SNDT Women's University

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Syllabus – B Sc.
(Food Science and Nutrition)

SNDT Women's University
1, Nathibai Thackersey Road,
Mumbai 400 020

Revised – 2008

Specialization - Food Science & Quality Control

Eligibility: The students passing higher secondary examinations in Home Science/ Arts/ Commerce/ science from any recognized board, with one paper of English.

Objectives:

1. To learn the various scientific aspects of food
2. To understand the various techniques for preserving the food, & develop useful food products.
3. To understand the basic principle of management for food industry.
4. To understand biochemical reactions taking place in the body and their relationship to nutrition.
5. To familiarize the students to various equipment packaging & manufacturing useful in the industry.

SCHEME: Semester I

	Subject	L	Cr	P/T	D	TP	INTERNAL	P/V	T
1	English	3	4	2	2.5	75	25		100
2	Applied Science (Th)	4	4	-	2.5	75	25		100
3	Applied Science (Pr)	-	2	4	-	-	25	25	50
4	Physical & Analytical Chemistry (Th)	4	4	-	2.5	75	25		100
5	Physical & Analytical Chemistry (Pr)	-	2	4	-	-	25	25	50
6	Human Ecology & Family Science-I	4	4	-	2.5	75	25		100
7	Entrepreneurship	-	2	4	-	-	50	-	50
	TOTAL	**15**	**22**	**14**		**300**	**200**	**50**	**550**

SCHEME: Semester II

	Subject	L	Cr	P/T	D	TP	INTERNAL	P/V	T
1	English	3	4	2	2.5	75	25		100
2	Physiology and Reproductive Health(Th)	3	3	-	2	50	25		75
	Physiology and Reproductive Health(Pr)	-	1	2		-	25		25
3	Nutrition and Food Science (Th)	4	4	-	2.5	75	25		100
4	Nutrition and Food Science (Pr)	-	2	4	-	-	25	25	50
5	Human Ecology & Family Science-II	4	4	-	2.5	75	25		100
6	Environment Studies	4	4	-	2.5	75	25		100
	TOTAL	**18**	**22**	**8**		**350**	**175**	**25**	**550**

L= No. of Lectures/week, P/T=Practical/ Tutorial in hrs, D= Duration of Theory paper for Examination in hrs, TP= Theory Paper- marks, Internal= Term Work- Marks, P/V= Practical/ Viva Voce- marks, T= Total

SCHEME: Semester III

	Subject	L	Cr	P/T	D	TP	INTERNAL	P/V	T
1	Food Microbiology & Preservation (Th)	4	4	-	2.5	75	25		100
2	Food Microbiology & Preservation (Pr)	-	2	4	-	-	25	25	50
3	Organic & Inorganic Chemistry	4	4	-	2.5	75	25		100
4	Nutrition for life Span (Th)	4	4	-	2.5	75	25		100
5	Nutrition for life Span (Pr)	-	2	4	-	-	25	25	50
6	Food Commodities	4	4	-	2.5	75	25		100
7	Culinary Science	-	2	4	-	-	50	-	50
	TOTAL	**16**	**22**	**12**		**300**	**200**	**50**	**550**

SCHEME: Semester IV

	Subject	L	Cr	P/T	D	TP	INTERNAL	P/V	T
1	Food Hygiene & Sanitation	4	4	-	2.5	75	25		100
2	Diet Therapy	4	4	-	2.5	75	25		100
3	Food Science & Sensory Evaluation (Th)	4	4	-	2.5	75	25		100
4	Food Science & Sensory Evaluation (Pr)	-	2	4	-	-	25	25	50
5	Food Analysis	-	2	4			25	25	50
6	Biochemistry (Th)	4	4	-	2.5	75	25		100
7	Biochemistry (Pr)	-	2	4	-	-	25	25	50
	TOTAL	**16**	**22**	**12**		**300**	**175**	**75**	**550**

SCHEME: Semester V

	Subject	L	Cr	P/T	D	TP	INTERNAL	P/V	T
1	Post Harvest Technology -1 (Th)	4	4	-	2.5	75	25		100
2	Post Harvest Technology –I (Pr)	-	2	4	-	-	25	25	50
3	Food Science & Quality Control (Th)	4	4	-	2.5	75	25		100
4	Food Science & Quality Control (Pr)	-	4	8			50	50	100
5	Food Processing & Application	-	4	8	-	-	50	50	100
6	Food Equipment & Food Plant Mgt.	4	4	-	2.5	75	25		100
	TOTAL	**12**	**22**	**20**		**225**	**200**	**125**	**550**

SCHEME: Semester VI

	Subject	L	Cr	P/ T	D	TP	INTERNAL	P/V	T
1	Post Harvest Technology-II	4	4	-	2.5	75	25		100
2	Food Packaging & Labelling	4	4	-	2.5	75	25		100
3	Food Toxicology & Industrial Waste Mgt (Th)	4	4	-	2.5	75	25		100
4	Food Toxicology & Industrial Waste Mgt (Pr)	-	4	8			50	50	100
5	Application of current trends	-	2	4	-	-	50		50
6	Project	-	4	8			50	50	100
	TOTAL	**12**	**22**	**20**		**225**	**225**	**100**	**550**

N.B.: For theory- One compulsory unit test of 25 marks and one assignment/ project of 25 marks

Detailed Syllabus Semester One:

Faculty Name	**Home Science**
Course Name	
Subject Name	**Communication skills in English**
Total marks assigned for Lectures	**75 Theory + 25 Term Work**
Total credit for Lectures	**4**
Total no. of periods / semester for Lectures	**46 + 14 = 60**
Total Lectures/ week	**3 hrs**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of hrs/ semester for practical	**-**
No. of tutorial/ week	**2 per batch**
No. of tests during the semester	**2 tests**
Final Examination duration	**2½ Hrs**
Final Practical Examination Duration	**-**

Objectives:

- To enable students to participate independently in conversations and discussions conducted in English
- To familiarize students with basic letter patterns
- To train the students in report writing and presentation of the same
- To train the students in reading skills such as skimming, scanning and drawing inference from a text
- To enable students to read literary text with understanding and enjoyment

Course Content:

Block No.	Topic and Details	No. of Lectures assigned	Weightage %
Block I	**Basics of Good Communication Skills**	**01**	**-**
Block 2	**Reading and Study skills** Unit 1: Skimming/Scanning Unit 2: Note making Unit 3: Comprehension Skills Unit 4: Reading a passage with intonation and voice modulation	**06**	**15**
Block 3	**Report writing (1)** Unit 1: Basics of good reporting Unit 2: Reporting an event Unit 3: Writing minutes of a meeting	**05**	**15**

Block 4	**Four basic letter patterns** Unit 1: Application letters Unit 2: Regret letters Unit 3: Appeal/Request letters Unit 4: Complaint letters	**10**	**20**
Block 5	**Summarizing/Précis writing**	**04**	**10**
Block 6	**Conventions of conversation** **Unit One: Etiquette** **Unit Two: Asking questions/making suggestions etc** **Unit Three: Writing a dialogue and role play**	04	10
Block 7	**Literary Appreciation of stories 1 – 8 from the Prescribed Text 'Let's Go Home and Other Stories'** Unit 1: Critical responses to stories /Expressing personal responses Unit 2: Reference to context Unit 3: Vocabulary building Question paper will be set with internal options	16	30 (15) (10) (5)
Block 7	**Practical sessions for reading/writing and verbal skills to be conducted in tutorials**	**14**	
	TOTAL	**60**	**100**

Prescribed Texts:

First 8 stories from *Let's Go Home and Other Stories* (ed). Meenakshi Mukherjee . Orient Longman Private Ltd.

Tasks selected from *Interface. A textbook of Compulsary English* by Dr Ranu Vanikar and Dr Katayun Palia. Vikas Publishing House Ltd. Email: orders@vikas.gobookshopping.com Website: www.gobookshopping.com

EVALUATION:

(1) One written paper (unit test) of **25** marks
(2) Continuous assessment of oral/verbal skills for 25 marks.
(3) Final (external) examination of **75** marks at college level.
(4) Total marks -Internal **25** + External **75** = **100**

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Nutrition**
Subject Name	**Applied Science I**
Total marks assigned for Lectures	**TP 75 + Internal 25**
Total credit for Lectures	**4**
Total no. of periods / semester for Lectures	**56**
Total Lectures/ week	**4**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of hrs/ semester for practical	**-**
No. of Tutorial/ week	
No. of tests during the semester	**2**
Final Examination duration	**2½ Hrs**
Final Practical Examination Duration	**-**

Objectives-

1) To inculcate scientific temper in the students and develop scientific attitude.
2) To acquire basic knowledge of various biological processes.
3) To acquaint the students with fundamentals of Physical Sciences enabling them To apply in day To day life.
4) To help the students to understand importance of Chemistry and Physics with respect To food, textile, medicine, agriculture and industries.
5) To impart knowledge of applications of biological process in day To day life.

Sr. No.	Topic and Details	No. of Lectures assigned	Weightage in% %
1	**Block 1) Revision of Basic Chemistry**	**03**	
2	**Block 2) Introduction To Polymers and Their Application** Unit 1: Introduction, Monomeric Unit, Polymerisation- Addition, Condensation, Classification- Natural and Synthetic, Organic and Inorganic, Thermoplastic and Thermosetting, Functionality of monomers with illustrations. Unit 2: Some important polymers and their uses. Man-made Polymers- Polythylene, Polypropylene, Polyvinyl Chloride.	**04**	**8**
3	**Block 3) Perfumes And Cosmetics** Unit 1: Perfumes- General, Formulation- Emulsifier solid. Sources of perfumes- plant oils, flower oils, animal secretions, and chemical substances (eg. Khus, Sandalwood, Eucalyptus, Rose, Jasmin, Orange, Nutmeg) and uses.	**05**	**6**

	Unit 2: Cosmetic Products:- Definition, skin cream and lotions, General, Formulation		
4	**Block 4) Dyes** Unit 1: Definition, chromophore, auxochrome, classification based on application. Unit 2: Uses of dyes of foods, textiles, medicine, cosmetics, industries and their hazards.	**02**	**6**
5	**Block 5) Drugs and Pharmaceuticals** Unit 1: Introduction To common drugs, properties of drugs. Unit 2: Common drugs: Meaning of terms with one example- Analgesic, antacid, antibiotics, anti-inflammaTory, diuretics, laxatives, sulfa drugs. Unit 3: Mode of action (in brief) uses and hazards of Aspirin, Paracetamol, Sulphanilamide.	**06**	**14**
6	**Block 6) Soaps and Detergents** Unit 1: Chemistry of soaps and detergents.	**03**	**6**
7	**Block 7) Red Listed Chemicals** Unit 1: Red listed chemicals used in day To day life and possible routes of contamination. Introduction, types, hazards- Food additives (synthetic) - artificial sweeteners, preservatives and stabilizers of food. Agrochemicals- Insecticides, pesticides.	**04**	**6**
8	**Block 8) Cell** Unit 1: Introduction To cell, types of cell (Eukaryotes, Prokaryotes) their general characteristics with examples. Unit 2: Ultra microscopic structures of animal cell. Cell organelles, their structure and functions. Unit 3: Types of cell division. MiTosis and Meiosis. (brief introduction)Significance of each type of cell division.	**05**	**10**
9	**Block 9) Introduction To Micro-organism** Introduction, General Characteristics, Important classes and Examples of each group for the following micro-organisms Unit 1: Bacteria Unit 2: Algae Unit 3: Fungi Unit 4: ProTozoa Unit 5: Virus	**05**	**14**

10	**Block 10) Genetics and Heredity** Unit 1: Mendel's laws- Monohybrid and Dihybrid cross Unit 2: Structure of DNA and types of RNA Unit 3: Protein Synthesis Unit 4: Mutation Unit 5: Chromosomes and their structure- auTosomes and sex chromosomes. Abnormality due To chromosomes number **Block 1)**. Unit 6: Sex determination in Human beings, sex linked diseases (Hemophilia and color blindness)	**09**	**14**
11	**Block 11) Genetic Engineering and Biotechnology** Unit 1: Introduction To Biotechnology and Genetic Engineering Unit 2: Gene Cloning-Introduction and methodology in brief. Unit 3: Applications of Genetic Engineering in plants- Insects and virus resistant plants. Plants with improved characters (in brief) Unit 4: Applications of Genetic Engineering in Human Medicine and Pharmaceuticals- Thallessemia, Oncogenes, Interferon, production of growth hormones and Human insulin. (in brief)	**07**	**10**
12	**Block 12) Immunology** Unit 1: Introduction To Immune system and types of immunity Unit 2: Antigen and antibody reactions and their assays {in brief)	**03**	**6**
		56	**100**

List of Reference-

1. Gowarikar V.R., Viswanathan N.N., Jaydev S. (1990): Polymer Science- Wiley Eastern Ltd.
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3. Poucher W.A.: Perfumes, Cosmetics and soaps (Vol. I and II)
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7. Dr. H.P. Tipnis, Dr. A.S.Dhake (1999): Pharmaceutical Chemistry-II, Vrinda Publications, M.G. Road, Jalgaon.
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27. Kumball J.W. (1990): Introduction To immunology, Mcmillan Publishing Co.
28. Coleman R.M., Lombard M.F. and Sicord R.E. (1992): Fundamental Immunology, W.C.Brown Publishers.

Detailed Syllabus

Faculty Name	Home Science
Course Name	Food Science and Nutrition
Sublect Name	Applied Science-II
Total marks assigned for Lectures	-
Total credit for Lectures	-
Total no. of hours/ semester for Lectures	-
Total Lectures/ week	-
Total Practical/week	4
Total marks assigned for Practical	25 marks for TW and 25 marks for viva-voce
Total credits for practical	2
Total no. ofhrs/ semester for practical	56
No. of tutorial/ week	-
No. of tests during the semester	2
Final Examination duration	-
Final Practical Examination Duration	2Hrs

Objectives:

1) To develop in students the ability to work systematically in laboratory
2) To develop in them the skill for simple chemical procedures.
3) To acquire knowledge of various micro organisms and develop required skills for the study of micro organisms.

Sr. No.	Topic and Details	No. of Lectures assigned
1	**Block 1)** Introduction to Chemistry Lab. Apparatus	04
2	**Block 2)** Acid Base Titration Neutralization of strong acid with strong base Neutralization of weak base with strong acid	08
3.	**Block 3**) pH determination of various solutions Acid, Base and Neutral (two household examples for each)	04

4.	**Block 4)** Viscosity Measurement Water, Oil, Shampoo by Ostwald's Viscometer.	**04**
5.	**Block 5)** Study and care of Microscope	**04**
6.	**Block 6)** Observation of motility of Bacteria by hanging drop method (E. coli and Proteus)	**06**
7.	**Block 7)** Observation of bacteria by the simple monochrome staining method (Hay infusion culture or milk)	**06**
8.	**Block 8)** Gramstain of bacteria in milk	**06**
9.	**Block 9)** To observe common pathogenic bacteria (any6-Permanent slides)	**04**
10.	**Block 10)** Observation of fungi on different food material and culture (PDA medium)	**02**
11.	**Block 11)** To observe common pathogenic protozoa (Permanent slides of entamoeba histolitica andplasmodium vivex	**02**
12.	**Block 12)** Study of medicinally important plants (project)	**02**
		56

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Quality Control**
Subject Name	**Physical and Analytical Chemistry (Th)**
Subject Code	
Total marks assigned for Lectures	**75 Theory + 25 Term Work**
Total credit for Lectures	**4**
Total no. of periods / semester for Lectures	**56**
Total Lectures / week	**4**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of periods /semester for practical	**-**
No. of tutorial / week	
No. of tests during the semester	**2**
Final Examination duration	**2 ½ Hrs**
Final Practical Examination Duration	**-**

OBJECTIVES :

1. To acquire fundamental knowledge of physical and analytical chemistry.
2. To understand various analytical methods.

CONTENTS :

Sr.No.	Topic and Details	No. of Lectures assigned	Weightage %
Block 1	**Introduction & Scope of Physical & Analytical chemistry**	**1**	**-**
Block 2	**Gravimetric Analysis** Common iron effect, Solubility product, Completeness of precipitation Complexions effect of acids, temperature and solvent upon Solubility of precipitin, super saturation and Precipitate Formation, re-precipitation.	**7**	**12**
Block 3	**Instrumental Method of Chemical Analysis** **Unit 1:** Potentiometry Brief mention of electrode, potential, quinhydrone glass, H meter, Applications. **Unit 2:** Conductometry – Definition of specific conductance, Equivalent conductance, types of conductivity cells, Principles of measurement of conductivity. **Unit 3:** Refractometry – Theory, Instrumentation, Abbe's refract meter Applications.	**8**	**15**
Block 4	**Solvent Extraction :-** Principle of solvent extraction. Distribution co-efficient, distribution ratio, relation	**7**	**12**

	BeInternaleen distribution co-efficient and distribution ratio solvenent extraction methods (i.e. ion association, salvation, chelate formation Applications.		
Block 5	**Chromatography** **Unit 1:** Principles of chromatography Types : i) Absorption, ii) Partition, iii) Column Chromatograph **Unit 2:** Principles, diameter of column, packing, loading of Sample, elution **Unit 3:** Ion Exchange Principle – Cat ion exchange, an ion exchange resins, Separation of metal ions, anion acids deionization of water. **Unit 4:** Paper and Thin layer chromatography detection of water. **Unit 5:** Gas liquid chromatography – Principle technique of GLC.	**8**	**15**
Block 6	**Instrumental Methods of Chemical Analysis** **Unit 1:** Colorimetric and spectrophotometer, Principle essential terms like Absorbance, Absorbility like tem, solvent, wave length. Essential components of colorimeter, difference between colorimeter and spectrophotometer filters. **Unit 2:** Polarimetry – Plane polarized light, Nickel prism, Optical activity. Application. **Unit 3:** Nephelometry and turbiodometry Introduction, Principle, difference between turbidometry And colorimetry applications.	**8**	**15**
Block 7	**Chemical Kinetics** Order or reaction, Molecularity, rate of reaction, factors Affecting rate. Effect of temperature on rate of reaction. Arrhenious equation.	**5**	**10**
Block 8	**Thermodynamics** Internal of energy, enthalpy first law and second law of thermodynamics, ethtrphy, free energy.	**5**	**10**
Block 9	**Catalysis –** Definition, Classification Homogeneous, heterogeneous, Acid base, Enzyme	**2**	**4**
Block 10	**Colloids**	**3**	**7**

Refrences :-

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3) Willard, Dean, Merit, Instrumental methods of chemical analysis, 6th edition.
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Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Quality Control**
Subject Name	**Physical and Analytical Chemistry (Pr)**
Subject Code	**-**
Total marks assigned for Lectures	**-**
Total credit for Lectures	
Total no. of periods / semester for Lectures	
Total Lectures / week	**-**
Total Practical / week	**2**
Total marks assigned for Practical	**50**
Total credits for practical	**2**
Total no. of periods /semester for practical	**56**
No. of tutorial / week	**4**
No. of tests during the semester	**-**
Final Examination duration	**-**
Final Practical Examination Duration	**-**

OBJECTIVES :

1. To develop basic skills in Physical and Analytical Chemistry
2. To understand the various principles of the instrumentation/analytical techniques

CONTENTS :

Sr.No.	Topic and Details	No. of Lectures Assigned
Block 1	Grayimetric Analysis To determine the amount of lead gravimetrically as lead chromate (Pbcr04) To determine the amount of Iron (Fe $^{3+}$) gravimetrically as Fe203 or To determine the amount of Nickel gravimetrically as Ni-DMG	2
Block 2	PH-metry Determine the PH value of a given weak acid by PH-metry titration with strong base Determination of PH values of various mixtures of sodium acetate and acetic acid in aqueous solutions and hence find out the dissociation constant of the acid	2
Block 3	Chromatography (One each of the following) Thin layer chromatography Paper chromatography Column chromatrography	3
Block 4	Molecular weight determination To determine the molecular weight of a substance weight its solution with different concentrations OR To determine the amount of carbonate and hydroxide from	1

	a given mixture by titrating it against a standard solution of HCL (0.05N)	
Block 5	Calorimetri	2
Block 6	Determination of relative fuel value (of ho kerosene to ethyl alcohol	
Block 7	To determine the heat of neutralization of strong acid or strong base	1
Block 8	Absorption	1
Block 9	Determination of order of reaction (Kinetics)	2

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Quality Control**
Subject Name	**Human Ecology and Family Science -I**
Subject Code	
Total marks assigned for Lectures	**100**
Total credit for Lectures	**4**
Total no. of periods / semester for Lectures	**56**
Total Lectures / week	**4**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of periods /semester for practical	**-**
No. of tutorial / week	
No. of tests during the semester	**2**
Final Examination duration	**2 ½ Hrs**
Final Practical Examination Duration	**-**

OBJECTIVE :

1. Students develop an understanding of self in relation to family and society.
2. They understand their roles and responsibilities as productive individuals, as members of family, community and society.
3. Students integrate learning across diverse domains and form linkages with other academic subjects of human ecology.

CONTENT :

Sr.No.	Topic and Details	No. of Lectures assigned	Weightage in %
BLOCK:			
UNIT – I:	Understanding oneself. A. Traits and Needs of Adolescence B. Changes during Adolescence and their influences on identity - Biological and Physical changes - Socio – Cultural context - Emotional changes - Cognitive changes - Cognitive changes. Record own emotions for a day. D. Nutrition and fitness during Adolescence - Record own diet for a day E. Time, money, management, energy, space. - Record one day's activities relating to time use and work. F. Fabric and apparel:	20	35

	- Record the fabric and apparel used in a day. G. Impact of Media and communication H. Communication Skills. Analyze owns communication and style. I. Living and working in a global society. Alcohol and dry abuse.		
UNIT-II	Understanding family, community and society. A. Family and community Relations B. Family, Community a. Health, nutrition and hygiene b. Activity, work and environment c. Resource availability and management d. Learning, education and extension. e. Textile heritage of India	15	25
UNIT - III	CHILDHOOD - Survival, Growth and Development - Nutrition, health and wellbeing - Care and education - Clothes and apparel - Children with special needs - Socio-cultural influence on children.	10	20
UNIT - IV	ADULTHOOD - Health and Wellness - Financial planning and management - Care and maintenance of fabrics and apparel - Perspectives in Communication - Citizen's responsibilities and rights	10	20

Detailed Syllabus

Faculty Name	**Faculty of Home Science**
Course Name	**Family Resource Management**
Subject Name	**Entrepreneurship**
Total Marks assigned for Lectures	**100 marks, (Pr 100)**
Total credits for Lectures	**-**
Total No. of hrs / semester for Lectures	**-**
Total lectures / week	**-**
Total Practical / week	**4 pd/week**
Total marks assigned for Practical	**50 marks**
Total credits for Practical	**2 cd**
Total No. of hrs / semester for Practical	**60 pd**
No. of Tutorials / week	**-**
No. of tests during the semester	**-**
Final Examination duration	**-**
Final Practical Examination Duration	**2 hrs (Viva)**

Objectives:

1. **To understand the concept of entrepreneurship**
2. **To gain knowledge about the world of entrepreneurs**
3. **To understand and cultivate entrepreneurial values, attitudes qualities and Desires.**
4. **To sow the seed of entrepreneurship in fertile minds**

- Marks to be given on projects presentations and information gathered according to sessions

Block. No	Topic and Details	No. of Lectures assigned	Marks assigned
1	**Introduction to Entrepreneurship:**	**4**	
	Unit 1- Definition, Concept and Need for entrepreneurship.		
	Unit 2- Types of entrepreneurs: Spontaneous, Motivated and Induced. (Teachers to explain and discuss case studies in class and invite different types of entrepreneurs to share the reasons and causes to entrepreneurship as a profession)		
	Unit 3- Kinds of Entrepreneurship: Proprietary, Partnership and Group Entrepreneurship. (Teachers to explain and discuss case studies in class and invite different kinds of entrepreneurs to share their experiences and talk about the advantages and disadvantages of proprietary partnership and group enterprises)		
2	**Exploring the World of Entrepreneurs:**	**8**	
	Unit 1- Legendary, Business, Social and Environmental,		

	Artistic and Aesthetic Entrepreneurs (Students to Document case studies and present using different audiovisual aids, may be individual or group activity)		
	Unit 2- Entrepreneurs in Shadows, failed entrepreneurship(Students to Document case studies and present using different audiovisual aids, may be individual or group activity)		
	Unit 3- New Internet Entrepreneurs. (Students to Document case studies and present using different audiovisual aids, may be individual or group activity)		
3	**Entrepreneurial Assets**	**8**	
	Unit 1- Entrepreneurial Values and attitudes.		
	Unit 2- Entrepreneurial Qualities.		
	Unit 3- Role demands and Requirements of Entrepreneurs.		
	Unit 4- Barriers to entrepreneurship. (Teachers to discuss and expose students to entrepreneurs to share their views and importance they give to particular entrepreneurial values, attitudes, qualities, role demands, requirements and Barriers)		
4	**Entrepreneurial Motivation**	**4**	
	Unit 1- Definition and Meaning of Achievement Motivation.		
	Unit 2- Need for Achievement Motivation		
	Unit 3- Motivating Factors: Internal and External.(Teachers to explain with examples)		
5	**Gaining Personal Focus and Developing Skills**	**20**	
	Unit 1- Communication Skills: Written and verbal communication. Unit 2- Barriers to communication. Unit 3- Developing Listening skills. (Teachers to explain the do's and don'ts of communication. Students to practice written and spoken office communication.		
	Unit 3- Personality Development: experts in the field to take sessions with students.		
	Unit 4- Gaining Personal Focus: Defining ones own Intentions, goals and purpose. <u>Internal Intentions:</u> (Students to share what her business will accomplish for her in her life, like prestige, economic independence etc. etc. <u>External Intentions:</u> (Students to describe how and who the business will help.		
6	**Entrepreneurial Ideas**	**8**	
	Unit 1- Creativity and Idea Generation		
	Unit 2- Searching and selecting Entrepreneurial Ideas.		
	Unit 3-Dynamics of project Identification.		
	Unit 4- Matching Project and enterprise. (Teachers to guide students)		

	Unit 5- Gather Information on what works, How to succeed and Mistakes to avoid. (Students to interact with particular business persons related to their identified project/ field of interest, have Brainstorming sessions and share Ideas and Strategies in class)		
	Unit 6 - Research select articles written about the industry related to their product or service.		
7	**Organize Visits** to Industries and Organisations helping entrepreneurship.	**8**	

References:

1. Bolton, B. & Thompson, J (2001): Entrepreneurs: Talent, Temperament, Technique, Replika Press Private Ltd, Delhi, 110 040, India.

2. Taneja, S. & Gupta, S.L. (1992) Entrepreneurship Development, New Venture Creation, Galgotia Publishing Company, New Delhi.

3. Hisrich, R.D. & Peters, M.P. (1995) Entrepreneurship: Starting, Developing and Managing a New Enterprise, Richard, D. USA, Irwin, INC.

4. Desai, V. (1991, 97, 99, Vol I & II,) Entrepreneurial Development, Himalaya Publishing House. Mumbai.

Detailed Syllabus :

Faculty Name	**Home Science**
Course Name	
Subject Name	**Communication skills in English**
Total marks assigned for Lectures	**75 Theory + 25 Term Work**
Total credit for Lectures	**4**
Total no. of periods / semester for Lectures	**46 + 14 = 60**
Total Lectures/ week	**3 hrs**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of hrs/ semester for practical	**-**
No. of tutorial/ week	**2 per batch**
No. of tests during the semester	**2 tests**
Final Examination duration	**2½ Hrs**
Final Practical Examination Duration	**-**

Objectives :

- To enable students to participate independently in conversations and discussions conducted in English
- To familiarize students with basic letter patterns
- To train the students in report writing and presentation of the same
- To train the students in reading skills such as skimming, scanning and drawing inference from a text
- To enable students to read literary text with understanding and enjoyment

Course Content:
Semester Two

Sr. No.	Topic and Details	No. of Lectures assigned	Weightage %
Block I	**Report writing (2)** Unit 1: Different kinds of reports/ Structure of report Unit 2: Preparing a project report _____ **Presenting a project report on a previously assigned topic**	**06**	**(10)** **(15)**

Block 2	**Writing a Resume** Unit 1: How to write a Resume Unit 2: How to write a covering letter for a job application Unit 3: Resume writing with ready made formats available on computer packages**.**	**06**	**15**
Block 3	**Devising a questionnaire and interpreting facts** Unit 1: How to prepare a simple questionnaire Unit 2: How to interpret data from surveys, tables, graphs etc, and to present the interpretation in coherent and lucid language Unit 3: Transfer of information from visual into verbal	**06**	**15**
Block 4	**Conventions of Social Interaction** Unit 1: Dialogue writing for formal/semi-formal situations etc Unit 2: How to Prepare for an interview Unit 3: Role Play/ mock interview sessions	**8**	**15**
Block 5	**Literary Appreciation of stories 9 – 15 from the Prescribed Text 'Let's Go Home and Other Stories'** Unit One: Critical Appreciation /Expressing personal responses Unit Two: Reference to context Unit Three: Vocabulary exercises Question Paper will be set with internal options	**18**	**30** **(15)** **(10)** **(5)**
Block 5	**Practice sessions for reading/writing and verbal skills to be conducted in tutorials** **TOTAL**	**14** **60 hours**	 **100 marks**

Prescribed Texts:

Stories 9 – 15 from *Let's Go Home and Other Stories* (ed). Meenakshi Mukherjee . Orient Longman Private Ltd.

Tasks selected from *Interface. A textbook of Compulsary English* by Dr Ranu Vanikar and Dr Katayun Palia. Vikas Publishing House Ltd. Email: orders@vikas.gobookshopping.com Website: www.gobookshopping.com

EVALUATION:

(1) One written paper (unit test) of **25** marks
(2) Continuous assessment of oral/verbal skills for 25 marks.
(3) Final (external) examination of **75** marks at college level.
(4) **Total marks -**Internal **25** + External **75** = **100**

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**B.Sc in Home Science**
Subject Name	**Physiology and reproductive Health (theory)**
Total marks assigned for Lectures	**100**
Total credit for Lectures	**4**
Total no. of hours/ semester for Lectures	
Total Lectures/ week	
Total Practical / week	
Total marks assigned for Practical	
Total credits for practical	
Total no. of hrs/ semester for practical	
No. of tutorial/ week	
No. of tests during the semester	**2**
Final Examination duration	**3**
Final Practical Examination Duration	

OBJECTIVES:

1. To enable the students to understand the basic structure and functions of human body.
2. To create awareness about common diseases/ disorders affecting each system.

Sr. No.	Topic and Details	No. of Lectures assigned	Weightage %
1	**Introduction:** - General terms – Anatomy, Physiology, symmetrical arrangement, anatomical position, Median plane/ lateral plane, Internal/external, Superficial/ deep, Superior/ Inferior, Anterior/ posterior - Basic human tissues - Introduction to human skeleton. Structure of bone and cartilage. - Classification of various types of muscles (in brief).	**05**	**7**
2	**Blood and Lymphatic system:** **(A) Blood:** - Physical characteristics, Blood volume, Composition of plasma, functions of plasma proteins - Red Blood cells: Formation and functions, haemoglobin, anaemia, Thalessemia. - White Blood cells: Types and functions, Importance of Haemogram, Leukaemia. - Platelets and mechanism of coagulation- Haemophilia. - Blood groups and Rh factor	**08**	**14**

	(B) Lymph: Lymphatic system - Spleen: Structure and functions.		
3	**Heart:** - Structure of Human Heart and its functions - Cardiac cycle - Blood Pressure - Pulse pressure Common diseases- Anemia, Leukemia, Hypertension, Ischemic heart disease	**05**	**10**
4	**Respiratory system:** - Respiratory organs and their functions - Lung volumes and lung capacities - Factors affecting efficacy of respiration. - Common diseases- T.B., Asthma, Bronchitis, Cough, Pneumonia, Sinusitis.	**07**	**10**
5	**Gastro- Intestinal system:** - Organs of the digestive system and their functions - Accessory organs of digestion- Liver, Gall Bladder, Pancreas - Common disorders- Dental caries, Vomiting, Diarrhoea, Constipation, Hyperacidity, piles.	**08**	**14**
6	**Excretory system:** **(A) Urinary System:** - Structure and functions of organs of urinary system (In brief) - Mechanism of urine formation - Common diseases- UTI and Renal stones (B) **Skin**: - Structure and functions - Regulation of body temperature - Common disorders- Burns, dandruff, acne.	**08**	**12**
7	**Nervous system:** - Structure and functions of different parts of Brain - **Special senses-** (A) Eye- Structure and functions - Common problems- Conjunctivitis, trachoma, glaucoma, cataract (B) Ear- Structure and functions - Common problems- Deafness, Vertigo, Motion sickness.	**06**	**8**
8	**Endocrine system:** - Listing of endocrine glands and Location, Functions of Thyroid, parathyroid, adrenaline, and pituitary glands.	**04**	**5**
9	**Reproductive system and reproductive health:** **Female reproductive system:** - Structure of female reproductive system.	**15**	**20**

	- Menstrual cycle, menarche and menopause - Fertilization - Breast: Structure and functions, Importance of breast hygiene and breast feeding. - Physiological changes in pregnancy, maternal adaptations in pregnancy. - Ante natal care. **Male Reproductive system:** - Structure of male reproductive system - Sex education - Contraception and Infertility - Sexually transmitted diseases- Syphilis, Gonnorhoea - AIDS		

References:

1) Guyton, A.C., Hall J.E. (1996) – Textbook of Medical Physiology (9th Edition) – Prism Books Pvt Ltd., Bangalore.
2) Concise medical Physiology - Chaudhari
3) API textbook of medicine
4) Textbook of Gynaecology - Datta
5) Winwood (1988) - Sear's Anatomy and Physiology for nurses- London, Edward Arnold.
6) Wilson (1989) –Anatomy and Physiology in Health and illness, Edinburgh, Churchill Livingstone.
7) Chatterjee Chandi Charan (1988) – Textbook of Medical Physiology, London, W.B. Saunder's Co.

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**B.Sc in Home Science**
Subject Name	**Physiology and reproductive Health (practical)**
Total marks assigned for Lectures	
Total credit for Lectures	
Total no. of hours/ semester for Lectures	
Total Lectures/ week	
Total Practical / week	**2**
Total marks assigned for Practical	**50**
Total credits for practical	**1**
Total no. of hrs/ semester for practical	
No. of tutorial/ week	
No. of tests during the semester	
Final Examination duration	
Final Practical Examination Duration	

OBJECTIVES:

1. To utilize the knowledge learnt to administer first aid for common emergency procedures.
2. To acquaint the students with basic principles of home nursing.

Sr. No.	Topic and Details	No. of Lectures assigned
1	Estimation of one's own Hemoglobin and blood group	**02**
2	- Demonstration of Peripheral smear of blood and pointing out various blood Cells. - CBC and its significance.	**08**
3	Method of estimating Pulse rate and blood pressure.	**05**
4	Urinary examination and significance	**07**
5	Basic principles of fst aid and home nursing with demonstration of various types of bandages and bandaging techniques. - **First aid in-** 3. Wounds- bruises, abrasions, lacerated wounds. 4. Foreign bodies in eye, ear, nose. 5. Control of Haemorrhage **6.** Simple and compound fracture **7.** Sprains, burns **8.** Treatment of common poisoning.	**08**
6	Method of Artificial respirations, External cardiac massage, CPR- Cardio pulmonary resuscitation.	

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Nutrition**
Subject Name	**Nutrition and Food Science-I**
Total marks assigned for Lectures	**75 Theory + 25 Term Work**
Total credit for Lectures	**3**
Total no. of periods/ semester for Lectures	**42 + 14**
Total Lectures/ week	**3**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of hrs/ semester for practical	**-**
No. of tutorial/ week	**1**
No. of tests during the semester	**2**
Final Examination duration	**2½ Hrs**
Final Practical Examination Duration	**-**

Objective-

1) To understand the importance of Nutrition.
2) To understand the role of food in health.
3) To know about the functions, deficiency and toxicity of nutrients.
4) To understand Malnutrition and its prevention.
5) To know the methods and principles involved in cooking.
6) To learn the selection, purchase and storage of foods.
7) To know about various adulterants and the methods of detecting them.
8) To learn the prevailing food laws, hygiene and sanitation of foods.

Sr. No.	Topic and Details	No. of Lectures assigned	Weightage %
1	**Block 1) Introduction to Nutrition-**		
	Unit 1: Terms used in Nutrition and Health. Definitions- Health, Nutrition, Nutrients, Foods, Diet, R.D.A., Balanced diet, Malnutrition, Under nutrition, Overnutrition, Optimum nutrition,	**03**	**6**
	Unit 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.	**03**	**6**
2	**Block 2) Food Preparation-**		
	Unit 1: Reasons for cooking, pre-preparation of foods, methods of cooking, medium of cooking, changes during cooking.	**03**	**4**

	Unit 2: Nutrient losses during processing and its prevention. **Unit 3:** Color pigments, effect of cooking on color pigments.		
3.	**Block 3) Basic Nutrition-** **Unit 1: WATER-** Functions, sources, requirements, water balance, dehydration (ORS) and toxicity, water as a cooking medium, effects of hard and soft water on cooking.	**02**	**4**
4.	**Unit2- CARBOHYDRATE-** Composition and classification, source, functions, requirements principles of cereal and sugar cookery (in brief)- effect of moist heat, effect of dry heat, identity of grains, gel formation, gluten formation, Pectic gels, crystallization, caramelization.	**05**	**8**
5.	**Unit 3- LIPIDS-** composition, sources, functions, requirements, deficiency and excess; fatty acids- essential and non-essential, SFA, USFA, MUFA, PUFA, significance of fatty acids, Rancidity, Emulsion, changes on heating, smoking point, frying point, melting point, processes- hydrogenation and rendering; factors affecting fat absorption (in brief)	**05**	**8**
6.	**Unit 4- PROTEINS-** composition, classification (complete, incomplete), sources, functions, requirements, deficiency, nutritional classification of amino acids (essential, Non-essential, semi-essential), mutual supplementation, Biological value, effect of heat on protein- denaturation, coagulation and Maillard reaction, foam formation, fermentation, Germination, Protein in Foods – Pulse, milk, egg, fish, meat.	**06**	**14**
7.	**Unit 5- ENERGY-** unit of energy, food as a source of energy, definition of calorie and joules, energy requirement and factors affecting it- BMR, RMR, SDA, growth and development, activity, effects of deficiency and excess.	**03**	**6**
8.	**Unit 6- MINERALS**- distribution in body, functions and sources, bioavailability and requirement, deficiency and excess of the following. Factors affecting (enhancing/ inhibiting) absorption (1) Calcium (2) Phosphorus (3) Iron (4) Iodine	**06**	**10**

9.	**Unit 7- VITAMINS-** classification, sources, functions, requirements, deficiency and excess of the following, Factors affecting availability of vitamins from the diet. (1) Vitamin A (2) Vitamin D (3) Vitamin E (4) Vitamin K (5) Vitamin C (6) Thiamin, Riboflavin, Niacin (7) Other B Complex Vitamins	**08**	**16**
10.	**Unit 8- FIBRE-** definition, types, sources, functions, importance in disease prevention.	**02**	**4**
11.	**Block 4) Malnutrition-** Definition, causes, symptoms, PEM-Kwashiorkor, Marasmus and its treatment	**02**	**4**
12.	**Block 5) Food Selection, Purchase and Storage-** Selection, Purchase and Storage of foods (in brief)	**02**	**2**
13.	**Block 6) Food Sanitation and Hygiene-** Importance for Health, Contamination of food though air, water, equipments, rodents and insects, cleaning materials; insect, pest and rodent control; practical rules for sanitation and hygiene.	**04**	**4**
14.	**Block 7) Food Adulteration and Food Laws-** Definition, Types, Common adulterants and home scale methods of detecting adulterants; Food Laws (only introduction) – PFA, BIS, AGMARK, FPO, HACCP	**02**	**4**
		56	**100**

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2. Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.
3. Nutrient Requirements and Recommended Dietary Allowances for Indians- I.C.M.R. Publication 1999.
4. Banarsidas B. (1995): Park & Park- Textbook of Preventive and Social Medicine, Jabalpur.
5. Robinsson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
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7. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.

8. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
9. Khanna K. (1998): The Art and Science of Cokking, Phoenix Publishing House Pvt. Ltd., New Delhi.
10. Blank F.C. (1999): Handbook of Food & Nutrition, Ago Botanical Publishers, Bikaner.
11. C.Gopalan, B.V. Ramasastri and S.C. Balasubramanian (1989)- Nutritive Value of Indian Foods. NINICMR Hyderabad 500 007
12. Kukude, S and others. Food Science, Sheth Publications.
13. Mudambi and Sheela Rao: Food science
14. Marion Benion & Hughes: Introductory Foods, *Macmillan New YORK*
15. Thangam Phillip: *Modern* Cookery
16. Srilaxmi: Food Science, New Age International
17. Usha Raina: Basic Food Preparation
18. Shakuntala Manay: Foods Facts and Principles, Wiley Eastern
19. Hinch J., Graves F., and Peckhams G.C: Foundation of Food Preparation.
20. Potter: Food Science,CBS publishers
21. Frazier W. & Westoff . D: Food Microbiology. Tata Mc Graw Hill.
22. Subbulaksmi G., and Udipi S.:Food Processing and Preservation

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Nutrition**
Subject Name	**Nutrition and Food Science-II**
Total marks assigned for Lectures	**-**
Total credit for Lectures	**-**
Total no. of periods/ semester for Lectures	**-**
Total Lectures/ week	**-**
Total Practical / week	**4**
Total marks assigned for Practical	**25 for Internal and 25 for Viva Voce**
Total credits for practical	**2**
Total no. of periods/ semester for practical	**56**
No. of tutorial/ week	**-**
No. of tests during the semester	**2**
Final Examination duration	**-**
Final Practical Examination Duration	**2 Hrs**

Objective-

1) To understand the concept of serving, exchange sizes and their cooked amount.
2) To learn the various cooking methods and medium of cooking.
3) To learn the use of food guide.
4) To know about the various color pigments present in food and the effect of processing on it.
5) To standardize different recipes based on portion size.

Sr. No.	Topic and Details	No. of Lectures assigned
1	**Block 1) Introduction to laboratory** Unit 1: Introduction to various equipments in laboratory (demonstration)	**04**
2	**Block 2) Introduction to weights and measure** Unit 1: Learn to weigh food ingredients, introduction to various means of measurement, method to measure fruits/ vegetables.	**06**
3	**Block 3) Methods and medium of cooking** Unit 1: Various methods of cooking (with examples of recipes) Unit 2: Advantages/ disadvantages of various methods, temperature and medium of cooking.	**04**
4	**Block 4) Food Guide and RDA** Unit 1: Introduction of food guide, its uses, RDA, Reference Man and Reference Woman.	**02**
5	**Block 5) Standardization of recipes and principles involved in**	

	recipe preparation (one serving) **Unit 1:Cereal Cookery-** **(A) Wheat-** standardization of various recipes made from wheat and wheat product. - Discussing various principles involved in cooking, changes occurring in nutrients especially protein, starch and color pigments. - Explain and discuss how to obtain desirable recipe e.g. how to obtain brown color in sheera. **(B) Rice-** standardization of various recipes made out of rice and rice products - Various principles involved in cooking and changes occurring while processing (discuss) - Explain and discuss desirable characteristics in various recipes e.g. maintain identity of grain in pulav - Extruded and Extraction products made from wheat and rice.	**04** **04**
7	**Unit 2:Pulses, legumes and oil seeds cookery-** soaking, germination, fermentation, role of oil seeds in cooking- thickening agent, flavouring agent, garnishing agent, identity of grain, base of masalas.	**04**
8	**Unit 3:Milk and milk products- S**tandardization of recipes - Standardizing methods for preparing paneer, curd, custard, basundi. - Effect of presence of other ingredients - Prevention of curdling - Principles involved during cooking - Changes during milk processing (Maillard reaction, Coagulation of Protein)	**04**
9	**Unit 4: Egg Cookery-** Preparation of hard and soft boiled egg, Denaturation of protein, foaming, role of egg in cookery.	**04**
10	**Unit 5:Vegetable cookery** - Standardization of various vegetable recipes - Principles involved in vegetable cookery - Various color pigments present in foods and Effect of heat, acid and alkali on color pigments and fiber - Changes during Vegetable processing - Prevention of loss of nutrient.	**04**

11	**Unit 6: Fruits cookery-** Standardization of Fruit recipes (squashes, jams, jellies); Pectin test; Changes during processing; Prevention of browning reaction.	**04**
12	**Unit 7: Sugar cookery-** standardization of sugar recipes; various strength of syrups (1 thread, 2 thread, etc.), factors affecting syrup strength, inversion of sugar.	**04**
13	**Unit 8:Miscellaneous-** **-** muthiya, handva, bhajiya, potato vada, etc. (one serving)	**08**
		56

Detailed Syllabus

Faculty Name	**Home Science**
Course Name	**Food Science and Quality Control**
Subject Name	**Human Ecology and Family Science –II**
Subject Code	
Total marks assigned for Lectures	**100**
Total credit for Lectures	**4**
Total no. of periods / semester for Lectures	**56**
Total Lectures / week	**4**
Total Practical / week	**-**
Total marks assigned for Practical	**-**
Total credits for practical	**-**
Total no. of hrs/semester for practical	**-**
No. of tutorial / week	
No. of tests during the semester	**2**
Final Examination duration	**2 ½ Hrs**
Final Practical Examination Duration	**-**

OBJECTIVES :

1. Students understand various streams of Human Ecology and family sciences
2. Students are able to integrate learning across various domains of human ecology

CONTENT :

Sr .No.	Topic and Details	No. of Lectures assigned	Weightage %
UNIT I	Scope of Human Ecology and family sciences in higher education. Major concepts, relevance and skills in the following areas:	02	4
BLOCK:	A: **NUTRITION, FOOD SCIENCE AND TECHNOLOGY:** - Clinical nutrition and dietetics - Public Nutrition and health. - Catering and food services management - Food processing and technology - Food quality and food safety. - ---------- B: **HUMAN DEVELOPMENT AND FAMILY STUDIES:** - Early Childhood Care and Education - Guidance and counseling - Special Education and support services - Support services for children in difficult circumstances - Child labour	11 11	20 20

	- Millennium Development goals Aging/Elderly - Management of institutions and programs for children, youth and elderly. **C. FABRIC AND APPAREL** - Care and maintenance of fabrics in institutions - Design for fabric and apparel - Retailing and merchandising - Production and quality control in garment industry - Museumology and Textile Conservation **D. RESOURCE MANAGEMENT** - Human Resource Management - Hospitality Management - Designing of interior and exterior space - Event management - Consumer services - Ergonomic Interior/Space E.**COMMUNICATION AND EXTENSION** - Management of Development programs - Development Communication and Journalism - Media management and Advocacy - Media Design and production - Corporate communication and public relations.	11 11 10	20 20 16

Detailed Syllabus

Faculty Name	**Faculty of Home Science**
Course Name	**Family Resource Management**
Subject Name	**Environment Studies**
Total Marks assigned for Lectures	**75**
Total credits for Lectures	**4**
Total No. of hrs / semester for Lectures	**56**
Total lectures / week	**4**
Total Practical / week	**---**
Total marks assigned for Practical	**---**
Total credits for Practical	**---**
Total No. of hrs / semester for Practical	**---**
No. of Tutorials / week	
No. of tests during the semester	**2**
Final Examination duration	**2.5**
Final Practical Examination Duration	**---**

Objectives-

1. **To get acquainted with the physical environment and its components.**
2. **To know natural resources and their types.**
3. **To develop the concept of ecology and its components.**
4. **To study the impact of human activities on ecology ant need to conserve the resources.**

Block. No	Topic and Details	No. of Lectures assigned	Marks assigned
1	**The Multidisciplinary Nature of Environmental Studies**	**2**	**5**
	Unit 1- Definition, Scope and Importance, Need for public awareness		
2	**Natural Resources**	**8**	**10**
	Unit 1- Renewable and Non- Renewable Resources		
	Unit 2- Natural Resources and Associated Problems- a) Forest Resources: Use and Over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.		
	b) Water Resources: Use and Over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems		
	c) Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.		
	d) Food Resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilization-pesticide problems, water logging, salinity, case studies		

	e) Energy Resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies		
	f) Land Resources: Land as a resources, land degradation, man induced landslides, soil erosion and desertification.		
	Unit 3- Role of individual in conservation of natural resources		
	Unit 4- Equitable use of resources for sustainable lifestyles		
3	**Ecosystems**	**6**	**10**
	Unit 1- Concept of ecosystem		
	Unit 2- Structure and function of ecosystem		
	Unit 3- Producers, consumers and Decomposers		
	Unit 4- Energy flow in the ecosystem		
	Unit 5- Ecological succession		
	Unit 6- Food chains, food webs and ecological pyramids.		
	Unit 7- Introduction , types, characteristics features, structure and function of the following ecosystem- a) Forest ecosystem b0 Grassland Ecosystem c) Desert ecosystem d) Aquatic ecosystem (pounds, steams, lakes, rivers, oceans, estuaries)		
4	**Biodiversity and its conservation**	**8**	**10**
	Unit 1- Introduction- Definition: genetic, species and ecosystem diversity.		
	Unit 2- Bio-geographical classification of India		
	Unit 3- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values		
	Unit 4- India as a mega-diversity nation		
	Unit 5- Hot-sports of biodiversity		
	Unit 6- Threats to bio-diversity: habitat loss, poaching of wildlife, man-wildlife conflicts		
	Unit 7- Endangered and endemic species of India		
	Unit 8- Conservation of bio-diversity: In-Situ and Ex-situ conservation of biodiversity		
5	**Environmental Pollution**	**8**	**15**
	Unit 1- Defination, Causes, effects and control measures of – a) Air pollution b) Water pollution c) Soil pollution d) Marine pollution e) Noise pollution f) Thermal pollution g) Nuclear hazards		
	Unit 2- Solid waste management: Causes, effects and control measures of urban and industrial waste		
	Unit 3- Role of individual in prevention of pollution		
	Unit 4- Pollution case studies		
	Unit 5- Diaster Management: floods, earthquake,		

	cyclone and landslides		
6	**Social Issues and the Environment**	**7**	**15**
	Unit 1- From Unsustainable to Sustainable development		
	Unit 2- Urban problems related to energy		
	Unit 3- Water conservation, rain water harvesting , watershed management		
	Unit 4- Re-settlement and rehabilitation of people; its problems and concerns. Case studies		
	Unit 5- Environmental ethics: Issues and possible solutions		
	Unit 6- Climate changes, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies		
	Unit 7-Wasteland reclamation		
	Unit 8- Consumerism and waste products		
	Unit 9- Environment Protection Act		
	Unit 10-Air (Prevention and Control of Pollution) Act		
	Unit 11- Water(Prevention and Control of Pollution) Act		
	Unit 12- Wildlife Protection Act		
	Unit 13- Forest Conservation Act		
	Unit 14- Issues involved in enforcement of environmental legislation		
	Unit 15- Public awareness		
7	**Human Population and the Environment**	**6**	**10**
	Unit 1- Population growth, variation among nation		
	Unit 2- Population explosion- Family Welfare Programme		
	Unit 3- Environment and Human Health		
	Unit 4- Human Rights		
	Unit 5- Value Education		
	Unit 6- HIV/AIDS		
	Unit 7- Women and Child Welfare		
	Unit 8- Role of Information Technology in Environment and Human health		
	Unit 9- Case Studies		
8	**Visit** to local area to document environmental assets-a) rivers/forest/grassland/hill/mountain. b) Local Pollution site- Urban/Rural/Industrial/ Agricultural c) Study of common plants/insects/birds d) Study of simple ecosystems- ponds, rivers, hill slope etc	**15**	**25****

Note ** 25 marks based on **T** and **Field Work.**

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