



ಪಾಂಕ್/ No. : MU/ACC/CR.18/2019-20/A8

ಕುಲಸಚಿವರ ಕಛೇರಿ
ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199
Office of the Registrar
Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 25/11/2020

Notification

Sub: Syllabus of B.Sc. Degree Programme in Home Science
(B.Sc. (H.Sc.) under Choice Based Credit System -reg

Ref: 1. Decision of the Academic Council meeting
dated:6/10/2020 vide Agenda No:1:14 (2020-21)
2. Vice Chancellor's approval dated:18/11/2020

Pursuant to the above, the Syllabus of B.Sc Degree Programme in Home Science (B.Sc.-H.Sc) under Choice Based Credit System which was approved by the Academic Council at its meeting held on 16.10.2020 is hereby notified for implementation with effect from the academic year 2020-21.

Copy of the Syllabus shall be downloaded from the Mangalore University Website. www.mangaloreuniversity.ac.in


REGISTRAR.

To:

- 1) The Principals of the Colleges concerned.
- 2) The Registrar (Evaluation), Mangalore University.
- 3) Dr. Daneshwari Onkari, Chairperson, UG BOS in Home Science, Mangalore University, S.D.M College, Ujire.
- 4) The Assistant Registrar, Superintendents, Academic Section, O/o the Registrar, Mangalore University.
- 5) The Director, DUIMS, Mangalore University - with a request to publish in the Website.
- 6) Guard File.

Besant Women's College
M.G. Road, Kodialbail
Mangaluru – 575 003

B.Sc. - HOME SCIENCE

CHOICE BASED CREDIT SYSTEM

PREAMBLE:

Home Science is a subject that helps each and everyone to develop themselves and in turn helps in the national development. Home Science promotes the capacity of an individual and country for social and economic empowerment.

AIMS AND OBJECTIVES OF THE PROGRAMME:

Aims: Home Science education helps :

- To develop individual personality
- To understand the changing needs of the individual, family and society
- To inculcate the sense of social responsibility

OBJECTIVES:

The objectives of B.Sc (CBCS) Home Science course are as follows: By studying this course the student:

- Develops a balanced personality to become self-reliant and confident citizens of the country
- Acquires skills for the empowerment of a student in particular and community in general
- Acquires knowledge to protect the environment
- Acquires knowledge and competence to teach and practice Home Science subjects
- Develops and practice the skills to oneself and the community to enhance the quality of life.

SCOPE AND JOB OPPORTUNITIES

Many job opportunities exist for students of Home Science. Some of the essential ones are listed below:

- Students can join as Junior Scientists in Food and Agriculture, Textile Industry, Home Management and Interior Decoration, Different Aspects In Human Life Cycle, etc.
- Food Analyst and Inspectors in Food Industry
- Dietitians in Hospitals, Nursing Homes and Health Clubs
- House keepers in Hospitality Industry
- Interior Designers
- Fashion Designers

- Textile Designers in Textile Industry, Merchandisers'
- ICDS Project Officers, Block Development Officers and Anganwadi Workers
- Officers in Social Welfare, Women and Child Welfare, Extension Departments, And Health Departments
- Child Psychologists
- Family Counselors
- Geriatric Care Takers in Hospitals, Old Age Homes etc.
- Human Resource Persons
- Self – Employment

MANGALORE UNIVERSITY
B.SC. HOME SCIENCE
CHOICE BASED CREDIT SYSTEM (CBCS)
SCHEME AND SYLLABUS

Group & Sem	Code	Course	Instructi on hrs/ week	Duration of Exam (hrs)	Marks			Credits	Total/ Sem
					IA	Exam	Total		
I SEMESTER									
I	BSCHSC131	Textile Science – I	4T	3	20	80	100	2	2
	BSCHSC132	Basic Nutrition – I	4T	3	20	80	100	2	2
	BSCHSC133	Human Physiology– I	4T	3	20	80	100	2	2
	BSCHSC134	Textile Science – I	3P	3	10	40	50	1	1
	BSCHSC135	Basic Nutrition – I	3P	3	10	40	50	1	1
	BSCHSC136	Human Physiology– I	3P	3	10	40	50	1	1
II	ELECTIVE								
	BSCHSE137	Basic Psychology	2T	2	10	40	50	1	1
	OR								
	BSCHSE138	Textiles and Clothing	2T	2	10	40	50		
III Foundation Course	a. Languages Any Two		2L	2x3	2x20	2x80	2x100	2x2	4
	b. Elective Foundation		1T	2	10	40	50	1	1
	BSCCIF131								
IV	EC & CC		1T	2	50	-	50	1	1
									16

(T-Theory, P-Practical)

Group & Sem	Code	Course	Instructi on hrs/ week	Durati on of Exam (hrs)	Marks			Credi ts	Total/ Sem
					IA	Exam	Total		
II SEMESTER									
I	BSCHSC151	Textile Science–II	4T	3	20	80	100	2	2
	BSCHSC152	Basic Nutrition–II	4T	3	20	80	100	2	2
	BSCHSC153	Human Physiology–II	4T	3	20	80	100	2	2
	BSCHSC154	Textile Science – II	3P	3	10	40	50	1	1
	BSCHSC155	Basic Nutrition–II	3P	3	10	40	50	1	1
	BSCHSC156	Human Physiology–II	3P	3	10	40	50	1	1
II	ELECTIVE								
	BSCHSE157	Research Methodology	2T	2	10	40	50	1	1
	OR								
	BSCHSE158	Child Development	2T	2	10	40	50		
III	a.Languages Any Two	2L	2x4	2x3	2x20	2x80	2x100	2x2	4
Foundatio n Course	b. Elective Foundation BSCHGF181	1T	2	2	10	40	50	1	1
IV	EC & CC	1T	2	2	50	-	50	1	
									16

Group & Sem	Code	Course	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits	Total/ Sem
					IA	Exam	Total		
III SEMESTER									
I	BSCHSC231	Apparel Designing	4T	3	20	80	100	2	2
	BSCHSC 232	Community Nutrition	4T	3	20	80	100	2	2
	BSCHSC 233	Chemistry I	4T	3	20	80	100	2	2
	BSCHSC 234	Apparel Designing	3P	3	10	40	50	1	1
	BSCHSC 235	Community Nutrition	3P	3	10	40	50	1	1
	BSCHSC 236	Chemistry I	3P	3	10	40	50	1	1
II	ELECTIVE								
	BSCHSE 237	Tourism Administration	2T	2	10	40	50	1	1
	OR								
	BSCHSE 238	Nutrition and Dietetics	2T	2	10	40	50		
III	a. Languages Any Two	2L	2x4	2x3	2x20	2x80	2x100	2x2	4
	b. Elective Foundation BSCGEF231	1T	2	2	10	40	50	1	1
IV	EC & CC	1T	2	2	50	-	50	1	
									16

Group & Sem	Code	Course	Instruction hrs/ week	Duration of Exam (hrs)	Marks			Credits	Total/ Sem
					IA	Exam	Total		
IV SEMESTER									
I	BSCHSC251	Life Span Development – The Early Childhood	4T	3	20	80	100	2	2
	BSCHSC252	Nutrition Management in Health & Diseases	4T	3	20	80	100	2	2
	BSCHSC253	Chemistry-II	4T	3	20	80	100	2	2
	BSCHSC254	Life Span Development – The Early Childhood	3P	3	10	40	50	1	1
	BSCHSC255	Nutrition Management in Health & Diseases	3P	3	10	40	50	1	1
	BSCHSC256	Chemistry II	3P	3	10	40	50	1	1
II	ELECTIVE								
	BSCHSE 257	Food & Nutrition	2T	2	10	40	50	1	1
	OR								
	BSCHSE 258	Resource Management & Interiors	2T	2	10	40	50		
III	a. Languages Any Two	2L	2x4	2x3	2x20	2x80	2x100	2x2	4
		b. Elective Foundation BSCESF281	1T	2	2	10	40	50	1
IV	EC & CC	1T	2	2	50	-	50	1	1
									16

Group & Sem	Code	Course	Instruction hrs/week	Duration of Exam (hrs)	Marks			Credits	Total/ Sem
					IA	Exam	Total		
V SEMESTER									
I	BSCHSC331	Life Span Development – Schoolage to Adulthood	3T	3	20	80	100	2	2
	BSCHSC332	Interior Decoration & Etiquette	3T	3	20	80	100	2	2
	BSCHSC333	House Planning	3T	3	20	80	100	2	2
	BSCHSC334	Extension Education	3T	3	20	80	100	2	2
	BSCHSC335	Chemistry - III	3T	3	20	80	100	2	2
	BSCHSC336	Food Microbiology-I	3T	3	20	80	100	2	2
	BSCHSC337	Life Span Development – Schoolage to Adulthood	3P	3	10	40	50	1	1
	BSCHSC338	Interior Decoration & Etiquette	3P	3	10	40	50	1	1
	BSCHSC339	House Planning	3P	3	10	40	50	1	1
	BSCHSC340	Extension Education	3P	3	10	40	50	1	1
	BSCHSC341	Chemistry - III	3P	3	10	40	50	1	1
	BSCHSC342	Food Microbiology-I	3P	3	10	40	50	1	1
									18

Group & Sem	Code	Course	Instruc tion hrs/ week	Duratio n of Exam (hrs)	Marks			Credits	Total/ Sem
					IA	Exam	Total		
VI SEMESTER									
I	BSCHSC351	Human Development & Family Relations	3T	3	20	80	100	2	2
	BSCHSC352	Resource Management	3T	3	20	80	100	2	2
	BSCHSC353	Personal Finance & Consumer Studies	3T	3	20	80	100	2	2
	BSCHSC354	Extension Education and Communication	3T	3	20	80	100	2	2
	BSCHSC355	Chemistry - IV	3T	3	20	80	100	2	2
	BSCHSC356	Food Microbiology-II	3T	3	20	80	100	2	2
	BSCHSC357	Human Development & Family Relations	3P	3	10	40	50 (Project)	1	1
	BSCHSC358	Resource Management	3P	3	10	40	50	1	1
	BSCHSC359	Personal Finance & Consumer Studies	3P	3	10	40	50	1	1
	BSCHSC360	Extension Education and Communication	3P	3	10	40	50	1	1
	BSCHSC361	Chemistry - IV	3P	3	10	40	50	1	1
	BSCHSC362	Food Microbiology-II	3P	3	10	40	50	1	1
									18

**I SEMESTER
TEXTILE SCIENCE - I
THEORY**

BSCHSC131

Total 48 hours
4 hours /Week

OBJECTIVES:

- To acquire with the basics of textiles, fibers and their properties
- To learn the various techniques by which the fabric can be created.

UNIT - I: Introduction to Textiles 12hrs

- Introduction and classification of textile fibers and their properties
- Production and uses of various fibers
- Natural Fibers : Cotton, Linen, Wool, Silk
- Manmade Fibers – Rayon, Nylon, Polyester, Acrylic.
- Recent trends in fibers

UNIT – II: Study of Yarn 12 hrs

Basic principles and process of yarn construction - Different types of Yarn, Staple, Filament, Textured and Blended Yarns, Yarn Count, Thread count, Yarn Twists, ‘S’ And ‘Z’ Twist

- Types of Yarns- Simple Yarns, Single Yarns, Ply Yarn, Cord Yarn.
- Novelty Yarns -Slub, Flake, Spiral, Loop, Knot
- Characteristics of Woven Fabrics – Warp and Weft, Grain and Selvedge.

UNIT – III: Techniques of Fabric Construction 12 hrs

- Introduction, Fabric Construction Process
- Woven: The Loom, Types of Looms, Parts of a Loom and its Functions
Characteristics of Woven Fabrics, Woven fabric defects.

UNIT IV: Weaving 12hrs

- Basic Weaves : Plain, Twill, Satin
- Decorative Weaves : Jacquard, Dobby, Leno, Pile
- Non Woven Textiles – Knitting, Braiding, Netting, Felting
- Lace Making – Uses and types of Lace

PRACTICALS:

Total – 36 hours

BSCHSC134

3 hrs /Week

1. Identification of different types of Textiles Fibers : Visual , Microscopic and Burning
2. Construction of Basic and Decorative stitches
3. Basic Weaves - Prepare paper samples for all the basic weaves: (one sample for each)
4. Collect the samples for the Decorative Weaves
5. Visit to Garment manufacture unit

REFERENCES:

1. Ziffzer – clothing construction practicals –prasaranga Mysore University
2. Hess,” Textile fibres and their use: 6th edition Oxfors& IBH publishing Co.PVt ltd., New Delhi, Bombay, Calcutta.
3. Mary, B. Cowan, Martha E. jungerman Introduction to textiles; D.B.Taraporvala sons & Company Pvt., Ltd.,
4. DurgaDaulkar, “ Household Textiles & Laundry work
5. Erwin, Mabul”Clothing for Moderns N.Y. Macmillian Publication.
6. Wingate, “Textile fabrics and their selcation” Prentice hall Englewood cliffs N.J.
7. Potter and Corbmon, “Fibre to fabric” N.Y. Gergg division and macran hill book co.
8. Dr.NaveenKaur “Comdex Fashion Design”. Vol II (2010) Dreamtech Press New Delhi
9. Dr.SushmaGuptha, neeruGarg, RenuSaini (2003)” Text Book of Clothing and Textiles” Kallyani publishers, ludhiyana, New Delhi.
10. Joseph m.L(1981)” Introductory Textiles Science” Holt Ripen hart of winstin New York.
11. D’souza N(1998) ‘Fabric care’ New Age International Pvt. Ltd. Publishers

**I SEMESTER
BASIC NUTRITION - I
THEORY**

BSCHSC132

Total – 48 hours
4 hrs / week

OBJECTIVES

To enable the students to

- To Understand the Functions and Sources of Nutrients
- Apply the knowledge in maintenance of Good Health for the individual and the Community
- Be familiar with factors affecting availability and requirements

UNIT I

12 hrs

- Nutritional Status: The relation of good nutrition to normal health.
- Definitions of the terms – Food, Nutrition, Health, Nutrients, Nutritional status, Malnutrition.
- Methods of cooking: boiling, teaming, pressure cooking, frying and dry heat cooking
- Energy - Definition of energy, calorie and joule, Measurement of calorific values of foods: gross and physiological value of food. Basal Metabolic Rate (BMR) and Factors affecting BMR. Specific Dynamic Action (SDA) of foods. Energy needs of the body. Direct and indirect calorimeter.

UNIT II

12hrs.

- Carbohydrates: Classification, Digestion, Absorption, Transport, Metabolism, Functions, Sources and Requirements

UNIT III

12hrs.

- Proteins: Classification, Digestion, Absorption, Metabolism, Functions, Sources and Requirements. Essential and non-essential Amino Acids, Factors Affecting Bio-Availability, Supplementation and Deficiency State.

UNIT IV

12 hrs.

- Lipids&Fats: Classification, Digestion, Absorption, Metabolism, Functions, Sources and Requirements. Saturated and Unsaturated Fatty Acids and Effects of Deficiency.

PRACTICALS
BSCHSC135

Total -36hrs
3hrs/week

- Weights and Measures
- Different methods of Cooking: Boiling, Steaming, Frying and Dry heat cooking – Demonstration each with minimum one recipe.
- Prepare weaning foods
- Prepare Protein rich recipes

REFERENCES:

1. Guthrie, A. H., (1986) Introductory Nutrition, 6th Ed., The CV Mosby Company
2. Swaminathan, M., (1985) Essentials of food and nutrition, Vol I and II, Ganesh and Co, Madras Gopalan C (1991) Nutrition value of Indian foods, ICMR
3. WHO Technical Reports Series for Different Nutrients.
4. Robinson CH, Lawler MR, Chenoweth WL, Garwick AE (1986) Normal and therapeutic nutrition, 17th Ed., Macmillan Publ. Co.
5. Agarwal A, Udipi SA (2014) Text book of human nutrition, Jaypee Bros. Medical Publ., New Delhi
6. Bamji M, Rao NP, Reddy V (1996) Text book of Human Nutrition, Oxford and IBH Publ. Co. Pvt Ltd, New Delhi
7. Srilakshmi B (2015) Nutrition science - 4th Ed., New age international Publ., New Delhi
8. Shills ME, Shike M, Ross AC, Caballero B, Cousins RJ (2005) Modern Nutrition in health and disease – 10th Ed., Lippincott Williams and Wilkins

**I SEMESTER
HUMAN PHYSIOLOGY- I
THEORY**

BSCHSCE133

Total - 48 hrs
4 hrs / week

OBJECTIVES

- To understand the homoeostatic status of the human body
- To understand the physiological processes and functions as applicable to human nutrition

UNIT I

12 hrs

- Introduction: Cell – Structure and Function of Organelles, Nucleus, Chromosomes, Genes, Cell Division, Types of Cell Tissue Transport, Cell Junctions. Homoeostasis and Body Fluids.
- Blood: Red blood cells – Erythropoiesis, Stages of Differentiation, Function, Counts, Physiological Variation.
- Hemoglobin – Structure, Function, Concentration, Physiological Variation. White Blood Cells – Production, Function, Life Span, Counts, Differential Counts. Platelets – Origin, Normal Count, Morphology, Functions.
- Plasma Proteins – Production, Concentration, Types, Albumin, Globulin, Fibrinogen. Homeostasis and Blood Coagulation.
- Homeostasis – Definition, Normal Homeostasis, Clotting Factors, Mechanism of Clotting, Disorders of Clotting Factors.
- Blood Bank - Blood groups – ABO system, Blood grouping and typing, Cross Matching. Rh system – Rh factor, Rh incompatibility.
- Blood transfusion – Indication, Universal Donor and Recipient Concept. Complications of Blood Transfusion and Cross Matching. Selection Criteria of a Blood Donor, Transfusion Reactions.
- Anticoagulants – Examples and Uses.
- Anaemia – Classification – Morphological and Etiological Effects of Anaemia on Body.
- Blood Indices – Colour Index, MCH, MCV, MCHC. Erythrocyte sedimentation rate (ESR) and packed cell volume.
- Blood volume – normal value, determination of blood volume and regulation of blood volume. Lymph – composition and function.

UNIT II

12 hrs

- Cardiovascular System: Heart – Physiological Anatomy, Nerve Supply, Properties of Cardiac Muscle, Cardiac Cycle – Systole, Diastole, Conduction System. Cardiac Output.
- Heart Sounds: Normal Heart Sounds, Areas Of Auscultation.

- Blood Pressure – Definition, Normal Value, Clinical Measurement of Blood Pressure.
- Physiological Variations, Regulation of Heart Rate, Cardiac Shock, Hypotension, Hypertension. Radial Pulse.
- Heart Sounds – Normal Heart Sounds, Characteristics And Signification (Significance). Heart Rate.
- Electrocardiogram (ECG) – Significance.

UNIT III

12 hrs

- Digestive System: Physiological Anatomy of Gastro-Intestinal Tract, Functions of Digestive System.
- Salivary Glands – Structure and Functions, Deglutition, Mastication – Stages and Regulation of Saliva, Functions of Saliva.
- Stomach – Structure and Functions.
- Gastric Secretion – Composition, Function, Regulation of Gastric Juice Secretion.
- Pancreas – Structure, Function, Composition and Regulation of Pancreatic Juice.
- Liver – Functions of Liver.
- Bile Secretion - Composition, Function, Regulation of Bile Secretion, Bilirubin Metabolism, Types of Bilirubin, Jaundice – Types, Significance.
- Gall Bladder – Functions. Intestine – Small Intestine and Large Intestine.
- Small Intestine - Functions, Digestion, Absorption, Movements.
- Large Intestine – Functions, Digestion and Absorption of Carbohydrates, Proteins, Fats, Lipids. Defecation.

UNIT IV

12 hrs

- Respiratory System: Function of respiratory system - physiological anatomy of respiratory system, respiratory tract, respiratory muscles and respiratory organs – lungs, alveoli, respiratory membrane, stages of respiration.
- Mechanism of normal and rigorous respiration, intra pulmonary pleural pressure, surface tension.
- Transportation of respiratory gases. Transportation of O₂: Oxygen, Haemoglobin, Dissociation.
- Lung volumes and capacities.
- Regulation of Respiration, Mechanisms of Regulation, Nervous and Chemical Regulation,
- Respiratory Centre. Hypoxia, Cyanosis, Asphyxia, Dyspnoea, Dysbarism, Artificial Respiration, Apnoea.

PRACTICALS:
BSCHSC136

Total – 36 hrs
3 hrs/week

- Record of blood pressure – Sphygmomanometer, Palpatory Method, Auscultatory Method, Variation Of BP
- Haemoglobin estimation
- Blood grouping
- Histology of Cartilage, bone, adipose tissue, skin, muscle.

REFERENCES:

1. Guyton, A. C., Hall, J. E., 1996, Textbook of Medical Physiology, 9th Ed., Prism Books Pvt Ltd., Bangalore
2. Chatterjee, C. C., 1988, Human Physiology, Calcutta, WB
3. Wilson., 1989, Anatomy and Physiology in Health and Illness, Edinburgh Churchill Livingstone
4. Sembulingam, K., Sembulingam, P., 2012, Essentials of medical physiology, Jaypee Bros. Medical Publ., New Delhi

**I SEMESTER
ELECTIVE
BASIC PSYCHOLOGY**

BSCHSE137

Total – 24 hours
2 hrs/week

OBJECTIVES:

- To Understand Psychological Concepts
- To Apply Major Areas of Psychology on Application in Daily Life.

UNIT-I: Introduction, Memory and Learning 12 hrs

- Definition and Goals of Psychology
- Scope and Key Perspectives of Psychology
- Memory Process, Memory in Children, Causes of Forgetting, Techniques to Improve Memory Methods of Encouraging Behaviours, Coping with Undesirable Behaviours

UNIT-II: Social Psychology 12 hrs

Definition, Application, Social Perception, Social Influence, Pro-social Behaviours, Stereotypes Prejudice, Discrimination, Aggression.

REFERENCES:

1. Feldman, A R, Understanding Psychology IV th Edition, 1996, Mcgraw Hill, New Delhi,
2. Baron, A.R, Psychology III Edition, 1996, Prentice Hall Of India, New Delhi.
3. Morgan, King, Weisz&Schopler, Introduction to Psychology- VII Edition, 1993, Tata Mcgraw Hill, New Delhi.
4. Weiten W., Themes And Variations –III Edition and VI, 1995-2004, Cole and Thomson, USA.
5. Plotnik Rod, Introduction to Psychology. VI Th Edition 2002, Wadsworth-Thomson Learning.

**I SEMESTER
ELECTIVE
TEXTILES AND CLOTHING**

BSCHSE138

Total – 24 hours
2 hrs/week

OBJECTIVES:

- To know different types of fibers and its identification
- To understand different techniques of dyeing techniques

UNIT-I

12 hrs

- Fiber Classification – natural and synthetic
- Dyeing and Printing – Dyeing at home, Dyeing defects, Colour fastness testing, Printed fabrics imperfection.

UNIT-II

12 hrs

- Sewing machines – parts, threading the machine, aids to better sewing, its care and maintenance.
- Drafting and pattern making – Necklines, Collars, Sleeves.
- Clothing according to season, size, occupation and figure.

References:

1. Dr.Mungal, R.. S., 2015, Textiles Fibre to Fabric, Satyam Publishers & Distributors, Jaipur.
2. Premalata, Mullick., 2011, Text Book of Home Science, New Delhi, Kalyani Publishers.
3. Dr.Navneet Kaur, 2010, “Comdex Fashion Design” Vol II, Dreamtech Press, New Delhi.
4. Durga Deulkar, 2002, “Household Textiles and Laundry Work.” Atma Ram & Sons Publishers.
5. Ziffzer, 1974, Clothing Construction practicals – Prasaranga Mysore University.

**II SEMESTER
TEXTILE SCIENCE II
THEORY**

BSCHSC151

Total – 48 hrs
4 hours/week

OBJECTIVES:

- To acquire skills based approach with theoretical knowledge
- To gain knowledge on Basic principles of Dyeing, Printing and Finishing

UNIT-I

12hrs

- Sewing machine – Types Basic Models – Parts and Functions, Care and Maintenance, Common Problems and Reason.
- Finishes: Definition, purpose, classification. Mechanical Finishes, Chemical Finishes, Special Finishes.

UNIT-II

12 hrs

- Brief study on types of Dyes with the chemical composition and their applicability to different fabrics
- Classification of Dyes – Natural, Artificial, Acid, Basic, Vat, Azoic, Sulphur, Mordant
- Methods of dyeing – Stock, Yarn, Piece, Cross etc.
- Methods of different stages of Dyeing - Fiber, Yarn, Fabric etc
- Types of Resist Dyeing -Tye and Dye, Batik

UNIT- III

12 hrs

- Fundamentals of Printing - Study of Dyes and Pigments for Printing
- Difference between Dying and Printing - Types - Hand, Block, Roller, Screen, Discharge, Stencil, Spray Printing

UNIT – IV

12 hrs.

- Laundry Science – Process Involved, Equipment Used, Manufacturing of Soaps, Detergents and Stain Removal methods

**PRACTICALS:
BSCHSC154**

**Total – 36 hours
3hrs / Week**

- Skill of using sewing machine.
- Construction process – Seams, Plackets, Fullness, Edge Finishes, Fastening (two for each)
- Preparation of Soap
- Prepare samples for - Fabric painting Block printing, Tie and Dye and Batik
- Home Apparel – Cushion Cover/ Pillow case/ Shoulder bag

REFERENCES:

1. Dr.Mungal, R. S., (2015), Textiles Fibre to Fabric, Satyam Publishers & Distributors, Jaipur.
2. Premalata Mullick., (2011), Text Book of Home Science, New Delhi, Kalyani Publishers.
3. Dr.Navneet Kaur (2010) “Comdex Fashion Design” Vol II, Dreamtech Press, New Delhi.
4. Durga Deulkar (2002), “Household Textiles and Laundry Work.” Atma Ram & Sons Publishers.
5. Ziffzer (1974) Clothing Construction practicals – Prasaranga Mysore University.

**II SEMESTER
BASIC NUTRITION – II
THEORY**

BSCHSC152

**Total - 48 hours
4 hrs / week**

OBJECTIVES:

To enable the students:

- To understand the functions and sources of nutrients
- Apply the knowledge in maintenance of good health for individual and the community.
- To be familiar with factors affecting availability and requirements

UNIT - I 12 hrs

- Macro minerals: Calcium, Phosphorus, Magnesium and Sodium- functions, sources, requirements and deficiency

UNIT - II 12 hrs

- Micro minerals: Iron, Copper, Zinc and Iodine- functions, sources, requirements and deficiency

UNIT - III 12 hrs

- Vitamins: Classification- fat soluble and water soluble. Thiamine, Riboflavin, Niacin, Folic acid, Vitamin B12, Ascorbic acid: functions, sources, requirements and deficiency

UNIT - IV 12 hrs

- Water: Importance, sources, water balance, edema and dehydration
- Dietary Fibre: Definition, classification, sources and role of fibre in nutrition.

PRACTICALS:**Total – 36 hours****BSCHSC155****3hrs / Week**

Planning, preparing and serving the recipes rich in the following nutrients

1. Calcium
2. Iron
3. Vitamin A
4. Vitamin C
5. Thiamine
6. Niacin

REFERENCES:

1. Guthrie, A. H., 1986, Introductory Nutrition, 6th Ed., The CV Mosby Company
2. Swaminathan, M., 1985, Essentials of food and nutrition, Vol I and II, Ganesh and Co, Madras Gopalan C (1991) Nutrition value of Indian foods, ICMR
3. WTO Technical Reports Series for Different Nutrients.
4. Robinson, C. H., Lawler, M. R., Chenoweth, W. L., Garwick, A. E., 1986, Normal and therapeutic nutrition, 17th Ed., Macmillan Publ. Co.
5. Agarwal, A. and Udipi, S. A., 2014, Text book of human nutrition, Jaypee Bros. Medical Publ., New Delhi
6. Bamji, M., Rao, N. P., Reddy, V., 1996, Text book of Human Nutrition, Oxford and IBH Publ. Co. Pvt Ltd, New Delhi
7. Srilakshmi, B., 2015, Nutrition science - 4th Ed., New age international Publ., New Delhi
8. Shills, M. E., Shike, M., Ross, A. C., Caballero, B., Cousins, R. J., 2005, Modern Nutrition in health and disease – 10th Ed., Lippincott Williams and Wilkins

**II SEMESTER
HUMAN PHYSIOLOGY - II
THEORY**

BSCHSC153

**Total - 48 hrs
4 hrs / week**

OBJECTIVES

To enable the students.

- To understand the homeostatic status of the human body
- Understand the physiological processes and functions as applicable to human nutrition

UNIT - I

12 hrs

- Endocrine System: Definition, classification of endocrine glands and their hormones, properties of hormones.
- Thyroid gland hormones – regulation of secretion. Disorders – hypo and hypersecretion of hormone.
- Adrenal gland - physiological anatomy. Adrenal cortex, cortical hormones – functions and regulation.
- Adrenal medulla – hormones, regulation and secretion.
- Functions of adrenaline and nor-adrenaline.
- Pituitary hormones – anterior and posterior pituitary hormones, secretion, function.
- Pancreas – hormones of pancreas. Insulin – secretion, regulation, function and action.
- Diabetes mellitus – regulation of blood glucose level.
- Parathyroid gland – function, action, regulation of secretion of parathyroid hormone.
- Calcitonin – function, action, CA metabolism and hormone regulating CA metabolism

UNIT - II

12 hrs

- Special Senses and Neuro-muscular system: Vision – function of different parts of eye, light reflex, refractive errors, colour blindness, night blindness, accommodation.
- Hearing –function of ear, deafness, vestibular apparatus.
- Taste buds – functions, smell physiology, receptors.
- Nervous system: Functions of nervous system, neuron structure, classification and properties, neuroglia. Nerve fibre, classification, conduction of impulses, factors affecting conduction.
- Synapse - structure, types, properties. Receptors - definition, classification, properties. Reflex action - reflex arc, properties of reflex action. Functions

of medulla, pons, hypothalamus. Cerebral cortex, lobes and functions, sensory cortex, motor cortex.

- Cerebellum - functions. Basal ganglia - functions, EEG, Parkinson's disease. Cerebro Spinal Fluid (CSF) - formation, circulation, properties, composition and functions, sleep, types of sleep.
- Muscle nerve physiology: Classification of muscle, structure of skeletal muscle, sarcomere, contractile proteins. Neuromuscular junction, transmission across neuromuscular junction, excitation contraction coupling. Mechanism of muscle contraction, muscle tone, fatigue. Rigor mortis, isometric and isotonic contraction.
- Autonomic nervous system: Sympathetic and parasympathetic distribution and functions.

UNIT - III

12 hrs

- Excretory system: Excretory organs - Kidney: function, structural and functional unit - nephrons, vasarecta, cortical and juxtamedullary nephrons - comparison, juxtaglomerular apparatus - structure and function. Renal circulation peculiarities. Mechanism of urine formation – ultrafiltration, criteria for filtration, GFR, plasma fraction, determination of GFR. Selective reabsorption - sites of reabsorption, substance reabsorbed, mechanisms of reabsorption. Tubular secretion, properties and composition of normal urine output. Abnormal constituents of urine.
- Counter-current mechanisms: micturition, innervations of bladder, cystourethrogram. Diuretics: water, diuretics, osmotic diuretics, artificial kidney, renal function tests.

UNIT - IV

12 hrs

- Skin - function. Body temperature measurement, physiological variation, regulation of body temperature by physical, chemical and nervous mechanisms.
- Hypothermia and fever. Reproductive system and puberty. Male reproductive system - functions of testis, spermatogenesis, spermiogenesis - stages, factors influencing semen, endocrine functions of testis.
- Androgens - Testosterone - structure and functions.
- Female reproductive system - ovulation, menstrual cycle, physiological changes during pregnancy, pregnancy test. Lactation: Composition of milk factors controlling lactation. Contraception

PRACTICALS:**Total - 36 hours****BCHSC156****3 hrs/week**

- Bleeding time
- Clotting time
- Total leucocyte count,
- RBC count
- Differential WBC count
- Instruments used in haematology

REFERENCES

1. Guyton AC, Hall JE (1996) Textbook of Medical Physiology, 9th Ed., Prism Books Pvt Ltd., Bangalore Chatterjee CC (1988) Human Physiology, Calcutta, WB.
2. Wilson (1989) Anatomy and Physiology in Health and Illness, Edinburgh Churchill Livingstone Sembulingam K, Sembulingam P (2012) Essentials of medical physiology, Jaypee Publ.

**II SEMESTER
ELECTIVE
RESEARCH METHODOLOGY**

BSCHSE157

**Total – 24 hours
2 hrs/week**

OBJECTIVES:

To enable Students

- To understand the fundamental principles and techniques of research methodology.
- Develop skills In documentation

UNIT – I

12 hrs

- Research Methodology: Different techniques and tool of data collection
- Research: Meaning, Objectives, phases of research, measurement of research, different designs, sampling, Analysis of data and interpretation.

UNIT – II

12 hrs

- Need and Methods of Sampling
- Data Presentation: Diagrammatic and Graphic Representation, Types of Diagrams and Report Writing
- Need for Documentation in Development Project.

REFERENCE

1. Kothari, C. R., 2004, Research Methodology- Methods and Techniques, New Age International Pvt Ltd. Publishers, Bangalore.
2. Sumati Mulay., 2000, Research Methods in Extension Education – Archan Publications.
3. Best, J. W. and Khan, J. V., 1986, Research and Education – Hall Of India Pvt Ltd.

**II SEMESTER
ELECTIVE
CHILD DEVELOPMENT**

BSCHSE158

**Total – 24 hours
2 hrs/week**

OBJECTIVES:

- To understand the child psychology
- To understand the importance of child development

UNIT – I

12 hrs

- Child Psychology –Importance, Development of Individual, Factors influencing growth and development of an infant.
- Child Development – Meaning and Importance, Characteristics of various stages, Expected development tasks of childhood, Need and Scope for studying child development.
- Factors influencing child development – Nutrition, Age, Sex, Psychological factors.

UNIT – II

12 hrs

- Aspects of Development – Physical, Motor, Emotional, Social, Language, Cognitive, Moral, Aesthetic.
- Children’s ailments – Crying, Constipation, Diarrhea, Convulsion, Vomiting, Fever, Thrush, Nappy Rash, Colic, Flatulence, Skin Eruptions.
- Child rearing practices – Influence on the Development of a Child.

REFERENCES:

1. Berk, Laura E. (2017), Child Development, Pearson India Education Services.
2. PremalataMullick (2011), Text Book of Home Science, New Delhi, Kalyani Publishers.
3. Saraswathi T.S and Kaur B. (1993) Human Development and Family studies in India, New Delhi, Sage Publications.
4. Harries, A.C. (1986): Child Development, St. Paul West Publications Unit-I.
5. Learner and Jultsch (1983): Human Development: A Life Span Perspective, Newyork, McGraw Hill Book Co.
6. Gorden I.J., (1975): Human Development, Newyork: Harper and Row Unit-I.

**III SEMESTER
APPAREL DESIGNING
THEORY**

BSCHSC231

**Total – 48 hours
4 hrs/week**

OBJECTIVES:

- To enable the students to develop skills in apparel designing and constructing garments
- To gain knowledge in fundamentals of fashion and garment construction technique

UNIT - I

12 hrs

- Fashion Interpretation - Terminology Concepts, Characteristics And Fashion Cycle Influence, Dictionary of Fashion Cycle Influence, Dictionary of Fashion Terms and Role of Fashion Designer
- Clothing in Relation to Season, Occasion, Size and Figure, Figure Problem and Optical illusion.

UNIT – II

12hrs

- Good Grooming and Psychological Aspects of Clothing – Clothing and Wearers, Personality Factors and Clothing Choices, Selection of Fabrics, Factors Effecting Choice of Clothing
- Elements of Design- Line, Colour, Texture.
- Principles of Design in Clothing- Balance, Rhythm, Proportion, Emphasis, Harmony.

UNIT – III

12hrs

- Traditional Indian Textiles and Embroideries – Dacca Muslin, Baluchar Buttedar, Himrusand Amrus, Kalamdar, Patola, Bhandhnius, Punjabi Phulkari, Kanthasof Bengal, Embroidery of Kashmir, Chikankari and Kasuthi of Karnataka.

UNIT – IV

12 hrs.

- Importance of Taking Body Measurements – Methods of Taking Measurements, Steps in Preparing Fabrics for Construction
- Pattern Making- Principles and Techniques Involved in Pattern Making

PRACTICALS:

Total - 36 hours

BSCHSC234

3 hrs/week

- Taking Body measurements
- Steps in pattern making
- Darning, patch work and garment enrichment
- Drafting, Tracing and construction of 'A' line Frock for a preschooler/saree petticoat/Apron
- Computer Aided Design – Visit to study software operation of various machines write the report
- Make a study of collections of famous designers and their famous innovations

REFERENCES:

1. Mungal, R. S., 2015, Textiles Fibre to Fabric, Satyam Publishers & Distributors, Jaipur.
2. Premalata Mullick., 2011, Text Book of Home Science, New Delhi, Kalyani Publishers.
3. Navneet Kaur., 2010, "Comdex Fashion Design" Vol II, Dreamtech Press, New Delhi.
4. Durga Deulkar., 2002, "Household Textiles and Laundry Work." Atma Ram & Sons Publishers.
5. Ziffzer, 1974, Clothing Construction practicals – Prasaranga Mysore University.

III SEMESTER
COMMUNITY NUTRITION
THEORY

BSCHSC232

Total - 48 hours
4hrs/week

OBJECTIVES:

To enable the Students:

- To gain knowledge regarding nutritional needs at different stages of growth
- To understand the concept of growth promotion to the community

UNIT – I

12 hrs

- Basic Principles of Meal planning, Factors affecting Meal Planning,
- Explanation of the terms: Health, RDA, Adequate intake, Balanced diet, Food guide pyramid.
- Nutrition during Infancy – Advantages of breast milk, bottle feeding and its effect on child health and weaning foods.

UNIT – II

12 hrs

- Growth and development, RDA, RFA, Dietary guidelines and Nutrition needs of Pre- school children , school age children and Adolescents
- Nutritional programmes

UNIT - III

12 hrs

- Nutrition during Pregnancy and lactation: Signs, common problems and complications during pregnancy. RDA, RFA, dietary guidelines and nutritional needs of pregnant and lactating mother.
- Nutritional programmes for pregnant and lactating mother

UNIT – IV

12 hrs

- Geriatric nutrition: Physiological changes, RDA, dietary guidelines and nutritional needs

PRACTICALS
BSCHSC235

Total : 36hrs
3 hrs/week

- Weaning foods
- Normal Diet for pre School child/ School age child / Adolescent girl
(Planning must be done - preparation any one)
- Diet for Pregnant/Lactating mother (Preparation any one)

REFERENCES

1. Antia FP (2005) Clinical Nutrition and Dietetics, Oxford University Press, New Delhi.
2. Mahan LK, Arlin, M.T.(2000) Krause's Food Nutrition and Diet Therapy 11th edition, W.B. Saunders Company, London.
3. Robinson, C.H; Lawler, M.R.Chenoweth, W.L; and Garwick, A.E (1986) : Normal and
4. Shubhangini A Joshi (2002) : Nutrition and Dietetics 2nd edition, Tata mc Graw-Hill Publishing Company Limited, New Delhi.
5. Srilakshmi B. (2005): Dietetics, 5th edition, New Age International(P) limited Publishers, New Delhi
6. Therapeutic Nutrition, 17th Ed., Mac Millan Publishing Co
7. Williams's (1989) : Nutrition and diet Therapy.6th edition. Times Mirror /Mosby College Publishing St.Louis

**III Semester
CHEMISTRY - I
THEORY**

BSCHSC233

**Total - 48 hrs
4 hrs /week**

OBJECTIVES:

This course will enable the students to

- Enrich the knowledge about the basic principles, fundamental concepts and unique mechanistic steps involved in chemical and biochemical reactions.
- Provide an introduction to key concepts of modern analytical methods and to equip the students to handle the modern analytical instruments.
- Expose the students to the rapid development and enormous expansion of every phase of chemistry.

UNIT I

12 hrs

- Structure and Bonding - Chemical bonding, types of chemical bonds – ionic, covalent, coordinate. Hybridization – sp, sp², sp³, bond length, bond angles, bond energy, van der Waals interactions, Hydrogen bonding – inter and intramolecular and their significance – anomalous properties of water. Solvents - Types of solvents and their characteristics, weak interactions in aqueous solutions, interaction between water and polar solutes, solubility of ionic solids, lattice energy and solvation energy.

UNIT II

12hrs

- Methods of analysis - Qualitative analysis and its types, quantitative analysis and its type:-volumetry, gravimetry and instrumental methods of analysis. Errors in quantitative analysis, minimization of errors. Accuracy, precision, significant figures, measurement of accuracy – absolute error, relative error, measurement of precision – standard deviation, variance.
- Viscosity and surface tension - Definition, determination.
- Reaction Kinetic- Order of reactions, first and second order reactions, methods of determining order of a reaction, theories of reaction rates – collision theory and transition state theory.

UNIT III

12 hrs

- Acids and bases: Arrhenius, Bronsted Lowry, solvent system and Lewis concept of acids and bases. Hard and soft acids and bases. Ionic product of water, common ion effect and applications, pH scale, buffers, buffer

capacity, Henderson's equation, preparation of acidic and basic buffers, buffers in biological system – blood plasma, RBC and tissue fluids, theory of acid-base indicators, pH titration curves and isoelectric pH of amino acids. Choice of indicators of acid base titrations.

- Binary Liquid mixtures - Liquid-liquid mixtures, ideal liquid mixtures, non ideal liquid mixtures. Azeotropes HCl – water, ethanol-water systems. Principle of fractional distillation, partially miscible liquids – phenol water system. Trimethyl amine – water and nicotine water systems. Lower and upper consolute temperature. Effect of impurity on consolute temperature, steam distillation – principle and applications.

UNIT IV

12 hrs

- Introduction to Organic Chemistry - Classification, characteristics, IUPAC nomenclature of organic compounds, isomerism. Detection of elements Nitrogen, Sulphur, Phosphorus and Halogens. Electronic effects- inductive, mesomeric and Resonance effects. Hyper conjugation, aromaticity, homolytic and heterolytic bond breaking reactive intermediates, carbo – anions and cations, electrophiles, nucleophiles, free radicals, carbenes with examples. Arenes: Structure of benzene, mechanism of nitration and Friedel-Crafts reaction.

PRACTICALS
BSCHSC236

Total - 36 hrs-

3 hrs/week

- Qualitative analysis of organic compounds
 - Urea
 - Benzamide
 - Aniline
 - Acetophenone
 - O-cresol
 - Nitro benzene
 - Chlorobenzene
 - Benzoic acid
 - Resorcinol benzyl alcohol
 - Benzaldehyde

- II. Determination of R_f value of Amino acid by Paper Chromatography
 - Ascending
 - Circular

REFERENCES

1. Soni PL (1988) A textbook of Inorganic chemistry, Sulthan Chand & Sons
2. Lee JD (1988) Concise Inorganic Chemistry, Blackwell Science
3. Skoog DA, West DM, Holler JF (1993) Fundamentals of Analytical Chemistry, New York CBS Publ. Gurudeep Raj (2001) A text book of Inorganic chemistry, Goel Publ. house, Meerut
4. Soni PL (2000) A textbook of Organic chemistry, Sulthan Chand & Sons
5. Bahl A and Bahl BS (2000) Advanced organic chemistry, Sulthan Chand & Sons
6. Vogel AI (1994) Textbook of quantitative chemical analysis, ELBS Ed
7. Agarwal OP (1998) Chemistry of natural products, Goel Sulthan Chand & Sons Publ. House, Meerut Madan RL, Tuli GD (2001) Physical Chemistry, Sulthan Chand & Sons
8. Raj Gurudeep (2001) Textbook of advanced Physical chemistry, Goel Publ. House, Meerut
9. Lehninger AL, Nelson DL, Cox MM (1993) Principles of Bio Chemistry, 2nd Ed. CBS Publ. and distributors

**III SEMESTER
ELECTIVE
TOURISM ADMINISTRATION**

BSCHSE237

**Total - 24hrs
2hrs /week**

Objectives:

To Enable the Students

- To gain knowledge on Tourism
- To have an Idea of Tourism Legislation

UNIT I

12 hrs

- Introduction and Legislation: Meaning, Significance and History, Types Needs for Tourism Organization, Laws Relating to Tourism Legislation.

UNIT II

12 hrs

- Travel Agent and Tourism Marketing
- Travel Agent Formalities and Regulations for Tourism
- Customer Service and Skills Tourism Marketing – Tourism Market
- Segmentation, Guidelines for Tourist

REFERENCE:

1. Marketing For Hospitality and Tourism- James C Makenes John T Boneen and Philip Kother 1996.
2. Tourism Operations and Management ArchanaBiwal, S Roday And Vandana Joshi 2009.
3. The Tourist Gaze 3.0 Book by John Urry and guide Jonas Larisem 2011.

**III SEMESTER
ELECTIVE
NUTRITION AND DIETETICS**

BSCHSE238

**Total - 24hrs
2hrs /week**

OBJECTIVES:

- To enrich the knowledge of nutrition and dietetics
- To enable the students to identify the food adulterants

UNIT – I

12 hrs

- Introduction to Nutrition and Dietetics.
- Effects of cooking on different nutrients – Carbohydrates, Proteins, Fats, Mineral Substance, Vitamin.
- Food preservation – types of preservatives, methods of food preservation.
- Food adulteration – definition, commonly used adulterants in food groups and their detection methods.

UNIT – II

12 hrs

- Meal Planning – Advantages, Meal Services and management.
- Factors Affecting Meal Planning.
- Characteristics of Balanced Diet.
- Nutritional care – Adaptation of Normal and Therapeutic Diets.

REFERENCES:

1. Srilakshmi (2014), Dietetics, New Age International Publications, New Delhi.
2. Premal Mullick (2011), Text Book of Home Science, New Delhi, Kalyani Publishers.
3. Joshi S.A (1992), “Nutritional & Dietetics”, Tata McGraw Hill Publications, New Delhi.
4. M. Raheena Begum (1986) “Text Book of Food Nutrition and Dietetics” Sterling Publication Pvt. Ltd.
5. Swaminathan M.S. (1985) “Essentials of Food & Nutrition Fundamental Aspects” VII Applied aspects.
6. Krause M.V, Mohan L.K. “Food Nutrition and Diet Therapy”.

IV SEMESTER
LIFE SPAN DEVELOPMENT: THE EARLY CHILDHOOD
THEORY

BSCHSC251

Total - 48 hrs
4 hrs/week

OBJECTIVES:

To enable the students to understand

- The importance of early childhood education for future learning
- To learn how to organize and manage of a good nursery school

UNIT – I

12hrs.

- Introduction – Definition, need and scope of Human Development, trends and Issues in Human Development, concepts and principles of growth and development. Theoretical perspectives and methods of studying Human Development. Influence of Heredity and Environment on development (theoretical perspective).

UNIT – II

12 hrs.

- Prenatal Development - conception, pregnancy, signs, symptoms, discomforts, complications, stages of prenatal development, factors affecting prenatal development.
- Child birth, - Process and types of birth, birth complications.

UNIT – III

12 hrs

- The Neonate : appearance, Size Proportion and Care, Physiological functioning and behavior patterns
- Infancy (From one month to 2 years): Physical Development and Motor skills, emotional Development, cognitive development and social development.
- Habit and Habit formation

UNIT – IV

12 hrs

- Pre-school Child (2-6 years): Physical growth and motor skills social behavior, Intellectual Development, Pre-school Childs vocabulary, discipline and guidance of pre-school child.
- Nursery School – Essentials of a nursery school, Building, Equipment and personnel, programme in the Nursery school, values of play, parent education, Types of pre schools – Creches, Anganawadies, day care centres, Balwadies.
- Methods of child study.

**PRACTICALS -
BSCHSC254**

Total – 36 hrs
3 hrs/week

- Observation of different developments among children
 - Physical development
 - Motor development
 - Emotional Development
 - Language Development
 - Intellectual Development
- Rhyme
- Story telling
- Basic Activities
- Review of Literature
- Write a report on cultural practices related to pregnancy and early childhood.
- Visit to nursery schools/ anganwadies.

REFERENCE:

1. Life span development – a topical approach, third edition, Jhon W. Santrock, Tata McGraw-Hill edition.
2. Human development, eleventh edition, Diane Papalia, Sally Olds, Ruth Field Man, MaGraw Hill.
3. Human development, Ninth edition, Diane Papalia, Sally Olds, Ruth Field Man, Ma Graw Hill.
4. Developmental Psychology, a lifespan approach, Elizabeth Hurlock, McGraw Hill,
5. Understanding Human development, third edition, Weddy L. Dunn, Grace JeroigMcGraw Hill.
6. Nayak A.K. (2007) Guidance and counseling, APH publishing corporation.

**IV SEMESTER
NUTRITION MANAGEMENT IN HEALTH AND DISEASES
THEORY**

BSCHSC252

**Total -48hrs
4 hrs/week**

OBJECTIVES:

- To gain knowledge about dietary Management in health and common diseases.
- To help students to use the principles and integrate with disease conditions.

UNIT – I

12 hrs.

- Basic concepts of Diet Therapy- Principles of Diet Therapy, modification of normal diet to suit therapeutic needs – Routine hospital diets – clear fluid, full fluid and soft diets.

UNIT – II

12 hrs

- Nutrition for Weight Management
- Underweight -Etiology, complications Dietary management.
- Over Weight and obesity – Assessment, types, complications of obesity and Dietary Management.

UNIT- III

12 hrs

- Nutrition during Febrile conditions: Classification of fever, Metabolic changes in fever and general dietary considerations.
- Dietary Management during Typhoid, Tuberculosis and Malaria.

UNIT – IV

- Nutrition in Diabetes mellitus: Prevalence, Classification, Factors influencing, Risk factors, metabolic changes and dietary management.

PRACTICALS
BSCHSC255

Total – 36 hrs
3 hrs/week

Planning and Preparation of the following,

- Fluid Diets
- Diet for underweight and obese patients
- Diet for febrile. condition fever/typhoid/malaria
- Diets for Diabetes Mellitus patients

REFERENCE:

1. Antia FP (2005) Clinical Nutrition and Dietetics, Oxford University Press, New Delhi.
2. Mahan LK, Arlin, M.T.(2000) Krause's Food Nutrition and Diet Therapy 11th edition, W.B. Saunders Company, London.
3. Robinson, C.H; Lawler, M.R.Chenoweth, W.L; and Garwick, A.E (1986) : Normal and
4. Shubhangini A Joshi (2002), Nutrition and Dietetics 2nd edition, Tata mc Graw-Hill Publishing Company Limited, New Delhi.
5. Srilakshmi B. (2005): Dietetics, 5th edition, New Age International(P) limited Publishers, New Delhi.
6. Therapeutic Nutrition, 17th Ed., Mac Millan Publishing Co.
7. Williams's (1989): Nutrition and diet Therapy.6th edition. Times Mirror/Mosby College Publishing St.Louis.

**IV SEMESTER
CHEMISTRY - II
THEORY**

BSCHSC253

**Total - 48 hrs
4 hrs / week**

OBJECTIVES:

This course will enable the students to:

- Enrich the knowledge about the basic principles, fundamental concepts and unique mechanistic
- steps involved in chemical and biochemical reactions
- Provide an introduction to key concepts of modern analytical methods and to equip the students to handle the modern analytical instruments
- Expose the students to the rapid development and enormous expansion of every phase of chemistry

UNIT I

12 hrs

- Bioinorganic Chemistry - Essential and trace elements in biological systems- chloride, calcium, magnesium, chromium, iodine, fluorine, phosphorus, selenium, molybdenum, copper, iron, sulphur, Nitrogen(daily dietary requirement, function and effects). functions of Sodium, Potassium, Calcium, Magnesium- sodium pump calcium pump. Toxicity of lead, mercury, cadmium and arsenic. Metal ions in Biological systems: Examples of naturally occurring complex compounds in living systems. Role of Iron in Hemoglobin, myoglobin and cytochromes, copper in hemocyanin, magnesium in chlorophyll, cobalt in Vitamin B12, molybdenum in nitrogenase, metalloenzymes – example and importance

UNIT II

3 hrs

- Adsorption: Types, Freundlich adsorption isotherm, Langmuir's adsorption isotherm applications of adsorption, adsorption indicators in precipitation titrations.

3 hrs

- Colloidal State: Solids in liquids (sols), properties, kinetic optical and electrical, stability of colloids, protective action, Hardy Schulze law, Gold number, Liquids in liquids (emulsions), Types of emulsions, preparation, emulsifiers. Liquids in solids (gels). Classification, preparation and properties, Inhibition of gels – general applications of colloids.

6hrs

- Radio chemistry: Nuclear stability, n/p ratio, Natural radioactivity, characteristics of radioactive elements, radioactive decay series, artificial transmutation using protons, neutrons, deuterons, induced radio activity, disintegration constant, half life. Radiation dosimetry. Fricke and Ceric sulphate dosimeter. Application of radio isotopes in medicine,

agriculture and study of reaction mechanism and ^{14}C dating. Biological effects of radiation, safety measurements in handling radio isotopes

UNIT III

6 hrs

- Photochemistry: Laws of photochemistry – Grothus and Draper law, Einstein's law of photochemical equivalence, quantum efficiency, high and low quantum efficiency, photosensitization, photoinhibition, fluorescence, phosphorescence, chemiluminescence, bioluminescence with examples, photosynthesis.

6 hrs

- Techniques: Lambert's law, Beer's law, Beer-Lambert's law, molar absorption, molar extinction coefficient, transmittance and absorbance, their relationship, colorimeter, UV-Vis spectroscopy - instrumentation, working, applications. Flame photometry – instrumentation, working, applications

UNIT IV

12 hours

- Carbon and its compounds- Definition for- allotropy, tetravalency, Catenation
- Alkanes: preparation, and chemical reactions
- Alkenes: Preparation of alkenes: Chemical reactions of alkenes: oxidation, ozonolysis, hydration, hydroxylation, polymerization, addition of HBr to propene, Markownikoff's rule. (mechanisms not required)
- Dienes: Classification, types with examples, butadiene, methods of preparation. Chemical reactions, mechanism of addition of Br_2 and HBr. Polymerization, Diels alder reaction (mechanisms not required)
- Alkynes: Acidity of alkynes, ozonolysis, polymerization. Alkyl halides: SN_1 and SN_2 reactions. Mechanism with one example for each. Concept of elimination reactions. E_1 and E_2 mechanisms.

PRACTICALS
BSCHSC256

Total - 36 hrs
3 hrs/week

Volumetric analysis

- Use of analytical balance and calibration of pipette
- Preparation of standard Sodium carbonate solution and standardization of HCl and estimation of NaOH.
- Preparation of standard potassium biphthalate solution. Standardization of NaOH and estimation of HCl in the given solution (Phenolphthalein)
- Preparation of standard Oxalic acid solution. Standardization of KMnO_4 and estimation of Mohr's salt in the given solution
- Preparation of $\text{K}_2\text{Cr}_2\text{O}_7$. Standardization of $\text{Na}_2\text{S}_2\text{C}_3$ and estimation of CuSO_4 in the given solution (starch)
- Preparation of ZnSO_4 . Standardization of EDTA and estimation of total hardness of water using Eriochrome black T indicator
- Preparation of $\text{K}_2\text{Cr}_2\text{O}_7$ solution. Estimation of Ferrous/Ferric ions in a mixture using diphenylamine indicator
- Estimation of alkali content in antacid tablet by using HCl
- Estimation of Vitamin C
- Estimation of Glucose
- Estimation of amino acid

REFERENCES

1. Soni PL (1988) A textbook of Inorganic chemistry, Sulthan Chand & Sons
2. Lee JD (1988) Concise Inorganic Chemistry, Blackwell Science
3. Skoog DA, West DM, Holler JF (1993) Fundamentals of Analytical Chemistry, New York CBS Publ.
4. Gurudeep Raj (2001) A text book of Inorganic chemistry, Goel Publ. house, Meerut
5. Soni PL (2000) A textbook of Organic chemistry, Sulthan Chand & Sons
6. Bahl A, Bahl BS (2000) Advanced organic chemistry, Sulthan Chand & Sons
7. Vogel AI (1994) Textbook of quantitative chemical analysis, ELBS Ed.
8. Agarwal OP (1998) Chemistry of natural products, Goel Sulthan Chand & Sons Publ. House, Meerut
9. Madan RL, Tuli GD (2001) Physical Chemistry, Sulthan Chand & Sons
10. Raj Gurudeep (2001) Textbook of advanced Physical chemistry, Goel Publ. House, Meerut
11. Lehninger AL, Nelson DL, Cox MM (1993) Principles of Bio Chemistry, 2nd Ed. CBS Publ., and distributors

**IV SEMESTER
ELECTIVE
FOOD AND NUTRITION**

BSCHSE257

**Total – 24 hrs
2 hrs/week**

OBJECTIVES:

- To help the students to understand different Nutrients
- To plan a meal with Therapeutic needs

UNIT – I

12 hrs.

- Introduction to Food and Nutrition.
- Importance of Different Nutrients: Carbohydrates, Proteins, Fats, Minerals and Vitamins.
- Food Preservation Importance and Methods.

UNIT – II

12 hrs

- Meal Planning - Importance and Factors affecting meal planning.
- Characteristics of Balanced Diet
- Planning Normal Diets

REFERENCES

1. Srilakshmi (2014), Dietetica, New Age International Publishers, New Delhi.
2. Premalata Mulick (2011), Text Book of Home Science, New Delhi, Kalyani Publishers.
3. Joshi S A (1992), “Nutrition & Dietetics,” Tata MecGraw Hill Publication New Delhi.
4. M Raheena Begum (1986) “Text Book of Food Nutrition and Dietetics” Sterling Publication Pvt Ltd.
5. Swaminathan M S (1985) “Essentials of Food & Nutrition Fundamental Aspects” VII Applied Aspects.
6. Krause M V Mohan L K ‘ Food Nutrition And Diet Therapy’

**IV SEMESTER
ELECTIVE
RESOURCE MANAGEMENT AND INTERIORS**

BSCHSE258

**Total – 24 hrs
2 hrs/week**

OBJECTIVES:

- To help the students to learn in managing resources wisely
- To enhance the esthetic qualities of an individual.

UNIT – I

12 hrs.

- Resource Management – Definition, Science and Art, Characteristics of Resources, Qualities of Resource Manager.
- Process of Resource Management.
- Motivating factors of Management – Values, Standards and Goals.

UNIT – II

12 hrs.

- Interior Decoration – Introduction.
- Colour in the home.
- Arranging Flowers – styles and conditioning of flowers.

REFERENCES:

1. Premalatha Mullik (2011) “Text Book of Home Science” Kalyani Publishers, New Delhi.
2. Seetharam Premavathi, Pannu, Parveen (2005) Interior Decoration CBS, Publishers & Distributors, Bangalore.
3. Pratap Rao (2005) “Interior Design, Principles and Practice” Standard Publishers & Distributors, Delhi.
4. Bela Bharghava (2005) “Family Resource Management and Interior Decoration”, University Book House (P) Ltd.
5. Nickel P. and Dorsey J.M. (1986) “Management in Family Living”, 3rd edition John Wiley and Sons, Newyork.
6. Varghese, Ogale and Srinivasan (1985) “Home Management” New Age International Limited, New Delhi.
7. Gross and Crandall and Kroll (1980) “Management in Modern Families” Prentice Hall, New Jersy.
8. Anna Hong Rutt (1961) “Home Furnishing” John Wiley Eastern Pvt. Ltd., New Commerce.

V SEMESTER
LIFE SPAN DEVELOPMENT - SCHOOLAGE TO ADULTHOOD
THEORY

BSCHSC331

Total - 36 hours
3 hrs/week

OBJECTIVES:

- To understand different developmental tasks in each stage of life.
- To understand the role of parents and peers in development.

UNIT-I

9 hours

- Developmental tasks, Physical, Social, Emotional, Moral and Intellectual Development,
- Common health problems during school age – sore throat, colds and coughs, Flue, Breathing problems, Stomach ache, Dental carries/oral, ocular health, Bed wetting, Diarrhea, Malaria.
- Role of Immunization

UNIT – II

9 hours

- Adolescence – Definition, Developmental tasks, physical changes, puberty, growth spurt, primary and secondary sex characteristics, role of confusion, Ego identity.
- Problems of adolescents

UNIT-III

9 hours

- Developmental tasks, Physiological changes, health status and health care, cognitive and emotional changes, effect of retirement on self and family, personality characteristics of oldage.

UNIT-IV

9 hours

- Family counseling – concept, nature, scope, principles and need of family counseling, thrust areas in family counseling-educational, vocational, social personal, pre-marital and marital problems, methods and approaches to family counseling.

PRACTICALS
BSCHSC337

Total -36 hrs
3 hrs/week

- Participation in preschool with visual aids.
 - Nature experience.
 - Science experience
 - Dramatization.
- Creative Activities.
- Case study of an adolescent-including study of self, family relationship and peer relationship.

REFERENCE:

1. Life span development – a topical approach, third edition, Jhon W. Santrock, Tata McGraw-Hill edition.
2. Human development, eleventh edition, Diane Papalia, Sally Olds, Ruth Field Man, MaGraw Hill.
3. Human development, Ninth edition, Diane Papalia, Sally Olds, Ruth Field Man, McGraw Hill.
4. Developmental Psychology, a lifespan approach, Elizabeth Hurlock, McGraw Hill,
5. Understanding Human development, third edition, Weddy L. Dunn, Grace JeroigMcGraw Hill.
6. Nayak A.K. (2007) Guidance and counseling, APH publishing corporation.

V SEMESTER
INTERIOR DECORATION AND ETIQUETTE
THEORY

BSCHSC332

Total – 36 hours
3 hours/week

OBJECTIVES:

- To provide an insight into the foundation of art and design.
- To learn different styles of flower arrangements and their suitability in different rooms.
- To acquaint the students with the basic knowledge in the art of entertainment and etiquette.

UNIT-I

9 hours

- Interior decoration – Objectives
- Types of design – Structural and Decorative Types of Motifs Used in Decorative Design- Naturalistic, Stylized, Geometric and Abstract.
- Elements of art- Line, Form, Colour, Texture, Pattern, Light and Space.
- Principles of design-Balance, Proportion, Rhythm, Harmony and Emphasis- Their Application in Interiors

UNIT-II

9 hours

- Colour at home-qualities of colour-Hue, Value and Intensity.
- Value scale-Tints, Shades, Neutrals.
- Colour systems; Prang colour system
- Standard colour combinations: Monochromatic, analogous, complementary, double complementary, split complementary, triad, tetrad.

UNIT-III

9 hours

- Flower arrangement: Materials used, Styles, Preparation and care of flowers

UNIT – IV

9 hours

- Etiquette-meaning and introduction, Planning and organizing parties, Table setting, Table ware, Introduction of guests and art of conversation, Table manners and Role of hostess

PRACTICALS
BSCHSC338

Total – 36 hours
3 hrs/week

- Illustrating and explaining structural and decorative design, elements of art and principles of design.
- Painting colour wheel, value scale, neutrals, tints and shades, standard colour schemes.
- Flower arrangements-styles and arrangements suited to different areas.
- Making invitations-acceptance and rejection letters, note paper, place card, greeting card, thank you card, get well card and book mark.
- Table setting – formal and informal, napkin folding.

REFERENCES

1. Anna Hong Rutt (1961), Home Furnishing, John Wiley Eastern Pvt. Ltd., New Commerce.
2. Goldstein and Goldstein; 'Art in everyday life' the Macmillan co.
3. Dorothy Sara; 'The collier quick and easy guide to etiquette', New York collier books.
4. Sarah, Faulkner (1979); Planning a House Rinehart and Winsten.
5. PratapRao (2005) Interior Design, Principles & Practice Standard publishers and distributors, Delhi.
6. SeetharamPremvathi, Pannu, Parveen(2005), Interior Design & Decoration CBS, Publishers &Distributors, Bangalore.

**V SEMESTER
HOUSE PLANNING
THEORY**

BSCHSC333

Total - 36 hrs

3 hrs/week

OBJECTIVES:

- To understand the principle of housing.
- To gain knowledge on basic building materials.

UNIT-I

9 hours

- Housing – Introduction, functions, need and importance, choice of house and factors affecting
- Factors influencing in the selection of a house owning or renting.
- Housing Planning: Site selection, activities in the house and space allocation, principles involved types of different kitchen plans.

UNIT-II

9 hours

- Building materials and finishes: Uses and types of stones, brick, cement, cement blocks, glass, iron and steel, sand, timber, plastic roof tiles and eco friendly materials.
- Types and selection for floors, walls, ceilings and windows.

UNIT-III

9 hours

- Furniture Styles of furniture – Traditional, Contemporary and Modern, selection and arrangement of furniture and types of furniture joints.
- Furnishings: Types of curtains and draperies for windows, floor coverings, cushion covers, bed and table linen.

UNIT-IV

9 hours

:

- Lighting: Types, suitable for various activities and effects created.
- Landscape gardening: Planning and layout of landscape, importance and principles of landscape and outdoor plant varieties.

PRACTICAL
BSCHSC339

Total - 36 hours
3 hrs/week

- Architectural symbols and Model house planning
- Drawing different types of kitchen plans.
- Survey on furniture/ landscape gardening
- Landscape Designing

REFERENCES:

1. Premavathy Seetharaman and Parveen Pannu (2005) Interior design and decoration, CBS Publishers.
2. Bhat Pranav and Goenka Shanita (1990), the foundation of art design, Lakhani Book Depot.
3. Agarwal Anju. D (1989): A practical handbook for consumers, Indian Book House, Mumbai.
4. Pratap Rao (2005): Interior Designing Principles.

**V SEMESTER
EXTENSION EDUCATION
THEORY**

BSCHSC334

Total – 36 hrs
3 hrs/week

OBJECTIVES:

- To understand the concept of Extension Education.
- To develop a sense of readiness to be the part of community.

UNIT-I

9 hours

- Extension Education – Definition, Meaning, objectives, principles, scope, qualities of an extension facilitator.
- Home Science Extension – concept, definition, objectives– its contribution towards development of community.

UNIT-II

9 hours

- Extension Teaching and Learning:- Extension teaching – concept, goals, characteristics, steps, phases in extension education process. Edigar Dav’s cone of experience, Adult learning, factors affecting, types, teaching process – types of teaching methods, principles of teaching, qualities of a good teacher.
- Leader and Leadership – types, styles, qualities, functions, advantages and disadvantages of working with leaders, training campus.

UNIT-III

9 hours

- Extension Teaching Methods: Definition, Aims and objectives, classification, merits and limitations.
- Audio visual aids – definitions, role of visual aids in teaching, important audio, visual and other extension, methods for effective teaching.

UNIT-IV

9 hours

- Community Development – Definition, Meaning, need, concept, essential elements, scope, objectives, principles and limitations, government and non-governmental organizations’ in community/rural development in India.

PRACTICALS
BSCHSC340

Total - 36 hours
3 hrs/week

- Select and prepare community development message using different methods and media.
 - Plan for the community.
 - Develop message to the community
 - Evaluate the Teaching aid used.
- Interview or case study about a leader or successful social worker or organization itself which is useful for community development.

REFERENCES:

1. P.M. Khan and L.L. Somani (2010): Fundamentals of Extension Education, Agrotech publishing company.
2. Wittch and Schuller (2002) : Audio Visual Materials, Havper& Row publications.
3. Extension Education by S.K. Waghmare (2007) New Age India publications.
4. Fundamentals of Teaching Home Science by Arvind Chandra, Anupam Shah and Uma Joshi (2010) International publishers.
5. A textbook of Audio-Visual aids by Lalit Kishore (2002) United publications.
6. Education and Communication for Development by O.P. Dahama and O.P. Bhatnagar (2007) revised edition, New Age India publications.
7. Singh, R, (2002): Text book of Extension Education, Sahitya Kala Prakashan, Ludhiana.

**V SEMESTER
CHEMISTRY - III
THEORY**

BSCHSC335

Total - 36 hrs

3 hrs/ week

OBJECTIVES

This course will enable the students to

- Enrich the knowledge about the basic principles, fundamental concepts and unique mechanistic steps involved in chemical and biochemical reactions
- Provide an introduction to key concepts of modern analytical methods and to equip the students to handle the modern analytical instruments
- Expose the students to the rapid development and enormous expansion of every phase of chemistry

UNIT I

9 hrs

- Co-ordination Compounds: Transition metals, properties (colour, oxidation states, magnetic properties, catalytic properties,). Double and complex salts - differences with examples. Postulates of Werner's theory . Ligands and its types of ligands - uni, bi, poly-dentate, ambidentate with examples, coordination number, stability of complexes, factors influencing stability of complexes, Valence bond theory, structure and magnetic properties of some complexes. Applications of complex formation, metal complexes as therapeutic agents - Platinum, gold, copper complexes.

UNIT II

9 hrs

- Dilute solutions: Dilute solutions and colligative properties. Ideal and non-ideal solutions, methods of expressing concentrations of solutions. Colligative properties, osmotic pressure and its measurement by Berkley and Hartley's method. Laws of osmotic pressure. Importance of osmotic pressure on living cells - hypotonic, hypertonic, isotonic solutions. Donnan membrane equilibrium, Raoult's law, relative lowering of vapour pressure. Molecular weight determination from osmotic pressure and relative lowering of vapour pressure. Elevation of boiling point, depression in freezing point, experimental methods for determining various colligative properties. Vant Hoff's factor. Abnormal molecular weight. (no need to workout problems)

UNIT III

9 hrs

- Alcohols: Classification, monohydric alcohols – general reactions, distinguishing reaction for 1,2 and 3 alcohols. Dihydric alcohols – Glycol preparation reactions and uses. Trihydric alcohols: Glycerol, synthesis, reactions, uses. Phenols: Acidity of phenols, effects of substituents on acidity on phenols. Reactivity of phenols towards electrophiles, uses. Carbonyl compounds: Synthesis of aldehydes and ketones. Structure, reactivity and properties of carbonyl group, nucleophilic addition reactions, aldol condensation, Perkins reaction, Cannizzaro reaction (mechanism).

UNIT IV

9 hrs

- Carboxylic acids: Synthesis of monocarboxylic acids, acidity of carboxylic acids, effect of substituents on acidity of carboxylic acids
- Hydroxy acids and dicarboxylic acids: Structure, preparation and properties of lactic acid, tartaric acid, citric acid, Succinic acid, maleic acid, fumaric acid. Effects of heat anhydrating agents on hydroxy acids.
- Amines: Classification, properties, synthesis of aliphatic and aromatic amines, separation of primary, secondary and tertiary amines (Heinsberg method). Distinguishing reactions of primary, secondary and tertiary amines.

PRACTICALS
BSCHSC341

Total - 36 hrs
3 hrs/week

Organic reparations

1. Acetanilide from aniline
2. M-dinitro benzene
3. Parabromo acetanilide
4. Benzoic acid from toluene

Physical chemistry experiments

5. Determination of density of a liquid using specific gravity bottle
6. Viscosity using Ostwald's method
7. Molecular weight of non-volatile substance by Walker Lumsden method
8. Critical solution temperature of phenol water system
9. Percentage of given electrolyte (NaCl) in water – phenol system by miscibility temperature method
11. Rate constant of decomposition of H₂O₂ using KmNO₄
12. Density of a liquid using specific gravity bottle and surface tension

REFERENCES

1. Soni PL (1988) A textbook of Inorganic chemistry, Sulthan Chand & Sons
2. Lee JD (1988) Concise Inorganic Chemistry, Blackwell Science
3. Skoog DA, West DM, Holler JF (1993) Fundamentals of Analytical Chemistry, New York CBS Publ.
4. Gurudeep Raj (2001) A text book of Inorganic chemistry, Goel Publ. house, Meerut
5. Soni PL (2000) A textbook of Organic chemistry, Sulthan Chand & Sons
6. Bahl A and Bahl BS (2000) Advanced organic chemistry, Sulthan Chand & Sons
7. Vogel AI (1994) Textbook of quantitative chemical analysis, ELBS Ed.
8. Agarwal OP (1998) Chemistry of natural products, GoelSulthan Chand & Sons Publ. House, Meerut
9. Madan RL, Tuli GD (2001) Physical Chemistry, Sulthan Chand & Sons
10. Raj Gurudeep (2001) Textbook of advanced Physical chemistry, Goel Publ. House, Meerut
11. Lehninger AL, Nelson DL, Cox MM (1993) Principles of Bio Chemistry, 2nd Ed., CBS Publ., and distributors. 46

**V SEMESTER
FOOD MICROBIOLOGY – I
THEORY**

BSCHSC336

**Total – 36 hrs.
3 hrs/week**

OBJECTIVES:

This course will enable students to:

- To understand the nature of microorganisms involved in Food Spoilage, Food Infections and Intoxications
- To understand the importance of Microorganisms in Food Industry

UNIT I

9 hrs

- Definition and history of microbiology - Contributions of Antonie van Leewenhoek, Louis Pasteur, LazarroSpallanzani, Robert Koch, Joseph Lister, Edward Jenner, Alexander Fleming, MW Beijerinck and Dmitri Ivanowsky to the development of microbiology. Culture media used in the isolation and culturing of microorganisms. The common nutrient requirement for bacteria - macro and micronutrients, Saprophytic Nutrition, Holozoic Nutrition.

UNIT II

9 hrs

- Instrumentation in microbiology - Construction and working principles of autoclave, hot air oven, laminar air flow, incubator, bacterial colony counter.. Sterilization - Physical methods - heat, irradiation, filtration. Chemical methods - alcohol, aldehydes, dyes, halogens, phenols, metallic salts, surface active agents, gases

UNIT III

9 hrs

- Bacteria - classification according to Bergey's manual upto levels of section, ultrastructure, reproduction - asexual and sexual methods, importance of bacteria in food.
- Viruses - structure and classification - plant, animal, bacterial and cyanophycean viruses, life cycle in virus - lytic and lysogenic cycle.

UNIT IV

9 hrs

- Yeast - morphology, reproduction - haplobiontic, diplobiontic and haplodiplobiontic cycle, physiology and nutrition in yeast. Importance of yeast in food.
- Mold - outlines of classification and reproduction - asexual and sexual modes. Type study of Aspergillus, Fusarium, Penicillium Rhizopus and Mucor. Importance of molds in food.

PRACTICALS
BSCHSC342

Total –36hrs
3 hrs/week

- Introduction –Good laboratory Practices. Study of apparatus used in microbiology lab
- Study of compound microscope.
- Cleaning and sterilisation of glassware.
- Preparation of culture media-Nutrient agar, Potato Dextrose Agar, EMB agar.
- Culturing of micro-organisms –point inoculation, streak inoculation, spread plate method, pour plate method and swab method.
- Simple staining of bacteria. Gram staining of bacteria. Negative staining of bacteria.
- Wet mount of fungi using lactophenol blue stain.
- Study of bacterial motility by hanging drop technique.
- Sampling of soil-Serial dilution technique.
- 10. Sampling of air by Plate exposure method.

REFERENCES

1. Frazier WC, West off DC (1998), Food Microbiology 4th Ed., Tata McGraw Hill Publ. Co. Ltd.
2. Jay J M (1986) Modern Food microbiology, 3rd Ed., Van No Strand Reinhold Co. Inc.
3. Pelezer ML, Reid RD (1978) Microbiology, McGraw Hill Book Co., New York
4. Brown A, Smith H (2015) Benson's Microbiological applications, McGraw Hill Publ.
5. Willey J, Sandman K, Wood D (2016) Prescott's Microbiology, 11th Ed., McGraw Hill Book Co., Newyork.

**VI SEMESTER
HUMAN DEVELOPMENT AND FAMILY RELATIONS
THEORY**

BSCHSC351

**Total - 3 hours
3 hrs/week**

OBJECTIVES:

- To introduce the student to the field of Human development, concepts, Scope, Dimensions and Interrelations.
- To study the interventions in the field of human development.

UNIT - I

9 hours

- Marriage: Concept of marriage in Indian society, types of marriages, Factors to be considered: cultural, religious, economic. Responsibilities and adjustments in marriage.

UNIT – II

9 hours

- Family: Purpose and functions of family, types of family.
- Beginning family –preparation of parenthood, family with a newborn, family with preschooler, family with adolescents.
- Family at the launching stage – health problems, re organization of the family living.
- Family in the later years –health problems, relationship problems, decreased income leisure time activities.

UNIT - III

9 hours

- Family crisis- death, old age, infidelity, separation, alcoholism, divorce, adoption.

UNIT - IV

9 hours

- Family planning- temporary and permanent methods of Family planning

PRACTICALS
BSCHSC357

Total – 36 hrs.
3 hrs/week

- Project -Case studies on any of the following topics
- Interviewing a single parent (away due to profession / due to care of elderly parents / due to illness of any one member due to death, due to divorce) studying the effect of separation of children / couple
- Case study of grieving individual
- Case study in working middle aged men and women on preparation for retirement
- Health problems of elderly people
- Visit to counseling centre, family court, old age centre/de-addiction centre etc.

REFERENCES:

1. Gorden, I.J.[1975]: Human Development, New York: Harper an Row, Unit I PP.2-21
2. Harries, A. C. [1986]: Child DevelopemntSt.Paul: West Pub. Unit IPP.5-17
3. Lerner &Jultsch, [1982]: Human Development : a life span perspective [pp.247-253] New York: Mccraw Hill Book Co.,
4. Saraswathi, T.S and Kaur, B[1993]: Human Development and family studies in India, new Delhi: Sage Publications, Unit VIII
5. Lerner, R. M &Hultsch, F. [1983]: Human Development: A life span perspective. New York: Harper and Row, Unit IPP.75-91, PP.117-140, Unit II, Unit IV
6. Craig, G. [1999]; Human Development N.J Prentice hall
7. Rice, F.P. [1965] Human Development – A life span approach, N.J Prentice Hall

**VI SEMESTER
RESOURCE MANAGEMENT
THEORY**

BSCHSC352

**Total - 36 hours
3 hrs/ week**

OBJECTIVES:

- To Develop an understanding of the Principles of Home Management
- To help students to develop experience and technique in the field of Household Equipments and Purchases.

UNIT I

9 hours

- Meaning & processes of Family Resource Management.
- Steps in Decision making and Types of Decisions
- Resources – classification, characteristics and factors affecting the use of resources

UNIT II

9 hours

- Time as a resource – steps in time plan, Tools in Time Management: peak load, work curve and rest period.

UNIT III

9 hours

- Energy- Fatigue, Types of Fatigue and relieving methods.
- Work simplification – Definition, principles and Techniques
- Mundel's classes of change

UNIT IV

9 hours

- Household equipments – Use and care of different household equipment's: Cooking Stove, Refrigerator, Pressure Cooker, Oven, Mixer, Iron Box, Washing Machine And Vacuum Cleaner
- A study Modern gadgets available in the market

PRACTICALS:
BSCHSC358

Total – 36 hrs
3 hrs/week

- Survey of global resources ; Solar/ Water/ Wind,/biogas etc
- Time and Activity chart: for one full working day, half working day and a Holiday.
- Techniques of work simplification- Flow process chart / pathway chart with symbols and activity.
- A study on Peak loads for working women and Home maker with alternate time plans.
- Survey on Modern Household equipment available in the market.

REFERENCES:

1. Deshpande, R.S [1980], Modern ideal homes for India, Education Deshpande Publications, India
2. Nickel, P. and Dorsey, J.M.[1986] Management in family living; 3rd edition, John Wiley & Sons New York.
3. Gross, Crandall & Kroll [1980] ‘Management for Modern Families’ Prentier Hall, NewJersy.
4. Varghese, Ogale and Srinivasan,’ Home Management’ Wiley Eastern Ltd., New Delhi.
5. BelaBharghava” Family Resource Management & Interior decoration (2005) University Book House (P) Ltd.,
6. PremalathaMullick (2011) “Text book of Home Science” Kalyani publishers. New Delhi.
7. SushmaGuptha, NeeruGarg, AmitaAggarwal (1993) “Home Management Hygiene and Physiology” Kalyani Publishers. Ludhiyana

**VI SEMESTER
PERSONAL FINANCE AND CONSUMER STUDIES
THEORY**

BSCHSC353

**Total –36 hours
3 hrs/week**

OBJECTIVES:

- To know the nature of Saving and the Role of Saving
- To understand the Importance, role and protection of the Consumers

UNIT - I

9 hrs.

- Definition and types of Income – Money income, Real income and Psychic income
- Ways of supplementing family income

UNIT - II

9 hrs

Family Budget and Income Tax:

- Family budget - Definition, limitation, advantages, steps in making a budget and account keeping methods.
- Income tax – Type, Tax Implications and Calculation of Personal Income Tax

UNIT - III

9 hrs

- Savings – types, Importance, Factors affecting household savings
- Different Saving Institutions
- Investment – Objectives, Types, criteria for investment
- Insurance services: Types and Guidelines

UNIT - IV

9 hrs

- Consumer Education – importance, Rights, Responsibilities, problems and protection

PRACTICALS:
BSCHSC359

Total – 36 hrs.
3 hrs/week

- Analysis of household budget – Budget plans for 3 income groups
- Different Account keeping Methods
- Income tax Filing
- Study on Banks, Post offices to understand the services and to learn to fill different bank forms and types of check
- Consumer aids – Brands, Labels, Trademark and Advertisement

REFERENCES:

1. Gross et.al (1980); Management for modern families, 3rd edition, Prentice Hall, New jersey.
2. Nickel and Dorsey (1986); Management in family living, John Wiley and Sons.
3. Koontz and Weihrich (1980); Essentials of Management McGraw hill international Ltd.
4. PremavathySeetharaman and Praveen Pannu (2005) Interior Design and Decoration, CBS Publishers
5. AgarwalAnju.D(1989): A practical handbook for consumers, Indian Book Houses, Mumbai.

**VI SEMESTER
EXTENSION EDUCATION AND COMMUNICATION
THEORY**

BSCHSC354

**Total - 36hrs
3 hrs/week**

OBJECTIVES :

- To understand the effectiveness of Communication
- To become aware of Different types of Communication.

UNIT – I

9 hrs

- communication process, Definitions, Communication system, functions, types communication models, key elements, channels of communication, Business communication

UNIT – II

9 hrs

- Communicator – Communicate Relationship
- Concepts to be adopted by a communicator, communicate relationship, Extension talks, Decision making process, Physical Inter dependence credibility, interaction

UNIT – III

9 hrs

- Visual Media and Communication literature
- A detailed study of Some of the visual aids – poster – photographs, slides,., blackboard, Bulletin board, flash cards, flannel graphs, exhibits, charts.
- Communication Literature – Leaflets and folders, circular letters, tours report, group discussions, lectures, symposium and proceedings.

UNIT – IV

9 hrs

- Traditional Media – Folk Media, puppet show, Folk Drama, folk songs- Folk dance
- Recent trends in Communication – ICR Tools, print and electronic media, e-mail, internet, uses of Multimedia, Mobile Phone, Video and teleconferencing, Computer assisted instructions, Web technology and information kiosks

PRACTICALS:
BSCHSC360

Total - 36 hrs
3 hrs/week

- Demonstrate Verbal and non-verbal communication
- Demonstrate barriers of communication
- Make poppet show
- Collect and present folk songs and folk dances
- Using Modern Media present PPT/ Pamphlet / Leaflet or any other

REFERENCES :

1. Barker, L.(1999). “Communication”, New Jersey: Prentice Hall, Inc; 171
2. P.M Khan and L.L Somani (2000): Fundamentals of Extension Education. Agrotech publishing company. Patri and Patri (2002); Essentials of Communication. Greenspan Publications
3. Education and Communication for Development by O.P Dahama and O.P Bhatnagar (2000) New Age India publications.
4. Vivian, J (2001) The Media of Mass Communication.
5. Stevenson, D (2002) Social Theory and mass Communication Sage Publications.
6. Enderson (1999): introduction to communication theories and practices, Cummings publishing house, California.
7. Sing, R, (2002): Text book of Extension Education, Sahitya Kala Prakashan, Ludhiana

VI SEMESTER
CHEMISTRY - IV
THEORY

BSCHSC355

Total - 36 hrs
3 hrs / week

OBJECTIVES:

This course will enable the students to:

- enrich the knowledge about the basic principles, fundamental concepts and unique mechanistic steps involved in chemical and biochemical reactions E
- provide an introduction to key concepts of modern analytical methods and to equip the students to handle the modern analytical instruments P
- expose the students to the rapid development and enormous expansion of every phase of chemistry E

UNIT I

9 hrs

- Electrochemistry: Specific equivalent and molar conductance, Kohlrausch's law, electrodes, electrode potential. Nernst equation. Reference electrode, working and construction of -Hydrogen electrode and calomel electrode, Quinhydrone electrode, glass electrode. Determination of equivalent conductance of NaCl. Conductometric titrations. Potentiometric titration. Determination of pH using quinhydrone electrode. E
- Chemical equilibrium: Second and third law of thermodynamics, concept of entropy, Equilibrium constant and energy, Lechatelier's principle and its applications C

UNIT II

9 hrs

- Stereochemistry of organic compounds: Stereoisomerism, types of stereoisomerism, optical isomerism. Elements of symmetry, asymmetric, atom molecular dissymmetry, chirality, optical isomerism in glyceraldehydes, lactic acid and tartaric acid, Enantiomers, diastereomers, meso compounds resolution of enantiomers and racemisation. Geometrical isomerism – condition, examples, geometrical isomerism in oximes. Conformational isomerism: conformational analysis of ethane and butane, Newman projection difference between configuration and conformation.

UNIT III

9 hrs

- heterocyclic compounds: Structural formula and importance of furan, pyrrole, thiophene, pyridine quinoline and isoquinoline, aromatic characteristics of pyrrole, furan, thiophene, pyridine, reactions. H
- terpenes: Classification isoprene rule, structure, and importance of limonene, menthol, camphor. T
- Alkaloids: Classification biological functions with examples, structure and physiological action of LSD, morphine, nicotine, atropine. A
- Polymers: Classification, properties of polymers, preparation and applications of PET, nylon-6,6, Bakelite, PVC, polythene, polypropylene, polystyrene P

UNIT IV

9 hrs

- Environmental Chemistry: Air pollution – air pollutants, their sources, effects and control. Water pollution: Types of water pollutants, biodegradation, dissolved oxygen level of water, Biochemical Oxygen Demand (BOD) of water, Chemical Oxygen Demand (COD) of water. Determination of DO, BOD and COD of waste water, industrial effluents, their effects, treatment of polluted water and sewage treatment. Soil pollution: pollutants, agricultural animal manures, crop harvesting. Pesticides. Use of fertilizers. Radioactive wastes. Control of soil pollution. E
- Chromatography: General principles, adsorption and partition techniques. Paper chromatography, ascending and circular. Rf values. Principle and applications of TLC, Column chromatography. C

PRACTICALS
BSCHSC361

Total -36 hrs
3 hrs/week

Extraction of bio-molecules

1. Starch from potato
2. Caffeine from tea leaves
3. Casein from milk

Physical chemistry experiments (instrumental)

4. Conductometric titration of strong acid and strong base
5. Conductometric titration of acid mixture against strong base.
6. Verification of Beer-Lambert's law by colorimeter.
7. Potentiometric titration of Mohr's salt against Potassium dichromate.
8. Determination of pH of buffer by pH meter or potentiometer.
9. Determination of equivalent conductance of strong electrolyte.

Chromatography experiments

10. Identification of amino acids by circular paper chromatography
11. Separation of green leaf pigments by column chromatography

REFERENCES

1. Soni PL (1988) A textbook of Inorganic chemistry, Sulthan Chand & Sons
2. Lee JD (1988) Concise Inorganic Chemistry, Blackwell Science
3. Skoog DA, West DM, Holler JF (1993) Fundamentals of Analytical Chemistry, New York CBS Publ.
4. Gurudeep Raj (2001) A text book of Inorganic chemistry, Goel Publ. house, Meerut
5. Soni PL (2000) A textbook of Organic chemistry, Sulthan Chand & Sons
6. Bahl A and Bahl BS (2000) Advanced organic chemistry, Sulthan Chand & Sons
7. Vogel AI (1994) Textbook of quantitative chemical analysis, ELBS Ed.
8. Agarwal OP (1998) Chemistry of natural products, Goel Sulthan Chand & Sons Publ. House, Meerut
9. Madan RL, Tuli GD (2001) Physical Chemistry, Sulthan Chand & Sons
10. Raj Gurudeep (2001) Textbook of advanced Physical chemistry, Goel Publ. House, Meerut
11. Lehninger AL, Nelson DL, Cox MM (1993) Principles of Bio Chemistry, 2nd Ed. CBS Publ., and distributors

**VI SEMESTER
FOOD MICROBIOLOGY - II
THEORY**

BSCHSC356

**Total -36hrs
3 hrs/week**

OBJECTIVES:

To enable the students to:

- To understand the principles of various methods used in the prevention and control of microorganisms in foods
- To understand the criteria for Microbiological Safety in various Food operations to avoid public health hazards due to contaminated foods

UNIT I

9 hrs

- General principles underlying spoilage of food - Fitness and unfitness of food for consumption; Causes for spoilage. Factors affecting kinds and numbers of microorganisms in food. Factors affecting the growth of microorganisms in food.

UNIT II

9 hrs

- Microbiology of water – sources, bacteriological examinations, total count, test for E.coli. Purification of water – filtration, sedimentation, disinfection. Water borne diseases - bacterial, viral, protozoan. Microbiology of sewage and sewage disposal. Bacterial and Fungal Air Borne Diseases.

UNIT II

9 hrs

- Contamination and kinds of organisms causing spoilage of fruits and vegetables. Contamination and kinds of organisms causing spoilage of meat, poultry, fish and eggs. Contamination and kinds of organisms causing spoilage of milk and milk products. Contamination and spoilage of fats and oils, bottled beverages, spices and condiments.

UNIT III

9 hrs

- Food poisoning - Staphylococcal poisoning, Streptococcal poisoning, botulism, Salmonellosis, Shigellosis. Food borne infections - Clostridium perfringens, Vibrio, EPEC, Bacillus cereus, Campylobacter, Listeria, yersiniosis.

PRACTICALS
BSCHSC362

Total - 36 hrs
3 hrs/week

- Estimation of lactic acid in milk
- Iodometric estimation of milk lactose.
- Quality tests for milk-Methylene Blue Reduction Test, Resazurin test, Phosphatase test, Turbidity test.
- Isolation of micro-organisms from food samples and spoilt vegetables
- Sampling of water-Membrane filtration technique.
- Standard Plate Count for water and milk samples.
- Coliform count for water and milk samples.
- Sampling of food handlers.
- Determination of microbial count of milk products.

REFERENCES

1. Frazier WC, Westoff DC (1998) Food Microbiology 4th Ed., Tata McGraw Hill Publ. Co. Ltd
2. Jay JM (1986) Modern Food microbiology, 3rd Ed., Van No Strand Reinhold Co. Inc.
3. Pelezer ML, Reid RD (1978) Microbiology, McGraw Hill Book Co., New York
4. Brown A, Smith H (2015) Benson's Microbiological applications, McGraw Hill Publ.