	-	4	25	75	100
	Food Preservation(b)	4	3	1	25	75	100
	TOTAL	**20**	**11**	**9**	**125**	**375**	**500**

SEMESTER V

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
	Biochemistry (b)	4	3	1	25	75	100
	Human Nutrition II (a)	4	4	-	25	75	100
	Food Science (a)	4	2	2	25	75	100
	Dietetic Therapy (a)	4	2	2	25	75	100
	Recent Advances in Food Science and Nutrition (seminar) and Women's Issues(b)	4	2	2	100	-	100
	TOTAL	**20**	**15**	**5**	**200**	**300**	**500**

SEMESTER VI

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
	Community Nutrition (a)	4	2	2	25	75	100
	Food Processing and Product Development(a)	4	2	2	25	75	100
	Nutrition and Life style Modifications for Wellness (a)	4	-	4	25	75	100
	Professional Applications in Food Science and Nutrition (Internship)(b)	8	-	8	100	100	200
	TOTAL	**20**	**4**	**16**	**175**	**325**	**500**

TC = Total Credits, Th C = Theory Credits, Pr C = Practical Credits
Int M = Internal Marks, Ext M = External Marks

Evaluation for B.Sc. Food Science and Nutrition Program

S. No	Credits			Marks						Total Marks (Int + Final)
	Total	Th	Pr	Internal			Final			
				Th	Pr	Int Total	Th	Pr	Total	
				I	II	III	IV	V	VI	VII
1	4	4	-	25	-	25	75	-	75	100
2	4	3	1	15	10	25	50	25	75	100
3	4	2	2	25	25	25	50	25	75	100
4	4	-	4	-	25	25	-	75	75	100
5	4	-	4	-	100	100	-	-	-	100

Structure of Home Science Curricula:

Total Credits for Semesters I-VI

a.	Core Courses (Specialization- Semesters IV to VI)	60
b.	Applied Courses	40
c.	Foundation Courses	16
d.	Inter & Intra Discipline Course	4
		120

A. Detailed Division of each Component:

	Core Course a	**Applied Course** b	**Foundation Course** c	**Inter & Intra discipline Course** d	**Total**
SemI	8	-	8	4	20
Sem II	12	-	8	-	20
Sem III	8	12	-	-	20
Sem IV	8	12	-	-	20
Sem V	12	8	-	-	20
Sem VI	12	8	-	-	20
Total	**60**	**40**	**16**	**4**	**120**

The above course structure of Semesters I to III is common for all programs under B.Sc. Home Science program except FSQC & FAD (Voc).

B. APPLIED COURSES (40 Credits)

Code No.	Course	Cred-its	Internal Marks	External Marks	Total
	Consumer Studies	4	25	75	100
	Media Skill Development	4	25	75	100
	Fabric Ornamentation and Accessory Design	4	100	-	100
	6 Specialization related courses	24	*	*	600
	Recent Advances in respective Specialization	4	100	-	100

* **As per each Specialization**

C. FOUNDATION COURSES (16 Credits)

Code No.	Course	Credits	Internal Marks	External Marks	Total
	English I	4	25	75	100
	Applied Science	4	25	75	100
	English II	4	25	75	100
	Human Physiology	4	25	75	100

D. INTER & INTRA DISCIPLINE COURSE (4 Credits)

Code No.	Course	Credits	Internal Marks	External Marks	Total
	Environmental Studies	4	25	75	100

Semester I
English I

OBJECTIVES:

1. To enable the student to read with fluency while simultaneously comprehending passages in English
2. To equip the student with skills to participate independently in conversations and discussions conducted in English
3. To develop written communication skills for everyday and professional communication
4. To develop the student's creatively so that she may express her ideas descriptively and creatively.

Course	TC	Th C	Pr C	Int M	Ext M	Total
English I (Higher Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	The learners will be able - • To understand the structure of different types of letter patterns • To write social and business letters effectively	**Written communication skills** 1. Types of layout 2. Social correspondence: Request/apology/ thank you 3. Letters of enquiry/ complaints (both personal and social) 4. Letters to the editor / Appeals (social/ civic issues) **Assignment:** 1 Writing a letter to the editor on a relevant social issue 2. Invitation letter (formal) 3. Thank you letter (formal) 4. Consumer complaint letter 5. Request letter (formal)	(5 marks per letter) 25 marks

Module No.	Objective	Content	Evaluation
2	The learner will be able to - • identify different types of reports • understand sequencing in a project report • use the correct tense while writing a report • effectively present a report verbally	**Report Writing** Kinds of reports 1. Sequencing 2. Use of correct tense 3. Reporting an event 4. Structure of a project report **Assignments** : 1. Preparing a simple project report based on class assignment 2. Presenting the same as group of 3-4 students	Assign.1:(structure/ outline) - 5 marks (delivery) - 5 marks = 10 marks Assign.2:(15 marks)

Module No.	Objective	Content	Evaluation
3	The learner will be able to - • read the narrative with understanding and enjoyment • enhance their vocabulary • express their personal responses descriptively • express ideas lucidly	**Enhancing Comprehension skills** Exercises based on Selections from prescribed text *Insight: A course in English Literature and Language.* By K. Elango. (Orient Black Swan). Unit IV (life stories) and Unit VII (Mass media) 1. Comprehending narratives 2. Articulating ideas /critical analysis using descriptive language 3. Expressing personal responses creatively 4. Vocabulary enhancement **Assignments** : 1. Comprehension 2. Articulating ideas/critical analysis 3. Expressing personal response to the select narratives	Assign.1:(5 marks) Assign.2:(10 marks) Assign.3:(10 marks)

Module No.	Objective	Content	Evaluation
4	The learner will be able to - • Participate independently in conversations and discussions conducted in English • familiarize them with formal and non-formal modes of conversation • develop questioning skills	**Interpersonal communication skills:** Conventions of Social Interaction 1. Greetings 2. Starting a conversation 3. Introducing self and others 4. Asking questions 5. Requesting 6. Apologizing 7. Thanking 8. Inviting 9. Accepting 10. Ending a conversation **Conventions of public speaking**: Hints on effective delivery (verbal and non-verbal) **Assignments**: 1. Pair work for dialogue writing 2. Oral presentation on an everyday situation 3. Descriptive question on conventions of public speaking	1. (written dialogue 10 + delivery of dialogue 5) = 15 marks 2. 5 marks 3. 5 marks

EVALUATION :

1. Continuous Evaluation of all four Modules = Internal - 25 marks
2. External - 75 marks
3. Total : Internal – 25 + External – 75 = 100 marks

4.

English I

OBJECTIVES:

1. To enable the student to read with fluency while simultaneously comprehending passages in English
2. To equip the student with skills to participate independently in conversations and discussions conducted in English
3. To develop written communication skills for everyday and professional communication
4. To develop the student's creatively so that she may express her ideas descriptively and creatively

Course	TC	Th C	Pr C	Int M	Ext M	Total
English I (Lower Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	The learners will be able to : • employ techniques of skimming and scanning while reading a passage • identify key points while summarizing • make notes effectively so as to improve study skills	1. Skimming and Scanning 2. Note taking 3. Note Making 4. Summary **Assignments**: 1. Passages for note taking 2. Exercises on note making 3. Passage for summarization 4. Passage for skimming and scanning	1. 5 marks 2. 10 marks 3. 5 marks 4. 5 marks

Module No.	Objective	Content	Evaluation
2	The learner will be able to - • familiarize themselves with basic letter patterns • prepare a report of an event with correct usage of grammar and tense • understand the importance of linking words required when reporting an event	**Written Communication Skills** **Basic Letter patterns** (i) Invitation/request/ apology / thank you (ii) Letters of enquiry/complaints/ **Report writing** 1. Types of reports 2. Reporting an event 3. Linking devices **Assignments**: Letter writing. Any 3 of the following: 1 Invitation **or** Request **or** Apology **or** Thank you **or** enquiry	Assign.1: (Written -10 marks + oral delivery - 5 marks) = 15 marks Assign.2: 5 marks per letter 2x 5= 10 marks

		or Complaint 2. Reporting an event in college	

Module No.	Objective	Content	Evaluation
3	The learner will be able to - • develop effective reading skills • express their ideas coherently • write with proper sentence construction and paragraph development • enhance their vocabulary	**Developing Reading and Writing Skills** 1st + 2nd story from the Prescribed Text Yuva Katha 7 1. Sentence construction for grammatically correct English 2. Paragraph development 3. Vocabulary building 4. Expressing ideas 5. Reading with fluency **Assignments**: 1. Comprehension of story 2. Vocabulary based exercises 3. Personal responses to the narrative	1.10 marks 2. 5 " 3. 10 "

Module No.	Objective	Content	Evaluation
4	The learners will be able to - • familiarize themselves with formal and informal modes of social interaction • confidently converse in English • confidently make short presentations in English	**Conventions of Social Interaction** Conventions of Social Interaction 1. Starting a conversation 2. Greetings 3. Introducing self and others 4. Asking questions 5. Requesting 6. Apologizing 7. Thanking 8. Inviting 9. Accepting 10. Ending a conversation Conventions of public speaking : Hints on effective delivery (verbal and non-verbal) **Assignments**: 1. Pair work-dialogue writing **2.** Oral presentation on an everyday situation	**Assign 1**: Written script =10 marks + Oral presen-tation = 5 marks **Assign 2**: Written outline = 5 marks + Delivery =5 marks

Prescribed Texts: (Lower Level)

Keerti Ramachandran. 1996 (rpt 2010). Yuvakatha Vol 7. Katha Books. New Delhi.

(Higher Level English)

K. Elango. (2009). *Insight. A course in English Literature and Language* . Orient Black Swan. Hyderabad, ( )

REFERENCE BOOKS:

1. Asoka Rani, T. (1989). *English for career development: A course in functional English*. Hyderabad: Orient Longman Ltd.
2. Baker, Joanna (2003). *Essential speaking skills. A handbook for English language teachers.* Westrup, Heaths: London Continuum.
3. David, A. (2005). *Teaching English as a second language*. New Delhi: Commonwealth Publishers.
4. Das, Susmita (2004). *English language and grammar a resource book of ideas and activities for teachers.* Jaipur: Mangal Deep Publications.
5. Gibson, Miiko Tan (2003). *Creative English - a comprehensive approach: 6*. Singapore: Singapore Federal Publications.
6. McArthur, Tom (1983). *A Foundation course for language teachers.* Cambridge: Cambridge University Press.
7. Nagaraj, Geetha (1996). *English language teaching: Approaches, methods, techniques.* Hyderabad: Orient Longman Ltd.
8. Ur, Penny and Wright, Andre (1996). *Five-minute activities.* Cambridge: Cambridge University Press.
9. Reutten, Mary K. (2004). *Focus on writing: 1: developing composition skills through instruction and practice*. Singapore: Singapore Learners Publishing.
10. Sood, S.C.(ed) et al. (1991). *Developing language skills: 1: oral communication and reading comprehension, writing skills and words.* New Delhi: Manohar.

Semester I

Applied Science

OBJECTIVES:

1. To know the importance of science in daily life
2. To develop analytical attitude.
3. To develop scientific way of thinking.
4. To impart knowledge to apply.

Course	TC	Th C	Pr C	Int M	Ext M	Total
Applied Science	4	2	2	25	75	100

Theory

Module No.	Objectives	Content	Evaluation
1	This will enable students to: 1) Inculcate scientific temper in the students and develop scientific, analytical attitude. 2) Develop to understand the importance of knowledge of chemistry with respect to food, textiles, medicine, harmful chemicals & industries. 3) Understand the use and importance of chemistry in day to day life.	**Applied Chemistry** **1) Review of Basic Chemistry** • Important definitions • Difference between Organic & Inorganic compounds • Functional groups • Bohr's model of atom • Atomic number & electronic configuration **2) Soaps & Detergents** • Saponification reaction • Cold and hot process of soap making • Difference between soaps and detergents • Cleansing action **3) Drugs and Pharmaceuticals** • Properties of good drug • Meaning of important terms with e.g. Analgesic, Antipyretic, Antacid, Antibiotic, Diuretic, anti-inflammatory, Laxatives, Sulfa drugs • Common drugs- use and side effects of Aspirin, Paracetamol, Sulphanilamide **4) Dyes** • Definition, important terms like chromophore, Auxochrome, chromogen • Classification based on application	Assignment / Quiz (1) Multiple Choice Questions (MCQs) 2) Objective 3) Descriptive = 10 marks

		• e.g. and uses of different dyes in food, textile, medicine, laboratory, etc. & their hazards **5)Polymers** • Introduction • Define-monomer, polymer, polymerization Some important polymers and their structure & uses polyethylene, polyester, polyvinyl chloride	

Module No.	Objective	Content	Evaluation
2	This will enable the students to - 1) Acquire the basic knowledge of the fundamentals of biological sciences. 2) Apply the knowledge of the biological processes to everyday life.	**Cell** • As the basic unit of life • Types of cells • Salient features of animal cell **Introduction to Micro-organism** • Bacteria-Structure, Classification based on response to O_2, nutrition, Importance of bacteria • Fungi- Morphology of molds and yeasts, classification, beneficial and harmful aspects • Virus- Morphology, Classification based on nucleic acid content and hosts **Genetics and Heredity** • Origin of the term gene • Chemical basis of heredity- organization of human genome, sex determination, monogenic and polygenic traits, patterns of inheritance- autosomal, recessive and sex-linked inheritance • Mutation and its type, abnormalities in chromosome number **Genetic Engineering and Biotechnology** • Definition of the terms • Methodology of gene cloning-in brief 1. Application of genetic engineering in plants- insects & virus resistant plants, plants with improved characters. 2. Application in human medicine- pharmaceuticals, thallessemia oncogenes, interferon, production of growth hormone, human insulin	Assignment / Quiz 1 Multiple Choice Questions (MCQs) 2Objective 3 Descriptive 15 marks

		ELISA.	

EVALUATION :

1) Internal (Practical) - 25 marks Internal (Theory) - 25 marks. Total Internal =50/2 = 25
2) External Practical - 25 marks + Theory - 50 marks = 75 marks
3) Internal -25 + External - 75 marks = 100 marks

REFERENCES:

George A. (1984): Shreeve's Chemical Process Industries

Glazer A. Na Ni Baido H (1995) Microbial Biotechnology W.H. Freemen Company.

K. Venkatraman (1952): The Chemistry of Synthetic Dyes, Vol. I, Academic Press, New York.

Kent S.A. (1974): Riegel's Handbook of Industrial Chemistry.

Loewy A. and Sckevilz (1995) Cell Structure and Functions, Hold, New-York
Nicholl D.S.T. (1994) An Introduction to Genetic Engineering-Cambridge University, Press.
Pelczar N.S, Chan F.C.S. Krieg N.R.(1998) Microbiology, Tata Mc Grow Hill.
Person D. (1983): The Chemical Analysis of Food, Churchill Livings Tone, Edunburgh, London, New York.
Porter K.R., Bonnevile M.A. (1964) Fine Structure of Cells and Tissues,**Lea & Blanchard, Philadelphia.**
Prof. V. A. Shenal (1991): Introduction to the Chemistry of Dyestuffs, sevsk Publications.
Rao C.V. (1994) Foundation to Mol. Biol, R. Chenda. Co. Publisher
Thomsen E.G. (1985): Modern Cosmetics Universal publishing corp
Zhdanov L.S. (1980): Physics for the Technician, MIR Publications. Moscow.

Applied Science Practical

Module No	Objective	Content	Evaluation
3	This will enable student to: 1) Develop in students the ability to work systematically in laboratory. 2) Develop in them the skill for simple chemical procedures	**Applied Chemistry** 1) Introduction to chemistry lab & apparatus. 2) Neutralization of strong acid with strong base (HCl & NaOH) 3) Neutralization of weak base with strong acid (Na_2CO_3& H_2SO_4) 4) Neutralization of weak acid with strong base (Oxalic acid & NaOH) 5) Oxidation- reduction reaction (Oxalic acid & $KMnO_4$) 6) pH determination of various solutions: acid, base and neutral (two household example for each) 7) Preparation of soap bar 8) Viscosity measurement: water, oil, shampoo by Oswald's viscometer	Daily work Journal Performing experiment 8 marks

Module No.	Objective	Content	Evaluation
4	This will enable student to: 1) Acquire knowledge of various micro-organisms and the required skills to study them. 2) Apply this knowledge in day to day life	**Applied Biology** 1) Study and care of microscope 2) Observation of motility of bacteria by Hanging drop method (*E.coli* / *Proteus*) 3) Observation of bacteria by the simple: monochrome staining method (Hay infusion culture or milk) 4) Gram staining of bacteria in buttermilk 5) To observe common pathogenic bacteria (any 6 – permanent slides) 6) Observation of fungi on different food materials 7) To observe common pathogenic protozoa (permanent slides of *Entamoeba histolytica* and *Plasmodium vivax*) 8) Study of medicinally important plants (projects)	Daily work Journal Performing experiment 7 marks

REFERENCES:

George A. (1984): Shreeve's Chemical Process Industries
Glazer A. Na Ni Baido H (1995) Microbial Biotechnology W.H. Freemen Company.
K. Venkatraman (1952): The Chemistry of Synthetic Dyes, Vol. I, Academic Press, New

York.
Kent S.A. (1974): Riegel's Handbook of Industrial Chemistry.
Loewy A. and Sckevilz (1995) Cell Structure and Functions, Hold, New-York
Nicholl D.S.T. (1994) An Introduction to Genetic Engineering-Cambridge University, Press.
Pelczar N.S, Chan F.C.S. Krieg N.R.(1998) Microbiology, Tata Mc Grow Hill.
Person D. (1983): The Chemical Analysis of Food, Churchill Livings Tone, Edunburgh, London, New York.
Porter K.R., Bonnevile M.A. (1964) Fine Structure of Cells and Tissues,**Lea & Blanchard, Philadelphia.**
Prof. V. A. Shenal (1991): Introduction to the Chemistry of Dyestuffs, sevsk Publications.
Rao C.V. (1994) Foundation to Mol. Biol, R. Chenda. Co. Publisher
Thomsen E.G. (1985): Modern Cosmetics Universal publishing corp
Zhdanov L.S. (1980): Physics for the Technician, MIR Publications. Moscow.

Semester I

Design & Aesthetics

OBJECTIVES:

1. To enable the students to understand the elements and principles of design.
2. To enable the students to develop the skills to appreciate the aesthetics of art and design.
3. To develop in the students an understanding of the application of art principles in various areas of Home Science.
4. To promote group learning in the study of arts and crafts.

Course	TC	Th C	Pr C	Int M	Ext M	Total
Design & Aesthetics	4	2	2	25	75	100

Module No.	Objective	Content	Evaluation
1	To enable the students to understand the various elements of art for creating designs. To develop a understanding in color perception and various textures To enhance the ability of students to visualize space and lighting	**<u>ELEMENTS OF DESIGN</u>** 1.1. **BASIC ELEMENTS** Introduction, types, importance, application and psychological effects of each element. a. Point b. Line c. Shape d. Form e. Texture f. Light g. Space 1.2. **INTRODUCTION TO COLOUR** a. Color wheel (Primary, Secondary and Intermediate colors) b. Introduction to Various Color Schemes (Color Harmonies) c. Dimensions of color d. Classification of colors (warm & Cool color and Advancing and Receding Colours) 1.3. **PRINCIPLES OF DESIGN** Introduction, types and application a. Harmony b. Balance c. Rhythm	Collect pictures of all the basic elements from nature as well manmade objects 5 Marks Journal work for the entire color chapter 10 Marks One journal assignment comprising of all the principles 10 Marks

		d. Scale and Proportion e. Emphasis	

Module No.	Objective	Content	Evaluation
2	To help students to -- understand good and better design concepts - develop the skills to appreciate the aesthetics of art and design. -have an understanding of the application of art principles in various areas of Home Science	**2.1 CONCEPT OF DESIGNING** a. Meaning of structural design and decorative design b. Requirements of structural design and decorative design **2.2 AESTHETICS OF ART AND DESIGN** a. Understanding of aesthetics and art b. Optical illusion **2.3 APPLICATION OF ART ELEMENTS AND PRINCIPLES OF DESIGN** Related to Interior Design/ Hospitality, Textile Design, Food Decoration, Visual Communication, Curriculum planning	Group Presentation (Charts, pictures) related to all specializations 10 Marks Optical Illusions (3 Pictures to be collected and Submitted) 5 Marks To conduct group activity (article making) 10 Marks

Module No.	Objective	Content	Evaluation
3	To develop students with various drawing skills. To help students learn different colour combination and its visual effects To promote group learning in the study of arts and crafts To develop skill in making different crafts	**3.1 USE OF VARIOUS MEDIUM TO CREATE DESIGNS** a) Pencil b) Pen & ink c) Color **3.2 CREATING TEXTURES** Fabric, Paper, Sticks, Saw dust, Pearls etc. **3.3 COLOR SCHEMES** Color harmony, Monochromatic, Achromatic, Chromatic color schemes. **3.4 ACCESSORY DESIGN** Paintings / pot painting / 3D Murals/ Stain Glass Painting (Innovative Work)	**Journal Work** for the first 3 blocks (5 marks each) = (15 Marks) **Accessory Design** (10 Marks) Concept (2 Marks) Creativity (3 Marks) Workmanship (3 Marks) Overall presentation (2 Marks)

Module No.	Objective	Content	Evaluation
4	To enable the students to - - create concept designing with themes - understand basic principle of geometry and shapes; and the concept of form follows function with the help of 3D modeling.	**4.1 SCALE DRAWING** a) Understanding Scales b) Enlargement c) Reduction **4.2 GEOMETRICAL DESIGN PATTERN** 4.2.1 Symmetry and asymmetrical designs 4.2.2 Abstract pattern **4.3 APPLICATION OF ART IN DESIGN** 4.3.1 Flower Arrangement 4.3.2 Fabric design/Embroidery 4.3.3 Salad carving/Food presentation 4.3.4 Flash cards/puppets **4.4 BEST OUT WASTE** 4.4.1 Paper bags / Paper collage etc.	Scale drawing and Geometric work 3 D form object • est out of waste

EVALUATION:

2) On Four Modules of 25 marks
3) External examination of 75 marks
4) Total : Internal - 25 + External - 75 = 100marks

REFERENCES:

1 Agan T. (1970): The Houses, its plan and use, Oxford and IBM, New Delhi.
2 Ahmed K. (1995): Interior Design- An introduction to art, craft, science, techniques and profession, Ingra Publications Pvt.Ltd, Mumbai.
3 Bevlin M.E. (1985): Design through discovery, Rinchart And Winston, NewYork.
4 Bhatt N.D. (1985): Elementary drawing, Anan Charotar Publishing House.
5 Bhatt P. & Shamita G.(1990) : Foundation of Art and Design, Lakhani Book Depot, Mumbai.
6 Collingwood R.G. (1958): The principles if Art, Oxford University Press, London.
7 Craig & Rush : Homnes with character, D.C. Health & Co.
8 Dandekar H.D. and Krishnamurti C.E. (1960): Anchine drawing, Oxford University Press, London.
9 Donald Anderson. : Elements of design, Holt, Rinchat and Winston, NewYork.
10 Dorothy S.: Introduction to Home Furnishing, The McMillan Company, NewYork.
11 Faulker R. & Faulker S.: Inside today's home, Holt, Rinchat and Winston, NewYork.
12 Faulker, Ziegfeld, and Hill: Art today, Itenry Holt.
13 Frances O.: Art and Design in home living, McMillan Company, NewYork.
14 Garreston Frouz.: Theory and practice of colour, Studio Vista Publishers, London.
15 Goldstein and Goldstein (1953): Art in everyday life, McMillan Company, NewYork.

16 Grames M. (1951): The art of colour and Design,Mcgraw Hill Book Co., NewYork.
17 Lewis D.S., Jean O.B and Ester F.S. (1969): Housing and Home Management, The McMillan Company, NewYork.
18 Morris W. (1989): Design and patterns Bracker Books, London
19 Morton R.: The home and its furnishing, Mcgraw Hill Book Company, Inc., New York.
20 Morton G. M. (1964): The arts of costume and personal appearance, John Wiley and Sons, New York.
21 Mueller C. G., Mae Rudolfetal (1967): Light and vision – Life Science and Library, Time life International, Netherlands.
22 Rowland K. (1965): The shapes we need vol. 2/3, Grinnd Co., London.
23 Rutt A. H.: Home Furnishing, Wiley Eastern Pvt. Ltd., New Delhi.
24 Shah M. G., Kale G. M. & Patki S. Y. (1993): Building drawing with an integrated approach to built environment, Tat Mcgraw Hill Publishing Company Ltd., New Delhi.

Semester I
Life Span Development

OBJECTIVES:
1. To become acquainted with the development stage from birth to old age.
2. To develop awareness of important aspects of development during the whole life span.
3. To understand the problems and hazards faced by an individual throughout the life span.

Course	TC	Th C	Pr C	Int M	Ext M	Total
Life Span Development	4	4	-	25	75	100

Module No.	Objective	Content	Evaluation
1	This will enable students to:- 1. To know and comprehend the meaning of life span development. 2. To develop awareness of advancements in the stage of pre natal and infancy	**Introduction to Life Span Development** **0-2 years** 1. Meaning and definition of life span development and various stages in life span development. 2. Conception and development during pre natal stage. 3. Neonatal stage a) Physical appearance b) Reflexes c) Perceptual Skills 4. Infancy a) Physical & Motor Development b) Developmental Task	Practical Component: Project on Child rearing practices 5 marks

Module No.	Objective	Content	Evaluation
2	This will enable students to- 1. Acquaint student with the developmental changes during early & middle childhood. 2. Develop understanding about significance of preschool and school in the process of development.	**Childhood** 1. Early & Late childhood – Definition & Developmental tasks 2. Physical, Social & Emotional development	Practical Component: Visit to a preschool & Group presentation in class 10 marks

Module No	Objective	Content	Evaluation
3	This will enable students to: 1. To gain deeper knowledge of various domains of adolescent development. 2. Develop awareness about career planning/sex education during adolescence.	**Adolescence** 1. Definition and characteristics of adolescence. 2. Physical, Social & Emotional development.	Practical Component: Guest Lecture on career choice/sex education, report on it 5 marks

Module No	Objective	Content	Evaluation
4	This will enable students to: 1. Develop awareness about characteristics of early, middle & late adulthood. 2. Create awareness about problems & issues of middle & late adulthood.	**Adulthood** 1. Definition of young, middle & late adulthood & development tasks of each stage. 2. Physical, Social & Emotional Development	Practical Component: Visit & write a report on old age home 5 marks

EVALUATION:

1. On Four Modules of 25 marks
2. External examination - 75 marks
3. Total : Internal - 25 + External - 75 = 100marks

REFERENCES:

Berk L. E. (1989): Child Development, Allyn and Bacon, U.S.A.

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Semester I
Environment Studies

OBJECTIVES:

1.To make students aware about the importance, current situation of natural resources and the need to conserve them.
2.To give information about concept, types of various ecosystems.
3.To make aware about biodiversity, and need of conservation.
4. To create awareness about social issues and the solutions to solve them.

Course	TC	Th C	Pr C	Int M	Ext M	Total
Environment Studies	4	4	0	25	75	100

Module No.	Objective	Content	Evaluation
1	This will enable students to: 1. Get acquainted with physical environment and its components 2. Know various natural resources, their importance, over use 3. Develop the concept of sustainable development	**The Multidisciplinary Nature of Environmental Studies** • Definition, Scope and Importance, Need for public awareness **Natural Resources** • Renewable and Non-Renewable Resources • Natural Resources and Associated Problem **Forest Resources:** Use and Over exploration, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people. **Water Resources:** Use and over utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems. **Mineral Resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies. **Food Resources:** World food problems, changes cause by agriculture and over grazing, effects of modern agriculture, fertilizers, pesticide problems, water logging, salinity, case studies. **Energy Resources:** Growing energy needs, renewable and non-renewable energy sources and use of alternate energy sources, case studies. **Land Resources:** Land as a resources, land degradation, man induced	• ShortQuestions/Multiple Choice Questions **Assignment or display on ecosystems** 10 marks

		landslides, soil erosion and desertification • Role of individual in conservation of natural resources • Equitable use of resources for sustainable lifestyles **Ecosystems** Concept of ecosystem Structure and function of ecosystem Producers, consumers and decomposers Energy flow in the ecosystem	

Module No.	Objective	Content	Evaluation
2	1. Develop the concept of ecology and its components 2. Study the impact of human activities and ecology and need to conserve the resources	**Biodiversity and its Conservation** • Introduction-Definition: Genetic, Species and Ecosystem Diversity • Bio-geographical classification of India • Value of biodiversity, consumptive use, productive use, social, ethical, aesthetic and option values • India as a mega-diversity nation • Hot-spots of biodiversity • Threats to biodiversity: habitat, loss, poaching of wild life, man wildlife conflicts • Endangered and endemic species of India • Conservation of bio-diversity: *In-situ* and *Ex-situ* conservation of biodiversity.	Display/ Assignment 5 marks

Module No.	Objective	Content	Evaluation
3	1. Make the students aware of various types of pollutions and solutions to the problem. 2. Make the students aware of social problems.	**Environmental Pollution:** • Definition, causes, effects and control measures of - Air, water, soil, marine, noise and thermal pollutions; Nuclear hazards • Solid Waste Management: causes, effects and control measures of urban and industrial waste • Role of individual in prevention of pollution • Pollution case studies • Disaster Management: Floods, earthquake, cyclone and landslides **Social Issues and the Environment:** • From unsustainable to sustainable development • Urban problems related to energy • Water conservation, rain water harvesting, water shed management	Assignment on local problems 5 marks

		• Resettlement and rehabilitation of people, its problem and concerns. case studies • Environmental ethics: Issues and possible solutions • Climate changes, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. case studies • Waste land reclamation • Consumerism and waste products • Environment Protection Act • Air, Water (Prevention and control of pollution) Act • Wildlife Protection Act • Forest Conservation Act • Issues involved in enforcement of environmental legislation • Public awareness	

Module No.	Objective	Content	Evaluation
4	1. Make the students aware of population problems. 2.Develop the love and interest about nature by being in nature itself. 3.Create awareness about Biodiversity pollution and social issues.	**Human Population and the Environment** • Population growth, variation among nation • Population explosion-family welfare programme • Environment and Human Health • Human Rights • Value Education • HIV/AIDS • Women and child welfare • Role of Information Technology in Environment and Human health • Case studies Visitto local area to document environmental assets a) Rivers/forest/grassland/ hill/ mountain b) Local Pollution Site-Urban/Rural/Industrial/ Agricultural c) Study of common plants/ insects/ birds d) Study of simple ecosystems-ponds, rivers, hill, slopes etc.	Report on the local visit 5 marks

EVALUATION:

1) On Four Modules, 1 or 2 assignments = 25 marks
2) External - 75 marks
3) Total : Internal - 25 + External - 75 = 100 marks

REFERENCES:

1) Agarwal, K.C. (2001) Environmental Biology, Nidi Publication Ltd. Bikaner.
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3) Brunner R. C. (1989), Hazardous Waste Incineration, McGraw Hill Inc. 480p
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5) Cunnigham W. P. Cooper, T. H. Gorhani, E & Hepworth, M. T. (2001), Environmental Encyclopedia, Jaico Publ. House Mumbai, 1196p
6) De A. K., Environmental Chemistry, Wileely Eastem Ltd.
7) Down to Earth, Center for Science and Environment(R)
8) Gleick, H. P. (1993), Water in Crisis, Pacifics Institute for Studies in dev., Environment & Security, Stockholm Env. Institute, Oxford University, Press. 473p

SEMESTER II
English II

OBJECTIVES:

The student should be able to -

1. Prepare and deliver an effective presentation
2. Write an effective resume
3. Appear for an interview process with confidence
4. Develop skills of reading literary narratives with understanding and appreciation

Course	TC	Th C	Pr C	Int M	Ext M	Total
English II (Higher Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	The learners will be able to- • understand the different techniques of presentations • understand the concept of sequencing of presentations • be equipped with the required vocabulary and correct use of grammar • be competent enough to give an effective presentation	**Presentation Skills :** 1. Structure of a presentation 2. Sequencing 3. Commonly used verbs 4. Use of signaling, signposting and listing techniques 5. Use of visual and electronic aids (OHP/PPT etc.) **Assignments**: 1. Structure of a presentation – (descriptive question) 2. Small group presentation on a given topic	**Assign.1** :Written script - 5 marks + orals -10 marks **Assign.2** Group presentation - 10 = 20 marks

Module No.	Objective	Content	Evaluation
2	The learners will - • familiarize themselves with basic norms of business correspondence • produce effective resumes in accordance with various contexts	**Job Applications** 1. How to write applications for jobs in response to advertisements 2. Types of resume 3. Electronic formats for resumes **Assignments**: 1. Job Application Letters in response to advertisement	**Assign.1:** 2 x 5 = 10 marks **Assign.2** 15 marks

		2. Writing a student's resume	

Module No.	Objective	Content	Evaluation
3	The learners will - • develop skills of literary appreciation • enhance their descriptive writing skills • enrich their vocabulary	**Literary Appreciation** The following stories from the prescribed Text 'Let's Go Home and Other Stories' . Ed. By Meenakshi Mukherjee. "The Shadow" "Meeting Pool" "Death of a Hero" "White Dove' "Zamindar of Palipuram' **Assignments**: 1. 2 Questions on expressing personal responses 2. 2 Character sketches 3. Vocabulary enhancement exercises	**Assign.** **1:**(2 x 5) = 10 marks **2.** (2 x 5) =10 **3.** 5 marks

Module No.	Objective	Content	Evaluation
4	The learners will - • be competent enough to appear for an interview process • confidently participate in a group discussion	**Soft skills enhancement through effective communication in English** Content-point (only of that module): 1. Types of Interviews 2. How to prepare for an interview 3. Language and Etiquette 4. Role play/mock interviews 5. Methods and Procedures of Group Discussions 6. Practice sessions in Group Discussions **Assignments**: 1. Descriptive question on how to prepare for an interview 2. Mock Interview 3. Mock Group Discussion	**Assign.** **1.** 5 marks **2.** 10 marks **3.** 10 marks

EVALUATION :

5. Internal= Continuous Evaluation of all four Modules to be taken = 25 marks
6. External = 75 marks
7. Total : Internal = 25 + External =75 = 100 marks

OBJECTIVES:

The student should be able to -

1. Prepare and deliver an effective presentation
2. Write an effective resume
3. Appear for an interview process with confidence
4. Develop skills of reading literary narratives with understanding and appreciation

Subject	TC	Th C	Pr C	Int M	Ext M	Total
English II (Lower Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	The learners will be able to - • use appropriate technical words, tense and linking devices • adopt different techniques of presentations • be competent enough to give an effective presentation in English	**Presentation Skills** Structure of a presentation 1. How to prepare the outline of a presentation 2. Commonly used verbs and connectors 3. Use of signaling, signposting and listing techniques 4. Use of visual and electronic aids (OHP/PPT etc.) **Assignments:** 1. Exercise based on use of signposting and listing techniques 2. Preparing outline of presentation 3. Presentation on given topic (oral)	**Assign.** **1.** 5 marks **2.** 10 marks **3.** 10 marks

Module No.	Objective	Content	Evaluation
2	The learners will - • be familiar with the requirements of a job application letter • be able to write an effective resume	**Job Applications** 1. How to respond to an advertisement and write job applications 2. How to write an effective resume 3. Electronic formats for resumes **Assignments:** 1. Job Application Letters in response to an advertisement 2. Writing a student's resume :	**Assign.** **1.** (2 x 5)= 10 marks **2.** 15 marks

Module No.	Objective	Content	Evaluation
3	The learner will learn how to - • read with emphasis on fluency, tone and voice modulation • enhance their vocabulary • express themselves creatively • be able to connect the narrative to the larger society and their lives	**Reading and comprehension skills: 3rd and 4th stories from Prescribed Text 'Yuva Katha 7'** 1. Comprehension Skills 2. Reading a passage with fluency, tone, modulation, fluency 3. Personal responses to the prescribed stories 4. Vocabulary building 5. Expressing ideas creatively **Assignment**: 1. Comprehension Skills 2. Reading a passage with - fluency, tone, modulation 3. Personal responses to the prescribed stories	**Assign.** **1.** 10 marks **2.** 5 marks **3.**10 marks

Module No.	Objective	Content	Evaluation
4	The learner will be able to- • verbally describe objects, images and pictures • use appropriate words and sentence structures to seek information, give replies, instructions etc. • confidently appear for an interview	**Verbal communication skills for interpersonal communication** 1. Asking for information and replying 2. Giving instructions and replying 3. Visual to verbal communication : interpreting pictures 4. Describing objects 5. Verbal skills required during an interview **Assignments**: 1. Visual to verbal interpretation 2. Writing instructions/asking for information 3. Describing objects 4. Mock Interview References (for all module):	**Assign.** **1.** 5 marks **2.** 5 marks **3.** 5 marks **4.**10 marks

Prescribed Texts: **(Lower Level)**

1. Yuvakatha 7

(Higher Level)

1. Mukherjee, Meenakshi (ed.), Let's Go Home and Other Stories.

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David, A. Teaching English as a second language New Delhi Commonwealth Publishers 2005 287p.

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McArthur, Tom Cambridge A Foundation course for language teachers Cambridge University Press 1983 183p.

Soundararaj, Francis Teaching spoken English and Communication skills Some suggestions to teachers of English, Madras T.R.Publications Pvt.Ltd. 1995 141p.:ill

Tickoo, M. L. Teaching and Learning English A sourcebook for teachers and teacher trainers, Hyderabad Orient Blackswan 2011 457p.

Ur, Penny Wright, Andre (Jt. auth) Five-minute activities Cambridge University Press 1996 xii, 105p

Semester II
Human Physiology

OBJECTIVES:
1. The students will understand the basic structure and functions of the human body
2. Student will be acquainted with common diseases/disorders of each system

Course	TC	Th C	Pr C	Int M	Ext M	Total
Human Physiology	4	3	1	25	75	100

Human PhysiologyTheory

Module No.	Objective	Content	Evaluation
1	This will enable students to: 1. Introduce students to basic terminologies 2. Understand the basic structure of human body 3. Understand the functioning of cardio vascular, respiratory , gastro intestinal 4. Brief knowledge about common diseases affecting each system. 5. To create awareness about interdependence and co-ordination between	**<u>INTRODUCTION</u>** • General terms- anatomy, physiology, symmetrical arrangement, anatomical position. Median plane / lateral plane, internal/ external, superficial /deep, superior/ inferior, anterior/posterior. • Basic human tissues. • Introduction to human skeleton. • Structure of bone and cartilage. • Classification of various types of muscle. **<u>BLOOD AND LYMPHATIC SYSTEM</u>** • Physical characteristics of blood • Blood volume, composition of plasma and functions of plasma protein • RBC formation and functions • Information about anaemia and thalessemia. • Blood groups, their importance , Rh-incompatibility. • WBC- types, functions, importance of CBC • Platelets and mechanism of coagulation • Lymph and lymphatic system, spleen and its functions. **<u>HEART</u>** • Its structure and circulation of blood. • Cardiac cycle • Information about hypertension & ischemic heart disease	• Multiple choice questions • Short notes • Display • Quiz 5 marks

	different systems of the body for normal functioning.	**RESPIRATORY SYSTEM** Respiratory organs-nose, sinuses, larynx, trachea, bronchi lung brief structure and functions. Mechanism of respiration, factors affecting efficacy of respiration. Various lung volumes and capacities. Common diseases- TB, asthma, bronchitis, cough, pneumonia sinusitis. **GASTRO - INTESTINAL SYSTEM** Oral cavity, tonsils, pharynx, oesophagus, stomach small and large intestine - brief structure and functions. Liver, gall bladder, pancreas structure and functions. Common disorders- Dental caries, vomiting. diarrhoea, constipation. Hyperacidity, diabetes.	

Module No.	Objective	Content	Evaluation
2	This will enable students to: 1. understand the functioning of excretory system and brief knowledge about common diseases affecting this system. **2.** know more about the nervous system	**EXCRETORY SYSTEM** • Structure and function of organs of urinary system (in brief). • Mechanism of urine formation • Common diseases- urinary tract infection and renal stones. • Structure and function of skin • Regulation of body temperature • Common disorders - acne dandruff and burns. **NERVOUS SYSTEM** • Classification of nervous system • Structure and functions of different parts of brain, spinal cord and reflex action. • Eye - structure and mechanism of vision • Common problems - conjunctivitis, cataract. • Ear - structure and mechanism of hearing • Common problems - deafness, vertigo, motion sickness	• Multiple choice questions. • Short notes. • Display. • Quiz. • PPT present-ation 5 marks

Module No.	Objective	Content	Evaluation

3	This will enable students to: 1. know more about the endocrine system 2. Have knowledge of reproductive system and importance of reproductive health	**ENDOCRINE SYSTEM** • Listing of endocrine glands and their location • Functions of pituitary, thyroid, parathyroid and adrenal. **REPRODUCTIVE SYSTEM** **FEMALE REPRODUCTIVE SYSTEM** • Structure • Menstrual cycle • Fertilization • Breast- Structure, function, importance of breast hygiene and breast feeding • Physiological changes in pregnancy • Importance of ante-natal care. **MALE REPRODUCTIVE SYSTEM** • Structure • Sex education • Contraception and infertility • Sexually transmitted diseases-syphilis, gonorrhoea, AIDS	• Multiple choice questions. • Short notes. • Display. • Quiz. • PPT present-ation 5 marks

EVALUATION:

1) Internal – Theory 15 marks + Practical 10 marks = 25 marks
2) External : Theory 50 marks + Practical 25 marks = 75 marks
3) Total : Internal -25 + External - 75 = 100marks

REFERENCES:

1) Guyton, A.C., Hall J.E.- Textbook of Medical Physiology - Prism Books Pvt Ltd., Bangalore.
2) Concise Medical Physiology - Chaudhari.
3) API Text Book of Medicine.
4) Textbook of Gynaecology - Datta.
5) Winwood - Sear's Anatomy and Physiology for Nurses - London, Edward Arnold .
6) Wilson -Anatomy and Physiology in Health and Illness, Edinburgh, Churchill Livingstone.
7) Chatterjee Chandi Charan -Textbook of Medical Physiology - London. W.B. Saunder's company.

Human PhysiologyPractical

Module No.	Objective	Content	Evaluation
4	This will enable students to: 1- Introduce the students to human skeleton and enable them to identify various bones in the body 2- perform simple clinical tests like estimation of haemoglobin and blood group and blood pressure 3- Utilize the knowledge learnt to administer first aid for common emergency situations. 4- Acquaint the students with the basic principles of home nursing.	1. Study of human skeleton and identification of bones. 2. Estimation of haemoglobin 3. Estimation of blood groups, 4. Demonstration of peripheral blood smear. Importance of complete blood count. 5. Measurement of pulse rate and blood pressure. 6. Discussion of normal components of urine. Test for abnormal components like sugar, albumin and acetone and discussion on diseases in which they are found. 7. **FIRST AID** -Definition, aims, qualities of first aider, contents of first aid box. -Different types of bandages and bandaging techniques. ***WOUNDS*** -Classification, dressing and management of haemorrhage- basic principles and discussion about bleeding from various parts of body. ***FRACTURE*** -Types, symptoms, management. Sprain and dislocation ***First Aid for***- foreign bodies in eye, ear, nose, skin. ***First Aid for -*** fainting, burns, heat stroke, asthma, convulsions, electric shock and heart attack. ***First Aid for -*** common poisoning, dog bite, snake bite, bee-sting and scorpion bite. ***BASIC PRINCIPLES OF HOME NURSING-*** Measuring body temperature, steam inhalation, body sponging, taking care of bed ridden patient and enema. 8)Cardio pulmonary resuscitation	10 marks

External : Practical exam - 25 marks + Theory - 50 marks = 75 marks

REFERENCES :

S. No.	Title of the Book	Author
1.	Book of Clinical Medicine	Hutchinson's
2.	First Aid	St .John's Ambulance Association

Semester II
Textile Science and Apparel Design

Subject	TC	Th C	Pr C	Int M	Ext M	Total
Textile Science and Apparel Design	4	2	2	25	75	100

OBJECTIVES: (THEORY)

1. Students gain knowledge of nomenclature and classification of Fibers, yarns, and fabrics in pure and blended form.
2. Students learn about general principles of clothing construction, selection, use and scope.
3. Makes the students wise and responsible consumer with good values.
4. Students to get knowledge and information related to legislation, labeling, and standards to enhance the consumer's understanding of textiles and clothing.

Module No.	Objective	Content	Evaluation
1	The learner will - 1. Become wise and a responsible consumer with good values. 2. Understand the essentials of textile terms and concepts	**<u>Understanding basics of textiles</u>** **Introduction to textiles:** • Scope & importance of textiles & Clothing, general properties and classification of textile fibers by Textile Fiber Product Identification Act. Concept of green fibers & Eco friendly textiles. (Definition-Importance Any three symbols) • Care labels, Silk mark, Wool mark, and Handloom mark **Yarn Construction:** • Types of yarns-single, ply, cable and cord & texturized yarns	Individual Assign-ment – 10 marks

Module No.	Objective	Content	Evaluation
2	The learner will: 1.Get acquainted with general principles of clothing construction, their selection use and care. 2. Understand different factors affecting	**<u>Textiles: Construction, clothing and selection</u>** **<u>Fabric construction</u>** • Introduction to fabric construction & basic weaves. (Concept of weaving, knitting and non woven to be explained.) • Definitions, uses, advantages and disadvantages of unions & blends. **<u>Selection of clothing.</u>** • Buying points for readymade garments – size, suitability, durability, aesthetic appeal, fiber content, labels (basic information & care labels), brand, purchasing power, socio economic –	Group Assignmen t – 15 marks

	selection of clothing.	conditions, location etc. • Selection of clothing based on silhouette & occasional wear (casual, party, sports, travel, corporate)	

EVALUATION:

1. Internal: Theory Modules 1 & 2 = 25 marks + Practical 50 marks= 75/3= 25 marks
2. External - Theory examination on all 4 modules = 75 marks
3. Total: Internal - 25 + External - 75 = 100 marks

OBJECTIVES: PRACTICAL

1. Make students aware of the use and care of sewing machine.
2. Learn the drafting, placement and cutting of basic garments.
3. Develop skill in stitching the garments with good finishing in stipulated time.
4. Generate awareness regarding different fabrics available in the market.

Module No.	Objective	Content	Evaluation
3	The learner will….. 1.learn the use and care of sewing. 2.Generate awareness regarding different fabrics available in the market.	**Basics of clothing construction** **1. Introduction to sewing machine.** • Basics of clothing- Basic seams -Plain, French, Flat & fell, Lap- plain & with gathers),Bias strip cutting-joining, Neckline finishing (round, square, V neck) **2. Definition, terms and uses of 25 fabrics namely –** • For Personal Clothing-Lawn, poplin, cambric, 2 x 2, organdy, voile, denim, drill, seer sucker, jute, khadi & other handloom fabrics. • Home Textiles-Casement, terrycloth, jacquard, cut pile, knitted, bonded, laminated, embossed, linen • Fashion Fabrics- Satin, tissue, crape, georgette, chiffon, knitted, knotted, braided, narrow fabrics, wrinkled, brasso, and suede.	10 Marks 10 Marks

Module No.	Objective	Content	Evaluation
4	The learner will- 1. Learn the method of	**Personal clothing construction & stitching** • Stitching of the following garment 1. **Skirt (As per trend)**	Skirt -10

	taking Body measurements for garment stitching. 2.Develop skill in stitching the garments with good finishing	Without yoke -Simple pattern 2. **Simple Top (As per trend).** Simple pattern, without darts, Simple sleeves Without *pl*acket Side slits – as per choice No collar	Marks Top-15 Marks

Practical: Evaluation of Module 1 + Module 2 (25 marks each) = 50 /2= 25 marks
Unit Test (Practical): Stitching of one neckline (10 marks) and 2 seams (10 marks)

REFERENCES:

S. No.	Title of the Book	Author
1	Creative clothing Construction New York: Mc Graw hill Book Co., 1956	Bane A :
2	Ready to Wear Apparel Analysis, 2nd edition Prentices Hall, 1998	Brown Rice
3	How you look to dress St.Louis. Mc Graw Hill, 1969.	Carson
4	Basic Processes & Clothing Construction.	Doongaji S. & Deshpande R
5	Textiles : properties & behaviour in clothing use London: B.T. Bradsford, 1992	Edward Miller
6	Fashion from Concept to Consumer 7th Ed New Jersey Prentice Hall Inc 2002	Gin Stiphens Frings
7	Textile Science Melbourne: Longman Cheshire Pvt.Ltd.,1983	Gohl E.P. and Velensky L.D
8	Handbooks of American Association of Home Economics.	
9	Textiles, 16th Edition New York, Macmillan publishing Co, 1998	Hollan, Norma & Saddler
10	Essentials of Textiles Holt, Rinehart & Winston, New York, 1976.	Joseph M.
11	Introductory Textile Science. – 6th Ed. Fort WorthHarcourt Brace Jovanovich College Publishers. 1993	Joseph M. –
12	Khadi, The fabric of freedom, Amr Vastra Kosh Trust Publication 2002.	
13	Individuality in clothing Selection & Personal Appearance – a guide for the consumer,: Specht	Kefgan & Phyllis T

	&Mac Million publication, Upper Saddle River, Prentice Hall Inc., 2000.	
14	Performance of Textile for Testing New York: John Wiley & Sons,1977.	Lyle Dorothy
15	Clothing for Moderns, 3rd edition New York: Mac Million publication	Mabel D.E. & A.K.
16	Clothing – A study in Human Behavior	Mary R.S.:
17	Art in clothing selection New York: Harper & Row, 1963	Mc. Jimsey
18	Textile – Fiber to Fabric, 6th edition New York: Mc Graw hill Book Co., 1983.	Potter & Corbman
19	Introduction to Textiles New York: John Wiley & Sons,1970	Stout E
20	Family Clothing New York: John Wiley, 1961	Tate & Glisson
21	Textile Fabrics and their selection (8th Ed.) Engle wood cliffe	Wingate I.B., Mohler J.F
22	Fairchild's Dictionary, 6th edition New Delhi: Universal Pub. Corporation, 1988.	Wingate Isable B.:
23	Understanding Textiles – Upper Saddle River, Merill Publishing – 5th Edition. Prentice Hall Inc, 1985	Tortora, Phyllis G.
24	Textiles – motivates series London , Macmillan Education Ltd. 1997	Wynne A
25	Sewing Fabrics London: Mitchell Beazley International, Ltd., 1978	Ann Ladbury
26	Designing Patterns A. E. Press Melberne, 1985.	Campbell H. & Davies M.
27	Clothing for Moderns III and V Editions New York, Mc Millan.	Ervin M.D. Knichen L.A. and Peters K:
28	Singer sewing Book London: Hamlyn, 1972	Hultin J.C.
29	Performance of textile for testing New York: John Wiley & Sons, 1977.	Lyle D.

Semester II

Fundamentals of Food Science and Nutrition

Objectives:
The course will enable the students to:

1. Understand the inter-relationship between food, nutrition and health
2. Know the methods and principles involved in cooking.
3. Understand the knowledge of food science and the changes occurring during food preparation
4. Know the methods and principles involved in cooking.
5. Learn to relate foods with their nutrient content

Course	T C	Pr C	Th C	Int M	Ext M	Total
Fundamentals of Food Science and Nutrition	4	2	2	25	75	100

Fundamentals of Food Science and Nutrition Theory

Module No.	Objectives	Content	Assessment
1	This will enable students to: 1. Know nutritional aspects of foods and their functions. 2. Understand the importance and role of macronutrients in health 3. Identify food sources **4.** Understand the principles of food science and discuss the relation between Food Science and Nutrition	**Introduction to Nutrition** 1: Terms used in Nutrition and Health. Definitions - Health, Nutrition, Nutrients, Foods, Diet, R.D.A., Balanced diet, Malnutrition, Under nutrition, Over nutrition, Optimum nutrition. 2**:** Five Food Groups and Food guide, relationship between food and nutrition, functions of food, classification of nutrients, factors affecting food consumption and food acceptance. **Macronutrients** 1. Carbohydrates 2. Proteins 3. Fats 4. Water - Classification, functions, sources, requirements, deficiencies - Digestion, Absorption, Transport - Food Science principles	25 Marks Quiz / assignments
2	This will enable students to: 1. Know the role of Vitamins and minerals in health	**Micronutrients:** Classification of Vitamins: A, D, E, K, Thiamin, Riboflavin, Niacin, Ascorbic Acid and Minerals: Calcium, Iron and	25 Marks Quiz /

	2. Identify the color pigments in foods 3. Understand the change in color pigments	Iodine - Functions, deficiencies sources, requirements - Digestion, Absorption, transport - Conservation of nutrients Color Pigments	assignments

Fundamentals of Food Science and NutritionPractical

Objectives:
The course will enable the students to:

1.Relate weight and measures of raw foods with cooked amounts and associate them with serving size.
2. Apply the knowledge of food science and observe the changes occurring during food preparation.
3. List rich food sources of various nutrients and plan and prepare recipes

Module No.	Objectives	Content	Assessment
3	This will enable students to: 1. Understand the concept of portion size 2. Know the specified amounts and proportion of ingredients used in the recipe 3. Understand the basic scientific principles and the preparation of food 4. Learn the preparation methods to optimize nutrient content and conserve nutrients	**Basics of Food Preparation** 1. Cereal, pulse, milk, egg and vegetable and fruit preparation - Weights and measures - Standardization, portion size - Methods of food preparation - Food Science principles - Calculation of nutrients - Conservation of nutrients	25 marks Quiz
4	This will enable students to: 1. Plan recipes and calculate nutrients 2. Evaluate the principles of food science applicable to the preparation and methods to conserve nutrients	**Plan and Prepare Recipes for One Serving:** - Energy: high and low calorie - Proteins - Calcium - Iron - Vitamin C - Vitamin A B- complex vitamins	25 marks Planning and Cooking

References:

1. Mudambi, S.R. and Rajgopal, M.V**. (**2012), *Fundamentals of Foods and Nutrition* New Age International Pvt. Ltd.
2. Food Science 1st Edition (2012) Sheth Publications. Maharashtra State Board of Secondary and Higher Secondary education Pune,
3. Roday S. (2012) *Food Science and Nutrition* (2nd Ed.) Oxford University Press.
4. Joshi S. (2009) *Nutrition and Dietetics*Mcgraw Hill Higher Education
5. Robinson, and Lawler (1990) *Normal and Therapeutic Nutrition* (17th Edn) Macmillan Pub. Co.
6. Introductory Nutrition (1986). Mosby College Publishing. Guthrie Helen Times Mirror
7. Wardlaw G.M (1997) *Contemporary Nutrition, Issues and Insights*, 3rd Edition Tata McGrawHill Inc. Boston.
8. Guthrie H. A. and Frances M. (1994) *Human Nutrition* William C Brown Pub.

Semester II

Extension and Communication

Objectives:

1. To develop understanding about the concept of Extension Education.
2. To comprehend the role and importance of communication in Extension.
3. To be able to understand the needs of the community by using enquiry techniques.
4. To be able to plan, prepare and use the different communication methods.

Course	TC	Th C	Pr C	Int M	Ext M	Total
Extension and Communication	4	3	1	25	75	100

Module No.	Objectives	Content	Evaluation
1	The students will learn to: 1. Develop an understanding about the concept of Extension. 2. Become aware of the significance of Home Science Extension. 3. Develop an understanding of different Audio-Visual Aids available for Extension and Communication.	**Concept of Extension:** 1. Concept, Need and Scope of Extension. 2. Principles, philosophy and trends of Extension Education. 3. Home Science Extension- Need and Significance. 4. Qualities of an extension worker 5. Introduction to Right to information Act (RTI).	**Assignment** 25 marks

Module No.	Objectives	Content	Evaluation
2	This will enable students to: 1. Understand concept and importance of communication. 2. Comprehend the different models of communication. 3. Identify and use different methods of communication.	**Communication for Extension:** 1. Concepts, Nature (Upward, Downward and Horizontal), elements, functions, barriers of communication. 2. Importance of communication for Extension Work. 3. Models of communication. 4. Communication Methods: Individual Methods- Interview, home and farm visits. Group Methods- Demonstration, Lecture, Workshop and Discussions. Mass Methods- Campaign, Exhibitions and Radio programme.	**Project** on methods of communi-cation 25 marks

Module No.	Objectives	Content	Evaluation
3	This will enable students to: 1. Develop an understanding of different audio visual aids available for communication and extension	**Audio visual aids** 1. Audiovisual aids-Meaning, importance and selection 2. Classification –Edgardales cone of experience 3. Importance of the cone of experience in learning	Brain storming on the different topics and innovative ways of making audio visual aids 25 marks

Module No.	Objectives	Content	Evaluation
4	This will enable students to: 1 Develop an understanding of community for Extension activities. 2 Get acquainted with Extension Work. 3 Explore community opinions and field conditions 4 Develop skills in preparing graphic aids.	**Need Assessments of Community** Assessing prevailing conditions of community focusing on aspects such as Health, Population, Housing, Education, Sanitation, etc. Compilation of data collected utilizing it for preparing **Community Contact Methods** 1. Preparation of Graphic Aids-Posters, Charts, Leaflets etc. for selected target group.	Conducting a survey on different issues and preparing a report Planning and preparing - Different teaching aids 25 marks

EVALUATION:

Continuous Evaluation = 25 Marks per Module
Internal : (Theory -15 +Practical - 10)= 25 marks
External: (Theory -50+Practical – 25) =75 marks
Total :Internal - 25 +External– 75 = 100 marks

REFERENCES:

1. Chandra, A., A. Shah, U. Joshi (1989) Fundamentals of Teaching Home Science, Sterling Publication, New Delhi.
2. Dahama, O.P., O. P. Bhatnagar (1995) Education and Communication for Extension, Communication and Management, Naya Prakash, Calcutta Development, Oxford and IBH Publication, New Delhi.Ray, G. L. (1991)

Semester III
Nutrition for Life span

Objectives:
The course enables students to -

- Understand the physiological changes, special needs and health concerns of people at different stages of life
- Understand the relationship of nutrition to physical, psychological growth and development and ageing

	Course	TC	Th C	Pr C	Int M	Ext M	Total
	Nutrition for Life span	4	**-**	4	100	-	100

Module No.	Objectives	Content	Assessment
1	This will enable students to: 1. Know the nutritional requirements and understand the concept of RDA 2. Comprehend the concept of food guide and translate the same into planning	**Basics of Meal Planning** 1. Overview of nutritional requirements 2. Food Guide/ Food Pyramid and its use 3. Food Exchange List 4. Balanced diet 5. Factors affecting meal planning 6. Maintaining a dietary record	Quiz/ Assignments / Projects Viva
2	This will enable students to: 1. Plan balanced diets for individuals keeping in mind their physical activity, income group, social and cultural background 2. Suggest dietary modifications for common ailments	**Nutrition in Adulthood** 1. Planning meals for sedentary, moderate and heavy workers 2. Dietary modifications for common ailments: diarrhea, constipation, Underweight, obesity and fever	Quiz Planning and Cooking Practical Viva
3	This will enable students to: 1. Learn the physiological changes during pregnancy and lactation 2. Understand the effect of physiological changes on nutritional requirements Understand the role of nutrition in pregnancy	**Nutrition during Pregnancy and Lactation** Planning meals for various physiological conditions - Pregnancy - Lactation	Quiz Planning and Cooking Practical Viva

	outcome and during lactation		
4	This will enable students to: Understand the physiological changes during growth, development and ageing and their effect on nutritional needs	**Nutrition during Life cycle** 1. Planning meals for different age groups - Infancy - Childhood - Adolescence - Old age	Quiz Planning and Cooking Practical Viva

Evaluation:

- **Planning = 50 marks**
  (Each plan to be evaluated out of 10 marks and average to be taken)
- **Cooking practical = 30 marks**
  (Each cooking practical to be evaluated out of 10 marks and average to be taken)
- **Quiz = 20 marks (**all four modules**)**
- **Total = 100 marks.**

REFERENCES:

1. Mudambi, S.R., Rajgopal, M.V.(2012), Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
2. Food Science (2012), Maharashtra State Board of Secondary and Higher Secondary education Pune, 1st Edition, Sheth Publications.
3. Roday Sunetra, (2012), Food Science and Nutrition, 2nd Edition, Oxford University Press.
4. Joshi, Shubhangini (2009), Nutrition and Dietetics , Mcgraw Hill Higher Education.
5. I.C.M.R. Publications 2010, Nutrient requirement and recommended Dietary Allowances for Indians.
6. C. Gopalan, B.V. Rama Sastri and S.C. Balasubramanium, Nutritive Value of Indian Foods, NIN, ICMR, Hyderabad.
7. Robinson, and Lawler, (1990), Normal and Therapeutic Nutrition 17th Edition MacMillan Pub. Co.
8. Guthrie Helen (1986). Introductory Nutrition, Times Mirror/ Mosby College Publishing.
9. Wardlaw G.M, (1997), Contemporary Nutrition, Issues and Insights, 3rd Edition Tata Mc GrawHill Inc. Boston.
10. Guthrie, Helen (1994), Human Nutrition, William C Brown Pub.

Semester III
Family Dynamics

OBJECTIVES:

1. To sensitize the student towards marriage and family life.
2. To understand the traditional and changing norms of the institution of the family with reference to its social environment.
3. To get familiar with the concept of marriage and the areas of adjustments within the family
4. To becomes aware about dynamics of family interactions and developmental tasks through family life
5. To becomes aware of problems in families and ways of coping

Course	TC	Th C	Pr C	Int M	Ext M	Total
Family Dynamics	4	3	1	25	75	100

(THEORY)

Module No	Objective	Content	Evaluation
1	This will enable students to:- 1. To analyze the traditional and changing norms of institution of family. 2. Be sensitive to variations in family practices of different ethnic groups. 3. Understand stages of family life cycle. 4. Create insight about the types of family. 5. Identify alternate family patterns. 6. Explore the dyadic relationships in family. 7. Analyze the areas & patterns of adjustments 8. Bring awareness & sensitize oneself about crisis in family life.	**Family & its structure** 1. Meaning of the term family • Family composition & structure • Practices & Patterns of family • Changing family patterns 2. Family life cycle: meanings, definition & stages. 3. Types of family 4. Alternate family patterns: Causes, characteristics & implications. 5. Dyadic relationships Family Responsibilities **Adjustments & Crises within the family** 1. Areas & patterns of Adjustment 2. Meaning of crisis ; Types of family crises & ways of coping	Use of experiential method by students: Role play, skit. etc. 5 marks Poster making and exhibition 5 marks

Module No.	Objective	Content	Evaluation
	This will enable students to:- 1. To understand the institute of marriage 2. Develop awareness in mate	**Marriage** 1. To understand the concept of "Marriage as an Institution" 2. Mate Selection	Group presentation on any

2	selection process. 3. Understand the goals of modern marriage. 4. Know and realize the importance and need for pre & post marital counseling. 5. Create deeper insight into the concept of engagement. 6. Understand the functions of traditional marriage. 7. Gain knowledge about types of marriage.	3. Goals of modern marriage 4. Preparing oneself for marriage 5. Pre marital and post marital counseling 6. Engagement 7. Marriage rituals & Court marriage 8. Honeymoon 9. Annulment & Divorce & Marriage Counselling	above topics, 10 marks

Module No.	Objective	Content	Evaluation
3	This will enable students to:- 1. Understand know how of Planned Parenthood. 2. Get acquainted with family planning methods.	**Planned Parenthood** 1. Concept & significance of Planned Parenthood. 2. Joys and hazards of parenting 3. Birth control 4. Parenthood (parenting at different ages)	Guest Lecture on family planning methods followed by objective test. 5 marks

EVALUATION:

1) Internal : Continuous evaluation on Four Modules = 25 marks
2) External examination -75 marks
3) Total : Internal - 25 + External - 75 = 100 marks

(PRACTICAL)

Module No.	Objectives	Content	Evaluation
4	This will enable students to - 1. understand and become aware about different alternate families 2. have an exposure through media 3.get acquainted with different family planning methods 4. get knowledge and aware about pre and post marital counseling	**Family and its structure** 1a. Survey report: different alternate families. 1b. Role play and skits 2.Films ,Movies, Review of the tele-serials presenting/ focusing families 3. Guest lecture and resource person. 4.seminar and workshops on counseling	5marks 5marks 5marks 10marks

REFERENCES :

Benokraitis, V. N. (2011). Marriages and Families: Changes, Choices and Constraints, 7th edition, Prentice hall, New Jersey.

Blood, Robert and Wolfe (1960). Husband and Wife: Dynamics of Married Life, Free Press, New York.

Coleman, C.J. (1988) Intimate Relationships, Marriage &Family (2nd Ed.). New York: Macmillan Publishing Company.

Duvall, E.M. (1977). Marriage and Family Development, 5th edition, Lippincott Co. Philadelphia.

Dyer, E.D. (1983). Courtship, Marriage and Family, American Style, the Dorsey Press, Illinois.

Edward, N.J. & Demo, H.D. (1991). Marriage and family transition. London: Allyn & Bacon.

Gore, (1969). Urbanization and Family Change, Popular Prakashan, Bombay.

Henslin, J. M. (ed.) (1989). Marriage and Family in a Changing Society, The free press, U.S.A.

Semester III
Consumer Studies

OBJECTIVES:

1. The overall goal of consumer studies is to create awareness about consumer problems in the market.
2. To impart knowledge regarding the role of consumer guides and agencies.
3. To enable the students to develop good buymanship skills in the selection of goods and services in the market.
4. To help the students to realize their rights and responsibilities as informed consumers

Course	TC	Th C	Pr C	Int M	Ext M	Total
Consumer Studies	4	4	-	25	75	100

Module No.	Objectives	Content	Evaluation
1	The learner understands the term consumer and can define it. To provide information regarding the need for consumer education. To create awareness regarding consumer problems.	**CONSUMER AND CONSUMER PROBLEMS** **1.1 DEFINITION AND NEED OF CONSUMER EDUCATION** • Introduction to Consumer Problems related to goods and services • Meaning and Objectives of Consumer Education **1.1. CONSUMER MOVEMENT** • Background/History of Consumer Movement • Emergence of Consumer Movement in India • Causes for slow growth of Consumer Movement in India **1.2. CONSUMER PROBLEMS** • Adulteration • Faulty Weights and Measures • Misleading Advertisements • Other Malpractices such as lack of safety and quality control regulations, sales gimmicks, unfair warranties, massive profiteering and illegal trading.	Identify 5 consumer problems related to food adulteration/ faulty weights and measures/ sales gimmicks. Interview a consumer who has faced some problem related to any one of the areas mentioned above, in the market and document the same. 10 Marks Presentation of the report 15 Marks

Module No.	Objectives	Content	Evaluation
2	To provide knowledge regarding various consumer guides To create an understand-ing of different brands, labels and grading and standard-ization.	**CONSUMER GUIDES** **2.1 BRANDS** • Meaning • Types of brands such as Individual, Family, Umbrella, Combination device and Private or Middleman's brand. **2.2. LABELS** • Meaning and types of labels • Essentials of labels **2.3 GRADING AND STANDARDIZATION** • Meaning and types (Qualitative and Quantitative) • Standardization process - grading, sampling, sorting and packaging **2.4 ADVERTISEMENTS** • Influence of advertisements on consumers • Usefulness of advertisements to consumers • Misleading advertisements **2.5 ROLE OF CONSUMER AGENCIES** • Role of BIS, AGMARK, FPO and ECO MARKS	Collect 5 samples for labels from various products such as food/ medicines/cosmetics/clothing. 10Marks Write a detailed report regarding the infor-mation given to the Consumers through these labels followed by a discussion in the class regarding the positive and negative points of the labels. 5 Marks Observe and critically analyze 5 advertisements from any media like Television/ radio / print media and write a detailed report followed by a discussion in the class. 10 Marks

Module No.	Objectives	Content	Evaluation
3	To help students make better decisions in the market as a wise consumer.	**CONSUMER DECISION MAKING** **3.1 CONSUMER DECISIONS** Decision making process • Problem recognition • Information seeking • Equation of alternatives • Buying decisions • Post purchase evaluation 3.2 **GOOD BUYMANSHIP**	Observe how decision making process is used, in your own family for the purchase of some consumer product like refrigerator/television / food processor/ washing machine and write a report 25 Marks

Module No.	Objectives	Content	Evaluation
4	To make the learners aware about their protection from the malpractices in the market. To create an understanding about different rights and responsibilities among the students. To inform the students regarding various Acts and Agencies	**CONSUMER PROTECTION** **4.1 NEED FOR CONSUMER PROTECTION** **4.2 CONSUMER RIGHTS** • Right to be heard • Right to choose • Right to be informed • Right to seek redressal • Right for Protection • Right to Basic needs • Right to Consumer Education • Right to secure ecological balance **4.3 CONSUMER RESPONSIBILITIES** **4.4 CONSUMER ACTS AND AGENCIES** • Acts: COPRA, Agencies: CGSI, CERC, CFBP	A written report on Role of Consumer Agencies like CGSI/ CERC/CFBP in consumer protection. 10 Marks Procedure for Redressal for a consumer problem. 15Marks

EVALUATION:

1) On Four Modules of 25 marks
2) External examination - 75 marks
3) Total : Internal - 25 + External - 75 = 100 marks

REFERENCES:

1. AggarwalAnju D. – "A practical Handbook for Consumers",1989, India Book House (Pvt) Ltd. Mumbai, India.
2. C.N.Sontakki, R.G. Deshpande – "Marketing, Salesmanship and Advertising" – Kalyani Publishers, New Delhi – Ludhiana, 1984.
3. Dr. S.C.Saxena – "Business Administration and Management".
4. Kotler Philip – Principles of Marketing – Prentice Hall of India Pvt. Ltd, New Delhi, 1985.
5. Nair Suja – "consumer Behaviour" – Text and Cases – Himalaya Publishing House, 1999.
6. Niraj Kumar – "Consumer Protection in India" – Himalaya Publishing House, New Delhi.
7. S.A. Chunawala – "Commentary on consumer Behaviour" – Himalaya Publishing House, New Delhi.
8. S. A. Sherlekar, P.N. Reddy, H.R. Appannaiah – "Essentials of Marketing Management" - Himalaya Publishing House, Mumbai, 1995.
9. S.S. Gulshan – "Consumer Protection and Satisfaction" – wileyEastem Ltd, New Delhi, 1996.
10. Sheth J.N. – "Model of Industrial Behaviour". Journal of Marketing 1973, 37 [4].

11. Sundaram I.S. – “Consumer Protection in India” – B.R. Publishing Corporation, Delhi, 1985.
12. V.S. Ramaswamy, S.Namakumari, - “Marketing Management”, Second Edition, McMillian India Ltd, New Delhi, 1997.

Semester III

Media Skill Development

Objectives:

1. To develop awareness about various forms of mass media.
2. To analyze the role of media in educating the masses.
3. To acquire the skills to design messages for communication
4. To develop skills in preparing and presentation of the different forms of media

Course	TC	Th C	Pr C	Int M	Ext M	Total
Media Skill Development	4	3	1	25	75	100

Module No.	Objectives	Content	Evaluation
1	1. Develop awareness of the need and importance of Mass-Media. 2. Analyze the relationship between media and message. 3. Learn writing for different media.	**Mass Media:** 1. Concept of Mass Media, its importance and its role in development of society. 2. Relationship of Medium and Message. 3. Writing for different Media.	Continuous assessment and project 25 marks

Module No.	Objectives	Content	Evaluation
2	1. Become aware of different forms of media. 2. Understand the role and importance of print, electronic, new and traditional media for development. 3. Be able to select the appropriate form of media for Extension activities.	**Forms of Media:** 1. Print Media- Newspapers, Magazines, Periodicals. 2. Electronic Media- Television, Radio, films. 3. New Media- Cell phones and Internet. 4. Traditional Media- Folk Media including puppetry.	Continuous assessment 25 marks

EVALUATION:

Internal :Continuous evaluation - 25 Marks
External : 75 Marks

Total : Internal - 25 + External - 75 = 100 marks

Module No.	Objectives	Content:	Evaluation
3	This module will enable students to: 1. Understand how to identify and analyze articles on social issues in print media. 2. Be able to analyze the content and form of electronic media. 3. Develop the skill of preparing A.V. clipping	**Forms of Media:** 1. Identify and analyze articles on social issues in Newspapers, Periodicals and Magazines. 2. Analysis of the content and form of Television Programmes. 3. Preparation of clippings on contemporary issues.	5 marks 5 marks 10 marks

Module No.	Objectives	Content:	Evaluation
4	This will enable students to: 1. Develop skills in writing for print media. 2. Be able to develop programme for radio. 3. Acquire skills in preparing the different forms of traditional media.	**Media Skills:** 1. Planning and writing an article for Newspapers, Magazines on developmental issues. 2. Preparing a format for radio programme. 3. Preparation and presentation of traditional media- puppets and Street plays.	7 marks 8 marks 15 marks

REFERENCES:

1. Kumar, K. J. (2001) Mass Communication in India, Jayco Publishing House, Mumbai
2. Modi, Bella (1991) Designing Messages for Development Communication- audience participation based approach, Sage Publication, New Delhi
3. Raidu C.S. (1993) Media and Communication Management, Himalaya Publishing House, New Delhi

Semester III

FabricOrnamentation & Accessory Design

OBJECTIVES:

1.To familiarize the student with the role and application of various types of accessories used in Fashion Business.
2.To get acquainted with various materials used as accessories.
3.To learn to mix match different materials and accessories to suit.

Course	TC	Th C	Pr C	Int M	Ext M	Total
FabricOrnamentation & Accessory Design	4	-	4	100	-	100

Module No.	Objective	Content	Evaluation
1	1.To learn various embroidery stitches 2.To learn various painting techniques 3.To learn application of beads, sequences etc.	Fabric ornamentation by Embroidery/ fabric painting. To make any two articles with given techniques. 1. Kantha / Kasuti embroidery on dupatta/stole. **OR** 2. Satin embroidery on dupatta/ stole. 1. Fabric painting on handkerchiefs/ Table cover/ Apparel **OR** 2. Tie and dye on scarf/ dupatta/ stole	For any two articles or applications 15+10 marks (25 Marks)

Module No.	Objective	Content	Evaluation
2	1. To learn various knots of macramé. 2.To learn various techniques of crochet 3. To learn technique of appliqué/patch work.	**Ornamentation** To make any two articles with suitable techniques. 1. Smocking technique on cushion cover OR 2. Bag/ purse with appliqué work/patch work. OR 3.Waist belt by Macrame OR 4. Edgings with crochet dupatta/ handkerchief/ sleeve/neck lines.	25 Marks For any two articles or applications 15+10 marks (25 Marks)

Module No.	Objective	Content	Evaluation
3	1. To learn various methods of making jewelry. 2. To learn finishing techniques. 3. To learn to use various materials for making jewelry	**Fashion Jewelry/Shoe decoration** To make any one set of jewelry (necklace, bangle/bracelet, earrings) with suitable material. (Traditional or funky type) OR Shoe decoration with suitable technique.	25 Marks For any one article or application

Module No.	Objective	Content	Evaluation
4	To apply learned technique to make the article	**Best of waste** Any article by using textile material. For example - borders /jean fabrics, dupatta, left over fabric pieces, etc. to make wall hangings or decorative pieces, etc.	25 Marks For selection of article and application

EVALUATION:

1. Continuous internal evaluation of 100 marks (each module 25 marks)
2. No Externals to be conducted.

REFERENCES:

S. No.	Title of the Book	Author
1	Anchor-educational service-(2007 & 2008 series)	
2	Anchor needle & thread (2007 & 08 series)	
3	The step by step Art of Ribbon work	Anita Aarrison
4	The complete book of needle craft	Caroline Ollard
5	Making leather handbags	Ellen Goldstein Lyrich Sarah, & Micole Malone
6	The new needle craft project book	Lucinda Ganderton
7	Creative crochet	Locias Calder's

8	Fabulous Fabrics	Mary Jo Hinely
9	Making handbags—Retro/Chic/Luxurious	
10	Complete guide to crochet	Pam Dawson

Semester IV
Advanced Chemistry

OBJECTIVES:

1. To lay the foundation of biological chemistry.
2. To give insights about the chemical reactions that occurs in biological systems.
3. To impart knowledge about the structures of the principle components present in living beings.

	subject	Th	Pr	Total	Int	Final	Total
	Advanced Chemistry	2	2	4	25	75	100

Advanced Chemistry Theory

Module No.	Objectives	Content	Evaluation

1	This module will enable students to: **1)** Understand the fundamentals of carbohydrates and their importance in metabolism. **2)** Understand importance of lipids and their role in biological systems.	**Carbohydrates:** • General formula, Classification, Structure, properties and uses of monosaccharides (Glucose, Fructose), disaccharides (Lactose, Maltose and Sucrose), oligosaccharides, and polysaccharides (Starch, Glycogen). • Introduction to the structure of D & L forms. Optical and stereo isomers. Anomers. Cyclic forms of monosaccharides of glucose and fructose including structures. • Reactions of Monosaccharids- Oxidation and reduction reactions, esterification reaction, osazone formation **Lipids:** • Definition and Introduction, Structural formula and difference between saturated and unsaturated fatty acids, • Chemical Constants of fats-iodine value, saponification value, acid value and Richert- Miesel numbers. • Rancidity • Sterols-Structure and function of cholesterol, 7 dehydro- cholesterol and ergosterol.	Question and answers- descriptive and objectives. OR Assignements. (13Marks)

References : 1-4, 8-10

Module No.	Objectives	Content	Evaluation
2	**1)** Understand the fundamentals of proteins and nucleic acid chemistry. **2)** Know the role of enzymes and factors that affect enzyme actions.	**Proteins:** • Classification of amino acids with structure. • Zwitter ionic form. • Peptide bond. • Structure of proteins (primary, secondary, tertiary and quaternary structure. • Denaturation of proteins. • Salting out of proteins and isoelectric precipitation.	Question and answers- descriptive and objectives. OR Assignements. (12Marks)

		Nucleic Acid Structure: **Enzymes:** • Definition, general properties, Nomenclature, classifications and specificity. • Mechanism of enzyme action. • Factors affecting enzyme activity. • Enzyme inhibition- competitive and non competitive. • Coenzymes and isoenzymes and their role in metabolism.	

References : 3, 4, 6, 7 & 9

Advanced Chemistry Practicals

OBJECTIVES:

1. To impart practical training in chemistry.
2. To develop understanding of the fundamentals of chemical reactions through hands on training.
3. To impart the necessary knowledge in identification of important compounds in biological systems.

Module No.	Objectives	Content	Evaluation
3	This module will enable students to: 1. Apply the basic knowledge of chemical reactions.	Preparations of basic solutions for titration: 1. Preparation of standard solution of NaOH and	Practical test (13Marks)

		H_2SO_4(Strength of 1N – 0.1N or 0.25N or 0.5N etc.),Calculations for normality, morality and g/l concentration. 2. Oxidation reduction titration- A) Ferrous ammonium sulphate with K_2Cr_2O7 B) KMnO4 with oxalic acid. 3. Using a standard solution of KMnO4and NaOH determine the strength of a mixture of H_2SO4 and $H_2C_2O4.2H2O$.	

References : 3

Module No.	Objectives	Content	Evaluation
4	1. Application of theoretical knowledge of carbohydrate, proteins and lipid chemistry**.**	1. Qualitative analysis of carbohydrates,Glucose, fructose,sucrose,lactose,maltose, starch. 2. Estimation of glucose by DNSA (colorimetric method) 3. Estimation of sucrose using Benedict's Quantitative method. 4. Qualitative tests for proteins (colour reactions and precipitation reactions) 5. Qualitative tests for fats.	Practical test (12Marks)

References : 1 & 2

References:

1) Finar I.L. "Organic Chemistry Vol. I" 6th Edition, (2009), Pearson Education India.
2) Finar I.L "Organic Chemistry, Volume 2": Stereochemistry and the Chemistry of Natural Products, 5th Edition, 2009.
3) Rastogi S.C. "Biochemistry", 2nd Edition, (2003) Tata MacGraw Hill Publishing Co. Ltd.
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7) Debajyoti D, "Biochemistry" 2nd Edition, (1980) Academic Publishers,.
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9) Chatterjee M.N., Shinde R. "Textbook of Medical Biochemistry" 8th Edition (2012) Jaypee Brothers, Medical Publishers.
10) Vasudevan D.M. and Sreekumari S – (2007) "Textbook of Biochemistry for Medical Students". 5th Edition, Jaypee Brothers, Medical Publishers.
11) "Murray Harper's Illustrated Biochemistry" 29th Edition, (2012) Prentice Hall Int.
12) Voet D, and Voet J.G "Biochemistry" 4th Edition. (2011), John Wiley & Sons.
13) Nelson DL & Cox MM. 5th Edition, 2009. "Lehninger's Principles of Biochemistry". Freeman and Co.
14) Berg J.M. Tymoczko J.L., and Stryer. L. "Biochemistry", 5th edition, (2002). W.H. Freeman.
15) Mendham J., RC Denney - Vogel's textbook of quantitative chemical analysis – Pearson education ltd.
16) Textbook of practical Chemistry Std. 11 Gujarat and Maharashtra secondary education Board.

Semester IV

Food Microbiology

Objectives

The course enables the students to-

1. **To understand the nature and the role of microorganisms in food.**
2. **To have a knowledge of the basic principles of food sanitation and safety.**

3. **To acquire a perspective of the importance of microorganisms in environmental microbiology.**

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Food Microbiology	**4**	**2**	**2**	**25**	**75**	**100**

Food Microbiology Theory

Module No	Objectives	Content	Evaluation
1	**This module will enable the students to :** 1. To be acquainted with microorganisms important in food 2. To understand their characteristics in relation to preservation and spoilage of food 3. To have a knowledge of the various sources of contamination	Food Microbiology –Basic concepts and History in brief General characteristics • Morphological Characteristics • Reproductive characteristics • Physiological characteristics • Molds of industrial importance 1. Molds, 2. Yeasts 3. Bacteria Brief introduction to the following: 4. Viruses 5. Algae 6. Parasites Sources And Types Of Contamination Water • Microbial flora-(types of micro organisms) • Water -As a source of contamination • Water purification • Microbial examination • Indicator organisms • Water borne illnesses- (names) • Microbial flora • Sources of contamination Sewage • Introduction Sewage as a source of contamination • Sewage treatment (brief) Air • Air micro flora • Air as a source of contamination	25 Marks Assignments / Presentations

		Other Sources of contamination • Humans • Pests • Animals • Birds • Inanimate objects, Food safety Basic concepts of Physical, Chemical and Biological hazards associated with foods. Sanitation in food service establishment **(1)** Cleansing agents, Disinfectants & sanitizers used in Food service Establishment. **(2)** Personal hygiene • The food handler • Cleanliness with regard to hand, habits, working attire/cloths, jewellery, • Health of a food handler (3) HACCP Principles, Need and benefits	
2	**This module will enable the students to :** 1. Understand the beneficial effects of micro-organisms 2. Food Spoilage and pathogenesis of micro-organisms	Micro Organisms and Food Beneficial effects of microorganisms. (1) Examples of microorganisms responsible for commercial production of acid, Alcohols, solvents, antibiotics, vitamins, hormones, enzymes, amino acid etc. (2) Microbial fermentation and Role of micro organisms in Food fermentations • Beer • Wine • Bread • Indian pickles • Fermented dairy products Curd, yoghurt & cheese • Vinegar Indian fermented products –Idli, dhokla, khaman.	25 Marks case studies on food borne diseases new research developments in fermentation technology Assignments / Presentations

		2. Food Spoilage And Food Borne Diseases (1) Contamination and spoilage of cereals,grains and cereal products. (2) Contamination and spoilage of meat and meat products. (3) Contamination and spoilage of milk and milk products. Food Poisoning and Infections: Definitions and differentiation between: ➢ Food poisoning and infections. ➢ Salmonella and Botulism ➢ E.coli and S. aureus	

References

1. Frazier ,W.C,&Westhoff,D.1988 Food Microbiology .Tata McGraw-Hill
2. Guthrie ,R.K.[ed].1972.Food sanitation Inc.Eaglewood Cliff,N.J
3. Jay,1978.Modern food microbiology.Van Nostrand Reinhold Company ,New York
4. Marriot .N.G.[,1995]Principles of Food Sanitation .4th edition Edward Arnold
5. Pelczar ,M.L .,and R.D Reid -1972 Microbiology.McGraw &Hill ,New York
6. Reid,G.[ed]1982.Prescott and Dunn's industrial microbiology AVI Publishing Co.,Inc ., Westport ,Conn
7. Stanier,R.Y.,E.A.Adelberg,and Ingraham .1976 .The microbial world .4th ed.Prentice Hall.

Food Microbiology Practical

Objectives

This course will enable students to:

1. **To understand the principle, working and use of various equipments.**
2. **To have a knowledge of the underlying principles in practical food microbiology.**
3. **To develop awareness about the different techniques in isolation and primary identification of microorganisms.**

Module No	Objectives	Contents	Evaluaiton
3	**The module will enable the student to:** 1. To have a knowledge of the commonly used staining techniques.	Study of laboratory equipments principle,working and use of Microscope, Autoclave, Incubator, Refrigerator, colony counter. 1. Study of motility : Hanging drop preparation.	Performing Practical-15 marks

	2. To make the student familiar with the various culture media	2. Staining techniques : Simple staining Gram staining Spore staining **Capsule staining** 3. Preparation of culture media composition and uses.	
4	**The module will enable the student to:** 1. To enable students to isolate micro-organisms fro different soures. 2. To make a preliminary identification of some micro-organisms	**Isolation and observation of fungi** 1. Isolation of bacteria: Using serial dilution streak plate and pour plate techniques: • From air • From soil 2. Bacteriological Analysis of Water. 3. Bacteriological analysis of milk. 4. Test for surface sanitation. 5. Permanent slides of pathogenic micro organisms	Performing practical-10 marks

References

1. Frazier ,W.C,&Westhoff,D.1988 Food Microbiology .Tata McGraw-Hill
2. Guthrie ,R.K.[ed].1972.Food sanitation Inc.Eaglewood Cliff,N.J
3. Jay,1978.Modern food microbiology.Van Nostrand Reinhold Company ,New York
4. Marriot .N.G.[,1995]Principles of Food Sanitation .4th edition Edward Arnold
5. Pelczar ,M.L .,and R.D Reid -1972 Microbiology.McGraw &Hill ,New York
6. Reid,G.[ed]1982.Prescott and Dunn's industrial microbiology AVI Publishing Co.,Inc ., Westport ,Conn
7. Stanier,R.Y.,E.A.Adelberg,and Ingraham .1976 .The microbial world .4th ed.Prentice Hall.

Semester IV

Human Nutrition I

Objectives

This course will enable students to:

1. Gain insight in the physiological process of digestion, absorption of nutrients.
2. Acquire knowledge about the functions of nutrients.

3. Understand the implications of deficiencies and excess of the nutrients.
4. Describe the function of water in the body and the ways electrolytes/fluids are balanced and maintained in the body.

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Human Nutrition I	**4**	**4**	**-**	**25**	**75**	**100**

Module No.	Objectives	Content	Assessment
I	**This module will enable students to:** 1. Know the various scientists and development in nutrition science. 2. Understand digestion, absorption of macronutrients. 3. Understand the inter-relationship between water and electrolytes and their role in maintenance of fluid balance. 4. Understand how the changes in fluid balance effects the human body	**History of Nutrients - Eminent Scientists and developments in nutrition Science** **Basic concepts in Human Nutrition:** • Digestion, • Absorption of macronutrients- Transport across cell membrane – active, passive, diffusion **Water, Electrolytes and acid-Base balance** • Sources, functions and Distribution and deficiencies of the following: Water and Electrolytes- Sodium, Potassium, Chloride • Mechanisms of water balance, electrolyte balance and Acid-Base Balance, Water Intoxication **ENERGY BALANCE:** • Forms of energy • measurement of energy, • SDA, thermogensis. • BMR estimation of BMR and factors affecting BMR	**Quiz** **Assignments** **Projects**

II	**This module will enable students to:** 1. Understand the functions, sources, effects of deficiencies and excess in the body.	**CARBOHYDRATES :** • Types and functions. • Sugar alcohols, • Fibre - types, properties, function, role in various diseases. • Computation of RDA, excess of carbohydrates.	**Quiz** **Assignments** **Projects**
III	**This module will enable students to:** 1. Understand protein quality, amino acid imbalance and its implications on health.	**PROTEIN:** • Classification and functions • Methods of protein quality evaluation, Amino acid imbalance, nitrogen balance, antagonism and toxicity. • Factors affecting protein utilization and RDA. • Vegetarianism • PEM - clinical and biochemical aspects.	**Quiz** **Assignments** **Projects**
IV	**This module will enable students to:** 1. Understand the role of lipids in nutrition and health 2. Understand the inter-relationship between the macronutrients	**LIPIDS :** • Types of lipids • Metabolism • Hydrogenation, fatty acids, lipoproteins. • Functions, role of fat in cardio-vascular diseases. • RDA • Inter relation between carbohydrate, fat and protein in energy metabolism. • Starvation, excess of macronutrient.	**Quiz** **Assignments** **Projects**

References

1. Passamore R. and M.A. Eastwood (1986): Human Nutrition and Dietetics, EWBS, Churchill Lingston
   H. (1986) Introductory Nutrition, Times Mirror College Publication, Toronto, Canada
2. Guthrie H. (1986) Introductory Nutrition, Times Mirror College Publication, Toronto, Canada
3. M. Swaminathan: Advanced Text book on Food and Nutrition Vol.-I & Vol. – II
4. Nutrition by Margaret S. Chaney, Margaret L. Ross
5. Textbook of Human Nutrition , Mantab S. Bamji, N. Prahlad Rao, Vinodini Reddy

Semester IV

Food Analysis

Objectives:
This course will enable the students:

1. **To impart basic skills to do laboratory work.**
2. **To teach general principles involved in instrumental method.**
3. **To make the students understand the principles involved in the estimations.**
4. **To provide training in analysis of different food component or constituents.**
5. **To teach simple tests to detect food adulterant from commonly consumed foods.**

6. **To introduce to the qualitative standards and specifications laid down by food safety and food standards authority of India.**

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Food Analysis	**4**	**-**	**4**	**25**	**75**	**100**

Module No	Objectives	Content	Assessment
1	**This module will enable students to:** 1. Understand the significance of food analysis. 2. Learn about sampling, and the techniques used in sampling. 3. Have knowledge about various instruments used in food analysis.	**Introduction to food analysis and its importance.** **Sampling** Definition of sampling Sampling methods/ techniques. Sampling Techniques in food analysis General classification of sampling methods. Advantages and disadvantages of Sampling Best sampling technique for particular foods **General instrumental methods -** Working principle and uses of various laboratory instruments used in food analysis-Colorimeter, Spectrophotometer, centrifuge, Kjeldahl's apparatus for protein estimation, Soxhlet apparatus for fat estimation, different balances, Muffle furnace, water bath, glass distillery unit.	**25 Marks** **Quiz** **Journal** **Assignments on working principle of various instruments** **Performing practical** **Viva**
2	**This module will enable students to:** 1. Know analytical methods used in estimation of proximate principles. 2. Understand the significance of chemical constants of fats and oils.	**Quantitative Analysis of proximate principles:** Estimation of moisture by AOAC method of dehydration. Estimation of crude fat/oil by solvent extraction method. (Demonstration only) Estimation of total ash by A.O.A.C. method of ashing.	**25 Marks** **Quiz** **Journal** **Assignments** **Performing practical** **Viva**

	3. Know about the food standards led down by FSSAI.	Estimation of protein by Macrokjeldahl method. (Demonstration only) **Chemical constants of fats and oils.** Determination of Acid value by NIN method. Determination of Saponification value by NIN method. Determination of Iodine value by NIN method.	
3	**This module will enable students to:** Learn analytical methods used in estimation of various food components.	**Estimation of Food Components** Estimation of total and free sugar from honey by Benedict's/ Lane and Eynon's quantitative reagent method**.** Determination of Ascorbic acid (Vit.C) from food sources by 2, 6, dichlorophenol indophenol method. Estimation of sodium chloride (NaCl) salt from butter by Mohr's titrimetric method. Estimation of calcium by titrimetric method (Clerk & Collips)**.** Estimation of phosphorus by Fiske and Subbarao's or Vandate-Molybdate colorimetric method. Estimation of Iron by dipyridyl reagent method. Estimation of Acidity in milk by titrimetric method.	**25 Marks** **Quiz** **Journal** **Assignments** **Performing practical** **Viva**
4	**This module will enable students to:** Gain knowledge about food adulterants and know methods of analysis.	**Qualitative analysis of common food adulterants.** Fats & oils Spices and condiments Milk and milk products Cereals and pulses Honey and jaggery Tea and coffee Sweets and confectionary	**25 Marks** **Quiz** **Journal** **Assignments** **Performing practical** **Viva**

References

1. Harold Egan, Ronald S. Kirk, Ronald Sawyer, David Pearson "Pearson's Chemical Analysis of Foods. 8th Edition, 1981. Churchill Livingstone.
2. C Gopalan; B V Rama Sastri; S C Balasubramanian " Nutritive Value of Indian Foods." 6th Edition, 1996, Reprinted 2011. National Institute of Nutrition.
3. "Official Methods of Analysis, of AOAC INTERNATIONAL", 18th Edition, 2005, AOAC INTERNATIONAL.

4. N.Raghuramulu, K.Madhavan, S.Kalyanasundaram. "A Manual of Laboratory Techniques", 2nd Edition, 2003, National Institute of Nutrition.
5. A.Y.Sathe, "A first course in Food Analysis" 1st Edition, 1999. New Age Internationa (P) Limited.
6. Manual of Methods of Analysis of Foods. Directorate General of Health Services, Ministry of Health and Family Welfare
   Government of India, 2005.
7. Morris Boris Jacobs "The Chemical Analysis of Foods and Food Products". 2nd Edition, 1951. D. Van Nostrad Company , 1951 .

Semester IV
Food Preservation

Objectives

The course enables students to:

1. **Understand the basic principles of food preservation.**
2. **Learn the various preservation techniques and their applications.**

	Subject	Total credits	Th	Pr	Int	Ext	Total

	Food Preservation	**4**	**3**	**1**	**25**	**75**	**100**

Food Preservation Theory

Modules	Objectives	Content	Assessment
1	This enables the students to: 1. Understand the need and scope for food preservation 2. Understand the basic principles underlying food preservation	1. Introduction to Food Preservation Importance and objectives of food preservation and traditional methods of food preservation. 2. Factors affecting post-harvest storage stability of foods. 3. Basic principles of Food Preservation 4. Causes of food spoilage-growth and activity of microorganisms and insects. 5. Action of enzymes and chemical reactions. 6. Physical changes in cereals, pulses, fruits and vegetables.	**25 marks** **One Test / assignment**
2	This enables the students to: 1. Understand the various methods of food preservation involving temperatures	**Methods of Food Preservation involving temperatures-** a. Asepsis and removal of micro-Organisms b. Use of high temperature Factors affecting heat resistance, TDT and Pasteurization Canning and its use in food industry c. Use of low temperature- Freezing, frozen storage, blanching, changes during storage and thawing. d. Drying or dehydration- factors affecting dehydration, pretreatments and post treatments, different techniques of dehydration.	**25 marks One Test / assignment**
3	This enables the students to: Understand the methods or combination of methods for preserving different kinds of foods	**Other Methods of Food Preservation-** a. Use of preservatives PFA classification of food preservatives- class I and class II preservatives, developed preservatives. b. Irradiation and applications in for	**25 marks One Test / assignment**

		various foods, advantages and disadvantages. Other methods- microwave heating, hurdle technology, wax emulsion	

References:

1. Frazier W. & Westhoff. D. (1988): Food Microbiology, Tata McGraw- Hill Publisher
2. Subbulakshmi G. and Udipi S.A. (2001): Food Processing and Preservation, New Longree K and Armbruster Johnwiley and Sons, Quantity food sanitation 4th edition
3. Roday, Food sanitation and hygiene (1989): Basic Food Microbiology, Chapman and Hall Publication, New York
4. Desorosier N.W., (1963), The Technology of Food Preservation. The AVT Publishing Company.
5. Salunke D.K., (1974), Storage, Processing and Nutritional Quality of Fruits & Vegetables, C.R.S. Press, Cleveland Ohio.
6. Banwart G.J., (1989), Basic Food Microbiology, Chapman & Hall Publication, New York.
7. Girdharilal, Siddappa .G.S. and Tandon .G. L., Preservation of Fruits and Vegetable published, ICAR, New Delhi
8. Dr Swaminathan .M., Food Science Chemistry and experimental Foods Published by the Bangalore Printing and Publishing co. Ltd.
9. Longree, K. and Armbruster, G. (1996) Quantity Food Sanitation, 5th Edition, John Wiley, New York, U.S.A.
10. Dr Swaminathan .M., Food Science Chemistry and experimental Foods Published by the Bangalore Printing and Publishing co. Ltd.
11. Longree, K. and Armbruster, G. (1996) Quantity Food Sanitation, 5th Edition, John Wiley, New York, U.S.A

Food Preservation Practicals

Objectives:This course will enable students to:

1. Apply principles of food preservation.
2. Prepare preserved products using different preservation methods.

Module No	Objectives	Content	Evaluation
4	**This module will enable students to:** 1. Understand and observe the role and mode of action of sugar as a preservative. 2. Understand and observe the role and mode of action of other preservatives and other techniques of preservation. 3. Get hands-on experience in preparation of various preserved products.	Introduction to Food Preservation – aseptic handling in lab. Preparation of products using sugar as the main preservative: Preparation of products using other preservatives: Pickles Tomato Products Other Sauces Masalas and dry chutney Freezing of fruits and vegetables Dehydrated foods Visit to canning, cold storage plants and various industries	25 Marks Continuous Evaluation Report on visit to food processing industry

Semester V
Biochemistry

Objectives:

1. **This course will enable students to:**
2. **Understand the fundamentals of metabolic processes occurring in the body.**
3. **Develop awareness about the significance of various metabolic processes / pathways.**
4. **Understand the integration of these metabolic processes.**
5. **Develop the ability to apply the significance of these processes to different physiological / metabolic conditions.**

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Biochemistry	4	3	1	25	75	100

Biochemistry Theory

Module No.	Objectives	Content	Evaluation
1	**This module will enable students to:** 1. Understand the various ways of carbohydrate utilization in the body. 2. Create awareness of regulation of the pathways. 3. Realize the significance of the pathways. 4. Understand the process of energy yield from the organic substrates.	**Carbohydrate metabolism:** • Various Biological pathways -- site, significance, intermediates with chemical structures, enzymes, coenzymes involved, Regulation and energetic • Glycolysis,TCA [Kreb's cycle], Pentose phosphate pathway Gluconeogenesis, Glycogenesis Glycogenolysis. • Alcohol metabolism and biochemical alterations in alcoholism • Biological oxidation and electron transport chain	**25 marks** Power point presentations/ Assignments / Displays on various pathways

2	**This module will enable students to:** 1. To understand the various ways of utilization of lipids in the body. 2. Create awareness of regulation of the pathways. 3. Realize the significance of the pathways.	**Lipid Metabolism:** • Lipogenesis and Lipolysis • Oxidation of saturated, unsaturated and odd chain fatty acids, regulation. energetics • Biosynthesis of fatty acids, regulation of synthesis. • Elongation and desaturation of fatty acid chains • Ketosis and Ketogenesis • **Triglycerides** synthesis **---** Intestinal resynthesis of triglycerides, synthesis in Liver. • Introduction of Cholesterol – Parent steroid sources, Cholesterol biosynthesis with structures, mode of utilization, Control of cholesterol metabolism • Plasma Lipoproteins, Metabolism of Chylomicrons, LDL, HDL and VLDL	**25 marks** Power point presentations/ Assignments/ Displays on various pathways
3	**This module will enable the students to** 1. Understand the various metabolic pathways 2. Significance ,regulatory mechanisms and synthesis of various essential non nitrogenous compounds synthesized from amino acids.	**Protein Metabolism** • Trans-amination – with diagrammatic representation,role of pyridoxine,significance • Oxidative and non oxidative De-amination. • Metabolic fate of Ammonia-- Formation of glutamate,Formation of Glutamine • Urea cycle –pathway with structures. • Metabolism of non protein nitrogenous compounds: Structures of purines,pyrimidines and uric acid,catabolic pathways without structures of the intermediates • Uric acid and gout. Synthesis (without structures) and significance of glutathione. Synthesis, catabolism and significance of Creatnine. • Transmethylation and one carbon transfer –scheme of interconversion and disposition of one carbon fragments	25 **marks** Power point presentations/ Assignments/ Displays On various pathways

		derived from catabolism of amino acids (without structures) • Metabolic fate of the carbon skeleton of amino acids – glucogenic, ketogenic and glucogenic and ketogenic amino acids.	

References:

1. Rastogi S.C. "Biochemistry", 2nd Edition, (2003) Tata MacGraw Hill Publishing Co. Ltd.
2. Jain, J, L., S. Jain and N. Jain. "Fundamentals of Biochemistry". 6th Edition, (2005). S.Chand Company Ltd.
3. Plummer, D.T., "An Introduction to Practical Biochemistry". 2nd Edition, (1971) McGraw-Hill Publishing Co. Ltd.
4. Apps D.K. and Cohen B.B. and Steel C.M. "Biochemistry: A Concise Text for Medical Students" (1992), Bailliere Tindall,
5. Debajyoti D, "Biochemistry" 2nd Edition, (1980) Academic Publishers,.
6. Satyanarayana U and Chakrapani U "Biochemistry", 3rd Edition, (2008), Books & Allied Publishers.
7. Chatterjee M.N., Shinde R. "Textbook of Medical Biochemistry" 8th Edition (2012) Jaypee Brothers, Medical Publishers.
8. Nelson DL & Cox MM. 5th Edition, 2009. "Lehninger's Principles of Biochemistry". Freeman and Co.
9. Berg J.M. Tymoczko J.L., and Stryer. L. "Biochemistry", 5th edition, (2002). W.H. Freeman.
10. Vasudevan D.M. and Sreekumari S – (2007) "Textbook of Biochemistry for Medical Students". 5th Edition, Jaypee Brothers, Medical Publishers.
11. "Murray Harper's Illustrated Biochemistry" 29th Edition, (2012) Prentice Hall Int.

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Biochemistry Practical

Objectives

- **To enable students, learn the principles and procedures of biochemical analysis of blood and urine.**
- **To develop ability to interpret the results of the estimations of the common constituents of biological fluids using only standard solutions.**

Module No	Objectives	Content	Assessment
1	**This module will enable students to:** 1. To know the principles on which the estimations are based. 2. To know the procedures used for the estimations using automatic pipettes. 3. To draw inference from the results.	1. Qualitative Estimation of Normal Constituents of Urine. 2. Qualitative Estimation of Abnormal Constituents of Urine. **Quantitative Estimation in Urine**. 3. Urea 4. Uric acid 5. Glucose **Quantitative estimation in serum / blood**. 6. Urea 7. Uric acid 8. Total protein 9. Albumin 10. Cholesterol	25 Marks Quiz Journal PracticalTests Interpretation of case studies

References

1. Oser, B. L. Ed "Hawk's Physiological Chemistry" (1979), 14th.Rep. ed Tata McGraw-Hill Publishing Company Ltd.
2. H. Varley, A. H. Gowenlock, and M. Bell, "Practical Biochemistry, Vol. 1", London, UK, 5th Edition, (1976), Edited by: I. W. Heinemann.
3. Godkar P.B. Godkar D.PTextbook of Medical Laboratory Technology (2006), 2nd Edition, Bhalani Publishing House.
4. Burtis C.A, Ashwood E.R, Bruns D.E. (2007), "Tietz Fundamentals of Clinical Chemistry", 6th Edition, Elsevier Health Sciences.
5. Davidsohn, I (Editor) & Henry, J B (Editor) "Todd-Sanford Clinical Diagnosis by Laboratory Methods" (1984), 17th Edition.W.B. Saunders.

Semester V

Human Nutrition - II

Objectives:
The course enables students to:

1. Explain the differences between water and fat-soluble vitamins, including how each one functions in the body, the deficiency/toxicity symptoms, and major food sources.
2. State which vitamins have antioxidant effects and identify those effects.
3. Explain the differences between major and minor minerals, including how each one functions in the body, the deficiency/toxicity symptoms, and major food sources.

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Human Nutrition II	**4**	**4**	**-**	**25**	**75**	**100**

Module No.	Objectives	Content	Assessment
1	**This module will enable students to:** 1. Understand the functions, sources, effects of deficiencies and excess of fat soluble vitamins in the body.	**VITAMINS -** Introduction- History and Classification **Fat soluble vitamins** Forms, Sources, Requirements Functions, Deficiency, Toxicity of 1. Vitamin A 2. Vitamin D 3. Vitamin E 4. Vitamin K	Quiz Assignments Projects MCQ
2	**This module will enable students to:** Understand the functions, sources, effects of deficiencies and excess of water soluble vitamins in the body	**Water Soluble Vitamins** Sources, Requirements, Functions and Deficiency of 1. Vitamin C 2. Thaimin 3. Riboflavin 4. Niacin (Tryptophan conversion and Niacin Equivalent) 5. Pyridoxin 6. Cynocobalamine	Quiz Assignments Projects MCQ

		7. Folic acid	
3	**This module will enable students to:** Understand the functions, sources, effects of deficiencies and excess of macro minerals in the body	**Macro Minerals :** Sources, RDA, Functions, Deficiency and Toxicity of: 1. Calcium 2. Phosphorus 3. Sodium 4. Potassium	Quiz Assignments Projects MCQ
4	**This module will enable students to:** Understand the functions, sources, effects of deficiencies and excess of micro minerals in the body	**Micro Minerals and Trace Elements** Sources, RD, Functions, Deficiency and Toxicity of: 1. Iron 2. Iodine 3. Zinc 4. Selenium 5. Copper 6. Chromium	Quiz Assignments Projects MCQ

Reference

1. Whitney E.N., Rolfes S.R. (1996) Understanding nutrition – St. Paul, Minneapolis: West Publishing Co.
2. Wardlaw G. (2001): Perspectives in nutrition – St. Lous Mosby – Year Book
3. Sizer F.S., Whitey E.N.(2001) Nutrition – concepts ad controversies – Belmont (CA): Wadsworth (Thomson learning).
4. Smolin L.A.(1994) Nutrition – science and applications, Saunders College Publishing.
5. Helen Guthrie, Introductory Nutrition, Times Mirror pub.
6. M. Swaminathan : Advanced Text book on Food and Nutrition Vol.-I & Vol– II
7. Margaret S. Chaney, Mararet L Ross, Nutrition.
8. Bamji Mantab, N.Prshlad Rao and Reddy Vinodini (2003) Textbook of Human Nutrition, Oxford and IBH Publishing Co. Pvt.Ltd.,New Delhi.

Semester V

Food Science

OBJECTIVES:
This course will enable students to:

1. **Understand nature and composition of food**
2. **Know the role of different ingredients along with methods and principles used in food preparation**
3. **Understand the changes occurring in foods during cooking.**

	Subject	Total Credits	Th	Pr	Internal	External	Total
	Food Science	**4**	**3**	**1**	**25**	**75**	**100**

Food Science Theory

Module No	Objectives	Content	Assessment
1	**This module will enable students to :** 4. Understand the importance of Sensory evaluation 5. Comprehend different sensory evaluation Techniques	**1. Sensory Evaluation** Sensory characteristics of food, importance and objectives of Sensory evaluation and its Prerequisites, Tests for Sensory Evaluation**:** Sensitivity Threshold test Difference test – paired comparison, triangle and Duo-trio test, Rating test – Hedonic, Numerical, Composite scoring and ranking test, 2. **Water:** Role of water in cookery, Forms of water – Bound and free water. Types : Hard and Soft 3. **Beverages:** Types and Classification. Coffee, Tea,Cocoa Processing. (Breifly) **4. Fats and Oils** Physical properties – plasticity,	25 Marks Quiz Assignments Projects

		smoke point, flash point, Functional role of fats Functional role of fats – flavor, texture, tenderness, emulsification, shortening and leavening effects. Emulsions Fat Spoilage – rancidity its types and its prevention. Antioxidants flavor reversion. Fat absorption and factors affecting it	
2	**This module will enable students to:** 3. Know the composition of specific foods of plant origin 4. Understand the changes occurring in various food components during cooking with their applications . 5. Know the role of various foods in cookery	**5. Cereals :** Structure and composition of a cereal grain, Properties of starch – Thickening and Gelatinization, Gel Formation, syneresis, Retrogradation and Lump formation, Dextrinization, Identity of grains, ,Gluten formation – Factors affecting Gluten formation. **Leavening agents:** Natural and Chemical and their action. 6. **Pulses and legumes**: Composition , toxic factors, its effects, and elimination, soaking, fermentation and germination, 7. **Vegetable and Fruits:** Composition, color pigments and effect of cooking on them Pectic substances: forms – Pectin, Protopectin, Pectic acid, Pectinic acid. Theory of gel formation Vegetables gums and their commercial uses.	25 Marks Quiz Assignments Projects

3	**This module will enable students to:** 1. Know the composition of specific foods of plant origin 2. Understand the changes occurring in various food components during cooking with their applications . 3. Know the role of various foods in cookery	**1. Milk:** Composition, effect of heat, acid, alkali and enzymes on milk, scum formation, maillard reaction 2. **Egg:** Structure and composition of egg,protein in egg White and Egg Yolk, Methods to judge Egg quality (grading) Physical andchemical changes during egg storage, foams**, r**ole of egg in Cookery, methods of cooking egg. 3. **Meat, Fish and Poultry-** Composition, Structure, post mortem changes, ripening or ageing of meat, tenderization of meat, changes during meat cooking. 4. **Fish** : Classification, quality indicators of fish, types of fish spoilage, gelatin, and Fish Protein Concentrate (FPC).	25 Marks Quiz Assignments Projects

References

1. Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers
2. Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers
3. Bennion, M. Scheule, B.: (2009): Introductory Foods,13th Edition, Prentice Hall Publications
4. Manay, S. (2009) Foods Facts ,New Age International Pvt Ltd Publishers
5. Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers
6. Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications

7. Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers

Food Science Practical

Objectives:
This course will enable students to:

1. **Understand nature and composition of food**
2. **Observe the principles of food Science**
3. **Comprehend the role of different ingredients used in food preparation**.

Module No	Objectives	Content	Assessment
4	This module will enable students to : 1. Understand the importance of Sensory evaluation 2. Comprehend and understand the role of ingredients and their behavior.	**1. Tests for Sensory Evaluation** Sensitivity Threshold test Difference test – paired comparison, triangle and Duo-trio test scoring and ranking test. **2. Sugar and Starch Cookery** Preparation ofsugar syrups for example: one thread, two thread soft ball and crack stage. Stiffness of starch gel and factors affecting it Factors affecting gluten formation i.e. kneading time, types of cereal and flours, effect of amount of fat etc. 3. **Fat Cookery**: Shortening effect and factors affecting fat absorption. 4. **Milk Cookery**- Curd ,Paneer,Maillard Reaction . 5. **Egg Cookery-** Role of Egg – Boiled, poached, Omlette, French toast, mayonnaise etc.	25 marks Continuous assessment.

***Evaluation Pattern:**

- **Each cooking practical to be evaluated out of 10 marks**
- **Average marks for each module to be aggregated at 25 marks.**

Semester V

Diet Therapy

Objectives

This course will enable students to:

1. Understand the etiological factors and physiological changes associated with specific disease conditions.
2. Develop an insight into the role of modified diets in specific conditions.
3. Acquire the ability to modify the normal diet to suit individuals suffering from specific diseases and lifestyle disorders.

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Diet Therapy	4	2	2	25	75	100

Diet Therapy Theory

Module No	Objectives	Content	Assessment
1	**This module will enable students to:** a. Understand the basic concepts involved in formulating therapeutic diets. b. Understand the role and scope of the Indian	**Basic Concepts of Diet Therapy : -** Principles of planning therapeutic diets. Modification of normal diet - consistency, nutrients Role of Registered dietitian in Nutritional care Indian Dietetic Association and its role.	25 marks Quiz Assignments Projects

	Dietetic Association. c. Know the etiological factors in the development of specific physiological conditions and their nutritional management	**Modification of diet in fever and infection : -** Fever – Definition, classification and causes. Metabolic Changes in the body during fever. Principles of dietary planning for T.B and Typhoid **Pre and Post Operative Diets:** General Dietary Guidelines. **GI disorders:** Etiology, symptoms and nutritional management of the following: Peptic ulcer Diverticulitis. Terms: Achlorhydria, Dumping syndrome, steatorrhoea. **Liver disorders:** Etiology, symptoms and nutritional management of the following: Infective hepatitis Cirrhosis of liver. Terms : Ascites, Oesophageal varices and hepatic coma	
2	**This module will enable students to:** a. Understand the causes and implications of specific non-communicable diseases. b. Develop an understanding of	**Weight management - underweight and overweight** -Definition of overweight and obesity, types and grades of obesity , Theories of obesity. -Causes of obesity Assessment techniques -Dietary modification Importance of behaviour modification, limitations of fad diets (very low calories, extreme energy restrictions)	25 marks Quiz Assignments Projects

	the association of lifestyle factors and specific non-communicable disease prevention. c. Learn the nutritional management of specific non-communicable diseases. **d.** Acquire the ability to suggest lifestyle modifications as a management methodology for NCD management and prevention	**Underweight.** - Definition, causes, assessment, and dietary modification. **Dietary management in hypertension:-** Hypertension - classification (mild, moderate, severe) Blood pressure control – Renin-angiotension system flow diagram. Dietary modification , low sodium foods and salt alternatives. Terms: Ischemia, Hyperproteinemia, P\S ratio, thrombus infarct atherosclerosis, myocardial infarction, stroke, coronary artery disease, rheumatic heart disease, , salt sensitive/resistant hypertension. **Diabetes Mellitus: -** Classification of Diabetes, causes, diagnosis, symptoms. - Metabolic changes in NIDDM. - Dietary mgt. of NIDDM - meal exchange glycemic index, glycemic load **Diet in Renal Disorders:** Physiology of Kidney. causes of renal disorders.(in brief) - Introduction to acute and chronic nephritis. - Renal calculi - types of stones, etiology , symptoms and - Principles of Diet therapy (Alkaline and acid ash diet.)	

References

1) Srilaksmi, B.(2011): Dietetics, 6th Edition,New Age International Pvt Ltd Publishers

2) Mahan, K.L , Escott-Stump, S , Raymond, J.L (2011)Krause's Food & the Nutrition Care Process, 13 edition, Saunders Publishers.

3) Nix, S. (2012): Williams' Basic Nutrition & Diet Therapy, 14 edition, Mosby publishing.

4) Whitney, E.N., Cataldo, C.B, Rolfes, S.R (2001): Understanding Normal and Clinical Nutrition, Brooks Cole Publishing

Diet Therapy Practical

Objectives
The course would enable the students to

1. **Apply principles of diet therapy in planning and preparing foods for specific health conditions.**
2. **Plan foods for specific disease conditions keeping in mind cost, availability and other factors**

Module	Objectives	Content	Evaluation
I	**This module will enable students to:** a. Understand the principles of dietary management for specific health conditions and apply the same to modify the diet as per need. b. Become aware of the various categories of products available in the market and their	**Planning and preparation of normal diet for adult sedentary man / woman** **Planning and preparation of recipes for progressive hospital diets** Clear Liquids such as Cereal kanjis, dal water, clear vegetable soups clear fruit juices, beverages without milk. Full Liquid recipes such as beverages, milkshakes, and Soft diet. -Nutritional facts of nutraceuticals and their incorporation in therapeutic diets	25 Marks Diet planning and cooking **Assignments:** Market Survey of available Nutraceuticals and nutritional supplements Market Survey of 1. protein

	potential uses.	-Protein supplements (concentrates hydrolysates and isolates), Planning and preparation of recipes using these products. - Sugar substitutes and non caloric sweeteners such as Sucralose, FOS (inulin) and Aspartame. Planning and preparation of recipes using these products - Brands and blends of oils and fats available in the market with their benefits - Planning and preparation of a high caloric High Protein Diet (additional minimum 1500kcal and 20- 25 g of protein) generally used for patients with Tuberculosis / convalescence period. Planning and preparation of foods for person with peptic ulcer and constipation	supplements 2. sugar substitutes and non caloric sweeteners 3. brands and blends of oils and fats
II	**This module will enable students to:** Understand the principles of dietary management for specific health conditions and apply the same to modify the diet as per need.	Planning and preparation of low calorie diet providing 1200-1400 kcal and 50 g of proteins Planning of a diet for person with Hypertension and preparation of few selected recipes Planning and preparation of foods for Nephritis and Nephrotic Syndrome (Low and high protein diet, with restricted sodium content) Planning a diet for person with diabetes mellitus and preparation of few selected recipes	25 Marks Diet planning and cooking

References

1) Srilaksmi, B.(2011): Dietetics, 6th Edition,New Age International Pvt Ltd Publishers

2) Mahan, K.L , Escott-Stump, S , Raymond, J.L (2011)Krause's Food & the Nutrition Care Process, 13 edition, Saunders Publishers.

3) Nix, S. (2012): Williams' Basic Nutrition & Diet Therapy, 14 edition, Mosby publishing.

4) Whitney, E.N., Cataldo, C.B, Rolfes, S.R (2001): Understanding Normal and Clinical Nutrition, Brooks Cole Publishing.

Semester V

Recent Advances in Food Science and Nutrition (Seminar) and Women's Issues

Objectives

The course enables the students to-

1. **Be aware of areas of research in the field.**
2. **Enrich themselves with recent advances.**
3. **Develop competence in reviewing the research papers.**
4. **Develop competence in presentations.**

	Subject	Total credits	Th	Pr	Int	Ext	Total
	Recent Advances in Food Science and Nutrition(Seminar) and Women's Issues	**4**	**2**	**2**	**100**	**-**	**100**

Students have to

- **Refer to the research work from journals,done in the last 10 years**
- **Prepare a powerpoint presentation of 15-20 min each on any recent research in the field of nutrition and dietetics**
- **Submit a detailed report of the presentations with bibliography**

Criteria of Assessment

- Review of Literature 15
- Report Writing 10
- Power point Slide Preparation and Presentation 15
- Oral Communication skills 10

- **Total** **50**

WOMEN'S ISSUES

Objectives:

1. To know the demographic profile of women in India.
2. To understand the present situation and changes in the status of women.

Module No	Objectives	Content	Evaluation
			25 Marks
3.Demographic profile of women in India and towards change	This module will enable students to: 1. Understand the demographic profile of women in India 2. To create awareness about the role and importance of media portraying women	1.Sex Ratio 2.Health 3.Education 4.Employment 5.National Policy of Empowerment of women 2001 6.The role and importance of media portraying women	Debate Discussion Presentation

Module No	Objectives	Content	Evaluation
			25 Marks
4.Women, work and development	1.To understand the present situation and changes in the status of women. 2.To create awareness about Governmental policies and strategies for women's development and role of voluntary organizations and	1.Women in the unorganized sector. 2.Women in the Organized sector. 3.Legal provision for the protection of working women 4.Governmental policies and strategies for women's development	Discussion Presentation

	NGO's in women's development.	5.Role of voluntary organizations and NGO's in women's development	

References:

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Kumar S.A (2007): Women in the face of Globalization, Serial Publication, New Delhi.

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Sapru R.K.(1989): Women and Development. Ashish Publication House, New Delhi.

Singh K.V (2007): Women Issues- Empowerment and Gender Discrimination. Vista International Publishing House, Delhi,

Tandon R.K. (1994): Women in Modern Indi. Indian Publication Distributors. Delhi.

Semester VI

Community Nutrition

Objectives:
The course will enable the students to:

1. **Know the major nutrition related problems India is currently facing and the reasons contributing to the situation.**
2. **Understand the sampling techniques and principles of various methods of assessment of nutritional status in the community**
3. **Know the intervention strategies and programmes undertaken by the Governmental and certain National and International agencies to combat malnutrition**
4. **Understand the principles underlying the strategies and methods that can be used to plan nutrition education programmes for at-risk populations.**

	Subject	Total Credits	Th	Pr	Int	Ext	Total
	Community Nutrition	**4**	**2**	**2**	**25**	**75**	**100**

Community Nutrition Theory

Module	Objectives	Content	Evaluation
1	**This module will enable students to:** 1. Understand the major nutritional	**Introduction to Nutrition-** **1:** Definition & characteristics of a community **2:** Major Nutritional problems	Quiz Assignments Projects

	problems & the vicious poverty-malnutrition interaction contributing to it 2. Know the different methods of assessment of nutritional status of a community	in India & factors contributing to it (PEM,nutritional anaemia, IDD,Vit A & D deficiency, metabolic syndrome)-explain the paradox of malnutrition. 3:Anthropometric Biochemical Clinical & Dietary surveys (including sampling techniques in brief) Vital statistics	MCQ
2	**This module will enable students to:** 1. Know about the intervention strategies & programmes undertaken by the Governmental & certain National & International agencies to combat malnutrition 2. Understand principles of the strategies & methods that can be used to plan nutrition education programmes for select population	1. 1.Supplementary feeding programmes(MDMP, school lunch programmes,ICDS,NNAPP,NIDDCP,Vit A prophylaxis programme) 2. Green and white revolution 3. Agencies and their role in nutrition programmes – NIN,ICMR,ICAR,FAO WHO, UNICEF,CARE 4. Individual strategies – woman-woman,child to child 5. Community strategies-community contact,rural school system 6. Principles of.Nutrition & health education techniques 7. Exhibition,demonstration and dramatisation	Quiz Assignments Projects MCQ

References

1. Rosalind.S, Gibson (2005) Principles of Nutritional Assessment Oxford University Press 2nd Edition.

Isobel Contento(2011) Nutrition Education: Linking Research, Theory, and Practice:2nd edition. Jones and Bartlett Publishers International.

2. J E Park and K Park (1991)Textbook of preventive and social medicine.

Community Nutrition Practical

Objectives

The course enables the students to:

1. Be aware of various vulnerable groups in society.
2. Design the questionnaire and conducting for Diet Surveys emphasizing diet pattern, Food habits, cooking practices, hygiene and environment.
3. Planning and organizing Nutrition Education in community.
4. Plan and prepare appropriate teaching aids and how to use them.
5. Identify various health related problems in various vulnerable sections

Module	Objectives	Content	Assessment

3	**This module will enable students to** : 1.Practically assess and interpret nutritional status of an individual or small group	1. Anthropometry: Weight and height measurements-Interpretation using NCHS standards and IAP classification for children Growth chart for an infant BMI for adults 2.Interpret a mock biochemical report of a malnourished child 3.Clinical signs (Group 1 – WHO classification) 4. Visit to aanganwadi, ANC, Hospital for practical observations 5. Dietary survey-24-hr recall, calculations and interpretation	25 Marks - Taking Anthropometric measurements - case study - PPT group presentation - Report on Visits to ANC and Anganwadi
4	**This module will enable students to:** 1. Plan, conduct and evaluate a nutrition education programme in the community	1. Conduct a baseline survey or interview to find out the need and gap in knowledge. 2. Plan and conduct an appropriate nutrition education programme 3. Evaluate the programme through a feedback mechanism	25 Marks - Conduct Diet Survey - Conducting lectures and demonstrations - case study - PPT group presentation

SEMESTER VI

Food Processing and Product Development

OBJECTIVES:

This course will enable students to:

1. Understand the principles of food processing
2. Comprehend the role of different ingredients used in food processing
3. Develop a discriminating appreciation of quality and standard of commodities available

Subject	Cr	Th	Pr	Internal	External	Total
Food Processing and Product Development	**4**	**2**	**2**	**25**	**75**	**100**

Food Processing and Product Development Theory

Module No	Objectives	Content	Assessment
1	This module will enable students to : 1. Understand the importance of Food Processing of Plant based products 2. Comprehend and understand the role of ingredients and their behavior.	**Principles of Food processing in Plant based products-** 1. **Beverages:** Coffee, cocoa carbonated Beverages (non-alcoholic), Bottled water 2. Cereals: Processing of wheat and rice Cereal products, Breakfast cereals, Macroni / Pasta products, 1 3. Processing of Soybean products – flour, milk, Tofu, Tempe Texture vegetable protein 4. Commercial processing of fats & oils, Hydrogenation, winterization, blending of oils. Fat substitutes – discuss Specific products available.	One Test / assignment of 25 marks
2	This module will enable students to : 1. Understand the importance of Food Processing of Animal based products 2. Comprehend and understand the role of ingredients and their behavior	**Principles of Food processing in Animal based products 12** 1. Processing of milk: Various processed products of milk, cheddar cheese, paneer and icecream 2. Processing of Egg products,, pasteurization,freezing desugaring & dehydration. 3. Processing of Meat/ Fish /Poultry – Curing, Smoking, dehydration, etc. Sausages and FPC	One Test / assignment of 25 marks

		4. Convenience Foods: Extruded products, Texturized Vegetable Protein,	

References:

Srilakshmi, B: (2010) Food Science, 5th Edition, New Age International Pvt Ltd Publishers

Shadaksharaswamy, M, Manay, S, (2010): Food facts and Principles, 3rd Edition, New Age International Publishers

Bennion, M. Scheule, B.: (2009): Introductory Foods,13th Edition, Prentice Hall Publications

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Subbulakshmi, G, Udipi, S. A (2006): Food processing and Preservation, New Age International Pvt Ltd Publishers

Potter, N. N., Hotchkiss J. H: (1999), Food Science , 5th Edition, Springer Publications

Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers

Food Processing and Product Development Practicals

Objectives:

This course will enable students to:

1. Understand the market and develop new food product.
2. Formulate, prepare and conduct shelf life studies of a new product.
3. Design packaging and nutrition labeling.

Module No	Objectives	Content	Assessment
1	**This module will enable students to :** Understand designing	Identify a food product to be developed using Market surveys, Standardization of the food product.	Continuous assessment. 25 marks

	and standardization of a food Product		
2	**This module will enable students to :** Learn and use sensory evaluation and shelf life aspects of a food product	Sensory evaluation and shelf life study of the food product. Nutrition label Budget aspects	Continuous assessment. 25 marks

Semester VI

Nutrition and Lifestyle Modifications for Wellness

Objectives
This course will enable students to:

1. **Understand various aspects of health and fitness**
2. **Adopt a holistic approach towards health management and disease prevention.**
3. **Develop the ability to provide guidance on healthy diet, exercise & life style modifications for disease prevention and management.**

No	Subject	Total Credit	Th	Pr	Int	Ext	Total
	Nutrition and Lifestyle Modifications for Wellness	**4**	**-**	**4**	**25**	**75**	**100**

Module	Objectives	Content	Evaluation
1	**This module will enable students to** 1. Understand basic concepts and terms related to health and fitness. 2. Learn different methods of evaluation of body composition and physical fitness and its influence on health. 3. Identify causes of stress on health and its management strategies. 4. Establish relationship between healthy behaviors and fitness.	**1. Introduction to Health and Fitness** Definition of Health and fitness (WHO) Important terms – Exercise, Physical ActivityStamina, Endurance, Intensity, VO_2 max,Duration, Flexibility, Muscle strength, Muscle endurance, Agility Healthy behaviors: Physical activity, Healthy Food Choices, Weight Control, Stress Management. **2. Different Aspects of Fitness** Evaluation of fitness Wrong exercise practices and injuries	25 Marks Assignments Projects - case study - PPT group presentation

		Body Composition through the life span, its significance in fitness and body composition evaluation techniques. Stress: Its effect on health and its management through Relaxation & Meditation	
II	**This module will enable students to:** **1. Know the mechanisms of energy turnover for various physical activities.** **2. Understand the influence of nutrients and exercises on the immune system**	3. **Energy Systems** Energy usage during anaerobic and aerobic exercises Energy usage in weight reduction and maintenance of body weight **4. Nutrition, Exercise and Immunity** Role of nutrients & exercises in the promotion of immunity	25 Marks Assignments Projects - case study - PPT group presentation
III	**This module will enable students to:** 1. Understand the significance of adopting healthy behaviors for maintenance of optimum health. 2. Establish an association between a healthy lifestyle and chronic degenerative disease prevention.	**Life style modification for the following conditions:** 1. Reproductive health before Pregnancy 2. Polycystic ovarian disease 3. Bone health during Life Span . 4. Chronic Degenerative diseases: Obesity, Cardiovascular Disease, Diabetes Mellitus, Syndrome X	25 Marks Assignments Projects - case study - PPT group presentation
IV	**This module will enable students to:** 1. Gain information about the	Performance Enhancement through the use of Nutritional Supplements: (General	Assignments Projects - case study

	various products and techniques available for performance enhancement and weight loss. 2. Develop discretion in recommending their use.	information, Uses and Disadvantages) 1. Ergogenic Aids 2. Protein Supplements 3. Vitamin and Mineral Supplements. Popularly used slimming techniques : 4. Meal replacers 5. Fat burners 6. Appetite Suppressants 7. Fad Diets 8. Spot reductions, Bariatric Surgery	- PPT group presentation

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2. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
3. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
4. Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
5. McArdle, William D; (2010): Exercise Physiology, Lippincott, William and Wilkins, Philadelphia.
6. Sharkey, Brian J and Gaskill, Steven E. (2007): Fitness and Health; 6th Edition; Human Kinetics, USA
7. ACSM

Semester VI

Professional Application in Food Science andNutrition (Internship / Project)

Objectives

The course enables the students to:

1. **Get hands-on experience in working in thrust areas.**
2. **Develop technical and communication skills.**
3. **Develop confidence and enhance soft skills.**

	Subject	Total credits	Th	Pr	Int	Ext	Total
	Professional Application In Food Science and Nutrition. (Internship / Project)	**8**	**-**	**8**	**100**	**100**	**200**

Duration of Internship: 30 working days

A. Criteria for Internship:

The students should complete training in any of the following:

1. Food Industries
2. Pharmaceutical /Nutraceuticals Industries
3. Analytical Labs
4. Research Organizations
5. NGO's involved in Nutrition programmes

B. Criteria for Project:

1. Students may be given projects planned and implemented by the department.
2. The project can be on Product Development / Nutrition Education / KAP Survey / Nutrition Assessment / Market Research.
3. The project should follow the specified format of : Title, Objectives, Methodology, Results and Discussion.

C. Evaluation

1. Internal assessment: Submission of report and oral presentation by the student.
2. External assessment: Evaluation criteria to be provided by the college to the organization to be filled in and submitted by the supervisor.