

Academic Council 25/05/2011

Item No. 4.97.

UNIVERSITY OF MUMBAI



Syllabus for the F.Y.B.Sc.

Program: B.Sc.

Course : Home Science

(Credit Based Semester and Grading System with
effect from the academic year 2011–2012)

SEMESTER I

COURSE CODE	TITLE	WORKLOAD		NO. OF CREDITS	
		L	P	T	P
USHS101	Basic Nutrition	2		3	
	Food Science	3			
USHS102	Textile & Fashion Technology Paper I: Fibre to Fabric	3		3	
	Textile & Fashion Technology Paper II: Psychology of Clothing	2			
USHS103	Child Development	3		4	
	Adolescent Development	3			
USHS104	Principles of Design	3		3	
	Consumer Education	2			
USHS105	– Foundation Course – ♦Computer Applications (Value Added)	3		2	
USHSP101	Group I: - Food Science - Principles of Design		3 2		3
USHSP102	Group II: - Children's Clothing		3		2
				15	5

♦ Additional fee will be charged for the Computer classes. Unless a student passes the Computer Examination the student will not get the credits of the said paper

Course Code		Title of the Paper	Lectures / week	Marks allotted	Credits for the paper
USHS101	Part A	Basic Nutrition	2	75	3
	Part B	Food Science	3	100	

Part A: BASIC NUTRITION

No. of Credits: 1

Objectives:-

1. To enable students to understand the relation of nutrition to health.
2. To enable students to understand functions, sources, requirements and effects of deficiency of macronutrients.
3. To enable students to understand digestion, absorption and metabolism of macronutrients

Course Content:	Lectures
Unit I: Introductory Nutrition and Energy A. Definition of terms and Food Pyramids B. Energy	15
Unit II: Macronutrients A. Carbohydrates B. Lipids C. Proteins	15

References:

- Srilakshmi,B(2003) Nutrition Science New Age International Ltd.
- Gopalan, c et al(2004)Nutritive value of Indian Foods NIN, ICMR, Hyderabad
- ICMR(1998)Nutrient requirements and Recommended Dietary Allowances for Indians-A report of the expert group of the ICMR, NIN, Hyderabad.
- Swaminathan, M.(1998)Essentials of Food and Nutrition.2nd edition, volume I&II Bangalore Printing & Publishing,Bangalore
- Ramarao A.V.S.S.(1998) A textbook of Medical Biochemistry, New Delhi:UBS
- Guthrie,H.(1986)Introductory Nutrition,6th edition TimesMirror/Mosby college Publication.
- Bamji, M.Praihad Rao,N.and Reddy,V.(Ed)(1996)Textbook of Human Nutrition. Oxford and TBH Publishing Co,Pvt,Ltd.

Part B: FOOD SCIENCE

No. of Credits: 2

Objectives

1. To acquire knowledge of various concepts of Food Science, its facts and principles
2. To develop the ability to select and apply the principles to practical situations.

Course Content:	Lectures
Unit I: A. Concept of Food Science <ul style="list-style-type: none">- Nutrition- Nutrients B. Food Groups Study of the classification, structure, composition, nutritive value, selection and storage of the following <ul style="list-style-type: none">- Nuts, fats and oils- Sugars and artificial sweeteners	15
Unit II: Food Groups Study of the classification, structure, composition, nutritive value, selection and storage of the following <ul style="list-style-type: none">a. Cerealsb. Pulsesc. Vegetables and fruit	15
Unit III: Food Groups Study of the classification, structure, composition, nutritive value, selection and storage of the following <ul style="list-style-type: none">a. Milkb. Flesh foods – meat, fish, egg, poultry	15

Unit III:

References :

- Arora K. (1993). Theory of Cookery. New Delhi: Frank Bros. and Co.
Bennion, M. (1975). Introductory Foods. New York:Mac Millan Publishing Co. Inc.
Manay, N.S. (1995). Food Facts and Principles. New Delhi: New Age International
Macwilliam M. (1980). Food Fundamentals. New York: John Wiley & Sane.
Srilakshmi. B. (1997) Food Science. New Delhi:New Age
Swaminathan, M. (1991). Food Science & Experimental Foods. Madras: Ganesh & Co.

***Part A & B examinations will be conducted separately as per the details given in the table.**

Course Code		Title of the Paper	Lectures/ week	Marks allotted	Credits for the paper
USHS102	Part A	Textile & Fashion Technology – Paper I Fibre to Fabric	3	100	3
	Part B	Textile & Fashion Technology – Paper II - Psychology of Clothing	2	75	

**Part A: Textile and Fashion Technology –
Paper I
FIBRE TO FABRIC**

No. of Credits: 2

Objectives:

1. To introduce students to the basics of textiles and clothing.
2. To give an insight into the new developments in textiles and garments.

Course Content:	Lectures
Unit I : Fibers Introduction to textile fibers a. Classification of fibers b. Introduction to polymerization and molecular arrangement of fibers c. Major Cellulosic fibers: Detailed study of Indian varieties, chemical structure, manufacturing processes, properties, uses and trade names of Cotton, Jute, Flax	15
Unit II: Fibers: Detailed study of Indian varieties, chemical structure, manufacturing processes, properties, uses and trade names of a. Major Proteinic Fibers: Wool, Silk, b. Major Synthetic Fibers Nylon, Polyester, Acrylic	15
Unit III: Fibers: Detailed study of chemical structure, manufacturing processes, properties, uses and trade names of a. Regenerated fibers like Viscose Rayon, Acetate Rayon, etc b. Minor Fibers: Brief study of other natural and synthetic fibers such as Hemp, Pina, Banana, Mohair, PVC, PVA, Elastomeric, Metallic, Glass, Carbon, etc. c. Study of blends – blending, advantages, common blends and end uses Recent Developments	15

References:

- Ajgaonkar, D. B.(1998). *Knitting technology*.Mumbai:Universal.pub.corporation
- Corbman, B. P. (1985). *Textiles: Fibre to fabric*. (6th Ed.). New York: Gregg Division/McGraw Hill
- Collier, B. J. and Phyllis, G. T. (2001). *Understanding textiles*. New Jersey: Prentice Hall.
- D’Souza, N. (1998). *Fabric care*. India: New Age International.
- Hollen, N., Saddler, J., Langford, A.L. & Kadolf, S.J. (1988). *Textiles*. (6th Ed). New York: Macmillan.
- Joseph, M. L. (1972). *Introductory textile science*. (2nd Ed.). New York: Holt, Rinehart and Winston.
- Joseph, M..L. (1975). *Essentials of textiles*. New York: Holt, Rinehart and Winston.
- Shenai, V. A. (1991). *Technology of textile processing*. Vol. 1. (3rd Ed.). India: Sevak.
- Tortora, P.G. (1978). *Understanding textiles*. New York: Macmillan.
- Wynne, A. (1997). *Textiles – the motivate series*. London: Macmillan Education.

Part B: Textile And Fashion Technology
Paper II
PSYCHOLOGY OF CLOTHING

No. of Credits: 1

Objectives:

1. To understand the psychology of clothing.
2. To give an insight into the relationship between clothing and body physique, personality and factors affecting clothing behavior.

Course Content:	Lectures
<p>Unit I : Origin & Theories of Dress and Adornment</p> <ul style="list-style-type: none"> • Early Interest / Use • Purpose for Dress – Modesty, Adornment, Protection and Utility <p>Clothing and Physical Self</p> <ul style="list-style-type: none"> • Body Image and Social Ideals • Bodily Traits and Social Influences • Physical Attractiveness • Physical Disabilities and appropriate clothing • Selection of fabrics for various age groups and end uses including self-help features 	15
<p>Unit II : Clothing, Socialization and Concept of Self</p> <ul style="list-style-type: none"> • Stages in Self Concept formation • Social Feedback • Self Comparison • Self Perception • Self Esteem 	15

References:

- Kaiser S. B. (1985), *The Social Psychology of Clothing*, New York, Mac Millan Publishing Company.
- Damhorst M. L., Miller K. A. & Michelman S. O. (2001), *The Meaning of Dress*, New York, Fairchild Publications.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code		Title of the Paper	Lectures/ week	Marks allotted	Credits for the paper
USHS103	Part A	Child Development	3	100	4
	Part B	Adolescent Development	3	100	

Part A: CHILD DEVELOPMENT

Objectives:

No. of Credits: 2

1. To impart basic knowledge on the principles and patterns of growth and development in children from conception through infancy.
2. To create an awareness of the various factors that influence and stimulate growth and development during this period.

Course Content:	Lectures
Unit I : Introduction; Theories of Child Development : Meaning of child development and importance of understanding child development (a) Principles of development (b) Factors influencing development (heredity and environment) (c) Erikson: Psychosocial development (d) Freud: Psychosexual development (e) Piaget: Cognitive development (g) Kohlberg: Moral development	15
Unit II : Prenatal Development and Birth (a) Conception, miscarriages, abortion, genetic counseling (b) Diagnosis of pregnancy: signs, symptoms, tests (c) Reproductive technologies (d) Prenatal development and factors influencing prenatal development (e) Stages of labour (f) Trends in childbirth (delivery) (g) Complications in delivery (h) Multiple births	15
Unit III : Infancy (a) Infant: examination and assessment, characteristics, reflexes and sensory capacities (b) Childcare: bathing, feeding (breast feeding, bottle feeding, supplementary feeding, weaning), immunization (c) Physical development: milestones of physical development, infant stimulation/activities to promote physical development and sensory perceptual development (g) Cognitive development: sensorimotor period, information processing, and methods to foster cognitive development (h) Language development: acquiring language, key signs of language development, first words, and stimulation/activities to promote language development (i) Psychosocial development: milestones of development, stimulation/activities to promote psychosocial development	15

References:

- Berk, L. (1996). Infants, children and adolescents. (2nd Ed.). Boston: Allyn & Bacon.
- Dacey J.S. & Travers, J.F. (2004). Human development Across the lifespan. New York: Tata McGraw Hill.
- Gallature, D.L., & Ozmun, J.C. (2006). Understanding motor development: Infants, children, adolescents and adults. New York: Tata McGraw Hill.
- Jaya, N., & Narasimhan, S. (2005). Parenting Children below two years. India: Abacus Foundation.
- Kail, R. & Cavanaugh, J. (2000) Human development-A lifespan view (2nd Ed) New York: Wadsworth
- Santrock, J. (2007). Children (11th Ed.). New York: Tata McGraw Hill

Part B: ADOLESCENT DEVELOPMENT

No. of Credits: 2

Objectives:

1. To expose students to different aspects of adolescent development.
2. To sensitize students to the common challenges during adolescence.
3. To acquaint students with the various ways in which one can create well-being in adolescence.

Course Content		Lectures
Unit I	Introduction, History, and Biological Development (a) Historical perspective of the study of adolescents: early history, stereotyping of adolescents, a positive view of adolescence (b) Puberty: determinants, growth spurt, sexual maturation, secular trends in puberty, pubertal timings and health care, psychological dimensions (c) Adolescent health a critical juncture: nutrition, exercise and sports, sleep, leading causes of death (d) Exploring heredity and environment	15
Unit II	Cognitive and Moral Development (a) The cognitive development view : Piaget's theory, Vygotsky's theory (b) The information processing view: mechanisms of change, attention, memory, executive functioning (decision-making, critical thinking, creative thinking, metacognition and self-regulatory learning) (c) Social cognition: adolescence egocentrism, perspective taking (d) Moral development: Piaget, Kohlberg, and Gilligan (e) Moral personality (f) Contexts of moral development: parenting, schools	15
Unit III	Social and Emotional Development (a) Self: what is the self, multidimensionality, self-concept vs. self-esteem, theories (James, Cooley, Harter), characteristics of an adolescent's self (b) Identity: Erikson's identity vs. role diffusion, psychosocial moratorium, identity crisis, Marcia's four statuses of identity, current perspective on identity development (c) Emotions: definition, relationship with self-esteem, adolescence as a period of storm and stress, hormones and emotions, social aspects and emotions, emotional competence	15

References:

- Santrock, J. W. (2007). *Adolescence*. USA: Allyn & Bacon.
Mehta, M. (2000). *Adolescent psychology*. Jaipur: Pointer.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code		Title of the Paper	Lectures/ week	Marks allotted	Credits for the paper
USHS104	Part A	Principles of Design	3	100	3
	Part B	Consumer Education	2	75	

Part A: PRINCIPLES OF DESIGN

Objectives

No. of Credits: 2

To enable students to:

1. understand the principles of Art and Design.
2. gain knowledge of the use of these principles in the field of Interior Design.

Course Content		Lectures
Unit I:	<p>Introduction to Design</p> <ul style="list-style-type: none"> • Good taste • Types of Design: Structural and Decorative • Objectives of Design: Function, beauty and Expressiveness • Design Concept: Application <p>Elements of Design: Colour</p> <ul style="list-style-type: none"> – Qualities of colour: hue, value and intensity – Colour Systems: Prang's Colour wheel, Munsell Colour System, Itten's Colour Star – Color schemes: Monochromatic & Complementary color schemes. – Law of Background Area 	15
Unit II:	<p>Other Elements of Design:</p> <ul style="list-style-type: none"> • Line <ul style="list-style-type: none"> – Types of Line: Straight and Curved – Illusion of Lines – Emotional Significance • Form <ul style="list-style-type: none"> – Definition – Classification: open & closed, positive and negative, foreground and background – Requirements of a good form • Texture <ul style="list-style-type: none"> – Definition – Types: visual, tactile – Significance of Texture – Texture and Intensity – Application • Light <ul style="list-style-type: none"> – Types of light: Natural and Artificial – Artificial: lighting systems – Emotional Significance • Space <ul style="list-style-type: none"> – Definition – Classification: Open and Close – Application in Interiors • Pattern <ul style="list-style-type: none"> – Definition – Motifs: Naturalistic, Stylized, Abstract, Geometric – Characteristics of a Good Pattern 	15

Unit III:	<p>Room Décor Accessories</p> <ul style="list-style-type: none"> – Definition – Types of Accessories – Factors affecting the Choice of Accessories <p>Furniture</p> <ul style="list-style-type: none"> – Brief history of Furniture Design – Factors influencing Selection of Furniture <p>Landscape Gardening</p> <ul style="list-style-type: none"> – Areas that can be used – Principles to be followed <p>Flower Arrangement</p> <ul style="list-style-type: none"> – Basic types of arrangements 	15
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References:

- Allen. P. S. (1985). Beginnings of Interior Environment (5th Ed), Macmillan Publishing Co. London.
- Bhatt. P. & Goenka S. (2001); Foundation of Art & Design (2nd Ed). Lakhani Book Depot. Mumbai
- Clifton C., Mogg & Paine. M. (1988). The Curtain Book. Reed International Books. New York.
- Craig. H. T. (1987). Homes with Character. Glencoe Publishing Co. Inc. U.S.A.
- Gilliat M. (1986). The Decorating Book. Library of Congress Cataloguing Publications, Great Britain.
- Lewis E. L. (1980). Housing Decisions, The Good Heart, Willcox Co. Inc. Great Britain.
- Seetharaman. P. & Pannu. P. (2005). Interior Design & Decoration. First Edition, CBS Publishers & Distributors. New Delhi.

Part B: CONSUMER EDUCATION

Objectives:

No. of Credits: 1

1. To highlight the importance of Consumer Education
2. To increase awareness in the students about the malpractices prevalent in the Market.
3. To empower students with the knowledge of Consumer Rights and Responsibilities

Course Content:		Lectures
Unit I:	Introduction <ul style="list-style-type: none">• Definition• Basic terms & concepts• The consumer movement in India<ul style="list-style-type: none">– Objectives– A brief history• Consumer rights and responsibilities	(15)
Unit II:	Buying Aids <ul style="list-style-type: none">• Consumer Decision Making<ul style="list-style-type: none">– Definition– Process of decision making• Grading and standardization<ul style="list-style-type: none">– Definition– Types– Advantages• Standardization / Certification marks• Branding<ul style="list-style-type: none">– Definition– Types– Advantages• Labeling<ul style="list-style-type: none">– Definition– Types– Advantages• Promotion of products by manufacturers<ul style="list-style-type: none">– Packaging – Definition, types of packaging, Packaging materials, Advantages– Promotion Mix – Publicity, Personal selling, sales promotion, Advertising	(15)

References:

- Sherlekar S.A. (1990) Trade Practices & Consumerism, Bombay Himalaya Publishing House
- Sethi M. and Seetharaman P. (1994). Consumerism – A growing concept, New Delhi, Phoenix Publishing House
- Kumar N. (1999) Consumer Protection in India. New Delhi, Himalaya Publishing House
- Meller R.L. and Staffrod A.D. (2001). Economic Issues for Consumers, California, Belmont Woodworth Publishers
- Sarkar A. (1989). Problems of Consumers in Modern India. Discovery Publishing House, Mumbai
- Antony M.J. (1990) Consumer Rights, Hind Pocket Books, New Delhi
- Stock M. & Harrison F. (1990) The consumer's Handbook
- Hennerwood Publications, Great Britain

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code	Title of the Paper	Lectures/week	Marks allotted	Credits for the paper
USHS105	Foundation Course	3	100	2

FOUNDATION COURSE

No. of Credits: 2

Objectives:

1. To facilitate students reading, comprehensive skills and vocabulary development.
2. To develop a sense of professional etiquette in the students.
3. To facilitate the development of values in students that will enable them to become better human beings.
4. To encourage personal, familial, community and professional value-grounding in students.

Course Content:		Lectures
Unit I:	Reading, Comprehensive skills and vocabulary development a. Abstracting and summarizing skills b. Concepts of functional and reading vocabulary c. Importance of vocabulary and its enhancement d. Oral and written expression of ideas	15
Unit II:	Introduction to values and integrating values in life a. Introduction to values <ul style="list-style-type: none"> • Values and value education • Process of value clarification • Obstacles in achieving these values • Steps towards achieving these values b. Integrating values of life <ul style="list-style-type: none"> • Acknowledging dilemmas between living different types of values • Resolving dilemmas in ways that affect human well being 	15
Unit III	Values for Human Excellence: Part I <ul style="list-style-type: none"> • Community values 	15

References:

- M. Pia Nazareth rjm & Maria E. Waples. Personal values All India Association of catholic schools, 28 CBSI centre, Ashok place, New Delhi – 110001.
- Mani Jacob, J. Dinakaralal, Reny Jacob, Resource book of value education. Institute of value education. National Council of education research and training.
- Asha Bhatnagar. The journal of value education. National council of research and training.
- Alder, R.B. & Rodman, G (2000). Understanding human communication. (7th Ed.) New York: Harcourt College
- Charles, E. (1999). Value education today – A manual for teachers. Mumbai St. Xavier’s Institute of Education Society.
- Daniel, J. & Selvamony, N. (1990). Value education today: Explorations in social ethics. Madras; Madras Christian College.
- Reader’s Digest (1997) Write better, speak better. New York Reader’s Digest Association.

Course Code		Title of the Paper	No. of Periods/week	Marks allotted	Credits for the practical group
USHSP101	Part A	Food Science (Practical)	3	50	3
	Part B	Principles of Design (Practical)	2	50	

Part A: FOOD SCIENCE (Practical)

No. of Credits: 2

Objectives:

To familiarize the students with

1. Basic techniques of food analysis.
2. Techniques of identifying food adulteration.
3. Concept of food quality.

Course Content:		Lectures
Unit I:	<ul style="list-style-type: none"> • Introductory Food Analysis • Standardization of acids and alkalies • Proteins: <ul style="list-style-type: none"> – Colour reaction of Amino acids – Precipitatory reaction of proteins 	15
Unit II:	<ul style="list-style-type: none"> • Carbohydrates: <ul style="list-style-type: none"> – Qualitative and quantitative analysis of carbohydrates in foods – Analysis of dietary fibre 	15
Unit III	<ul style="list-style-type: none"> • Lipids <ul style="list-style-type: none"> – Qualitative tests for lipids – Determination of Acid value • Vitamins: <ul style="list-style-type: none"> – Estimation of Vitamin C • Effect of heat, acid & alkali on vegetable & fruit pigments 	15

References:

- Jamesen, K. (1998). Food science laboratory manual New Jersey. Prentice Hall. Inc.
McWilliams, M. (1984). Experimental foods laboratory manual. New delhi: Surjeet Publication.

Part B: PRINCIPLES OF DESIGN (Practical)

Objective:

No. of Credits: 1

To enable students to apply the basic principles of Art & Design in various fields such as Interior Design and Textile Design.

Course Content:		Lectures
Unit I:	Simple Illustrations using the following Elements of Design <ul style="list-style-type: none">• Lines<ul style="list-style-type: none">– Types of lines: Free hand & scale– Combination of lines– Illusion of lines• Forms<ul style="list-style-type: none">– Forms created with the use of lines– Forms created without the use of lines• Other elements of design<ul style="list-style-type: none">– Texture– Light– Pattern– Space	15
Unit II:	Use of Colour in Art & Design <ul style="list-style-type: none">• Colour Wheel:<ul style="list-style-type: none">– Prang's Colour Wheel,– Itten's Star• Qualities of Colour:<ul style="list-style-type: none">– Hue,– Value – Intensity Chart• Colour Schemes:<ul style="list-style-type: none">– Monochromatic Colour Schemes– Complementary Colour Schemes• Simple Applications of Colour Schemes to Room Décor	15

References:

- Craig. H. T. (1987). Homes with Character. Glencoe Publishing Co. Inc. U.S.A.
- Damhorst. M. L., Miller. K. A. & Michelman. S. O. (2001). The meaning of Dress. Fairchild Publishing . New York.
- Diane. T. & Cassidy T. (2005). Colour Forecasting. Blackwell Publishing Co. Great Britain.
- Gill. R. W. (1994). Rendering with Pen & Ink. Thames & Hudson Ltd. London.
- Hauser. P. W. (1994). Greeting Card & Gift Wrap. North Light Books, Ohio.
- Hendy J. (1997). Balconies & Roof Gardens. New Holland Publishers (UK) Ltd. U.K.
- Hiney. I. M. (1998). Fabric Covered Boxes. Sterling Publishing Co. Inc. New York.
- Lehri. R. M. (1999) Folk Designs & Motifs from India. Dover Publications Inc. New York.
- Sheen. J. (1992). Flower Crafts. Salamander Books Ltd. New York.
- Smith. A. (1995). Big book of Paper Craft. Usborne Publishing Ltd. England.
- Wilson. J. (2005). Handbook of Textile Design – Principles, Processes & Practice. Woodhead Publishing Ltd. England.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code	Title of the Paper	Lectures / week	Marks allotted	Credits for the paper
USHSP102	Children's Clothing (Practical)	3	50	2

CHILDREN'S CLOTHING (Practical)

No. of Credits: 2

Objectives:

1. To create interest in the subject by application of fundamentals of clothing.
2. To introduce basic pattern drafting.
3. To introduce the principles of clothing construction.

Course Content:		Lectures
Unit I:	A. Introduction to sewing equipment and care of sewing machines B. Fundamentals a. Basic hand stitches (Uneven, even basting, running, back, slip stitch, hemming) b. Seams (plain, run and fell, french, lapped, double sewn, edge machining, pinked) c. Fasteners (press button, button and buttonhole, pant hook and bar)	15
Unit II:	a. Template cutting, embellishment and stitching article (bag/pouch/folder/cover) b. Child's basic block and basic sleeve	15
Unit III	Boy's shirt with sleeve and collar: Drafting and Garment construction	15

References:

- Claire B. (1981). *The complete book of sewing short cuts*, New York: Sterling Publishing Co. Inc.
- Cream, P. & Shillong, C. (1996). *The complete book of sewing*, London: Dorling Kindersley Ltd.
- Cunningham G. (1969). *Singers sewing book*, New York: Singer Co. Ltd.
- Dunn, L., Bailey, A. & Draper, W. (1970). *Steps in clothing skills*. Illinois: Chas A. Bennett. Co. Inc.
- Gardiner, W. (2003). *Encyclopedia of sewing techniques*, Kent: Search Presshold.
- Jewel, R. (2000). *Encyclopedia of dress making*. (1st Ed.) New Delhi: A.P.H. Publishing Corporation.
- McCall's. (1964). *Sewing in colour*. London: The Hamlyn Publishing Group Ltd.
- Reader's Digest (1993). *Step by step guide: Sewing and knitting*, Auckland: Reader's Digest.
- Zarapkar, T. (1981). *Zarapkar system of cutting*, Mumbai: Zarapkar Tailoring College.

SEMESTER II

COURSE CODE	TITLE	WORKLOAD		NO. OF CREDITS	
		L	P	L	P
USHS201	Basic Nutrition	2		3	
	Food Science	3			
USHS202	Textile & Fashion Technology Paper I:Fibre to Fabric	3		3	
	Textile & Fashion Technology Paper II: Psychology of Clothing	2			
USHS203	Child Development	3		4	
	Adolescent Development	3			
USHS204	Principles of Design	3		3	
	Consumer Education	2			
USFC205	Foundation Course	3		2	
USHSP201	Group I:				3
	- Food Science		3		
	- Principles of Design		2		
USHSP202	Group II:				2
	- Children's Clothing		3		
				15	5

Course Code		Title of the Paper	Lectures/week	Marks allotted	Credits for the paper
USHS201	Part A	Basic Nutrition	2	75	3
	Part B	Food Science	3	100	

Part A: BASIC NUTRITION

No. of Credits: 1

Objectives:-

1. To enable students to understand the relation of nutrition to health.
2. To enable students to understand functions, sources, requirements and effects of deficiency of micronutrients.
3. To enable students to understand digestion, absorption and metabolism of macronutrients.

Course Content:		Lectures
Unit I:	Vitamins A. Fat soluble vitamins B. Water soluble vitamins	15
Unit II:	Minerals A. Macrominerals B. Microminerals and water	15

References:

Srilakshmi, B. (2003) Nutrition Science New Age International Ltd.

Gopalan, C et al (2004) Nutritive value of Indian Foods NIN, ICMR, Hyderabad

ICMR (1998) Nutrient requirements and Recommended Dietary Allowances for Indians-A report of the expert group of the ICMR, NIN, Hyderabad.

Swaminathan, M. (1998) Essentials of Food and Nutrition. 2nd edition, volume I&II Bangalore Printing & Publishing, Bangalore

Ramarao A.V.S.S. (1998) A textbook of Medical Biochemistry, New Delhi: UBS

Guthrie, H. (1986) Introductory Nutrition, 6th edition Times Mirror/Mosby college Publication.

Bamji, M. Praihad Rao, N. and Reddy, V. (Ed) (1996) Textbook of Human Nutrition. Oxford and TBH Publishing Co, Pvt, Ltd.

Part B: FOOD SCIENCE

Objectives

No. of Credits: 2

1. To acquire Knowledge of various concepts of food science, its facts and principles
2. To develop the ability to select and apply the principles to practical situations.

Course Content:		Lectures
Unit I:	Introduction to Cooking <ol style="list-style-type: none"> a. Reasons for cooking b. Methods of heat transfer c. Cooking methods – dry heat and moist heat methods d. Browning reactions in food Elementary principles involved in the cooking of: <ol style="list-style-type: none"> a. Fats and oils b. Sugars c. Cereals d. Pulses 	15
Unit II:	Elementary principles involved in the cooking of: <ol style="list-style-type: none"> a. Vegetables & Fruits b. Milk c. Flesh foods – <ul style="list-style-type: none"> • Meat • Fish • Poultry • Egg Study of role of the following in food preparation <ol style="list-style-type: none"> a. Spices and herbs b. Leavening agents c. Additives 	15
Unit III	Basics of Food processing – in brief <ol style="list-style-type: none"> a. Fats and oils b. Sweetening agents c. Cereals d. Pulses e. Vegetables & fruit f. Milk g. Flesh foods – <ul style="list-style-type: none"> • Meat • Fish • Poultry 	15

References :

- Arora K. (1993). Theory of Cookery. New Delhi: Frank Bros. and Co.
- Bennion, M. (1975). Introductory Foods. New York: Mac Millan Publishing Co. Inc.
- Manay, N.S. (1995). Food Facts and Principles. New Delhi: New Age International
- Macwilliam M. (1980). Food Fundamentals. New York: John Wiley & Sane.
- Srilakshmi. B. (1997) Food Science. New Delhi: New Age
- Swaminathan, M. (1991). Food Science & Experimental Foods. Madras: Ganesh & Co.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code		Title of the Paper	Lectures/ week	Marks allotted	Credits for the paper
USHS202	Part A	Textile & Fashion Technology – Paper I: Fibre to Fabric	3	100	3
	Part B	Textile & Fashion Technology – Paper II: Psychology of Clothing	2	75	

Part A: Textile and Fashion Technology
Paper I
FIBRE TO FABRIC

No. of Credits: 2

Objectives:

1. To introduce students to the basics of textiles and clothing.
2. To give an insight into the new developments in textiles and garments.
3. To equip students with the knowledge of the care and maintenance of textiles.

Course Contents		Lectures
Unit I	Yarns a. Introduction to yarns b. Yarn formation: Staple and filament (spinning- conventional and non-conventional) c. Classification of yarns and different types of yarns d. Properties and end uses e. Recent Developments	15
Unit II	Fabrics: a. Woven: Yarn preparatory stages, parts of the loom, steps in weaving and basic weaves (plain, satin and twill) b. Knitted: Introduction to knitting, warp and weft knitting, steps in knitting, properties and uses c. Non-woven: Definition, manufacture, properties and uses d. Recent Developments	15
Unit III	a. Recent developments in yarns and fabrics b. Care labels c. Care of special textile articles	15

References:

- Ajgaonkar, D. B. (1998). *Knitting technology*. Mumbai: Universal pub. corporation
- Corbman, B. P. (1985). *Textiles: Fibre to fabric*. (6th Ed.). New York: Gregg Division/McGraw Hill
- Collier, B. J. and Phyllis, G. T. (2001). *Understanding textiles*. New Jersey: Prentice Hall.
- D'Souza, N. (1998). *Fabric care*. India: New Age International.
- Hollen, N., Saddler, J., Langford, A.L. & Kadolf, S.J. (1988). *Textiles*. (6th Ed). New York: Macmillan.
- Joseph, M. L. (1972). *Introductory textile science*. (2nd Ed.). New York: Holt, Rinehart and Winston.
- Joseph, M.L. (1975). *Essentials of textiles*. New York: Holt, Rinehart and Winston.
- Shenai, V. A. (1991). *Technology of textile processing*. Vol. 1. (3rd Ed.). India: Sevak.
- Tortora, P.G. (1978). *Understanding textiles*. New York: Macmillan.
- Wynne, A. (1997). *Textiles – the motivate series*. London: Macmillan Education.

Part B: Textile And Fashion Technology
Paper II
PSYCHOLOGY OF CLOTHING

No. of Credits: 1

Objectives:

1. To understand the psychology of clothing.
2. To give an insight into the relationship between clothing and body physique, personality and factors affecting clothing behavior.

Course Content:

		Lectures
Unit I	Clothing, Personality and Roles A. Symbolic Interactive theory B. Role Theory – Ascribed Roles, Achieved Roles C. Role Acquisition D. Role Conflict Role Embracement E. Dramaturgy F. Clothing and Personality	15
Unit II	Clothing and Socio – Cultural Aspects • Clothing in Groups and Organizations • Social Constraints in Clothing • Fashion Process Theory • Clothing Society and Self • Socio – cultural variations in Clothing	15

References:

Kaiser S. B. (1985), *The Social Psychology of Clothing*, New York, Mac Millan Publishing Company.

Damhorst M. L., Miller K. A. & Michelman S. O. (2001), *The Meaning of Dress*, New York, Fairchild Publications.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code		Title of the Paper	Lectures/ week	Marks allotted	Credits for the paper
USHS203	Part A	Child Development	3	100	4
	Part B	Adolescent Development	3	100	

Part A : CHILD DEVELOPMENT

Objectives:

No. of Credits: 2

- 1) To impart basic knowledge on the principles and patterns of growth and development in children from preschool period through late childhood period.
- 2) To create an awareness of the various factors that influence and stimulate growth and development during this period.

Course Contents		Lectures
Unit I	Preschool Period (a) Physical and motor development: body size and proportions, motor skills, handedness (b) Cognitive development: preoperational period (d) Language development: sequence of early language development, bilingualism, speech disorders (e) Psychosocial development: general trends in psychosocial development, play (importance, types of play, factors influencing play), and selection of toys for preschoolers	15
Unit II	Middle Childhood (a) Physical and motor development: physical growth and change (b) Cognitive development: concrete operational period (c) Language development: language development and literacy (d) Psychosocial development: emotional and social development during middle childhood period.	15
Unit III	Late Childhood (a) Physical and motor development: physical growth and change (b) Cognitive development: period of formal thought (c) Language development: language development and literacy (d) Psychosocial development: emotions during middle childhood period, personality development in an expanding social world (influence of family, school, peer relationships and social competence)	15

References:

- Berk, L. (1996). *Infants, children and adolescents*. (2nd Ed.). Boston: Allyn & Bacon.
- Dacey, J.S., & Travers, J.F. (2004). *Human Development. Across the Lifespan*. New York: Tata McGraw Hill.
- Gallature, D.L., & Ozmun, J.C. (2006). *Understanding motor development: Infants, children, adolescents and adults*. New York: Tata McGraw Hill.
- Jaya, N., & Narasimhan, S. (2005). *Parenting children below two years*. India: Abacus Foundation.
- Kail, R., & Cavanaugh, J. (2000). *Human development--A life-span view* (2nd Ed.). New York: Wadsworth.
- Santrock, J. (2007). *Children* (11th Ed.). New York: Tata McGraw Hill.

Part B: ADOLESCENT DEVELOPMENT

Objectives:

No. of Credits: 2

1. To expose students to different aspects of adolescent development.
2. To sensitize students to the common challenges during adolescence.
3. To acquaint students with the various ways in which one can create well-being in adolescence.

Course Content		Lectures
Unit I	Personality, Gender, and Sexuality (a) Personality: different conceptions of personality, the Big Five model of personality, person vs. situation as determinants of behavior (b) Gender : femininity, masculinity, gender classifications, androgyny as a healthy option, role of culture in gender development, sex vs. gender, gender differences (activities and interests, personal-social attributes, social relationships, styles and symbols) (c) Sexuality: sex vs. sexuality, importance of sexuality in adolescence, challenges related to sexuality	15
Unit II	Contexts of Adolescent Development (a) Families: reciprocal socialization and the family as a system, developmental construction of relationships, maturation, (b) Parents: parents as managers, parenting styles, parent-adolescent conflict, autonomy and attachment (c) Siblings: sibling roles (d) Peer relations: peer group functions, family-peer linkages, peer conformity, peer statuses (e) Friendship: importance, Sullivan's ideas, intimacy and similarity	15
Unit III	Challenges and Problems in Adolescence (a) Teen suicide: statistics, common situations in which adolescents commit suicide, symptoms of depression, prevention and intervention (b) Academic stress: statistics/profile of adolescents in India related to academic stress, reasons, strategies for coping (c) Bullying, ragging, aggression/violence, and juvenile delinquency: statistics/profile of adolescents in India, prevention and intervention (d) Substance abuse: smoking, alcohol and drugs; influence of peers; prevention and intervention (e) Strategies for creating well-being in adolescence	15

References:

- Santrock, J. W. (2007). *Adolescence*. USA: Allyn& Bacon.
Mehta, M. (2000). *Adolescent psychology*. Jaipur: Pointer.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code		Title of the Paper	Lectures/ week	Marks allotted	Credits for the paper
USHS204	Part A	Principles of Design	3	100	3
	Part B	Consumer Education	2	75	

Part A: PRINCIPLES OF DESIGN

Objectives:

No. of Credits: 2

To enable students to:

1. Understand the principles of Art and Design.
2. Gain knowledge of the use of these principles in the field of Interior Design.

Course Content:		Lectures
Unit I:	<p>Principles of Design</p> <ul style="list-style-type: none"> • Balance <ul style="list-style-type: none"> – Definition – Types: formal, Informal, Radial – Application: Interior and Apparel Design, Commercial Art, Product Design • Rhythm <ul style="list-style-type: none"> – Definition – Ways of achieving Rhythm: Repetition of shapes, Progression of sizes, Continuous Line Movement, Radiation – Application: Interior and Apparel Design, Commercial Art, Product Design • Harmony <ul style="list-style-type: none"> – Definition – Methods of achieving harmony: Line and Shape, Colour, Ideas, Size & Texture 	(15)
Unit II:	<p>Principles of Design</p> <ul style="list-style-type: none"> • Proportion <ul style="list-style-type: none"> – Definition – Scale – Application: Interior and Apparel Design, Commercial Art, Product Design • Emphasis <ul style="list-style-type: none"> – Definition – Ways of Achieving Emphasis: Grouping of objects, Use of Contrasting Colours, Use of Decoration, Use of Background Space – Use of Lines, Shapes or Sizes – Where to place the emphasis: Law of Margin – Application: Interior and Apparel Design, Commercial Art and product Design 	(15)

Unit III:	<p>Components of Interior Design</p> <ul style="list-style-type: none"> • Wall & Wall Finishes <ul style="list-style-type: none"> – Definition – Types of walls – Wall treatments: Paints, Plaster, Panelling, Wall papers • Floor & Floor Coverings <ul style="list-style-type: none"> – Definition – Types of Floor Finishes – Floor Coverings • Ceilings <ul style="list-style-type: none"> – Definition – Treatments for Ceilings – False Ceilings • Window & Window Treatments <ul style="list-style-type: none"> – Parts of a Window – Types of Windows – Window Treatments: Hard & Soft 	(15)
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References:

- Allen. P. S. (1985). Beginnings of Interior Environment (5th Ed), Macmillan Publishing Co. London.
- Bhatt. P. & Goenka S. (2001); Foundation of Art & Design (2nd Ed). Lakhani Book Depot. Mumbai
- Clifton C., Mogg & Paine. M. (1988). The Curtain Book. Reed International Books. New York.
- Craig. H. T. (1987). Homes with Character. Glencoe Publishing Co. Inc. U.S.A.
- Gilliat M. (1986). The Decorating Book. Library of Congress Cataloguing Publications, Great Britain.
- Lewis E. L. (1980). Housing Decisions, The Good Heart, Willcox Co. Inc. Great Britain.
- Seetharaman. P. & Pannu. P. (2005). Interior Design & Decoration. First Edition, CBS Publishers & Distributors. New Delhi

Part B: CONSUMER EDUCATION

Objectives:

No. of Credits: 1

1. To highlight the importance of Consumer Education
2. To increase awareness in the students about the malpractices prevalent in the Market.
3. To empower students with the knowledge of Consumer Rights and Responsibilities

Course Content:		Lectures
Unit I:	Problems of Indian Consumers <ul style="list-style-type: none">• Common problems• Weights & Measures• Food Adulteration• Fake products• Misleading Advertisements	(15)
Unit II:	Legal Issues & Redressal : Laws & Legislations: <ul style="list-style-type: none">• Consumer Protection Act• Drugs & Magic Remedies Act• Environment Protection Act• Right to Information Act• Bureau of Indian Standards Act• MRTP Act• AgMark Act• Prevention of Food Adulteration Act• Standards of Weights and Measures Act Redressal <ul style="list-style-type: none">• Redressal procedures<ul style="list-style-type: none">– How to Complain– Where to complain– Consumer Courts– Case Studies• Consumer Organizations<ul style="list-style-type: none">– CGSI– MGP– CRRC– CFBP	(15)

References:

- Sherlekar S.A. (1990) Trade Practices & Consumerism, Bombay Himalaya Publishing House
- Sethi M. and Seetharaman P. (1994). Consumerism – A growing concept, New Delhi, Phoenix Publishing House
- Kumar N. (1999) Consumer Protection in India. New Delhi, Himalaya Publishing House
- Meller R.L. and Staffrod A.D. (2001). Economic Issues for Consumers, California, Belmont Woodworth Publishers
- Sarkar A. (1989). Problems of Consumers in Modern India. Discovery Publishing House, Mumbai
- Antony M.J. (1990) Consumer Rights, Hind Pocket Books, New Delhi
- Stock M. & Harrison F. (1990) The consumer's Handbook
- Hennerwood Publications, Great Britain

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code	Title of the Paper	Lectures/week	Marks allotted	Credits for the paper
USHS205	Foundation Course	3	100	2

FOUNDATION COURSE

No. of Credits: 2

Objectives:

5. To facilitate students reading, comprehensive skills and vocabulary development.
6. To develop a sense of professional etiquette in the students.
7. To facilitate the development of values in students that will enable them to become better human beings.
8. To encourage personal, familial, community and professional value-grounding in students.

Course Content:		Lectures
Unit I:	Values for Human Excellence: Part II a. Professional values b. Professional etiquette • Definition of and need for professional etiquette • Aspects of professional etiquette (punctuality, regularity, honoring appointments, and meetings, dress code)	15
Unit II:	Values for human Excellence: Part III Personal values	15
Unit III	Value System of our great personalities	15

References:

- M. Pia Nazareth rjm & Maria E. Waples. Personal values All India Association of catholic schools, 28 CBSI centre, Ashok place, New Delhi – 110001.
- Mani Jacob, J. Dinakaralal, Reny Jacob, Resource book of value education. Institute of value education. National Council of education research and training.
- Asha Bhatnagar. The journal of value education. National council of research and training.
- Alder, R.B. & Rodman, G (2000). Understanding human communication. (7th Ed.) New York: Harcourt College
- Charles, E. (1999). Value education today – A manual for teachers. Mumbai St. Xavier's Institute of Education Society.
- Daniel, J. & Selvamony, N. (1990). Value education today: Explorations in social ethics. Madras; Madras Christian College.
- Reader's Digest (1997) Write better, speak better. New York Reader's Digest Association.

Course Code		Title of the Paper	Lectures/week	Marks allotted	Credits for the paper
USHSP201	Part A	Food Science (Practical)	3	50	3
	Part B	Principles of Design (Practical)	2	50	

Part A: FOOD SCIENCE (Practical)

No. of Credits: 2

Objectives:

To familiarize the students with

1. Common ingredients, devices and equipments and their functionality available for food preparation.
2. Different cooking methods and techniques used while food preparation.
3. Principles involved during preparation of different foods and their application
4. Concept of food quality.

Course Content:		Lectures
Unit I:	Experimental Cookery <ul style="list-style-type: none"> • Introduction to different terms, equipments and methods used in cookery • Sugar cookery • Factors affecting fat absorption 	15
Unit II:	<ul style="list-style-type: none"> • Starch Cookery • Gluten formation 	15
Unit III	<ul style="list-style-type: none"> • Gel formation • Protein gelation, denaturation and coagulation • Egg cookery 	15

References:

- Jamesen, K. (1998). Food Science laboratory manual New Jersey. Prentice Hall. Inc.
- McWilliams, M. (1984). Experimental foods laboratory manual. New Delhi: Surjeet Publication.
- McWilliams, M. (1997). Foods experimental perspective. (3rd Ed.) New Jersey. Merrill/Prentice Hall.
- Sethi, M and Rao, S.E. (2001). Food science experiments and applications. New Delhi. CBS Publishers and Distributors.

Part B: PRINCIPLES OF DESIGN (Practical)

Objective:

No. of Credits: 1

To enable students to apply the basic principles of Art & Design in various fields such as Interior Design and Textile Design.

Course Content:		Lectures
Unit I:	Gift Wrapping <ul style="list-style-type: none">• Selection of Gift wrappers: Readymade / Handmade• Wrapping of gifts: Rectangular/Square, Cylindrical, Round, Irregular boxes• Ribbon tying & Bows• Envelope making	15
Unit II:	Lettering <ul style="list-style-type: none">• Basics of Lettering• Consistent Alphabets & Numerals• Spacing: Optical & Mechanical Simple Applications of the Principles of Design <ul style="list-style-type: none">• Interior Design: Décor, Flower Arrangements, Floor Decoration, Furniture Design, Landscape Design• Room Accessories	15

References:

- Craig. H. T. (1987). Homes with Character. Glencoe Publishing Co. Inc. U.S.A.
- Damhorst. M. L., Miller. K. A. & Michelman. S. O. (2001). The meaning of Dress. Fairchild Publishing . New York.
- Diane. T. & Cassidy T. (2005). Colour Forecasting. Blackwell Publishing Co. Great Britain.
- Gill. R. W. (1994). Rendering with Pen & Ink. Thames & Hudson Ltd. London.
- Hauser. P. W. (1994). Greeting Card & Gift Wrap. North Light Books, Ohio.
- Hendy J. (1997). Balconies & Roof Gardens. New Holland Publishers (UK) Ltd. U.K.
- Hiney. I. M. (1998). Fabric Covered Boxes. Sterling Publishing Co. Inc. New York.
- Lehri. R. M. (1999) Folk Designs & Motifs from India. Dover Publications Inc. New York.
- Sheen. J. (1992). Flower Crafts. Salamander Books Ltd. New York.
- Smith. A. (1995). Big book of Paper Craft. Usborne Publishing Ltd. England.
- Wilson. J. (2005). Handbook of Textile Design – Principles, Processes & Practice. Woodhead Publishing Ltd. England.

***Part A & B examinations will be conducted separately as per the details given in the table**

Course Code	Title of the Paper	Lectures/week	Marks allotted	Credits for the paper
USHSP202	Children's Clothing (Practical)	3	50	2

CHILDREN'S CLOTHING (Practical)

No. of Credits: 2

Objectives:

1. To create interest in the subject by application of fundamentals of clothing.
2. To introduce basic pattern drafting.
3. To introduce the principles of clothing construction.

Course Content:		Lectures
Unit I	Fundamentals a. Piping (2) b. Facing (2/4) c. Fasteners	15
Unit II	A. Shorts: Drafting and garment construction B. Baby knicker: drafting and garment construction C. Apron with patch pocket and pin tucks: Drafting and garment construction	15
Unit III	Baby Frock with gathers, yoke and puff sleeves: drafting and garment construction	15

*Journal: Drafting of flat pattern construction of the garments and stitched fundamentals

References:

- Claire B. (1981). *The complete book of sewing short cuts*, New York: Sterling Publishing Co. Inc.
- Cream, P. & Shillong, C. (1996). *The complete book of sewing*, London: Dorling Kindersley Ltd.
- Cunningham G. (1969). *Singers sewing book*, New York: Singer Co. Ltd.
- Dunn, L., Bailey, A. & Draper, W. (1970). *Steps in clothing skills*. Illinois: Chas A. Bennett. Co. Inc.
- Gardiner, W. (2003). *Encyclopedia of sewing techniques*, Kent: Search Presshold.
- Jewel, R. (2000). *Encyclopedia of dress making*. (1st Ed.) New Delhi: A.P.H. Publishing Corporation.
- McCall's. (1964). *Sewing in colour*. London: The Hamlyn Publishing Group Ltd.
- Reader's Digest (1993). *Step by step guide: Sewing and knitting*, Auckland: Reader's Digest.
- Zarapkar, T. (1981). *Zarapkar system of cutting*, Mumbai: Zarapkar Tailoring College.

F.Y.B.Sc. (Home Science)
Scheme of Examination
SEMESTER I

COURSE CODE	TITLE	Internal Examination Marks	University / External Examination Marks	Total Marks	University/ External Examination Time (Hours)
USHS101	Basic Nutrition	30	45*	75	1 ½
	Food Science	40	60*	100	2
USHS102	Fibre to Fabric	40	60*	100	2
	Psychology of Clothing	30	45*	75	1 ½
USHS103	Child Development	40	60*	100	2
	Adolescent Development	40	60*	100	2
USHS104	Principles of Design	40	60*	100	2
	Consumer Education	30	45*	75	1 ½
USHS105	– Foundation Course	40	60	100	2
	– Computer Application (Value Added)	20	30	50	---
USHSP101	Group I: - Food Science	20	30	50	---
	- Principles of Design	20	30	50	---
USHSP102	Group II: - Children's Clothing	20	30	50	---

SEMESTER II

COURSE CODE	TITLE	Internal Examination Marks	University / External Examination Marks	Total Marks	University/ External Examination Time (Hours)
USHS201	Basic Nutrition	30	45*	75	1 ½
	Food Science	40	60*	100	2
USHS202	Fibre to Fabric	40	60*	100	2
	Psychology of Clothing	30	45*	75	1 ½
USHS203	Child Development	40	60*	100	2
	Adolescent Development	40	60*	100	2
USHS204	Principles of Design	40	60*	100	2
	Consumer Education	30	45*	75	1 ½
USHS205	– Foundation Course	40	60	100	2
USHSP201	Group I: - Food Science	20	30	50	---
	- Principles of Design	20	30	50	---
USHSP202	Group II: - Children's Clothing	20	30	50	---

* Examination to be conducted by the University

Scheme of Examination

The performance of the learners shall be evaluated into two parts. The learner's performance shall be assessed by Internal Assessment with 40% marks in the first part by conducting the Semester End Examinations with 60% marks in the second part. The allocation of marks for the Internal Assessment and Semester End Examinations are as shown below:-

(a) Internal assessment

i) Theory 40 %

Sr. No	Evaluation type	Marks
1	Two Assignments/Case study/Project	20
2	One class Test (multiple choice questions objective)	10
3	Active participation in routine class instructional deliveries(case studies/ seminars//presentation)	05
4	Overall conduct as a responsible student, mannerism and articulation and exhibit of leadership qualities in organizing related academic actives	05

ii) Practicals 40%

Sr. No	Evaluation type	Marks
1	Two best practicals based on practical skill/demo experiments, error calculations, graph plotting.	10
2	Journal	05
3	Viva	05

(b) External Theory examination 60 %

i) Duration –

- The examinations for two unit courses (with external examination of 45 marks) shall be of 1 ½ hours duration for each paper.
- The examinations for three unit courses (with external examination of 60 marks) shall be of 2 hours duration for each paper.

ii) Theory Question Paper Pattern:-

External examination of 45 marks (two unit courses)

- There shall be three questions each of 15 marks. On each unit there will be one question and the third question will be based on the entire syllabus.
- All questions shall be compulsory with internal choice within the questions. (Each question will be of 20 to 23 marks with options.)
- Questions may be subdivided into sub-questions a, b, c... and the allocation of marks depend on the weightage of the topic.

External examination of 60 marks (three unit courses)

- There shall be four questions each of 15 marks. On each unit there will be one question and the fourth question will be based on the entire syllabus.
- All questions shall be compulsory with internal choice within the questions.
(Each question will be of 20 to 23 marks with options.)
- Question may be subdivided into sub-questions a, b, c... and the allocation of marks depend on the weightage of the topic.

Practicals

Each practical examination can be conducted out of 50 marks, 20 internal and 30 external

