

# SNDT Women's University

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



With effect from  
Academic Year 2013-14

**Shreemati Nathibai Damodar Thackersey Women's University  
1, Nathibai Thackersey Road, Mumbai – 400 020.**

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**Promotion to Various Semesters (SNDT Women's University rules from time to time are applicable)**

Grading System :

<b>Grade</b>	<b>Grade Points</b>	<b>Percentage Equivalent</b>
'O' = Outstanding	6.00	80-100
'A+' = Very Good	5.00 - 5.99	70-79
'A' = Good	4.00 - 4.99	60-69
'B' = Average	3.00 - 3.99	50-59
'C' = Below Average	2.00 - 2.99	45-49
'D' = Poor	1.00 - 1.99	40-44
'F' = Fail	0 - 0.99	<=39

**Eligibility Criteria for Admission to the Degree Course:**

- 1. Admission for students to First/Second/Third years, open/reserved categories will be applied to the program.**
- 2. Admission to First Year**

**Students passing 12<sup>th</sup> Std. with Science/Home Science with Science with 50% marks, from any recognized Board, with one paper of English are eligible.**

**Specialization: Food Science and Nutrition**  
**Sub Specialization: Nutrition and Dietetics**

**SEMESTER I**

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9101 9101 A)	English I (H.L.) (d) English (L.L.)	4	3	1	25	75	100
9102	Applied Science (c)	4	2	2	25	75	100
9103	Design and Aesthetics (b)	4	2	2	25	75	100
9104	Life Span Development (b)	4	4	-	25	75	100
9105	Environment Studies (c)	4	4	-	25	75	100
	<b>TOTAL</b>	<b>20</b>	<b>15</b>	<b>5</b>	<b>125</b>	<b>375</b>	<b>500</b>

**SEMESTER II**

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9201 9201 (A)	English II (H.L.) (d) English II (L.L.)	4	3	1	25	75	100
9202	Human Physiology (d)	4	3	1	25	75	100
9203	Textile Science and Apparel Design (b)	4	2	2	25	75	100
9204	Fundamentals of Food Science and Nutrition (b)	4	2	2	25	75	100
9205	Extension and Communication (b)	4	3	1	25	75	100
	<b>TOTAL</b>	<b>20</b>	<b>13</b>	<b>7</b>	<b>125</b>	<b>375</b>	<b>500</b>

**SEMESTER III**

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9301	Nutrition for Life Span (b)	4	-	4	100	-	100
9302	Consumer Studies (d)	4	4	-	25	75	100
9303	Family Dynamics (b)	4	3	1	25	75	100
9304	Media Skill Development (b)	4	3	1	25	75	100
9305	Fabric Ornamentation and Accessory Design (b)	4	-	4	100	-	100
	<b>TOTAL</b>	<b>20</b>	<b>10</b>	<b>10</b>	<b>275</b>	<b>225</b>	<b>500</b>

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

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

### SEMESTER IV

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
0741	Advanced Chemistry (b)	4	2	2	25	75	100
0742	Food Microbiology (a)	4	2	2	25	75	100
0743	Human Nutrition -I (a)	4	4	-	25	75	100
0244	Medical Nutrition Therapy - I (a)	4	2	2	25	75	100
0245	Institutional Food Service Management (b)	4	-	4	25	75	100
	<b>TOTAL</b>	<b>20</b>	<b>10</b>	<b>10</b>	<b>125</b>	<b>375</b>	<b>500</b>

### SEMESTER V

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
0751	Biochemistry (a)	4	3	1	25	75	100
0752	Human Nutrition II (a)	4	4	-	25	75	100
0253	Medical Nutrition Therapy– II (a)	4	4	-	25	75	100
0254	Dietetic Applications (a)	4	-	4	25	75	100
0255	Recent Advances in Nutrition and Dietetics (Seminar) (b)	2	-	2	50	-	50
9356	Women’s Studies (c)	2	2	-	50	-	50
	<b>TOTAL</b>	<b>20</b>	<b>13</b>	<b>7</b>	<b>200</b>	<b>300</b>	<b>500</b>

### SEMESTER VI

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
0761	Community Nutrition (a)	4	2	2	25	75	100
0262	Nutrition Exercise and Fitness (a)	4	2	2	25	75	100
0263	Behavior and Lifestyle Management (a)	4	-	4	25	75	100
0264	Professional Applications in Nutrition and Dietetics (Internship) (b)	8	-	8	100	100	200
	<b>TOTAL</b>	<b>20</b>	<b>4</b>	<b>16</b>	<b>175</b>	<b>325</b>	<b>500</b>

**TC = Total Credits, Th C = Theory Credits, Pr C = Practical Credits**

**Int M = Internal Marks, Ext M = External Marks**

**U = Exam at University level C = Exam at College level**

Evaluation for B.Sc. Home Science 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	25	25	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:

#### A. Total Credits for Semesters I-VI

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

#### B. Detailed Division of each Component:

	Core Course a	Applied Course b	Foundation Course c	Inter and Intra discipline Course d	Total
Sem I	-	4	8	4	16
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
<b>Total</b>	<b>52</b>	<b>44</b>	<b>16</b>	<b>4</b>	<b>116</b>

## B. APPLIED COURSES (40 Credits)

Code No.	Course	Credits	Internal Marks	External Marks	Total
9302	Consumer Studies	4	25	75	100
9304	Media Skill Development	4	25	75	100
9305	Fabric Ornamentation and Accessory Design	4	100	-	100
	6 Specialization related courses	24	*	*	600
0255	Recent Advances in respective Specialization	2	50	-	50

\* As per each Specialization

## C. FOUNDATION COURSES (16 Credits)

Code No.	Course	Credits	Internal Marks	External Marks	Total
9101 9101(A)	English I (H.L) English I (L.L)	4	25	75	100
9102	Applied Science	4	25	75	100
9201 9201(A)	English II (H.L) English II (L.L)	4	25	75	100
9202	Human Physiology	4	25	75	100

## D. INTER & INTRA DISCIPLINE COURSE (4 Credits)

Code No.	Course	Credits	Internal Marks	External Marks	Total
9105	Environment Studies	4	25	75	100

## Semester I

### English I (Higher Level)

#### 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.

Code No.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9101	English I (Higher Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	<p>The learners will be able -</p> <ul style="list-style-type: none"> <li>• To understand the structure of different types of letter patterns</li> <li>• To write social and business letters effectively</li> </ul>	<p><b>Written communication skills</b></p> <ol style="list-style-type: none"> <li>1. Types of layout</li> <li>2. Social correspondence: Request/apology/ thank you</li> <li>3. Letters of enquiry/ complaints (both personal and social)</li> <li>4. Letters to the editor / Appeals (social/ civic issues)</li> </ol> <p><b>Assignment:</b></p> <ol style="list-style-type: none"> <li>1 Writing a letter to the editor on a relevant social issue</li> <li>2. Invitation letter (formal)</li> <li>3. Thank you letter (formal)</li> <li>4. Consumer complaint letter</li> <li>5. Request letter (formal)</li> </ol>	<p>(5 marks per letter)</p> <p>25 marks</p>

Module No.	Objective	Content	Evaluation
2	<p>The learner will be able to -</p> <ul style="list-style-type: none"> <li>• identify different types of reports</li> <li>• understand sequencing in a project report</li> <li>• use the correct tense while writing a report</li> <li>• effectively present a report verbally</li> </ul>	<p><b>Report Writing</b></p> <p>Kinds of reports</p> <ol style="list-style-type: none"> <li>1. Sequencing</li> <li>2. Use of correct tense</li> <li>3. Reporting an event</li> <li>4. Structure of a project report</li> </ol> <p><b>Assignments :</b></p> <ol style="list-style-type: none"> <li>1. Preparing a simple project report based on class assignment</li> <li>2. Presenting the same as group of 3-4 students</li> </ol>	<p>Assign.1:(structure/outline) - 5 marks (delivery) - 5 marks = 10 marks Assign.2:(15 marks)</p>

Module No.	Objective	Content	Evaluation
3	<p>The learner will be able to -</p> <ul style="list-style-type: none"> <li>• read the narrative with understanding and enjoyment</li> <li>• enhance their vocabulary</li> <li>• express their personal responses descriptively</li> <li>• express ideas lucidly</li> </ul>	<p><b>Enhancing Comprehension skills</b>            Exercises based on Selections from prescribed text <i>Insight: A course in English Literature and Language</i>. 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  <b>Assignments :</b>            1. Comprehension            2. Articulating ideas/critical analysis            3. Expressing personal response to the select narratives</p>	<p>Assign.1:( 5 marks)            Assign.2:(10 marks)            Assign.3:(10 marks)</p>

Module No.	Objective	Content	Evaluation
4	<p>The learner will be able to -</p> <ul style="list-style-type: none"> <li>• Participate independently in conversations and discussions conducted in English</li> <li>• familiarize them with formal and non-formal modes of conversation</li> <li>• develop questioning skills</li> </ul>	<p><b>Interpersonal communication skills:</b>            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  <b>Conventions of public speaking:</b>            Hints on effective delivery (verbal and non-verbal)  <b>Assignments:</b>            1. Pair work for dialogue writing            2. Oral presentation on an everyday situation            3. Descriptive question on conventions of public speaking</p>	<p>1. (written dialogue 10 + delivery of dialogue 5) = 15 marks            2. 5 marks            3. 5 marks</p>

**EVALUATION:**

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

## Semester I English I (Lower Level)

### 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 creativity so that she may express her ideas descriptively and creatively

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9101A	English I (Lower Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	The learners will be able to : <ul style="list-style-type: none"> <li>• employ techniques of skimming and scanning while reading a passage</li> <li>• identify key points while summarizing</li> <li>• make notes effectively so as to improve study skills</li> </ul>	<ol style="list-style-type: none"> <li>1. Skimming and Scanning</li> <li>2. Note taking</li> <li>3. Note Making</li> <li>4. Summary</li> </ol> <b>Assignments:</b> <ol style="list-style-type: none"> <li>1. Passages for note taking</li> <li>2. Exercises on note making</li> <li>3. Passage for summarization</li> <li>4. Passage for skimming and scanning</li> </ol>	<ol style="list-style-type: none"> <li>1. 5 marks</li> <li>2. 10 marks</li> <li>3. 5 marks</li> <li>4. 5 marks</li> </ol>

Module No.	Objective	Content	Evaluation
2	The learner will be able to - <ul style="list-style-type: none"> <li>• familiarize themselves with basic letter patterns</li> <li>• prepare a report of an event with correct usage of grammar and tense</li> <li>• understand the importance of linking words required when reporting an event</li> </ul>	<b>Written Communication Skills</b> <b>Basic Letter patterns</b> <ol style="list-style-type: none"> <li>(i) Invitation/request/ apology / thank you</li> <li>(ii) Letters of enquiry/complaints/</li> </ol> <b>Report writing</b> <ol style="list-style-type: none"> <li>1. Types of reports</li> <li>2. Reporting an event</li> <li>3. Linking devices</li> </ol> <b>Assignments:</b> Letter writing. Any 3 of the following: <ol style="list-style-type: none"> <li>1 Invitation or Request or Apology or Thank you or enquiry or Complaint</li> <li>2. Reporting an event in college</li> </ol>	Assign.1: (Written -10 marks + oral delivery - 5 marks) = 15 marks  Assign.2: 5 marks per letter 2x 5= 10 marks

Module No.	Objective	Content	Evaluation
3	<p>The learner will be able to -</p> <ul style="list-style-type: none"> <li>develop effective reading skills</li> <li>express their ideas coherently</li> <li>write with proper sentence construction and paragraph development</li> <li>enhance their vocabulary</li> </ul>	<p><b>Developing Reading and Writing Skills</b>  1<sup>st</sup> + 2<sup>nd</sup> story from the Prescribed Text  Yuva Katha 7</p> <ol style="list-style-type: none"> <li>Sentence construction for grammatically correct English</li> <li>Paragraph development</li> <li>Vocabulary building</li> <li>Expressing ideas</li> <li>Reading with fluency</li> </ol> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>Comprehension of story</li> <li>Vocabulary based exercises</li> <li>Personal responses to the narrative</li> </ol>	<p>1.10 marks  2. 5 “  3. 10 ”</p>

Module No.	Objective	Content	Evaluation
4	<p>The learners will be able to -</p> <ul style="list-style-type: none"> <li>familiarize themselves with formal and informal modes of social interaction</li> <li>confidently converse in English</li> <li>confidently make short presentations in English</li> </ul>	<p><b>Conventions of Social Interaction</b>  Conventions of Social Interaction</p> <ol style="list-style-type: none"> <li>Starting a conversation</li> <li>Greetings</li> <li>Introducing self and others</li> <li>Asking questions</li> <li>Requesting</li> <li>Apologizing</li> <li>Thanking</li> <li>Inviting</li> <li>Accepting</li> <li>Ending a conversation</li> </ol> <p>Conventions of public speaking :  Hints on effective delivery (verbal and non-verbal)</p> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>Pair work-dialogue writing</li> <li>Oral presentation on an everyday situation</li> </ol>	<p><b>Assign 1:</b> Written script =10 marks + Oral presentation = 5 marks  <b>Assign 2:</b> Written outline = 5 marks + Delivery =5 marks</p>

**Prescribed Texts:** (Lower Level)

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

(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.

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9102	Applied Science	4	2	2	25	75	100

#### Theory

Module No.	Objectives	Content	Evaluation
1	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1) Inculcate scientific temper in the students and develop scientific, analytical attitude.</li> <li>2) Develop to understand the importance of knowledge of chemistry with respect to food, textiles, medicine, harmful chemicals &amp; industries.</li> <li>3) Understand the use and importance of chemistry in day to day life.</li> </ol>	<p><b>Applied Chemistry</b></p> <p><b>1) Review of Basic Chemistry</b></p> <ul style="list-style-type: none"> <li>• Important definitions</li> <li>• Difference between Organic &amp; Inorganic compounds</li> <li>• Functional groups</li> <li>• Bohr's model of atom</li> <li>• Atomic number &amp; electronic configuration</li> </ul> <p><b>2) Soaps &amp; Detergents</b></p> <ul style="list-style-type: none"> <li>• Saponification reaction</li> <li>• Cold and hot process of soap making</li> <li>• Difference between soaps and detergents</li> <li>• Cleansing action</li> </ul> <p><b>3) Drugs and Pharmaceuticals</b></p> <ul style="list-style-type: none"> <li>• Properties of good drug</li> <li>• Meaning of important terms with e.g. Analgesic, Antipyretic, Antacid, Antibiotic, Diuretic, anti-inflammatory, Laxatives, Sulfa drugs</li> <li>• Common drugs- use and side effects of Aspirin, Paracetamol, Sulphanilamide</li> </ul> <p><b>4) Dyes</b></p> <ul style="list-style-type: none"> <li>• Definition, important terms like chromophore, Auxochrome, chromogen</li> <li>• Classification based on application</li> <li>• e.g. and uses of different dyes in food, textile, medicine, laboratory, etc. &amp; their hazards</li> </ul> <p><b>5) Polymers</b></p> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Define-monomer, polymer, polymerization Some important polymers and their structure &amp; uses polyethylene, polyester, polyvinyl chloride</li> </ul>	<p>25 marks</p> <p>Assignment / Quiz</p> <p>Market survey on soaps, Détergents, OTC Drugs, Dyes and Polymers</p>

Module No.	Objective	Content	Evaluation
2	<p>This will enable the students to -</p> <p>1) Acquire the basic knowledge of the fundamentals of biological sciences.</p> <p>2) Apply the knowledge of the biological processes to everyday life.</p>	<p><b>Cell</b></p> <ul style="list-style-type: none"> <li>As the basic unit of life</li> <li>Types of cells</li> <li>Salient features of animal cell</li> </ul> <p><b>Introduction to Micro-organism</b></p> <ul style="list-style-type: none"> <li>Bacteria-Structure, Classification based on response to O<sub>2</sub>, nutrition, Importance of bacteria</li> <li>Fungi- Morphology of molds and yeasts, classification, beneficial and harmful aspects</li> <li>Virus- Morphology, Classification based on nucleic acid content and hosts</li> </ul> <p><b>Genetics and Heredity</b></p> <ul style="list-style-type: none"> <li>Origin of the term gene</li> <li>Chemical basis of heredity- organization of human genome, sex determination, monogenic and polygenic traits, patterns of inheritance- autosomal, recessive and sex-linked inheritance</li> <li>Mutation and its type, abnormalities in chromosome number</li> </ul> <p><b>Genetic Engineering and Biotechnology</b></p> <ul style="list-style-type: none"> <li>Definition of the terms</li> <li>Methodology of gene cloning-in brief               <ol style="list-style-type: none"> <li>Application of genetic engineering in plants- insects &amp; virus resistant plants, plants with improved characters.</li> <li>Application in human medicine- pharmaceuticals, thalassemia oncogenes, interferon, production of growth hormone, human insulin ELISA.</li> </ol> </li> </ul>	<p>25 marks</p> <p>Assignment / Displays on various applications of Biotechnology</p>

#### EVALUATION:

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

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- Glazer A. Na Ni Baido H (1995) Microbial Biotechnology W.H. Freeman 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., Bonneville 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.

**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	<b>Applied Chemistry</b> 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 <sub>2</sub> CO <sub>3</sub> & H <sub>2</sub> SO <sub>4</sub> ) 4) Neutralization of weak acid with strong base (Oxalic acid & NaOH) 5) Oxidation- reduction reaction (Oxalic acid & KMnO <sub>4</sub> ) 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	25 Marks  Daily work Journal Performing experiment

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	<b>Applied Biology</b> 1) Study and care of microscope 2) Observation of motility of bacteria by Hanging drop method ( <i>E.coli</i> / <i>Proteus</i> ) 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 <i>Entamoeba histolytica</i> and <i>Plasmodium vivax</i> ) 8) Study of medicinally important plants (projects)	25 Marks  Daily work Journal Performing experiment

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## Semester I Design and 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.

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9103	Design and Aesthetics	4	2	2	25	75	100

Module No.	Objective	Content	Evaluation
1	<p>To enable the students to understand the various elements of art for creating designs.</p> <p>To develop a understanding in color perception and various textures</p> <p>To enhance the ability of students to visualize space and lighting</p>	<p style="text-align: center;"><b><u>ELEMENTS OF DESIGN</u></b></p> <p>1.1. <b>BASIC ELEMENTS</b> Introduction, types, importance, application and psychological effects of each element.</p> <p>a. Point b. Line c. Shape d. Form e. Texture f. Light g. Space</p> <p>1.2. <b>INTRODUCTION TO COLOUR</b> 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 &amp; Cool color and Advancing and Receding Colours)</p> <p>1.3. <b>PRINCIPLES OF DESIGN</b> Introduction, types and application</p> <p>a. Harmony b. Balance c. Rhythm d. Scale and Proportion e. Emphasis</p>	<p>Collect pictures of all the basic elements from nature as well manmade objects</p> <p>5 Marks</p> <p>Journal work for the entire color chapter 10 Marks</p> <p>One journal assignment comprising of all the principles 10 Marks</p>

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	<p><b>2.1 CONCEPT OF DESIGNING</b></p> <p>a. Meaning of structural design and decorative design b. Requirements of structural design and decorative design</p> <p><b>2.2 AESTHETICS OF ART AND DESIGN</b></p> <p>a. Understanding of aesthetics and art b. Optical illusion</p> <p><b>2.3 APPLICATION OF ART ELEMENTS AND PRINCIPLES OF DESIGN</b> Related to Interior Design/ Hospitality, Textile Design, Food Decoration, Visual Communication, Curriculum planning</p>	<p>Group Presentation (Charts, pictures) related to all specializations 10 Marks</p> <p>Optical Illusions (3 Pictures to be collected and Submitted) 5 Marks</p> <p>To conduct group activity (article making) 10 Marks</p>

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	<p><b>3.1 USE OF VARIOUS MEDIUM TO CREATE DESIGNS</b></p> <p>a) Pencil b) Pen &amp; ink c) Color</p> <p><b>3.2 CREATING TEXTURES</b> Fabric, Paper, Sticks, Sawdust, Pearls etc.</p> <p><b>3.3 COLOR SCHEMES</b> Color harmony, Monochromatic, Achromatic, Chromatic color schemes.</p> <p><b>3.4 ACCESSORY DESIGN</b> Paintings / pot painting / 3D Murals/ Stain Glass Painting (Innovative Work)</p>	<p><b>Journal Work</b> for the first 3 blocks (5 marks each) = (15 Marks)</p> <p><b>Accessory Design</b> (10 Marks)</p> <p>Concept (2 Marks)</p> <p>Creativity (3 Marks)</p> <p>Workmanship (3 Marks)</p> <p>Overall presentation (2 Marks)</p>

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.	<b>4.1 SCALE DRAWING</b> a) Understanding Scales b) Enlargement c) Reduction <b>4.2 GEOMETRICAL DESIGN PATTERN</b> 4.2.1 Symmetry and asymmetrical designs 4.2.2 Abstract pattern <b>4.3 APPLICATION OF ART IN DESIGN</b> 4.3.1 Flower Arrangement 4.3.2 Fabric design/Embroidery 4.3.3 Salad carving/Food presentation 4.3.4 Flash cards/puppets <b>4.4 BEST OUT WASTE</b> 4.4.1 Paper bags / Paper collage etc.	Scale drawing and Geometric work  3 D form object  • Best out of waste

#### EVALUATION:

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

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## 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.

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
<b>9101</b>	<b>Life Span Development</b>	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	<b>Introduction to Life Span Development 0-2 years</b> 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.	<b>Childhood</b> 1. Early & Late childhood – Definition & Developmental tasks  2. Physical, Social & Emotional development	Practical Component:  Visit to a preschool & Group presentation in class 10 marks

<b>Module No</b>	<b>Objective</b>	<b>Content</b>	<b>Evaluation</b>
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.	<b>Adolescence</b> 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

<b>Module No</b>	<b>Objective</b>	<b>Content</b>	<b>Evaluation</b>
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.	<b>Adulthood</b> 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 = 100 marks

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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.

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9105	Environment Studies	4	4	-	25	75	100

Module No.	Objective	Content	Evaluation
1	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Get acquainted with physical environment and its components</li> <li>2. Know various natural resources, their importance, over use</li> <li>3. Develop the concept of sustainable development</li> </ol>	<p><b>The Multidisciplinary Nature of Environmental Studies</b></p> <ul style="list-style-type: none"> <li>• Definition, Scope and Importance, Need for public awareness</li> </ul> <p><b>Natural Resources</b></p> <ul style="list-style-type: none"> <li>• Renewable and Non-Renewable Resources</li> <li>• Natural Resources and Associated Problem</li> </ul> <p><b>Forest Resources:</b> Use and Over exploration, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.</p> <p><b>Water Resources:</b> Use and over utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.</p> <p><b>Mineral Resources:</b> Use and exploitation, environmental effects of extracting and using mineral resources, case studies.</p> <p><b>Food Resources:</b> World food problems, changes cause by agriculture and over grazing, effects of modern agriculture, fertilizers, pesticide problems, water logging, salinity, case studies.</p> <p><b>Energy Resources:</b> Growing energy needs, renewable and non-renewable energy sources and use of alternate energy sources, case studies.</p> <p><b>Land Resources:</b> Land as a resources, land degradation, man induced landslides, soil erosion and desertification</p> <ul style="list-style-type: none"> <li>• Role of individual in conservation of natural resources</li> <li>• Equitable use of resources for sustainable lifestyles</li> </ul> <p><b>Ecosystems</b></p>	<ul style="list-style-type: none"> <li>• Short Questions/Multiple Choice Questions</li> </ul> <p><b>Assignment or display on ecosystems</b></p> <p>10 marks</p>

		Concept of ecosystem Structure and function of ecosystem Producers, consumers and decomposers Energy flow in the ecosystem	
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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	<b>Biodiversity and its Conservation</b> <ul style="list-style-type: none"> <li>• Introduction-Definition: Genetic, Species and Ecosystem Diversity</li> <li>• Bio-geographical classification of India</li> <li>• Value of biodiversity, consumptive use, productive use, social, ethical, aesthetic and option values</li> <li>• India as a mega-diversity nation</li> <li>• Hot-spots of biodiversity</li> <li>• Threats to biodiversity: habitat, loss, poaching of wild life, man wildlife conflicts</li> <li>• Endangered and endemic species of India</li> <li>• Conservation of bio-diversity: <i>In-situ</i> and <i>Ex-situ</i> conservation of biodiversity.</li> </ul>	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.	<b>Environmental Pollution:</b> <ul style="list-style-type: none"> <li>• Definition, causes, effects and control measures of - Air, water, soil, marine, noise and thermal pollutions; Nuclear hazards</li> <li>• Solid Waste Management: causes, effects and control measures of urban and industrial waste</li> <li>• Role of individual in prevention of pollution</li> <li>• Pollution case studies</li> <li>• Disaster Management: Floods, earthquake, cyclone and landslides</li> </ul> <b>Social Issues and the Environment:</b> <ul style="list-style-type: none"> <li>• From unsustainable to sustainable development</li> <li>• Urban problems related to energy</li> <li>• Water conservation, rain water harvesting, water shed management</li> <li>• Resettlement and rehabilitation of people, its problem and concerns. case studies</li> <li>• Environmental ethics: Issues and possible solutions</li> <li>• Climate changes, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. case studies</li> <li>• Waste land reclamation</li> <li>• Consumerism and waste products</li> <li>• Environment Protection Act</li> </ul>	Assignment on local problems 5 marks

		<ul style="list-style-type: none"> <li>• Air, Water (Prevention and control of pollution) Act</li> <li>• Wildlife Protection Act</li> <li>• Forest Conservation Act</li> <li>• Issues involved in enforcement of environmental legislation</li> <li>• Public awareness</li> </ul>	
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Module No.	Objective	Content	Evaluation
4	<ol style="list-style-type: none"> <li>1. Make the students aware of population problems.</li> <li>2. Develop the love and interest about nature by being in nature itself.</li> <li>3. Create awareness about Biodiversity pollution and social issues.</li> </ol>	<p><b>Human Population and the Environment</b></p> <ul style="list-style-type: none"> <li>• Population growth, variation among nation</li> <li>• Population explosion-family welfare programme</li> <li>• Environment and Human Health</li> <li>• Human Rights</li> <li>• Value Education</li> <li>• HIV/AIDS</li> <li>• Women and child welfare</li> <li>• Role of Information Technology in Environment and Human health</li> <li>• Case studies</li> </ul> <p>Visit to local area to document environmental assets</p> <ol style="list-style-type: none"> <li>a) Rivers/forest/grassland/ hill/ mountain</li> <li>b) Local Pollution Site-Urban/Rural/Industrial/ Agricultural</li> <li>c) Study of common plants/ insects/ birds</li> <li>d) Study of simple ecosystems-ponds, rivers, hill, slopes etc.</li> </ol>	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

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## SEMESTER II

### English II (Higher Level)

#### 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

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9201	English II (Higher Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	The learners will be able to- <ul style="list-style-type: none"> <li>• understand the different techniques of presentations</li> <li>• understand the concept of sequencing of presentations</li> <li>• be equipped with the required vocabulary and correct use of grammar</li> <li>• be competent enough to give an effective presentation</li> </ul>	<b>Presentation Skills :</b> <ol style="list-style-type: none"> <li>1. Structure of a presentation</li> <li>2. Sequencing</li> <li>3. Commonly used verbs</li> <li>4. Use of signaling, signposting and listing techniques</li> <li>5. Use of visual and electronic aids (OHP/PPT etc.)</li> </ol> <b>Assignments:</b> <ol style="list-style-type: none"> <li>1. Structure of a presentation – (descriptive question)</li> <li>2. Small group presentation on a given topic</li> </ol>	<b>Assign.1</b> :Written script - 5 marks + orals -10 marks <b>Assign.2</b> Group presentation - 10 = 20 marks

Module No.	Objective	Content	Evaluation
2	The learners will - <ul style="list-style-type: none"> <li>• familiarize themselves with basic norms of business correspondence</li> <li>• produce effective resumes in accordance with various contexts</li> </ul>	<b>Job Applications</b> <ol style="list-style-type: none"> <li>1. How to write applications for jobs in response to advertisements</li> <li>2. Types of resume</li> <li>3. Electronic formats for resumes</li> </ol> <b>Assignments:</b> <ol style="list-style-type: none"> <li>1. Job Application Letters in response to advertisement</li> <li>2. Writing a student's resume</li> </ol>	<b>Assign.1:</b> 2 x 5 = 10 marks <b>Assign.2</b> 15 marks

Module No.	Objective	Content	Evaluation
3	<p>The learners will -</p> <ul style="list-style-type: none"> <li>• develop skills of literary appreciation</li> <li>• enhance their descriptive writing skills</li> <li>• enrich their vocabulary</li> </ul>	<p><b>Literary Appreciation</b>  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”  <b>Assignments:</b>  1. 2 Questions on expressing personal responses  2. 2 Character sketches  3. Vocabulary enhancement exercises</p>	<p><b>Assign.</b>  <b>1:</b>(2 x 5) = 10 marks  <b>2.</b> (2 x 5) =10  <b>3.</b> 5 marks</p>

Module No.	Objective	Content	Evaluation
4	<p>The learners will -</p> <ul style="list-style-type: none"> <li>• be competent enough to appear for an interview process</li> <li>• confidently participate in a group discussion</li> </ul>	<p><b>Soft skills enhancement through effective communication in English</b>  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  <b>Assignments:</b>  1. Descriptive question on how to prepare for an interview  2. Mock Interview  3. Mock Group Discussion</p>	<p><b>Assign.</b>  <b>1.</b> 5 marks  <b>2.</b> 10 marks  <b>3.</b> 10 marks</p>

#### EVALUATION :

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

## English II (Lower Level)

### 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

Code no.	Subject	TC	Th C	Pr C	Int M	Ext M	Total
9201A	English II (Lower Level)	4	3	1	25	75	100

Module No.	Objective	Content	Evaluation
1	<p>The learners will be able to -</p> <ul style="list-style-type: none"> <li>• use appropriate technical words, tense and linking devices</li> <li>• adopt different techniques of presentations</li> <li>• be competent enough to give an effective presentation in English</li> </ul>	<p><b>Presentation Skills</b>            Structure of a presentation</p> <ol style="list-style-type: none"> <li>1. How to prepare the outline of a presentation</li> <li>2. Commonly used verbs and connectors</li> <li>3. Use of signaling, signposting and listing techniques</li> <li>4. Use of visual and electronic aids (OHP/PPT etc.)</li> </ol> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>1. Exercise based on use of signposting and listing techniques</li> <li>2. Preparing outline of presentation</li> <li>3. Presentation on given topic (oral)</li> </ol>	<p><b>Assign.</b></p> <ol style="list-style-type: none"> <li>1. 5 marks</li> <li>2. 10 marks</li> <li>3. 10 marks</li> </ol>

Module No.	Objective	Content	Evaluation
2	<p>The learners will -</p> <ul style="list-style-type: none"> <li>• be familiar with the requirements of a job application letter</li> <li>• be able to write an effective resume</li> </ul>	<p><b>Job Applications</b></p> <ol style="list-style-type: none"> <li>1. How to respond to an advertisement and write job applications</li> <li>2. How to write an effective resume</li> <li>3. Electronic formats for resumes</li> </ol> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>1. Job Application Letters in response to an advertisement</li> <li>2. Writing a student's resume :</li> </ol>	<p><b>Assign.</b></p> <ol style="list-style-type: none"> <li>1. (2 x 5)= 10 marks</li> <li>2. 15 marks</li> </ol>

Module No.	Objective	Content	Evaluation
3	<p>The learner will learn how to -</p> <ul style="list-style-type: none"> <li>• read with emphasis on fluency, tone and voice modulation</li> <li>• enhance their vocabulary</li> <li>• express themselves creatively</li> <li>• be able to connect the narrative to the larger society and their lives</li> </ul>	<p><b>Reading and comprehension skills:</b>  <b>3<sup>rd</sup> and 4<sup>th</sup> stories from Prescribed Text ‘Yuva Katha 7’</b></p> <ol style="list-style-type: none"> <li>1. Comprehension Skills</li> <li>2. Reading a passage with fluency, tone, modulation, fluency</li> <li>3. Personal responses to the prescribed stories</li> <li>4. Vocabulary building</li> <li>5. Expressing ideas creatively</li> </ol> <p><b>Assignment:</b></p> <ol style="list-style-type: none"> <li>1. Comprehension Skills</li> <li>2. Reading a passage with - fluency, tone, modulation</li> <li>3. Personal responses to the prescribed stories</li> </ol>	<p><b>Assign.</b></p> <ol style="list-style-type: none"> <li>1. 10 marks</li> <li>2. 5 marks</li> </ol> <p><b>3.10 marks</b></p>

Module No.	Objective	Content	Evaluation
4	<p>The learner will be able to-</p> <ul style="list-style-type: none"> <li>• verbally describe objects, images and pictures</li> <li>• use appropriate words and sentence structures to seek information, give replies, instructions etc.</li> <li>• confidently appear for an interview</li> </ul>	<p><b>Verbal communication skills for interpersonal communication</b></p> <ol style="list-style-type: none"> <li>1. Asking for information and replying</li> <li>2. Giving instructions and replying</li> <li>3. Visual to verbal communication : interpreting pictures</li> <li>4. Describing objects</li> <li>5. Verbal skills required during an interview</li> </ol> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>1. Visual to verbal interpretation</li> <li>2. Writing instructions/asking for information</li> <li>3. Describing objects</li> <li>4. Mock Interview</li> </ol> <p>References ( for all module):</p>	<p><b>Assign.</b></p> <ol style="list-style-type: none"> <li>1. 5 marks</li> <li>2. 5 marks</li> <li>3. 5 marks</li> </ol> <p><b>4.10 marks</b></p>

**Prescribed Texts: (Lower Level)**

1. Yuvakatha 7

**(Higher Level)**

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

## **REFERENCE BOOKS:**

Asoka Rani, T. English for career development A course in functional English, Hyderabad Orient Longman Ltd. 1989 104p.:ill.

Baker, Joanna Westrup, Heaths. London Essential speaking skills a handbook for English language teachers, Continuum 2003 vi, 170p.

Brown, Gillian Yule, George Cambridge Teaching the spoken language An approach based on the analysis of conversational English, Cambridge University Press 1983 xi,162p.

Das, Susmita English language and grammar a resource book of ideas and activities for teachers, Jaipur Mangal Deep Publications 2004 240p

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

Geetha, Nagaraj English language teaching Approaches, methods, techniques Hyderabad Orient Longman Ltd. 1996 v,232p.:ill

Hardfield, Charles Hardfield, Jill Walton-on-Thames, Writing games, Thomson Nelson and Sons Ltd. 1990 viii,22+80p.:ill.

Hornby, A.S. The Teaching of structural words and sentence patterns Stages I & II Delhi Oxford University Press 1964 Lii,162p.

Horsburgh, David Hyderabad How to use the blackboard in teaching English Orient Longman Ltd. 1967 3p.,60plate+2p.:ill.

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

Code no.	Course	TC	Th C	Pr C	Int M	Ext M	Total
9202	Human Physiology	4	3	1	25	75	100

### Theory

Module No.	Objective	Content	Evaluation
1	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Introduce students to basic terminologies</li> <li>2. Understand the basic structure of human body</li> <li>3. Understand the functioning of cardio vascular, respiratory , gastro intestinal</li> <li>4. Brief knowledge about common diseases affecting each system.</li> <li>5. To create awareness about interdependence and co-ordination between different systems of the body for normal functioning.</li> </ol>	<p><b><u>INTRODUCTION</u></b></p> <ul style="list-style-type: none"> <li>• General terms- anatomy, physiology, symmetrical arrangement, anatomical position. Median plane / lateral plane, internal/ external, superficial /deep, superior/ inferior, anterior/posterior.</li> <li>• Basic human tissues.</li> <li>• Introduction to human skeleton.</li> <li>• Structure of bone and cartilage.</li> <li>• Classification of various types of muscle.</li> </ul> <p><b><u>BLOOD AND LYMPHATIC SYSTEM</u></b></p> <ul style="list-style-type: none"> <li>• Physical characteristics of blood</li> <li>• Blood volume, composition of plasma and functions of plasma protein</li> <li>• RBC formation and functions</li> <li>• Information about anaemia and thalessemia.</li> <li>• Blood groups, their importance , Rh-incompatibility.</li> <li>• WBC- types, functions, importance of CBC</li> <li>• Platelets and mechanism of coagulation</li> <li>• Lymph and lymphatic system, spleen and its functions.</li> </ul> <p><b><u>HEART</u></b></p> <ul style="list-style-type: none"> <li>• Its structure and circulation of blood.</li> <li>• Cardiac cycle</li> <li>• Information about hypertension &amp; ischemic heart disease</li> </ul> <p><b><u>RESPIRATORY SYSTEM</u></b></p> <p>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.</p> <p>Common diseases- TB, asthma, bronchitis, cough, pneumonia sinusitis.</p>	<ul style="list-style-type: none"> <li>• Multiple choice questions</li> <li>• Short notes</li> <li>• Display</li> <li>• Quiz</li> </ul> <p>5 marks</p>

		<p><b><u>GASTRO - INTESTINAL SYSTEM</u></b></p> <p>Oral cavity, tonsils, pharynx, oesophagus, stomach small and large intestine - brief structure and functions.</p> <p>Liver, gall bladder, pancreas structure and functions.</p> <p>Common disorders- Dental caries, vomiting, diarrhoea, constipation. Hyperacidity, diabetes.</p>	
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Module	Objective	Content	Evaluation
2	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. understand the functioning of excretory system and brief knowledge about common diseases affecting this system.</li> <li>2. know more about the nervous system</li> </ol>	<p><b><u>EXCRETORY SYSTEM</u></b></p> <ul style="list-style-type: none"> <li>• Structure and function of organs of urinary system (in brief).</li> <li>• Mechanism of urine formation</li> <li>• Common diseases- urinary tract infection and renal stones.</li> <li>• Structure and function of skin</li> <li>• Regulation of body temperature</li> <li>• Common disorders - acne dandruff and burns.</li> </ul> <p><b><u>NERVOUS SYSTEM</u></b></p> <ul style="list-style-type: none"> <li>• Classification of nervous system</li> <li>• Structure and functions of different parts of brain, spinal cord and reflex action.</li> <li>• Eye - structure and mechanism of vision</li> <li>• Common problems - conjunctivitis, cataract.</li> <li>• Ear - structure and mechanism of hearing</li> <li>• Common problems - deafness, vertigo, motion sickness</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple choice questions.</li> <li>• Short notes.</li> <li>• Display.</li> <li>• Quiz.</li> <li>• PPT presentation</li> </ul> <p>5 marks</p>

Module	Objective	Content	Evaluation
3	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. know more about the endocrine system</li> <li>2. Have knowledge of reproductive system and importance of reproductive health</li> </ol>	<p><b><u>ENDOCRINE SYSTEM</u></b></p> <ul style="list-style-type: none"> <li>• Listing of endocrine glands and their location</li> <li>• Functions of pituitary, thyroid, parathyroid and adrenal.</li> </ul> <p><b><u>REPRODUCTIVE SYSTEM</u></b></p> <p><b><u>FEMALE REPRODUCTIVE SYSTEM</u></b></p> <ul style="list-style-type: none"> <li>• Structure</li> <li>• Menstrual cycle</li> <li>• Fertilization</li> <li>• Breast- Structure, function, importance of breast hygiene and breast feeding</li> <li>• Physiological changes in pregnancy</li> <li>• Importance of ante-natal care.</li> </ul> <p><b><u>MALE REPRODUCTIVE SYSTEM</u></b></p> <ul style="list-style-type: none"> <li>• Structure</li> <li>• Sex education</li> <li>• Contraception and infertility</li> <li>• Sexually transmitted diseases-syphilis, gonorrhoea, AIDS</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple choice questions.</li> <li>• Short notes.</li> <li>• Display.</li> <li>• Quiz.</li> <li>• PPT presentation</li> </ul> <p>5 marks</p>

**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 = 100 marks

**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.

**Practical**

Module No.	Objective	Content	Evaluation
4	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1- Introduce the students to human skeleton and enable them to identify various bones in the body</li> <li>2- perform simple clinical tests like estimation of haemoglobin and blood group and blood pressure</li> <li>3- Utilize the knowledge learnt to administer first aid for common emergency situations.</li> <li>4- Acquaint the students with the basic principles of home nursing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Study of human skeleton and identification of bones.</li> <li>2. Estimation of haemoglobin</li> <li>3. Estimation of blood groups,</li> <li>4. Demonstration of peripheral blood smear. Importance of complete blood count.</li> <li>5. Measurement of pulse rate and blood pressure.</li> <li>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.</li> <li>7. <b>FIRST AID</b> -Definition, aims, qualities of first aider, contents of first aid box. -Different types of bandages and bandaging techniques. <b>WOUNDS</b> -Classification, dressing and management of haemorrhage- basic principles and discussion about bleeding from various parts of body. <b>FRACTURE</b> -Types, symptoms, management. Sprain and dislocation <b>First Aid for</b> - foreign bodies in eye, ear, nose, skin. <b>First Aid for</b> - fainting, burns, heat stroke, asthma, convulsions, electric shock and heart attack. <b>First Aid for</b> - common poisoning, dog bite, snake bite, bee-sting and scorpion bite. <b>BASIC PRINCIPLES OF HOME NURSING-</b> Measuring body temperature, steam inhalation, body sponging, taking care of bed ridden patient and enema. 8) Cardio pulmonary resuscitation</li> </ol>	10 marks

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

**REFERENCES :**

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

## Semester II

### Textile Science and Apparel Design

Code No.	Subject	TC	Th C	Pr C	Int M	Ext M	Total
9203	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	<b><u>Understanding basics of textiles</u></b> <b>Introduction to textiles:</b> <ul style="list-style-type: none"> <li>• Scope &amp; importance of textiles &amp; Clothing, general properties and classification of textile fibers by Textile Fiber Product Identification Act. Concept of green fibers &amp; Eco friendly textiles. (Definition- Importance Any three symbols)</li> <li>• Care labels, Silk mark, Wool mark, and Handloom mark</li> </ul> <b>Yarn Construction:</b> <ul style="list-style-type: none"> <li>• Types of yarns-single, ply, cable and cord &amp; texturized yarns</li> </ul>	Individual Assignment – 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 selection of clothing.	<b><u>Textiles: Construction, clothing and selection</u></b> <b><u>Fabric construction</u></b> <ul style="list-style-type: none"> <li>• Introduction to fabric construction &amp; basic weaves. (Concept of weaving, knitting and non woven to be explained.)</li> <li>• Definitions, uses, advantages and disadvantages of unions &amp; blends.</li> </ul> <b><u>Selection of clothing.</u></b> <ul style="list-style-type: none"> <li>• Buying points for readymade garments – size, suitability, durability, aesthetic appeal, fiber content, labels (basic information &amp; care labels), brand, purchasing power, socio economic – conditions, location etc.</li> <li>• Selection of clothing based on silhouette &amp; occasional wear (casual, party, sports, travel, corporate)</li> </ul>	Group Assignment – 15 marks

#### 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



- 3 How you look to dress Carson  
St.Louis. Mc Graw Hill, 1969.
- 4 Basic Processes & Clothing Construction. Doongaji S. & Deshpande R
- 5 Textiles : properties & behaviour in clothing use Edward Miller  
London: B.T. Bradsford, 1992
- 6 Fashion from Concept to Consumer 7th Ed Gin Stiphens Frings  
New Jersey Prentice Hall Inc 2002
- 7 Textile Science Gohl E.P. and Velensky L.D  
Melbourne: Longman Cheshire Pvt.Ltd.,1983
- 8 Handbooks of American Association of Home Economics.  
9 Textiles, 16th Edition Hollan, Norma & Saddler  
New York, Macmillan publishing Co, 1998
- 10 Essentials of Textiles Joseph M.  
Holt, Rinehart & Winston, New York, 1976.
- 11 Introductory Textile Science. – 6th Ed. Joseph M. –  
Fort WorthHarcourt Brace Jovanovich College Publishers. 1993
- 12 Khadi, The fabric of freedom, Amr Vastra Kosh Trust Publication 2002.
- 13 Individuality in clothing Selection & Personal Appearance – a guide for Kefgan & Phyllis T  
the consumer,,: Specht & Mac Million publication, Upper Saddle River,  
Prentice Hall Inc., 2000.
- 14 Performance of Textile for Testing Lyle Dorothy  
New York: John Wiley & Sons,1977.
- 15 Clothing for Moderns, 3rd edition Mabel D.E. & A.K.  
New York: Mac Million publication
- 16 Clothing – A study in Human Behavior Mary R.S.:  
17 Art in clothing selection Mc. Jimsey  
New York: Harper & Row, 1963
- 18 Textile – Fiber to Fabric, 6th edition Potter & Corbman  
New York: Mc Graw hill Book Co., 1983.
- 19 Introduction to Textiles Stout E  
New York: John Wiley & Sons,1970
- 20 Family Clothing Tate & Glisson  
New York: John Wiley, 1961
- 21 Textile Fabrics and their selection (8th Ed.) Wingate I.B., Mohler J.F  
Engle wood cliffe
- 22 Fairchild’s Dictionary, 6th edition Wingate Isable B.:  
New Delhi: Universal Pub. Corporation, 1988.
- 23 Understanding Textiles – Upper Saddle River, Merrill Publishing – 5th Tortora, Phyllis G.  
Edition. Prentice Hall Inc, 1985
- 24 Textiles – motivates series Wynne A  
London , Macmillan Education Ltd. 1997
- 25 Sewing Fabrics Ann Ladbury  
London: Mitchell Beazley International, Ltd., 1978
- 26 Designing Patterns Campbell H. & Davies M.  
A. E. Press Melberne, 1985.
- 27 Clothing for Moderns III and V Editions Ervin M.D. Knichen L.A. and Peters K:  
New York, Mc Millan.
- 28 Singer sewing Book Hultin J.C.  
London: Hamlyn, 1972
- 29 Performance of textile for testing Lyle D.  
New York: John Wiley & Sons, 1977.

## 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

Code No	Course	T C	Pr C	Th C	Int M	Ext M	Total
<b>9204</b>	<b>Fundamentals of Food Science and Nutrition</b>	4	2	2	25	75	100

### Fundamentals of Food Science and Nutrition Theory

Module No.	Objectives	Content	Assessment
1	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Know nutritional aspects of foods and their functions.</li> <li>2. Understand the importance and role of macronutrients in health</li> <li>3. Identify food sources</li> <li>4. Understand the principles of food science and discuss the relation between Food Science and Nutrition</li> </ol>	<p><b>Introduction to Nutrition</b></p> <p>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.</p> <p>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.</p> <p><b>Macronutrients</b></p> <ol style="list-style-type: none"> <li>1. Carbohydrates</li> <li>2. Proteins</li> <li>3. Fats</li> <li>4. Water</li> </ol>	<p>25 Marks</p> <p>Quiz / assignments</p>

		<ul style="list-style-type: none"> <li>- Classification, functions, sources, requirements, deficiencies</li> <li>- Digestion, Absorption, Transport</li> <li>- Food Science principles</li> </ul>	
2	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Know the role of Vitamins and minerals in health</li> <li>2. Identify the color pigments in foods</li> <li>3. Understand the changes in color pigments</li> </ol>	<p><b>Micronutrients:</b></p> <p>Classification of Vitamins: A, D, E, K, Thiamin, Riboflavin, Niacin, Ascorbic Acid and Minerals: Calcium, Iron and Iodine</p> <ul style="list-style-type: none"> <li>- Functions, deficiencies sources, requirements</li> <li>- Digestion, Absorption, transport</li> <li>- Conservation of nutrients</li> </ul> <p>Color Pigments</p>	<p>25 Marks</p> <p>Quiz / assignments</p>

## Fundamentals of Food Science and Nutrition Practical

### 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	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of portion size</li> <li>2. Know the specified amounts and proportion of ingredients used in the recipe</li> <li>3. Understand the basic</li> </ol>	<p><b>Basics of Food Preparation</b></p> <ol style="list-style-type: none"> <li>1. Cereal, pulse, milk, egg and vegetable and fruit preparation</li> </ol> <ul style="list-style-type: none"> <li>- Weights and measures</li> <li>- Standardization, portion size</li> <li>- Methods of food preparation</li> <li>- Food Science principles</li> <li>- Calculation of nutrients</li> <li>- Conservation of nutrients</li> </ul>	<p>25 marks</p> <p>Quiz</p>

	<p>scientific principles and the preparation of food</p> <p>4. Learn the preparation methods to optimize nutrient content and conserve nutrients</p>		
4	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Plan recipes and calculate nutrients</li> <li>2. Understand and relate the principles of food science to the preparation and methods to conserve nutrients</li> </ol>	<p><b>Plan and Prepare Recipes for</b></p> <p><b>One Serving:</b></p> <ul style="list-style-type: none"> <li>- Energy: high and low calorie</li> <li>- Proteins</li> <li>- Calcium</li> <li>- Iron</li> <li>- Vitamin C</li> <li>- Vitamin A</li> </ul> <p>B- complex vitamins</p>	<p>25 marks</p> <p>Planning and Cooking</p>

**References:**

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

Code No	Course	TC	Th C	Pr C	Int M	Ext M	Total
<b>9205</b>	<b>Extension and Communication</b>	4	3	1	25	75	100

Module No.	Objectives	Content	Evaluation
1	The students will learn to: <ol style="list-style-type: none"> <li>1. Develop an understanding about the concept of Extension.</li> <li>2. Become aware of the significance of Home Science Extension.</li> <li>3. Develop an understanding of different Audio-Visual Aids available for Extension and Communication.</li> </ol>	<b>Concept of Extension:</b> <ol style="list-style-type: none"> <li>1. Concept, Need and Scope of Extension.</li> <li>2. Principles, philosophy and trends of Extension Education.</li> <li>3. Home Science Extension- Need and Significance.</li> <li>4. Qualities of an extension worker</li> <li>5. Introduction to Right to information Act (RTI).</li> </ol>	<b>Assignment</b>  25 marks

Module No.	Objectives	Content	Evaluation
2	This will enable students to: <ol style="list-style-type: none"> <li>1. Understand concept and importance of communication.</li> <li>2. Comprehend the different models of communication.</li> <li>3. Identify and use different methods of communication.</li> </ol>	<b>Communication for Extension:</b> <ol style="list-style-type: none"> <li>1. Concepts, Nature (Upward, Downward and Horizontal), elements, functions, barriers of communication.</li> <li>2. Importance of communication for Extension Work.</li> <li>3. Models of communication.</li> <li>4. Communication Methods:                             <ul style="list-style-type: none"> <li>Individual Methods- Interview, home and farm visits.</li> <li>Group Methods- Demonstration, Lecture, Workshop and Discussions.</li> <li>Mass Methods- Campaign, Exhibitions and Radio programme.</li> </ul> </li> </ol>	<b>Project</b> on methods of communication 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	<b>Audio visual aids</b> 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.	<b>Need Assessments of Community</b> Assessing prevailing conditions of community focusing on aspects such as Health, Population, Housing, Education, Sanitation, etc.  Compilation of data collected utilizing it for preparing  <b>Community Contact Methods</b>  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 will enable students to -

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

Code No	Course	TC	Th C	Pr C	Int M	Ext M	Total
9301	Nutrition for Life span	4	-	4	100	-	100

Module No.	Objectives	Content	Assessment
1	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Know the nutritional requirements and understand the concept of RDA</li> <li>2. Comprehend the concept of food guide and translate the same into planning</li> </ol>	<p><b>Basics of Meal Planning</b></p> <ol style="list-style-type: none"> <li>1. Overview of nutritional requirements</li> <li>2. Food Guide/ Food Pyramid and its use</li> <li>3. Food Exchange List</li> <li>4. Balanced diet</li> <li>5. Factors affecting meal planning</li> <li>6. Maintaining a dietary record</li> </ol>	<p>Quiz/ Assignments / Projects  Viva</p>
2	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Plan balanced diets for individuals keeping in mind their physical activity, income group, social and cultural background</li> <li>2. Suggest dietary modifications for</li> </ol>	<p><b>Nutrition in Adulthood</b></p> <ol style="list-style-type: none"> <li>1. Planning meals for sedentary, moderate and heavy workers</li> <li>2. Dietary modifications for common ailments: diarrhea, constipation, Underweight, obesity and fever</li> </ol>	<p>Quiz  Planning and Cooking Practical  Viva</p>

	common ailments		
3	<p>This will enable students to:</p> <ol style="list-style-type: none"> <li>1. Learn the physiological changes during pregnancy and lactation</li> <li>2. Understand the effect of physiological changes on nutritional requirements Understand the role of nutrition in pregnancy outcome and during lactation</li> </ol>	<p><b>Nutrition during Pregnancy and Lactation</b></p> <p>Planning meals for various physiological conditions</p> <ul style="list-style-type: none"> <li>- Pregnancy</li> <li>- Lactation</li> </ul>	<p>Quiz</p> <p>Planning and</p> <p>Cooking Practical</p> <p>Viva</p>
4	<p>This will enable students to:</p> <p>Understand the physiological changes during growth, development and ageing and their effect on nutritional needs</p>	<p><b>Nutrition during Life cycle</b></p> <ol style="list-style-type: none"> <li>1. Planning meals for different age groups <ul style="list-style-type: none"> <li>- Infancy</li> <li>- Childhood</li> <li>- Adolescence</li> <li>- Old age</li> </ul> </li> </ol>	<p>Quiz</p> <p>Planning and</p> <p>Cooking Practical</p> <p>Viva</p>

### Evaluation:

- **Planning = 50 marks** (including projects and assignments)  
(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** (including viva)
- **Total = 100 marks.**

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2. Food Science (2012), Maharashtra State Board of Secondary and Higher Secondary education Pune, 1<sup>st</sup> Edition, Sheth Publications.
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4. Joshi, Shubhangini (2009), Nutrition and Dietetics , Mcgraw Hill Higher Education.
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8. Guthrie Helen (1986). Introductory Nutrition, Times Mirror/ Mosby College Publishing.
9. Wardlaw G.M, (1997), Contemporary Nutrition, Issues and Insights, 3<sup>rd</sup> Edition Tata Mc GrawHill Inc. Boston.
10. Guthrie, Helen (1994), Human Nutrition, William C Brown Pub.

## 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 buy Manship 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

Code No	Course	TC	Th C	Pr C	Int M	Ext M	Total
9302	Consumer Studies	4	4	-	25	75	100

Module No.	Objectives	Content	Evaluation
1	<p>The learner understands the term consumer and can define it.</p> <p>To provide information regarding the need for consumer education.</p> <p>To create awareness regarding consumer problems.</p>	<p><b>CONSUMER AND CONSUMER PROBLEMS</b></p> <p><b>1.1 DEFINITION AND NEED OF CONSUMER EDUCATION</b></p> <ul style="list-style-type: none"> <li>• Introduction to Consumer Problems related to goods and services</li> <li>• Meaning and Objectives of Consumer Education</li> </ul> <p><b>1.1. CONSUMER MOVEMENT</b></p> <ul style="list-style-type: none"> <li>• Background/History of Consumer Movement</li> <li>• Emergence of Consumer Movement in India</li> <li>• Causes for slow growth of Consumer Movement in India</li> </ul> <p><b>1.2. CONSUMER PROBLEMS</b></p> <ul style="list-style-type: none"> <li>• Adulteration</li> <li>• Faulty Weights and Measures</li> <li>• Misleading Advertisements</li> <li>• Other Malpractices such as lack of safety and quality control regulations, sales gimmicks, unfair warranties, massive profiteering and illegal trading.</li> </ul>	<p>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.</p> <p>10 Marks</p> <p>Presentation of the report</p> <p>15 Marks</p>

Module No.	Objectives	Content	Evaluation
2	<p>To provide knowledge regarding various consumer guides</p> <p>To create an understanding of different brands, labels and grading and standardization.</p>	<p><b>CONSUMER GUIDES</b></p> <p><b>2.1 BRANDS</b></p> <ul style="list-style-type: none"> <li>• Meaning</li> <li>• Types of brands such as Individual, Family, Umbrella, Combination device and Private or Middleman's brand.</li> </ul> <p><b>2.2. LABELS</b></p> <ul style="list-style-type: none"> <li>• Meaning and types of labels</li> <li>• Essentials of labels</li> </ul> <p><b>2.3 GRADING AND STANDARDIZATION</b></p> <ul style="list-style-type: none"> <li>• Meaning and types (Qualitative and Quantitative)</li> <li>• Standardization process - grading, sampling, sorting and packaging</li> </ul> <p><b>2.4 ADVERTISEMENTS</b></p> <ul style="list-style-type: none"> <li>• Influence of advertisements on consumers</li> <li>• Usefulness of advertisements to consumers</li> <li>• Misleading advertisements</li> </ul> <p><b>2.5 ROLE OF CONSUMER AGENCIES</b></p> <ul style="list-style-type: none"> <li>• Role of BIS, AGMARK, FPO and ECO MARKS</li> </ul>	<p>Collect 5 samples for labels from various products such as food/ medicines/cosmetics/clothing. 10Marks</p> <p>Write a detailed report regarding the information 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</p> <p>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</p>

Module No.	Objectives	Content	Evaluation
3	<p>To help students make better decisions in the market as a wise consumer.</p>	<p><b>CONSUMER DECISION MAKING</b></p> <p><b>3.1 CONSUMER DECISIONS</b> Decision making process</p> <ul style="list-style-type: none"> <li>• Problem recognition</li> <li>• Information seeking</li> <li>• Equation of alternatives</li> <li>• Buying decisions</li> <li>• Post purchase evaluation</li> </ul> <p><b>3.2 GOOD BUYMANSHIP</b></p>	<p>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</p>

Module No.	Objectives	Content	Evaluation
4	<p>To make the learners aware about their protection from the malpractices in the market.</p> <p>To create an understanding about different rights and responsibilities among the students.</p> <p>To inform the students regarding various Acts and Agencies</p>	<p><b>CONSUMER PROTECTION</b></p> <p><b>4.1 NEED FOR CONSUMER PROTECTION</b></p> <p><b>4.2 CONSUMER RIGHTS</b></p> <ul style="list-style-type: none"> <li>• Right to be heard</li> <li>• Right to choose</li> <li>• Right to be informed</li> <li>• Right to seek redressal</li> <li>• Right for Protection</li> <li>• Right to Basic needs</li> <li>• Right to Consumer Education</li> <li>• Right to secure ecological balance</li> </ul> <p><b>4.3 CONSUMER RESPONSIBILITIES</b></p> <p><b>4.4 CONSUMER ACTS AND AGENCIES</b></p> <ul style="list-style-type: none"> <li>• Acts: COPRA,</li> <li>Agencies: CGSI, CERC, CFBP</li> </ul>	<p>A written report on Role of Consumer Agencies like CGSI/ CERC/CFBP in consumer protection.</p> <p>10 Marks</p> <p>Procedure for Redressal for a consumer problem.</p> <p>15Marks</p>

#### EVALUATION:

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

#### REFERENCES:

1. Aggarwal Anju 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

### 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 become aware about dynamics of family interactions and developmental tasks through family life
5. To become aware of problems in families and ways of coping

Code No	Course	TC	Th C	Pr C	Int M	Ext M	Total
<b>9303</b>	<b>Family Dynamics</b>	4	3	1	25	75	100

(THEORY)

Module No	Objective	Content	Evaluation
1	This will enable students to:- <ol style="list-style-type: none"> <li>1. To analyze the traditional and changing norms of institution of family.</li> <li>2. Be sensitive to variations in family practices of different ethnic groups.</li> <li>3. Understand stages of family life cycle.</li> <li>4. Create insight about the types of family.</li> <li>5. Identify alternate family patterns.</li> <li>6. Explore the dyadic relationships in family.</li> <li>7. Analyze the areas &amp; patterns of adjustments</li> <li>8. Bring awareness &amp; sensitize oneself about crisis in family life.</li> </ol>	<b>Family &amp; its structure</b> <ol style="list-style-type: none"> <li>1. Meaning of the term family                             <ul style="list-style-type: none"> <li>• Family composition &amp; structure</li> <li>• Practices &amp; Patterns of family</li> <li>• Changing family patterns</li> </ul> </li> <li>2. Family life cycle: meanings, definition &amp; stages.</li> <li>3. Types of family</li> <li>4. Alternate family patterns: Causes, characteristics &amp; implications.</li> <li>5. Dyadic relationships</li> </ol> <b>Family Responsibilities</b> <b>Adjustments &amp; Crises within the family</b> <ol style="list-style-type: none"> <li>1. Areas &amp; patterns of Adjustment</li> <li>2. Meaning of crisis ; Types of family crises &amp; ways of coping</li> </ol>	Use of experiential method by students: Role play, skit. etc.  5 marks        Poster making and exhibition 5 marks

Module No.	Objective	Content	Evaluation
2	This will enable students to:- <ol style="list-style-type: none"> <li>1. To understand the institute of marriage</li> <li>2. Develop awareness in mate selection process.</li> <li>3. Understand the goals of modern marriage.</li> </ol>	<b>Marriage</b> <ol style="list-style-type: none"> <li>1. To understand the concept of “Marriage as an Institution”</li> <li>2. Mate Selection</li> <li>3. Goals of modern marriage</li> <li>4. Preparing oneself for marriage</li> </ol>	Group presentation on any above

	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.	5. Pre marital and post marital counseling 6. Engagement 7. Marriage rituals & Court marriage 8. Honeymoon 9. Annulment & Divorce & Marriage Counselling	topics,  10 marks
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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.	<b>Planned Parenthood</b> 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	<b>Family and its structure</b> 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

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- 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

### 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

Code No	Course	TC	Th C	Pr C	Int M	Ext M	Total
<b>9304</b>	<b>Media Skill Development</b>	4	3	1	25	75	100

Module No.	Objectives	Content	Evaluation
1	<ol style="list-style-type: none"> <li>1. Develop awareness of the need and importance of Mass-Media.</li> <li>2. Analyze the relationship between media and message.</li> <li>3. Learn writing for different media.</li> </ol>	<p><b><u>Mass Media:</u></b></p> <ol style="list-style-type: none"> <li>1. Concept of Mass Media, its importance and its role in development of society.</li> <li>2. Relationship of Medium and Message.</li> <li>3. Writing for different Media.</li> </ol>	Continuous assessment and project 25 marks

Module No.	Objectives	Content	Evaluation
2	<ol style="list-style-type: none"> <li>1. Become aware of different forms of media.</li> <li>2. Understand the role and importance of print, electronic, new and traditional media for development.</li> <li>3. Be able to select the appropriate form of media for Extension activities.</li> </ol>	<p><b><u>Forms of Media:</u></b></p> <ol style="list-style-type: none"> <li>1. Print Media- Newspapers, Magazines, Periodicals.</li> <li>2. Electronic Media- Television, Radio, films.</li> <li>3. New Media- Cell phones and Internet.</li> <li>4. Traditional Media- Folk Media including puppetry.</li> </ol>	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
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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	<b>Forms of Media:</b>	
		1. Identify and analyze articles on social issues in Newspapers, Periodicals and Magazines.	5 marks
		2. Analysis of the content and form of Television Programmes. 3. Preparation of clippings on contemporary issues.	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.	<b>Media Skills:</b> 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

### Fabric Ornamentation & 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.

Code No	Course	TC	Th C	Pr C	Int M	Ext M	Total
<b>9305</b>	<b>Fabric Ornamentation &amp; Accessory Design</b>	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. <b>OR</b> 2. Satin embroidery on dupatta/ stole. 1. Fabric painting on handkerchiefs/ Table cover/ Apparel <b>OR</b> 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.	<b>Ornamentation</b> To make any two articles with suitable techniques. 1. Smocking technique on cushion cover OR 2. Bag/ purse with appliqué work/patch work. <b>OR</b> 3.Waist belt by Macrame <b>OR</b> 4. Edgings with crochet dupatta/ handkerchief/ sleeve/neck lines.	25 Marks  For any two articles or applications 15+10 marks (25 Marks)

<b>Module No.</b>	<b>Objective</b>	<b>Content</b>	<b>Evaluation</b>
3	1. To learn various methods of making jewelry. 2. To learn finishing techniques. 3. To learn to use various materials for making jewelry	<b>Fashion Jewelry/Shoe decoration</b> 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

<b>Module No.</b>	<b>Objective</b>	<b>Content</b>	<b>Evaluation</b>
4	To apply learned technique to make the article	<b>Best of waste</b> 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 External to be conducted.

#### **REFERENCES:**

<b>S. No.</b>	<b>Title of the Book</b>	<b>Author</b>
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:

The course will enable students to:

1. Lay the foundation of biological chemistry.
2. Give insights about the chemical reactions that occur in biological systems.
3. Impart knowledge about the structures of the principle components present in biological systems.

Code No	Course	TC	Th	Pr	Int	Ext	Total
0741	Advanced Chemistry	4	2	2	25	75	100

#### Advanced Chemistry Theory

Module No	Objectives	Content	Evaluation
1	<p>This module will enable students to:</p> <ol style="list-style-type: none"><li>1) Understand the fundamentals of carbohydrates and their importance in metabolism.</li><li>2) Understand importance of lipids and their role in biological systems.</li></ol>	<p><b>Carbohydrates:</b></p> <ul style="list-style-type: none"><li>• General formula, Classification, Structure, properties and uses of monosaccharides (Glucose, Fructose), disaccharides (Lactose, Maltose and Sucrose), oligosaccharides, and polysaccharides (Starch, Glycogen).</li><li>• Introduction to the structure of D &amp; L forms. Optical and stereo isomers. Anomers. Cyclic forms of monosaccharides of glucose and fructose including structures.</li><li>• Reactions of Monosaccharids- Oxidation and reduction reactions, esterification reaction, osazone formation</li></ul> <p><b>Lipids:</b></p> <ul style="list-style-type: none"><li>• Definition and Introduction, Structural formula and difference between saturated and unsaturated fatty acids,</li><li>• Chemical Constants of fats-iodine value,</li></ul>	<p>25 Marks</p> <p>Assignments</p> <p>Quiz</p>

		<p>saponification value, acid value and Richert- Miesel numbers.</p> <ul style="list-style-type: none"> <li>• Rancidity</li> </ul> <p>Sterols-Structure and function of cholesterol, 7 dehydro- cholesterol and ergosterol.</p>	
2	<p>1) Understand the fundamentals of proteins and nucleic acid chemistry.</p> <p>2) Know the role of enzymes and factors that affect enzyme actions.</p>	<p><b>Proteins:</b></p> <ul style="list-style-type: none"> <li>• Classification of amino acids with structure.</li> <li>• Zwitter ionic form.</li> <li>• Peptide bond.</li> <li>• Structure of proteins (primary, secondary, tertiary and quaternary structure).</li> <li>• Denaturation of proteins.</li> <li>• Salting out of proteins and isoelectric precipitation.</li> </ul> <p><b>Nucleic Acid Structure:</b></p> <p><b>Enzymes:</b></p> <ul style="list-style-type: none"> <li>• Definition, general properties, Nomenclature, classifications and specificity.</li> <li>• Mechanism of enzyme action.</li> <li>• Factors affecting enzyme activity.</li> <li>• Enzyme inhibition-competitive and non competitive.</li> </ul> <p>Coenzymes and isoenzymes and their role in metabolism.</p>	<p>25 Marks</p> <p>Assignments</p> <p>Quiz</p>

**References :** 3, 4, 6, 7 & 9

## **Advanced Chemistry Practical**

### **OBJECTIVES:**

**The course will enable students to:**

1. Impart practical training in chemistry.
2. Develop understanding of the fundamentals of chemical reactions through hands on training.

3. Impart the necessary knowledge in identification of important compounds in biological systems.

Module No	Objectives	Content	Evaluation
1	This module will enable students to:  Apply the basic knowledge of chemical reactions.	Preparations of basic solutions for titration:  1. Preparation of standard solution of NaOH and H <sub>2</sub> SO <sub>4</sub> (Strength of 1N – 0.1N or 0.25N or 0.5N etc.), Calculations for normality, molarity and g/l concentration.  2. Oxidation reduction titration- A) Ferrous ammonium sulphate with K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>  B) KMnO <sub>4</sub> with oxalic acid.  Using a standard solution of KMnO <sub>4</sub> and NaOH determine the strength of a mixture of H <sub>2</sub> SO <sub>4</sub> and H <sub>2</sub> C <sub>2</sub> O <sub>4</sub> . 2H <sub>2</sub> O.	25 Marks  Practical test
2	This module will enable students to:  Apply 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) Qualitative tests for fats.	25 Marks  Practical test

**References :** 1, 2 and 3

**References:**

- 1) Finar I.L. "Organic Chemistry Vol. I" 6<sup>th</sup> Edition, (2009), Pearson Education India.
- 2) Finar I.L "Organic Chemistry, Volume 2": Stereochemistry and the Chemistry of Natural Products, 5<sup>th</sup> Edition, 2009.
- 3) Rastogi S.C. "Biochemistry", 2<sup>nd</sup> Edition, (2003) Tata MacGraw Hill Publishing Co. Ltd.
- 4) Jain, J, L., S. Jain and N. Jain. "Fundamentals of Biochemistry". 6<sup>th</sup> Edition, (2005). S.Chand Company Ltd.
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- 6) Apps D.K. and Cohen B.B. and Steel C.M. "Biochemistry: A Concise Text for Medical Students" (1992), Bailliere Tindall,
- 7) Debajyoti D, "Biochemistry" 2<sup>nd</sup> Edition, (1980) Academic Publishers,.

- 8) Satyanarayana U and Chakrapani U “Biochemistry”, 3<sup>rd</sup> Edition, (2008), Books & Allied Publishers.
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## 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.

Code No	Subject	Total Credits	Th	Pr	Int	Ext	Total
<b>0742</b>	<b>Food Microbiology</b>	4	2	2	25	75	100

#### Food Microbiology Theory

Module No	Objectives	Content	Evaluation
1	<p><b>This module will enable the students to :</b></p> <ol style="list-style-type: none"> <li>1. To be acquainted with microorganisms important in food</li> <li>2. To understand their characteristics in relation to preservation and spoilage of food</li> <li>3. To have a knowledge of the various sources of contamination</li> </ol>	<p><b>Food Microbiology –Basic concepts and History in brief</b></p> <p><b>General characteristics</b></p> <ul style="list-style-type: none"> <li>• Morphological Characteristics</li> <li>• Reproductive characteristics</li> <li>• Physiological characteristics</li> <li>• Molds of industrial importance</li> </ul> <p>Molds, Yeasts and Bacteria</p> <p>Brief introduction to the following: Viruses, Algae and Parasites</p> <p><b>Sources And Types Of Contamination</b></p> <p><b>Water</b></p> <ul style="list-style-type: none"> <li>• Microbial flora- (types of micro organisms)</li> <li>• Water -As a source of contamination</li> <li>• Water purification</li> <li>• Microbial examination</li> <li>• Indicator organisms</li> <li>• Water borne illnesses- (names)                             <ul style="list-style-type: none"> <li>• Microbial flora</li> <li>• Sources of contamination</li> </ul> </li> </ul>	<p>25 Marks</p> <p>Assignments / Presentations</p>

		<p><b>Sewage</b></p> <ul style="list-style-type: none"> <li>• Introduction Sewage as a source of contamination</li> <li>• Sewage treatment (brief)</li> </ul> <p><b>Air</b></p> <ul style="list-style-type: none"> <li>• Air micro flora</li> <li>• Air as a source of contamination</li> </ul> <p><b>Other Sources of contamination</b></p> <ul style="list-style-type: none"> <li>• Humans, Pests, Animals, Birds and Inanimate objects</li> </ul> <p><b>Food safety</b> Basic concepts of Physical, Chemical and Biological hazards associated with foods.</p> <p><b>Sanitation in Food Service Establishment</b></p> <ol style="list-style-type: none"> <li>1. Cleansing agents, Disinfectants &amp; sanitizers used in Food service Establishment.</li> <li>2. Personal hygiene <ul style="list-style-type: none"> <li>• The food handler</li> <li>• Cleanliness with regard to hand, habits, working attire/cloths, jewellery,</li> <li>• Health of a food handler</li> </ul> </li> <li>3. HACCP Principles, Need and benefits</li> </ol>	
2	<p><b>This module will enable the students to :</b></p> <ol style="list-style-type: none"> <li>1. Understand the beneficial effects of micro-organisms</li> <li>2. Food Spoilage and pathogenesis of micro-organisms</li> </ol>	<p><b>Micro Organisms and Food: Beneficial effects of microorganisms.</b> Microorganisms responsible for commercial production of acid, alcohols, solvents, antibiotics, vitamins, hormones, enzymes, amino acid etc.</p> <p><b>1. Microbial fermentation and role of micro organisms in Food fermentations</b></p> <ul style="list-style-type: none"> <li>• Beer, Wine, Bread</li> <li>• Indian pickles</li> <li>• Fermented dairy products - curd, yoghurt and cheese</li> <li>• Vinegar Indian fermented products –idli, dhokla and khaman.</li> </ul> <p><b>2. Food Spoilage And Food Borne Diseases</b></p> <ol style="list-style-type: none"> <li>(1) Contamination and spoilage of cereals, grains and cereal products.</li> <li>(2) Contamination and spoilage of meat and meat products.</li> </ol>	<p>25 Marks</p> <p>New research developments in fermentation technology Assignments / Presentations</p>

		(3) Contamination and spoilage of milk and milk products. <b>Food Poisoning and Infections:</b> Definitions and differentiation between: <ul style="list-style-type: none"> <li>➤ Food poisoning and infections.</li> <li>➤ Salmonella and Botulism</li> <li>➤ E.coli and S. aureus</li> </ul>	
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## References

1. Frazier, W. C. and Westhoff, D. (1988) Food Microbiology .Tata McGraw-Hill
2. Guthrie, R. K. (1972) Food sanitation Inc. Eaglewood Cliff, N. J
3. Jay, 1978. Modern food microbiology. Van Nostr and Reinhold Company, New York
4. Marriot. N.G. (1995)Principles of Food Sanitation .4<sup>th</sup> edition Edward Arnold
5. Pelczar, M. L. and R.D Reid (1972 )Microbiology. McGraw &Hill, New York
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7. Stanier, R. Y.,E. A. Adelberg and Ingraham .1976 .The microbial world .4<sup>th</sup> ed. Prentice Hall.

## Food Microbiology Practical

### Objectives

This course will enable students to:

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

Module No	Objectives	Contents	Evaluaition
1	<b>The module will enable the student to:</b> <ol style="list-style-type: none"> <li>1. To have a knowledge of the commonly used staining techniques.</li> <li>2. To make the student familiar with the various culture media</li> </ol>	Study of laboratory equipments - Principle, working and use of Microscope, Autoclave, Incubator, Refrigerator, colony counter. <ol style="list-style-type: none"> <li>1. Study of motility: Hanging drop preparation.</li> <li>2. Staining techniques: Simple staining Gram staining Spore staining <b>Capsule staining</b></li> <li>3. Preparation of culture media</li> </ol>	Performing Practical 15 marks

		composition and uses.	
2	<p><b>The module will enable the student to:</b></p> <ol style="list-style-type: none"> <li>To enable students to isolate micro-organisms from different sources.</li> <li>To make a preliminary identification of some micro-organisms</li> </ol>	<p><b>Isolation and observation of fungi</b></p> <ol style="list-style-type: none"> <li>Isolation of bacteria: Using serial dilution streak plate and pour plate techniques: <ul style="list-style-type: none"> <li>From air</li> <li>From soil</li> </ul> </li> <li>Bacteriological Analysis of Water.</li> <li>Bacteriological analysis of milk.</li> <li>Test for surface sanitation.</li> <li>Permanent slides of pathogenic micro organisms</li> </ol>	<p>Performing practical</p> <p>10 marks</p>

### References

- Frazier, W.C., and Westhoff, D. 1988 Food Microbiology. Tata Mc. Graw-Hill
- Guthrie, R.K. [ed] (1972) Food sanitation Inc. Eaglewood Cliff, N. J
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- Pelczar, M.L. and R.D Reid -1972 Microbiology, Mc. Graw and Hill, New York
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- Stanier R.Y., E. A. Adelberg and Ingraham. 1976. The microbial world 4<sup>th</sup> ed. Prentice Hall.

## Semester IV

### Human Nutrition I

#### Objectives

**This course will enable students to:**

1. Gain insight in to 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 functions of water in the body and how electrolytes and fluid balance are maintained in the human body.

Code No	Subject	Total Credits	Th	Pr	Int	Ext	Total
0743	Human Nutrition I	4	4	-	25	75	100

Module No.	Objectives	Content	Assessment
I	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Know the various scientists and development in nutrition science.</li> <li>2. Understand digestion, absorption of macronutrients.</li> <li>3. Understand the inter-relationship between water and electrolytes and their role in maintenance of fluid balance.</li> <li>4. Understand how the changes in fluid balance effects the human body</li> </ol>	<p><b>History of Nutrients - Eminent Scientists and developments in Nutrition Science</b></p> <p><b>Basic concepts in Human Nutrition:</b></p> <ul style="list-style-type: none"> <li>• Digestion,</li> <li>• Absorption of macronutrients- Transport across cell membrane – active, passive, diffusion</li> </ul> <p><b>Water, Electrolytes and Acid-Base balance</b></p> <ul style="list-style-type: none"> <li>• Sources, functions and distribution, deficiencies of the following: Water and Electrolytes- Sodium, Potassium and Chloride</li> <li>• Mechanisms of water balance, electrolyte balance and Acid-Base Balance and Water Intoxication.</li> </ul> <p><b>ENERGY BALANCE:</b></p> <ul style="list-style-type: none"> <li>• Forms of energy</li> <li>• measurement of energy,</li> <li>• SDA, thermogenesis.</li> </ul>	<p><b>Quiz</b></p> <p><b>Assignments</b></p> <p><b>Projects</b></p>

		<ul style="list-style-type: none"> <li>• BMR estimation of BMR and factors affecting BMR</li> </ul>	
<b>II</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the functions, sources, effects of deficiencies and excess in the body.</li> </ol>	<p><b>CARBOHYDRATES :</b></p> <ul style="list-style-type: none"> <li>• Types and functions.</li> <li>• Sugar alcohols,</li> <li>• Fibre - types, properties, function, role in various diseases.</li> <li>• Computation of RDA Effects of excess and deficiency of carbohydrates</li> </ul>	<p><b>Quiz</b></p> <p><b>Assignments</b></p> <p><b>Projects</b></p>
<b>III</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand protein quality, amino acid imbalance and its implications on health.</li> </ol>	<p><b>PROTEIN:</b></p> <ul style="list-style-type: none"> <li>• Classification and functions</li> <li>• Methods of protein quality evaluation, Amino acid imbalance, nitrogen balance, antagonism and toxicity.</li> <li>• Factors affecting protein utilization and RDA.</li> <li>• Vegetarianism</li> <li>• PEM - clinical and biochemical aspects.</li> </ul>	<p><b>Quiz</b></p> <p><b>Assignments</b></p> <p><b>Projects</b></p>
<b>IV</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the role of lipids in nutrition and health</li> <li>2. Understand the inter-relationship between the macronutrients</li> </ol>	<p><b>LIPIDS :</b></p> <ul style="list-style-type: none"> <li>• Types of lipids</li> <li>• Metabolism</li> <li>• Hydrogenation, fatty acids, lipoproteins.</li> <li>• Functions, role of fat in cardiovascular diseases.</li> <li>• RDA</li> <li>• Inter relation between carbohydrate, fat and protein in energy metabolism.</li> <li>• Starvation, excess of macronutrient.</li> </ul>	<p><b>Quiz</b></p> <p><b>Assignments</b></p> <p><b>Projects</b></p>

## References

1. Passamore R. and M.A. Eastwood (1986): Human Nutrition and Dietetics, EWBS, Churchill.
2. Guthrie H. (1986) Introductory Nutrition, Times Mirror College Publication, Toronto, Canada.
3. Swaminathan M., (1985) Advanced Text book on Food and Nutrition Vol.-I & Vol. – II, BAPPCO, Bangalore.
4. Chaney M.S., M.L., (1979) Nutrition, 9<sup>th</sup> edition, Boston, Houghton Mifflin Co.
5. Bamji M.S., Rao N.P., Reddy V., (2003) Textbook of Human Nutrition, Oxford and IBH Publishing co. Ltd., New Delhi.
6. Agarwal A and Udipi SA. (2013) Text Book of Human Nutrition, Jaypee Publihers, New Delhi.

**Semester IV**  
**Medical Nutrition Therapy - I**

**Objectives**

The course enables the students to:

1. Understand the role of diet in health and disease.
2. Know the etiology of disease.
3. Relate the physiological changes associated with specific diseases.
4. Acquire the skills to modify the normal diets for diseased conditions.
5. Recommend and provide appropriate nutrition care for prevention of various diseases.

Code No	Subject	TC	Th	Pr	Int	Ext	Total
0244	Medical Nutrition Therapy - I	4	2	2	25	75	100

**Medical Nutrition Therapy – I Theory**

Module	Objective	Content	Assessment
1	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the role of a dietitian</li> <li>2. Know the principles and modifying normal diet</li> </ol>	<p><b>Basic concepts of Medical Nutrition Therapy</b></p> <ol style="list-style-type: none"> <li>1. Role of a dietitian</li> <li>2. Principle of planning therapeutic diets and hospital diets</li> <li>3. Modification of normal diets with special emphasis on macronutrients and micronutrients for fever, infections, obesity, underweight, anemia</li> <li>4. Role of Functional Foods</li> </ol>	<p>25 marks</p> <p>Quiz</p> <p>Assignment on therapeutic diets</p> <p>Presentations on Functional foods</p>
2	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the importance of modified diets in specific disease conditions.</li> <li>2. Plan diets for various G.I.T disorders keeping in mind physiological and metabolic alterations</li> </ol>	<p><b>Medical Nutrition Therapy in gastro-intestinal disorders</b></p> <ol style="list-style-type: none"> <li>1. Review Physiology of GIT, digestion and absorption</li> <li>2. Explain the terms Esophagitis, dysphagia, flatulence, diverticulosis</li> <li>3. Etiology, Symptoms and MNT for- Diarrhea Lactose intolerance</li> </ol>	<p>25 Marks</p> <p>Quiz</p> <p>Assignment on gut physiology</p>

		Constipation Irritable bowel syndrome Ulcerative colitis Celiac disease Gastritis Peptic ulcer Dumping syndrome 4. Physiological role of liver 5. Diseases of liver (i) Hepatitis (ii) Cirrhosis & its complications 6. Explain the terms: Cholelithiasis, Cholecystitis, Pancreatitis	
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**Reference:**

1. Anita F.P. (1989): Clinical Dietetics and Nutrition, Oxford University Press, Bombay.
2. Cataldo D.W. (1995): Nutrition and Diet Therapy - Principles & Practice, West Publishing Company, San Francisco.
3. Davis J and Sherer K, (1994): Applied Nutrition and Diet Therapy for Nurses, 2<sup>nd</sup> Edition, W.B. Saunders Co.
4. Escott-Stump, S. (1998). Nutrition and Diagnostic Related Care, 4<sup>th</sup> Edition, Williams and Wilkins.
5. Garrow J.S. & W.P.T. James (2000): Human Nutrition and Dietetics, 10<sup>th</sup> Edition, Churchill Livingstone Inc.
6. Joshi S. A. (2002): Nutrition and Dietetics, 2<sup>nd</sup> Edition, Tata McGraw-Hill
7. Krause M.M, Mahan L. K. & Escott S.S. (2008), Krause's Food, Nutrition and Diet Therapy, 12<sup>th</sup> Edition, W. B. Saunders Company, Philadelphia.
8. Robinson C. H., Lawler M. R., Cheneweth W.L. and Garwick A. E. (1986): Normal and Therapeutic Nutrition, MacMillan Publication Co.
9. Sri Laxmi B. (2003): Dietetics, New Age International Pvt. Ltd., Mumbai.
10. Williams S.R. (1993): Nutrition and Diet Therapy, 7<sup>th</sup> Edition, Times Mirror / Mosby College Publishing, St. Louis.

## **Medical Nutrition Therapy- I Practical**

### **Objectives**

**The course enables the students to:**

1. **Apply principles of diet therapy in preparing foods for specific diseases conditions.**
2. **Develop skills in planning and preparation of foods, for specific disease conditions keeping in mind cost, seasonal availability and psychosocial factors.**

<b>Module</b>	<b>Objectives</b>	<b>Content</b>	<b>Assessment</b>
<b>3</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>To know the market trends in nutritional supplements</li> <li>To apply the principles of diet therapy in modifying normal diet</li> <li>Develop ability to plan diets for weight management, fever, anemia</li> </ol>	<p><b>Basic of Therapeutic modifications</b></p> <ol style="list-style-type: none"> <li>Nutritional supplements</li> <li>Modification of normal diet for consistency, texture</li> <li>Modification of normal diet for               <ol style="list-style-type: none"> <li>weight management</li> <li>fever</li> <li>anemia</li> </ol> </li> </ol>	<p>25 Marks</p> <p>Market survey on nutritional supplements</p> <p>Therapeutic Diet Planning</p>
<b>4</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>Develop skills in planning and preparation of foods for specific G.I disease condition</li> </ol>	<p><b>Therapeutic modifications in GI tract disorders and liver disorders</b></p> <ol style="list-style-type: none"> <li>Constipation</li> <li>Diarrhea</li> <li>Peptic ulcer</li> <li>Hepatitis</li> <li>Cirrhosis</li> </ol>	<p>25 Marks</p> <p>Therapeutic Diet Planning</p> <p>Viva</p>

#### References:

- Krause M.M, Mahan L. K. & Escott S.S. (2008), Krause's Food, Nutrition and Diet therapy, 12<sup>th</sup> Edition, W. B. Saunders Company, Philadelphia.
- Williams S.R. (1993): Nutrition and Diet Therapy, 7<sup>th</sup> Edition, Times Mirror / Mosby College Publishing, St. Louis.
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- Joshi S. A. (2002): Nutrition and Dietetics, 2<sup>nd</sup> Edition, Tata McGraw-Hill Publishing Company Limited.
- C. Gopalan, B. V. Ramashastry and S. C. Balasubramanian (2004): Nutritive Value of Indian Foods, NIN, ICMR, Hyderabad.

**Semester IV**  
**Institutional Food Service Management**

**Objectives**

**The course enables students to:**

1. Learn different types of food service institutes
2. Know various types of food service in different institutes
3. Plan menu for institutes
4. Understand the principles of plant and equipment management
5. Understand the principles of personnel management
6. Develop skills in quantity food production and service
7. Become aware about the current trends of food market
8. Understand the concept of standardization, cost control, recipe writing and quality control

Code No	Subject	TC	Th	Pr	Int	Ext	Total
0245	Institutional Food Service Management	4	-	4	25	75	100

Module	Objective	Content	Assessment
1	<p><b>Food service Management</b></p> <p>The course enables students to</p> <ol style="list-style-type: none"> <li>1. Identify various types of food service institutes and service systems</li> <li>2. Know various food delivery systems</li> <li>3. Understand the food management tools and calculate the food costs</li> <li>4. Develop ability to plan menu</li> <li>5. Have knowledge about various food equipment available in the institutions</li> </ol>	<p><b>Types of:</b></p> <ol style="list-style-type: none"> <li>(i) Food service systems</li> <li>(ii) Food delivery systems</li> </ol> <ol style="list-style-type: none"> <li>2. Menu planning</li> <li>3. Food management</li> <li>4. Standardisation and Food Costing</li> <li>5. Equipments in Food Service Institution</li> <li>6. Managing Kitchen and store room</li> </ol>	<p>25 Marks</p> <p>Assignment on food service systems</p> <p>Presentation on food service equipment</p>

<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>2</b>	<b>Institutional Organization and Management</b> The course enables students to <ol style="list-style-type: none"> <li>1. Know the various types of organization</li> <li>2. Understand the principles, functions and tools of management</li> <li>3. Have knowledge about different laws pertaining to food service institutes</li> </ol>	1. Basics of Management 2. Types of organization 3. Legal policies for food service operations	25 Marks  Assignment on food laws Quiz on Management Basics

<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>3</b>	The course enables the students to: <ol style="list-style-type: none"> <li>1. Become aware of the current trends in food market.</li> <li>2. Understand the concept of standardization, cost control and recipe writing.</li> </ol>	<b>Basics of quantity food production:</b> <ul style="list-style-type: none"> <li>- Market survey</li> <li>- Recipe writing and standardization</li> <li>- Food Cost</li> <li>- Job allocation and organization of food production.</li> </ul>	25 Marks  1. Assignment on Standardized recipe writing 2. Survey on common food commodities available in market

<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>4</b>	The course enable the student to: <ol style="list-style-type: none"> <li>1. Develop skills in quantity food production and marketing.</li> </ol>	<b>Quantity food production</b> (15 serves) <ul style="list-style-type: none"> <li>- Salads</li> <li>- Snacks</li> <li>- Mini meals</li> <li>- Desserts</li> <li>- Beverages</li> </ul>	25 Marks  Planning and cooking in quantity

### References

1. West B.B., L. Wood W.E. Heyer , G.F. Stugart, (1997), Food service in Institutions , Ohn Wiley & Sons .
2. Kinton and Ceasarani (1981), Theory of Catering, Butter and Tana Ltd.
3. Mohini S. and Surjeet M.,(1987) ,Catering Management , an Integrated approach , Wiley Eastern Ltd.
4. Lillicrap D.R., Cousins J.A., (1991 ) ,Food and Beverage Service , ELBS , With Hodder & Stoughton.

## Semester V

### Biochemistry

#### Objectives:

This course will enable students to:

1. Know the fundamentals of metabolic processes / pathways occurring in the body.
2. Understand the significance of various metabolic processes / pathways.
3. Understand the integration of these metabolic processes.
4. Develop the ability to apply the significance of these processes to different physiological / metabolic conditions.

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
0751	Biochemistry	4	3	1	25	75	100

#### Biochemistry Theory

Module No.	Objectives	Content	Evaluation
1	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"><li>1. Understand the various ways of carbohydrate utilization in the body.</li><li>2. Create awareness of regulation of the pathways.</li><li>3. Realize the significance of the pathways.</li><li>4. Understand the process of energy yield from the organic substrates.</li></ol>	<p><b>Carbohydrate metabolism:</b></p> <ul style="list-style-type: none"><li>• Various Biological pathways -- site, significance, intermediates with chemical structures, enzymes, coenzymes involved, Regulation and energetic</li><li>• Glycolysis, TCA [Kreb's cycle], Pentose phosphate pathway Gluconeogenesis, Glycogenesis Glycogenolysis.</li><li>• Alcohol metabolism and biochemical alterations in alcoholism</li><li>• Biological oxidation and electron transport chain</li></ul>	<p><b>25 marks</b></p> <p>Power point presentations/ Assignments / Displays on various pathways</p>

Module No.	Objectives	Content	Evaluation
2	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>To understand the various ways of utilization of lipids in the body.</li> <li>Create awareness of regulation of the pathways.</li> <li>Realize the significance of the pathways.</li> </ol>	<p><b>Lipid Metabolism:</b></p> <ul style="list-style-type: none"> <li>Lipogenesis and Lipolysis</li> <li>Oxidation of saturated, unsaturated and odd chain fatty acids, regulation. energetics</li> <li>Biosynthesis of fatty acids, regulation of synthesis.</li> <li>Elongation and desaturation of fatty acid chains</li> </ul> <p>Ketosis and Ketogenesis</p> <ul style="list-style-type: none"> <li><b>Triglycerides</b> synthesis --- Intestinal resynthesis of triglycerides, synthesis in Liver.</li> <li>Introduction of Cholesterol – Parent steroid sources, Cholesterol biosynthesis with structures, mode of utilization, Control of cholesterol metabolism</li> <li>Plasma Lipoproteins, Metabolism of Chylomicrons, LDL, HDL and VLDL</li> </ul>	<p><b>25 marks</b></p> <p>Power point presentations/ Assignments/ Displays on various pathways</p>
3	<p><b>This module will enable the students to</b></p> <ol style="list-style-type: none"> <li>Explain the various metabolic pathways</li> <li>Understand the significance, regulatory mechanisms and synthesis of various essential non nitrogenous compounds synthesized from amino acids.</li> </ol>	<p><b>Protein Metabolism</b></p> <ul style="list-style-type: none"> <li>Trans-amination – with diagrammatic representation, role of pyridoxine, significance</li> <li>Oxidative and non oxidative De-amination.</li> <li>Metabolic fate of Ammonia-- Formation of glutamate, Formation of Glutamine</li> <li>Urea cycle –pathway with structures.</li> <li>Metabolism of non protein nitrogenous compounds:</li> </ul> <p>Structures of purines, pyrimidines and uric acid, catabolic pathways without structures of the intermediates</p> <ul style="list-style-type: none"> <li>Uric acid and gout.</li> </ul> <p>Synthesis (without structures) and significance of glutathione.</p> <p>Synthesis, catabolism and significance of Creatnine.</p> <ul style="list-style-type: none"> <li>Transmethylation and one carbon transfer – scheme of inter conversion and disposition of one carbon fragments derived from catabolism of amino acids (without structures)</li> <li>Metabolic fate of the carbon skeleton of amino acids – glucogenic, ketogenic and glucogenic and ketogenic amino acids.</li> </ul>	<p><b>25 marks</b></p> <p>Power point presentations/ Assignments/ Displays On various pathways</p>

## References:

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2. Jain, J, L., S. Jain and N. Jain (2005) “Fundamentals of Biochemistry”. 6<sup>th</sup> Edition,. S. Chand Company Ltd.
3. Plummer, D.T., (1971) “An Introduction to Practical Biochemistry”. 2<sup>nd</sup> Edition, McGraw-Hill Publishing Co. Ltd.
4. Apps D.K. and Cohen B.B. and Steel C.M. (1992), “Biochemistry: A Concise Text for Medical Students” Bailliere Tindall,
5. Debajyoti D, “Biochemistry” 2<sup>nd</sup> Edition, (1980) Academic Publishers,.
6. Satyanarayana U and Chakrapani U “Biochemistry”, 3<sup>rd</sup> Edition, (2008), Books & Allied Publishers.
7. Chatterjee M.N., Shinde R. “Textbook of Medical Biochemistry” 8<sup>th</sup> Edition (2012) Jaypee Brothers, Medical Publishers.
8. Nelson DL & Cox MM. 5<sup>th</sup> 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”. 5<sup>th</sup> Edition, Jaypee Brothers, Medical Publishers.
11. “Murray Harper’s Illustrated Biochemistry” 29<sup>th</sup> Edition, (2012) Prentice Hall Int. Voet D, and Voet J.G “Biochemistry” 4<sup>th</sup> Edition. (2011), *John Wiley*

## Biochemistry Practical

### Objectives

The course will enable students to:

1. Learn the principles and procedures of biochemical analysis of blood and urine.
2. Develop ability to interpret the results of the estimations of the common Constituents of biological fluids.

Module No	Objectives	Content	Assessment
<b>1</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. To know the principles on which the selected estimations are based.</li> <li>2. To know the procedures used for the estimations.</li> <li>3. To draw inferences from the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Qualitative Estimation of Normal Constituents of Urine.</li> <li>2. Qualitative Estimation of Abnormal Constituents of Urine.</li> </ol> <p><b>Quantitative Estimation in Urine.</b></p> <ol style="list-style-type: none"> <li>1. Urea</li> <li>2. Uric acid</li> <li>3. Glucose</li> </ol> <p><b>Quantitative Estimation in Serum / Blood.</b></p> <ol style="list-style-type: none"> <li>1. Urea</li> <li>2. Uric acid</li> <li>3. Total protein</li> <li>4. Albumin, Globulin, A/G Ratio.</li> <li>5. Glucose</li> <li>6. Cholesterol</li> </ol>	<p>25 Marks</p> <p>Quiz</p> <p>Journal</p> <p>Practical Tests</p> <p>Interpretation of case studies</p>

### References

1. Oser, B. L. Ed (1979 ),“Hawk's Physiological Chemistry”, 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.
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## 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. Explain the differences between major and minor minerals, including how each one functions in the body, the deficiency/toxicity symptoms, and major food sources.
3. Understand the interrelationship between nutrients.

Code No.	Subject	Total Credits	Th	Pr	Int	Ext	Total
0752	Human Nutrition II	4	4	-	25	75	100

### Human Nutrition II Theory

Module No.	Objectives	Content	Assessment
<b>1</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the functions, sources, effects of deficiencies and excess of fat soluble vitamins in the body.</li> </ol>	<p><b>VITAMINS -</b> Introduction- History and Classification <b>Fat soluble vitamins</b> Forms, Sources, Requirements Functions, Deficiency, Toxicity of</p> <ol style="list-style-type: none"> <li>1. Vitamin A</li> <li>2. Vitamin D</li> <li>3. Vitamin E</li> <li>4. Vitamin K</li> </ol>	<p>Quiz Assignments Projects</p>
<b>2</b>	<p><b>This module will enable students to:</b></p> <p>Understand the functions, sources, effects of deficiencies and excess of water soluble vitamins in the body</p>	<p><b>Water Soluble Vitamins</b> Sources, Requirements, Functions and Deficiency of</p> <ol style="list-style-type: none"> <li>1. Vitamin C</li> <li>2. Thiamin</li> <li>3. Riboflavin</li> <li>4. Niacin (Tryptophan conversion and Niacin Equivalent)</li> <li>5. Pyridoxin</li> <li>6. Cynocobalamin</li> <li>7. Folic acid</li> </ol>	<p>Quiz Assignments Projects</p>

3	<p><b>This module will enable students to:</b> Understand the functions, sources, effects of deficiencies and excess of macro minerals in the body</p>	<p><b>Macro Minerals :</b> Sources, RDA, Functions, Deficiency and Toxicity of:</p> <ol style="list-style-type: none"> <li>1. Calcium</li> <li>2. Phosphorus</li> <li>3. Sodium</li> <li>4. Potassium</li> </ol>	<p>Quiz Assignments Projects</p>
4	<p><b>This module will enable students to:</b> Understand the functions, sources, effects of deficiencies and excess of micro minerals in the body</p>	<p><b>Micro Minerals and Trace Elements</b> Sources, RDA, Functions, Deficiency and Toxicity of:</p> <ol style="list-style-type: none"> <li>1. Iron</li> <li>2. Iodine</li> <li>3. Zinc</li> <li>4. Selenium</li> <li>5. Copper</li> <li>6. Chromium</li> </ol>	<p>Quiz Assignments Projects</p>

**References:**

1. Whitney E.N., Rolfes S.R. (1996) Understanding nutrition – St. Paul, Minneapolis: West Publishing Co.
2. Wardlaw G. (2001): Perspectives in nutrition – St. Louis 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 (1985) Advanced Text book on Food and Nutrition Vol.-I & Vol– II, BAPPCO, Bangalore.
7. Margaret S. Chaney, Mararet L Ross,(2014) Nutrition. Houghton, Mifflin.
8. Bamji M.N., Rao P.and Reddy V.(2003) Textbook of Human Nutrition, Oxford and IBH Publishing Co. Pvt.Ltd., New Delhi.

**Semester V**  
**Medical Nutrition Therapy-II**

**Objectives:**

**The course enables the students to:**

- 1. Understand the etiology, physiological and metabolic changes in diseases.**
- 2. Learn the impact of various diseases on nutritional status and nutrient needs**
- 3. Recommend diets for prevention and treatment of diseases.**

Code No.	Subject	Total credits	Th	Pr	Int	Ext	Total
0253	Medical Nutrition Therapy- II	4	4	-	25	75	100

Module	Objective	Content	Assessment
<b>1</b>	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"> <li>1. Understand the importance of modified diets in Cardio Vascular Diseases.</li> <li>2. Understand the principles in dietary modification.</li> </ol>	<p><b>Medical Nutrition Therapy in Cardio Vascular Disease</b></p> <ol style="list-style-type: none"> <li>(i) Review of physiology and function of circulatory system</li> <li>(ii) Terms – angina, stroke, myocardial infarction, compensated and decompensated condition, arrhythmia, cardiac cachexia, congestive cardiac failure, deep vein thrombosis</li> <li>(iii) Risk factors</li> <li>(iv) Hypertension</li> <li>(v) Prevention</li> <li>(vi) MNT</li> </ol>	<p>25 marks</p> <p>Quiz</p> <p>Assignment</p> <p>Presentations on Functional foods for CVDs</p> <p>Case studies</p>

Module	Objective	Content	Assessment
<b>2</b>	<p>This module will enable students to</p> <ol style="list-style-type: none"> <li>1. Understand the importance of modified diets in Renal Disease.</li> <li>2. Understand the principles in dietary modification.</li> </ol>	<p><b>Medical Nutrition Therapy in Renal Diseases</b></p> <ol style="list-style-type: none"> <li>(i) Review of physiology and functions of kidney</li> <li>(ii) Causes, symptoms and MNT for               <ul style="list-style-type: none"> <li>- glomerulonephritis</li> <li>- nephrotic syndrome,</li> <li>- acute renal failure,</li> <li>- chronic renal failure,</li> <li>- urinary calculi</li> </ul> </li> <li>(iii) Dialysis</li> </ol>	<p>25 marks</p> <p>Quiz</p> <p>Assignment</p> <p>Presentations on Dialysis, case studies</p>

<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>3</b>	This module will enable students to <ol style="list-style-type: none"> <li>1. Understand the importance of modified diets in Endocrine Disorders.</li> <li>2. Understand the principles in dietary modification.</li> </ol>	<b>Medical Nutrition Therapy in Endocrine disorders</b> <b>1. Diabetes Mellitus –</b> (i) Types of Diabetes Mellitus (ii) MNT  <b>2. Thyroid disorders</b> (i) Types (ii) MNT	25 marks  Quiz Assignment Presentations

<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>4</b>	This module will enable students to <ol style="list-style-type: none"> <li>1. Understand the importance of modified diets in Metabolic stress</li> </ol>	<b>Medical nutrition therapy for metabolic stress</b> 1. Burns 2. Surgery 3. Preventive role of nutrition in cancer 4. Introductory dietary management in Human immune deficiency virus disease	25 marks  Quiz Assignment Presentations

## References

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2. Cataldo D.W. (1995): Nutrition and Diet Therapy - Principles & Practice, West Publishing Company, San Francisco.
3. Davis J and Sherer K, (1994): Applied Nutrition and Diet Therapy for Nurses, 2<sup>nd</sup> Edition, W.B. Saunders Co.
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9. Sri Laxmi B. (2003): Dietetics, New Age International Pvt. Ltd., Mumbai.
10. Williams S.R. (1993): Nutrition and Diet Therapy, 7<sup>th</sup> Edition, Times Mirror / Mosby College Publishing, St. Louis.

## Semester V Dietetics Applications

### Objectives:

The course enables the students to:

1. Understand the modifications in nutrient and dietary requirements for various diseases.
2. Develop skills and techniques in the planning and preparation of therapeutic diets for various diseases.
3. Learn the use of Exchange list.

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
0254	Dietetics Applications	4	-	4	25	75	100

Module	Objective	Content	Assessment
1	This module will enable students to 1. To know the market trends in nutritional supplements 2. To apply the principles of diet therapy in modifying normal diet 3. Develop ability to plan diets for various CVD's	<b>Therapeutic modifications in cardio vascular diseases</b> - Hypertension - Atherosclerosis - Obesity and hypertension - Obesity and CVD	25 Marks  Planning and cooking
2	This module will enable students to 1. To know the market trends in nutritional supplements 2. To apply the principles of diet therapy in modifying normal diet 3. Develop ability to plan diets for various Renal diseases	<b>Therapeutic modifications in Renal Diseases</b> - Acute renal failure - Chronic renal failure - Nephrotic syndrome - Renal Calculi	25 Marks  Planning and cooking
3	This module will enable students to 1. To know the market trends in nutritional supplements 2. To apply the principles of diet therapy in	<b>Therapeutic modifications in Endocrine disorders</b> <b>Diabetes Mellitus –</b> - Type 1 - Type 2– Different types of insulin	25 Marks  Planning and cooking

	<p>modifying normal diet.</p> <p>3. Develop ability to plan diets for various endocrine diseases</p>	<ul style="list-style-type: none"> <li>- Obesity and Type 1 Diabetes Mellitus</li> <li>- Obesity, DM and CVD</li> </ul>	
4	<p>This module will enable students to</p> <ol style="list-style-type: none"> <li>1. To know the market trends in nutritional supplements</li> <li>2. To apply the principles of diet therapy in modifying normal diet.</li> <li>3. Develop ability to plan diets for various metabolic stress conditions</li> </ol>	<p><b>Therapeutically modified recipes for Metabolic stress</b></p> <ol style="list-style-type: none"> <li>1. Nutrient dense recipes for <ul style="list-style-type: none"> <li>- Cancer</li> <li>- HIV</li> <li>- Burn</li> </ul> </li> <li>2. Introduction to Enteral feeding</li> </ol>	<p>25 Marks</p> <p>Planning and cooking</p>

**Reference:**

1. Anita F.P. (1989): Clinical Dietetics and Nutrition, Oxford University Press, Bombay.
2. Cataldo D.W. (1995): Nutrition and Diet Therapy - Principles & Practice, West Publishing Company, San Francisco.
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**Semester V**  
**Recent Advances in Nutrition and Dietetics**  
**(Seminar)**

**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.

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
0255	Recent Advances in Nutrition and Dietetics (Seminar)	2	-	2	50	-	50

Students have to

- Refer to the research work from journals, done in the last 10 years
- Prepare a power point 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
- <b>Total</b>	<b>50</b>

## WOMEN'S STUDIES

### Objectives:

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

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
9356	Women's Studies	2	2	-	50	-	50

Module No	Objectives	Content	Evaluation
			25 Marks
1. Demographic profile of women in India and towards change	<p>This module will enable students to:</p> <ol style="list-style-type: none"> <li>1. Understand the demographic profile of women in India</li> <li>2. To create awareness about the role and importance of media portraying women</li> </ol>	<ol style="list-style-type: none"> <li>1. Sex Ratio</li> <li>2. Health</li> <li>3. Education</li> <li>4. Employment</li> <li>5. National Policy of Empowerment of women 2001</li> <li>6. The role and importance of media portraying women</li> </ol>	<p>Debate</p> <p>Discussion</p> <p>Presentation</p>

Module No	Objectives	Content	Evaluation
			25 Marks
2. Women, work and development	<ol style="list-style-type: none"> <li>1. To understand the present situation and changes in the status of women.</li> <li>2. To create awareness about Governmental policies and strategies for women's development and role of voluntary organizations and NGO's in women's development.</li> </ol>	<ol style="list-style-type: none"> <li>1. Women in the unorganized sector.</li> <li>2. Women in the Organized sector.</li> <li>3. Legal provision for the protection of working women</li> <li>4. Governmental policies and strategies for women's development</li> <li>5. Role of voluntary organizations and NGO's in women's development</li> </ol>	<p>Discussion</p> <p>Presentation</p>

## **References:**

- Bansal S. (2007): Women in Developing Countries, Sumit Enterprises, New Delhi.
- Bhadauria M (1997): Women in India (Some Issues), APH Publication, New Delhi.
- Chaudhuri M (ed.) (2004): Feminism In India, Women Unlimited, New Delhi.
- Ghadially Rehana (ed.) \*1998): Women In Indian Society: A Reader Sage Publications, New Delhi.
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- 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 currently prevailing in India 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.

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
0761	Community Nutrition	4	2	2	25	75	100

#### Community Nutrition Theory

Module	Objectives	Content	Evaluation
1	<p><b>This module will enable students to:</b></p> <ol style="list-style-type: none"><li>1. Understand the major nutritional problems and the vicious poverty-malnutrition interaction contributing to it</li><li>2. Know the different methods of assessment of nutritional status of a community</li></ol>	<p><b>Introduction to Nutrition-</b></p> <ol style="list-style-type: none"><li>1. Definition and characteristics of a community</li><li>2. Major Nutritional problems in India &amp; factors contributing to it (PEM, Nutritional Anemia, IDD, Vitamin A and D deficiency, Metabolic Syndrome)- explain the paradox of malnutrition.</li><li>3. Anthropometric, Biochemical, Clinical and Dietary surveys (including sampling techniques in brief)</li></ol>	<p>Quiz</p> <p>Assignments</p> <p>Projects</p>

		Vital statistics	
2	<p><b>This module will enable students to:</b></p> <p>1. Know about the intervention strategies and programmes undertaken by the Governmental and certain National and International agencies to combat malnutrition</p> <p>2. Understand principles of the strategies and methods that can be used to plan nutrition education programmes for selective population</p>	<p>1. Supplementary feeding programmes (MDMP, School Lunch Programmes, ICDS, NNAPP, NIDDCP, Vitamin A prophylaxis programme)</p> <p>Food Scurity Bill.</p> <p>1. Green and white revolution</p> <p>2. Agencies and their role in Nutrition Programmes – NIN, ICMR, ICAR, FAO WHO, UNICEF, CARE.</p> <p>3. Individual strategies – Woman-Woman, Child to Child.</p> <p>4. Community strategies- community contact, rural school system.</p> <p>5. Principles of Nutrition and health education techniques</p> <p>6. Exhibition, Demonstration and Dramatization.</p>	<p>Quiz</p> <p>Assignments</p> <p>Projects</p>

## References

1. Rosalind. S, Gibson 2<sup>nd</sup> Edition (2005) Principles of Nutritional Assessment Oxford University Press.
2. Isobel Contento, 2<sup>nd</sup> edition (2011) Nutrition Education: Linking Research, Theory, and Practice:. Jones and Bartlett Publishers International.
4. 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	<p><b>This module will enable students to:</b></p> <p>1. Practically assess and interpret nutritional status of an individual or small group</p>	<p>1. Anthropometry: Weight and height measurements - Interpretation using WHO standards for children, Growth chart for infants BMI for adults (for Asians)</p> <p>2. Interpret a mock biochemical report of a malnourished child</p> <p>3. Clinical signs (Group 1 –WHO classification)</p> <p>4. Visit to aanganwadi, ANC, Hospital for practical observations</p> <p>5. Dietary survey-24-hr recall, calculations and interpretation</p>	<p>25 Marks</p> <p>- Taking Anthropometric measurements</p> <p>- case study</p> <p>- PPT group presentation</p> <p>- Report on Visits to ANC and Anganwadi</p>
4	<p><b>This module will enable students to:</b></p> <p>1. Plan, conduct and evaluate a nutrition education programme in the community</p>	<p>1. Conduct a baseline survey to find out the need and gaps in knowledge.</p> <p>2. Plan and conduct an appropriate nutrition education programme</p> <p>3. Evaluate the programme through a feedback mechanism</p>	<p>25 Marks</p> <p>- Conduct Diet Survey</p> <p>- Conducting lectures and demonstrations</p> <p>- case study</p> <p>- PPT group presentation</p>

## Semester VI

### Nutrition, Exercise and Fitness

**Objectives:**

The course enables the students to:

1. Understand the relationships between physical activity, fitness and health.
2. Acquire knowledge about the different components of physical fitness.
3. Prescribe exercise.
4. Understand the relation between nutrition and physical activity.
5. Learn the steps involved in stress management.

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
0262	Nutrition, Exercise and Fitness	4	2	2	25	75	100

### Nutrition, Exercise and Fitness Theory

Module	Objective	Content	Assessment
1	This module will enable students to 1. Understand the concept of physical fitness, its components and importance 2. Know the training effects on components of physical fitness 3. Suggest exercise guidelines for normal adults	<b>Wellness and physical fitness</b> 1. Concept of wellness 2. Concept of physical fitness and its components 3. Principles of physical training 4. Exercise guidelines for normal adults based on principles of physical training 5. Stress and Stress Management Techniques	25 Marks  Quiz

Module	Objective	Content	Assessment
2	This module will enable students to: 1. Understand the relation between nutrition and physical activity 2. Suggest guidelines for hydration during physical activity 3. Have knowledge	<b>Nutritional requirements of physically active</b> 1. Macronutrient requirement of physically active 2. Micronutrient requirement of physically active 3. Fluid balance and rehydration 4. Ergogenic aids	25 Marks Quiz  Presentation

	about various ergogenic aids used		
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**References:**

1. Anita B (1998), The Complete Guide to Sports Nutrition, A S C Black, London.
2. Catherine G.R.J. – Nutrition and strength Athlete.
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6. Robergs R.A. and Roberts S.O. (2000) Fundamental principles of exercise physiology for fitness, performance and health, Mcgraw Hill.
7. Sandhu G.S. and Mann N.S. (2000) – Sports Excellence a Psychological Pursuit, Friends Publication (India).
8. Wolinsky I. (1998), Nutrition in Exercise and Sport, C R C Press.
9. Alexandria V. (1981) : Exercising for Fitness, Time Life Books.
10. Briggs G.M. (1984) – Nutrition and Physical Fitness, Rinchart and Winston Inc New York.
11. Smolin L.A. (1994) – Nutrition – Science and Applications, M.B. Fort Worth, Saunders College Publishing.
12. Davidson S. (1986) – Human Nutrition and Dietetics – Edinburgh, ELBS/Churchill Livingstone.
13. Katch and Katch – Exercise Physiology

**Nutrition, Exercise and Fitness Practical**

**Objectives:**

**The course enables the students to-**

1. **Develop skills and techniques of assessing physical fitness.**
2. **Have knowledge about exercises for improving physical fitness.**
3. **Plan and prepare diets for physically active.**

<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>3</b>	This module will enable students to <ol style="list-style-type: none"> <li>1. To understand the concept of physical fitness, its components and its importance</li> <li>2. Know the training</li> </ol>	<b>Assessment of physical fitness</b> <ol style="list-style-type: none"> <li>1. Body Composition</li> <li>2. Assessment of flexibility Test for flexibility</li> <li>3. Assessment of muscular</li> </ol>	25 Marks Fitness testing and Evaluation

	<p>effects on components of physical fitness</p> <p>3. To suggest exercise guidelines for normal adults</p>	<p>strength and endurance</p> <p>4. Assessment of aerobic fitness</p> <p>5. Demonstration of exercise to develop Flexibility Endurance Strength Cardio respiratory fitness</p>	
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<b>Module</b>	<b>Objective</b>	<b>Content</b>	<b>Assessment</b>
<b>4</b>	<p>This module will enable students to:</p> <ol style="list-style-type: none"> <li>1. Understand the relation between nutrition and physical activity</li> <li>2. Suggest guidelines for hydration during physical activity</li> <li>3. Have knowledge about various ergogenic aids used</li> </ol>	<p><b>Planning and preparing meals for sportsmen</b></p> <p>Pre game meal Post game meal Sports drink</p> <p><b>Planning of a day's diet for:</b></p> <ol style="list-style-type: none"> <li>(i) Long distance runner</li> <li>(ii) Basketball player</li> <li>(iii) Gymnast</li> <li>(iv) Body builder</li> </ol> <p><b>Ergogenic aids</b></p> <p><b>Stress Management</b></p>	<p>25 Marks</p> <p>Planning and Orals</p> <p>Report of survey on Ergogenic aids</p> <p>Presentation on Stress Management</p>

### References:

1. Alexandria V. (1981) : Exercising for Fitness, Time Life Books.
2. Anita B (1998), The Complete Guide to Sports Nutrition, A S C Black, London.
3. Briggs G.M. (1984) – Nutrition and Physical Fitness, Rinchart and Winston Inc New York.
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7. Inge K and Robert C – Food for Sport Cook Book.
8. Kansal, Devinder K(1996), Test and Measurement in Sports and Physical Education, DVS Publication.

9. Mc Ardle, William D, Katch, FrankI, Katch, Victor L., (2007)Exercise Physiology, 6<sup>th</sup> ed.
10. Mc.Ardle, William D – Exercise Physiology, Energy, Nutril and Human Performance.
11. Robergs R.A. and Roberts S.O. (2000) Fundamental principles of exercise physiology for fitness, performance and health, Mcgraw Hill.
12. Sandhu G.S. and Mann N.S. (2000) – Sports Excellence a Psychological Pursuit, Friends Publication (India).
13. Sharkley, Brian J,(2002), Fitness and Health Human Kinetics, 5<sup>th</sup> ed.
14. Smolin L.A. (1994) – Nutrition – Science and Applications, M.B. Fort Worth, Saunders College Publishing.
15. Wolinsky I. (1998), Nutrition in Exercise and Sport, 3<sup>rd</sup> ed.C R C Press.

**Semester VI**  
**Behavior and Lifestyle Management**

**Objectives.**

**The course enables students to -**

1. Understand the concept of counseling, role and characteristic of nutritional counselor
2. Develop communication skills essential for nutritional counseling.
3. Interact effectively with client/patient.
4. Know the impact of lifestyle on diseases

Code No.	Subject	TC	Th	Pr	Int	Ext	Total
0263	Behavior and Lifestyle Management	4	-	4	25	75	100

Module	Objective	Content	Assessment
1	The course enables the student to: - Understand the significance of nutritional counseling and role as a nutritional counselor - Understand the usefulness of counseling models - Understand the readiness to change assessment tools - Understand the client	<b>Nutrition Counselling and Counseling process</b> 1. Nutritional Counselling 2. Theoretical approaches to counseling 3. Nutrition Counseling goals 4. Nutritional Counseling Models 5. Nutritional Counseling Protocols 6. Review of client assessment 7. Preparation of questionnaire with the following aspects conducting a survey and evaluating the same	25 Marks Preparation of aids for Counseling Preparing a Questionnaire

Module	Objective	Content	Assessment
2	The course enables the student to: - Understand and use in communication skills effectively - Understand the impact of communication dynamics on nutrition interventions - Evaluate effectiveness of counselor's non-verbal	<b>Communication Skills and basic counseling responses</b> 1. Stages of skill development 2. Model of communication 3. Understanding an effective counseling relationship between counselor and client 4. Responses and Skills required for counseling	25 marks Quiz

	communication - Identify common messages form body languages - Identify communication roadblocks	5. Respondent Driven Interview	
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Module	Objective	Content	Assessment
3	The course enables the student to: - Explain the advantages and disadvantages of group counseling. - Describe the selected techniques in organizing group counseling. - Implement a behavior change group counseling sessions	<b>Group counseling, educational intervention and relapse prevention</b> - Group counseling - Advantages and disadvantages - Group process and management - Evaluation of group interaction	Counseling sessions (5 Marks)

Module	Objective	Content	Assessment
4	The course enables the student to: - Use counseling procedures - Employ interpretational skills - Employ goal setting process - Tailor educational interventions	<b>Activities and Presentation</b> - Preparation of Audio Visual aids - Mock Counseling Sessions	Counseling sessions (5 Marks)

### References

- Holli Betsy B., Calabrese Richard J., (1998): Communication and Education Skills for Dietetics Professionals, 3<sup>rd</sup> Edition, Lippincott Williams and Wilkins, Philadelphia, USA.
- Bauer Kathleen, Sokolik Carol, (2002): Basic Nutrition Counseling Skill Development, Wadsworth Thomson Learning, USA
- Reiff DW, Reiff KKL.,(1992): Eating Disorders: Nutrition Therapy in Recovering Process. Gaithersburg, MD; Aspen Publishers.
- Gable Judy (1997): Counseling Skills for Dieticians, Blackwell Science, London
- Burnard P.(1984): Counseling Skills for Health Professionals, Chapman and Hall, London.
- Hunt P. & Hilsdon M. (1996): Changing Eating and Exercise Behavior, Blackwell Science, Oxford.
- Jacobs M. (1988): Psychodynamic Counseling in Action, Sage Publications, London.
- Bolton R. (1986): People Skills, Prentice Hall Sydney.
- Russell J, Dexter G. & Bond T. (1992): Differentiation between Advice Guidance, Befriending, Counseling Skills and Counseling, British Association for Counseling, Rugby

**Semester VI**  
**Professional Applications in Nutrition and Dietetics**  
**(Internship)**

**Objectives:**

The course enables the student,

1. To get hands on experience in working in thrust areas.
2. To develop confidence and enhance skills.
3. To develop communication skill and interpersonal relations.

Code No.	Course	TC	Th	Pr	Int	Ext	Total
0264	Professional Applications In Nutrition and Dietetics (Internship)	8	-	8	100	100	200

**Duration: 30 working days**

**The students should complete training in any of the following:**

1. Hospitals
2. NGO'S involved in Community Nutrition and Health.
3. Health Centers
4. Consultants

**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.**