

B. Sc. (Home Science)

Third Year – Textile and Clothing

Third year B.Sc. Home Science curricular includes two semesters.

Semester – V

Paper No.	Subject	Exam scheme							
		Theory		Practical		Total		Exam	
		Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	At	By
19	Advanced Textile designing and textile testing	100	40	-	-	100	40	The end of Sem.	Pune University
20	Dyeing and printing	100	40	-	-	100	40		
21	Fashion Designing	100	40	-	-	100	40		
22	Embroidery	100	40			100	40		
Pract-IX	Based on Paper No. 19 & 20	-	-	50	20	50	20	The end of Sem	Pune University
Pract-X	Based on Paper No. 21 & 22	-	-	50	20	50	20		
Total		400	160	100	40	500	200		

Semester – VI

Paper No.	Subject	Exam scheme							
		Theory		Practical		Total		Exam	
		Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	At	By
23	Traditional Textiles and costumes of India	100	40	-	-	100	40	The end of Sem.	Pune University
24	Apparel making	100	40	-	-	100	40		
25	Project management, entrepreneurship development and computer skills	100	40	-	-	100	40		
26	Children's Clothing	100	40			100	40		
Pract-XI	Based on Paper No. 23 & 24	-	-	50	20	50	20	The end of Sem	Pune University
Pract-XII	Based on Paper No. 25 & 26	-	-	50	20	50	20		
Total		400	160	100	40	500	200		

Internship	50 marks
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T.Y. B. Sc. (Home Science) – Sem.- V

Paper – 19 : Advanced Textile Designing and Textile Testing

Theory	-	4 Hrs./Week	Theory	-	100 Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus :

- 1) Structural fabric designs are produced mainly through different weaves. An understanding of the technology of simple weaving forms the body of this course.
- 2) Quality of fabrics depends on their components. This course helps to learn the methods of testing fibre, yarn and fabrics.

Objectives :

- 1) To develop ability to recognize different designs.
- 2) To develop ability to create basic weaves and novelty wears.
- 3) To acquaint students with the knowledge of fibre, yarn and fabric properties and their measurements.

Theory

Unit I : (10)

- 1) Textile designing
 - Weaving
 - Introduction to weaving
 - Different types of handlooms, dobby, box machines and jacquard
 - Principles and functions of primary and secondary motions
 - Focus on recent developments

Unit II : (12)

- 1) Various Draft and Peg plan
 - Elementary weaves and their derivative. Plain weave and its derivatives : Hopsack, basket weave etc.
 - Twill weave and its derivatives such as broken twill, waved twill, pointed twill, diamonds, diapers, herringbone twills. Curved, elongated, combination twill, fancy twill.
 - Satin and sateen : Regular and irregular and their extensions.

Unit III : (10)

- 1) Textile testing
 - Introduction to textile testing
 - Importance of textile testing
 - Definition related to textile testing
 - Sampling
 - Fiber Testing
 - Fiber dimensions and their measurement
 - Measurement of length, staple length, effective length

Unit IV : (10)

- 1) Yarn Testing
 - Yarn characteristics and their measurement
 - Twist, crimp, strength
 - Yarn numbering systems – tex, denier, count

Unit V : (12)

1) Fabric Testing

- Fabric count
- Fabric thickness and fabric weight
- Bow and skewness, dimensional stability
- Tensile strength and tear strength
- Colour fastness of fabric
- Air permeability
- Fabric stiffness
- Per cent moisture content and moisture regain
- Introduction to Drapability and Abrasion resistance

Practical :

- 1) Collection and identification of different weaves (02)
- 2) Analysis of woven samples for design, drafts, peg plans and other particulars (01)
- 3) Fibre Testing (01)
- 4) Yarn Testing (01)
- 5) Fabric Testing (01)

References :

- 1) Grosicky, Z.J. (1980) : Watson's textile design and colour, London Newness Butterworths.
- 2) Oelsner, G.H. : A handbook of weaves, New York Over publication Inc.
- 3) Robinson and Mark (1973) : Woven cloth construction, London Butterworth and Co. (Publishers) Ltd.
- 4) Znamieroushi, N. (1967) : Step by step weaving, New York Western Publishing Co. Inc.
- 5) Plath Iona (1972) : The craft of handweaving, New York Western Publishing Co Ltd.
- 6) Murray Rosemary (1981) : The Essential Handbook weaving, London Bell and Hyman Ltd.
- 7) Andrea Wynne (1997) : Text for the Industrial, vocational and technical education textiles, 1st publication Macmillan education Ltd. London and Basingstoke
- 8) Teery Brackenbury : Knitted clothing technology, Blackwell science Ltd., London.
- 9) Kulkarni M.M. (1998) : Weaving technology, Vrinda Publication, Jalgaon.
- 10) Booth J.E. (1968) : Principles of textile testing, Butterworth Heinemann Ltd. U.K. or CBS publishers and distributors, New Delhi.
- 11) Grower and Hanby (1969) : Handbook of textile testing and quality control
- 12) Indian Standards Institute (1982) : Handbook of textile testing
- 13) Shinkle John H : Textile testing chemical publishing Co. Inc., Brooklyn, New York.
- 14) ASTM Standards
- 15) Wynne Andrea (1997) : Textiles, the motivate series Macmillan Texts for industrial, vocational and technical education, Macmillan Education, Ltd., London.

T.Y. B. Sc. (Home Science) – Sem.- V

Paper – 20 : Dyeing and Printing

Theory	-	4 Hrs./Week	Theory	-	100 Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus

Textile dyeing is done to give colour to an otherwise uninteresting fabric. Different fabrics require different dyeing/printing techniques as well as different dyes. Some of the dyeing techniques have been dealt with in this course. Practicals can be undertaken based on the supplies available.

Fabrics are printed to give variety to the consumer. Simple technologies have been included in the course given below, which require only reasonably low investment as an enterprise.

Objectives :

To enable the students to

- 1) Impart knowledge pertaining to basic principles of dyeing
- 2) Help develop creativity in designing through the principles of design
- 3) Create awareness of use of different techniques of colouring textiles through the use of different dyes
- 4) Impart knowledge on the basic principles of printing
- 5) Help to develop creativity in designing for prints
- 6) Create awareness of different printing techniques

Theory

Unit I : (12)

- 1) Difference between dyeing and printing. Methods of dyeing jet
 - Jig, winch, warp beam etc.
- 2) A brief study of different types of dyes and their applicability to different fibres

Unit II : (10)

- 1) Styles of dyeing – Direct, resist and discharge styles involving varying dyed effects
 - Fibre, yarn and fabric dyeing

Unit III : (12)

- 1) Methods of printing
 - Fundamentals of printing – study of dyes and pigments for printing
 - Hand printing – painting, stencil, Block, spray, hand screen

Unit IV : (12)

- 1) Machine printing – Flat Bed and Rotary, screen, spray, flock
- 2) Heat transfer, photo, lacquer

Unit V : (10)

- 1) Introduction to computer design softwares

Practical :

1. Simple dyeing of different fibre/yarn fabrics using suitable dyes
 - Batik (01)
 - Stencil printing (01)
 - Screen making of printing (02)
 - Spray printing (01)
 - Fabric painting (01)

References :

- 1) Cockett, B. R. (1964) : Dyeing and printing, London, Sir Issac Pitman and sons Ltd.
- 2) Faulkner Ray and Faulkner Sarah (1975) : Inside Today's Home, Rinehart and Winson.
- 3) Gohl and Vilensky (1987) : Textile science, Delhi, BCS Publishers and Distributors.
- 4) Grossicki, Watson's (1975) : Textile design and colour, Butterworth and company.
- 5) Pandit Savitri and Patel Saroj (1970) : Tie and dye and Batik techniques for all, Baroda, Faculty of Home Science.
- 6) Shenai V. A. (1973) : Chemistry of Dyes and principles of Dyeing, Ahmedabad, Textile Book Sellers and publishers.
- 7) Shenai V. A. (1977) : Technology of Dyeing, Technology of Textile processing. Vol. VI. Bombay Sevak Publication.
- 8) Story Joyce (1974) : The Thames and Hudson, Manual of Textile Printing, London, Thames and Hudson Ltd.
- 9) Story Joyce (1979) : Manual of dyes and fabrics, London, Thames and Hudson Ltd.
- 10) Rutt-Anna Hond (1969) : Home furnishing, New Delhi, Willey Eastern Pvt. Ltd.
- 11) Clarke, W. (1977) : Dyeing and printing, London Sir Isaac Pitman and Sons Ltd.
- 12) History of Indian Textiles, Ahmedabad, Calico Museum of Textiles
- 13) Andrea Mcnamara, Patrik Snelling (1995) : Design and practice for printed textiles, Australia, Oxford University Press.
- 14) S. N. Guha Ray : (1965) : 5000 Indian designs and motifs, Indian Institute of art and industry.
- 15) Peter Phillips, Gillian Bunce (1993) : Repeat patterns – A manual for designers, artists and architects, London, Themes and Hudson Ltd.

T.Y. B. Sc. (Home Science) – Sem.- V

Paper – 21 : Fashion Designing

Theory	-	4 Hrs./Week	Theory	-	100Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus :

Producing sketches of different designs requires skills in depicting the design details over a proportionate figure. Therefore, the fundamentals of art drawing forms the basis of this course.

Marketing and merchandising are essential for any enterprise. If not equally important, these are even more important, in this competitive business world. Product planning based on the consumer demand, pricing, knowledge in distribution system and the support, facilities, prevailing from the basis for this course.

Objective :

- 1) To enable the learner to produce fashion sketches of the garments in an appealing manner with all the details.

Theory

Unit I : (08)

- 1) Introduction to fashion and fashion terms
- 2) History of fashion

Unit II : (08)

- 1) Fashion trends in fashion and changes
- 2) Classification of fashion, factors influencing fashion
- 3) Fashion forecasting

Unit III : (08)

- 1) Consumer demand and fashion marketing, fashion change and consumer acceptance
- 2) Re-inforcement of pricing policies and sales promotion techniques
- 3) Retain fashion merchandising

Unit IV : (08)

- 1) Fashion research and analysis

Unit V : (08)

- 1) Introduction to export import management
 - Manual of computer Documentation
 - Global textile and apparel market

Practical :

Unit I : Principles of figure drawing and sketching of body features (04)

Unit II : Drawing the human form from different angles: (04)

- Front, side, back

Unit III : Rendering the figures in different postures with colours (04)

Unit IV : Drawing different silhouettes (04)

Unit V : Sketching styles for different age groups (04)

References :

- 1) Tate S. L. Edwards M.S. (1987) : The complete book of fashion illustration, New York, Harper and Row Publication 2nd edition.
- 2) Allen, Anne and seaman, Julian (1993) : Fashion drawing : basic principles, B.T. Batsford, London.
- 3) Bames Colin (1988) : Fashion Illustration.
- 4) Chowdhry Sonia (1998) : A unique phenomenon : understanding the dynamics of fashion, Clothersline 11 (11) Nov.
- 5) Ewing, Elizabeth (1974) : History of twentieth century fashion, London.
- 6) Ireland John Patrik (1976) : Drawing and designing Men's wear, London B. T., Bradford Ltd.
- 7) Ireland John Patrik (1976) : Drawing and designing children's and teenage fashions, London B. T., Bradford Ltd.
- 8) Ireland John Patrik (1975) : Basic fashion design, London B. T., Bradford Ltd.
- 9) Ireland John Patrik : Encyclopedia of fashion details, London B. T., Bradford Ltd.
- 10) Jindal Ritu (1988) : Handbook for fashion designing: best drafting techniques, Mittal Publ. New Delhi.
- 11) Kathryn Mckclively and Joininc Murnstrov (1997) : Illustrating fashion, Blockwell Science Ltd.
- 12) Patrik John Irland : Fashion design illustration, B.T. Bradford, London.
- 13) Peacock John (1997) : Fashion source books : the 1970s. Themes and Hudson, London.
- 14) Patrik John Irland : Introduction to Fashion design, B.T. Bradford, London.
- 15) Stecker, Pamela (1996) : The fashion design manual, Macmillan, South Yarra.
- 16) Jamoiv J.A., Guerreiro M. and Judella, B. (1987) : The Edn., Inside the fashion business, New York, Macmillan Pub. Co.
- 17) Phillips P., Bloom E. and Mattingly (1985) : Fashion sales promotion, New York John Wiley and sons Inc.
- 18) Drake, M.F., Spoone J. H. Greenwald, J. : Retail fashion promotion advertising, New York, Macmillan Pub. Co.
- 19) Gordon L.J. (1961) : Economics for consumer, New York, American Book Company.
- 20) Gini Stephns Frings (1996) : Prentice Hall Upper Saddle River, New Hersey, USA.
- 21) Helen L. Brockman (1965) : The theory of fashion design, John Willey and sons Inc., New York, London, Sydney, Toronto.
- 22) 20th Century Fashion : The complete sourcebook by John Peacock with a preface by Christian Lacroix, Thames and Hudson, London, 1993.
- 23) Troxell Mary and Judelle Beatrice (1971) : Fashion merchandising, McGraw Hill Book Co., New York, London.

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Paper – 22 : Embroidery

Theory	-	4 Hrs./Week	Theory	-	100 Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus :

Though garment making is popular, embellishing certain parts of garments enhances the beauty and appeal of the items prepared. Embroidery can play a vital role in upgrading the appearance and value of the products both in the Textile & Clothing forms.

Objective :

- 1) To develop taste in embroidering.
- 2) To impart skill in simple hand and machine embroidery.

Theory

Unit I :	Fundamentals of embroidery: - Techniques, design, color combinations, uses of different threads.	(12)
Unit II :	Embroidery stitches - types, suitability etc.	(12)
Unit III :	Types of threads, needles etc. used on different fabrics.	(15)
Unit IV :	Study of the types of various contemporary embroideries like, Shadow work, cut work, drawn thread work, smocking, appliqué work etc.	(15)

Practical:

Unit I:	Preparation of 3 consumers items using contemporary embroidering techniques	(03)
Unit II:	Machine embroidery samples:	(03)
Unit III:	Making samples of traditional embroideries of Kashia of (84) Kashmir and Bihar, Kantha of Bengal, Kasuti of Karnataka, Embroidery of Kutch and Kathiawar, Zari embroidery, Phulkari of Punjab, Chamba, Chikankari of Lucknow, Manipur, Appliqué work, Quilting of Gujarati and Rajasthani of Bihar and Orissa.	(04)

References :

- 1) Pandit Savitri (1975) : Indian Embroidery its variegated charm, Baroda, faculty of Home Science.
- 2) Chattopadhyaya and Kamala Devi (1975) : Handicraft of India, New Delhi, Indian Council of Cultural Relations..
- 3) Dongerkeys, S. (1951) : The Romance of Indian Embroidery, Bombay. Thacker Company Ltd..
- 4) Marg - Embroidery.
- 5) Calico - Embroidery.
- 6) Bali, Rakesh : Buyers and their buying behaviour, clothesline 11 (10), Oct. 1998, P 28-30
- 7) Big Book of Needle craft, odhams publications..
- 8) Cho. Jinsook & Kang, Jikyeong : Consumers attitudes toward clothing coupons, family and consumers sciences Research Journal (26) (3) Mar. 1998, P - 328-345 (ENG.).
- 9) Creative Embroidery Designs, Ondorish Publications.

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Paper – 23 : Traditional Textiles and Costumes of India

Theory	-	4 Hrs./Week	Theory	-	100 Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus

Traditional woven textiles of India are considered pieces of art. They are popular for the intricacy of the art. This course deals with their method of manufacture, materials used, designs, dyes and motifs used. This enables the students to understand the art, which can form the basis for Textile Design.

Indian culture is reflected partly in Indian costumes. Costumes themselves speak about the blending of different cultures into the art of dressing. Modern clothing and its variety can be achieved through a basic understanding of the traditional costumes belonging to different regions.

Objectives :

To enable students to -

- 1) Impart knowledge about the traditional textiles of India.
- 2) Identify the special features in the traditional clothing
- 3) Examine the influence of traditional costumes to the change in clothing practices
- 4) Study the present day costumes

Theory

Unit I : (10)

1) Introduction

- Woven textiles of India
 - Brocades
 - Shawls of Kashmir
 - Muslins of Bengal
 - Silks of Karnataka, Kashmir, Murshidabad, Varanasi, Assam, Tamil Nadu
 - Cottons of Kerala

Unit II : (10)

1) Woven sarees of India

Unit III : (10)

1) Dyed and printed textiles of India

- Kalamkari (painted and block printed)
- Patola, tie-and-dye of Gujarat and Rajasthan
- Andhra Pradesh : Pochampally, Telia rumals
- Tie and dye of Tamil Nadu, Sungadi, Ikats of Orissa

Unit IV : (10)

1) Male and female costumes of different state of India

Unit V : (10)

1) Traditional Dance costumes

- Bharat Natyam, Manipuri, Oddissi, Kathak, Kathakali
- 2) Tribal costumes of India

Practical :

- 1) Preparation of samples of traditional Indian embroideries from different states (05)
- 2) Preparation of 3 consumers item using contemporary embroidering techniques (05)

References :

- 1) Bali, Rakesh (1998) : Buyers and their buying behaviour, Clothesline 11 (10)
- 2) Big Book of Needles Craft, Odhams Publications.
- 3) Cho. Jinsook and Kang, Jikyeong (1998) : Consumers attitudes towards clothing coupons, Family and Consumer Research Journal 26 (3).
- 4) Creative Embroidery designs, Ondorisha Publications.
- 5) Needle Craft by Reader's Digest.
- 6) Chattopadhyay, Kalaladevi (1975) : Handicrafts of India, New Delhi, Indian Council of Cultural Relations.
- 7) Dongerkery, S. (1951) : The Romance of Indian Embroidery, Bombay, Thacker Co.
- 8) Armstrong, Helen Joseph (1987) : Patternmaking for fashion design, Harper Collins Publi. New York.
- 9) Brij Bhushan, Jamila (1958) : The Crafts of weavers, the costumes and Textiles of India, D.E. Tarapore Valla Sons and Co. Pvt. Ltd. Bombay.
- 10) Gurey, G.S. : Indian Costumes, The Popular Book Dept. Mumbai.
- 11) Roshan Alkaji : Costumes of India
- 12) Dar : Costumes of India and Pakistan
- 13) Koher C. (1963) : A History of costume, Dover Pub. Inc. N. York.
- 14) Lester Katherine (1956) : Historic costumes.
- 15) Gazettes of India
- 16) Census of India, India Census Commissioner.

T.Y. B. Sc. (Home Science) – Sem.- V

Paper – 24 : Apparel Making

Theory	-	4 Hrs./Week	Theory	-	100 Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus

Garment making, as an enterprise needs certain relevant inputs to the entrepreneur. This course renders an exposure to these essentials.

This course is designed to give the additional skill in Garment making for the enterprise.

Objectives :

To enable students to -

- 1) Familiarize with the essentials of Apparel Making
- 2) Acquaint with the various steps involved in the apparel making system and to gain skill in making certain garments for personal/individual measurements
- 3) Improve the skill in garment making
- 4) Impart more elaborate skills
- 5) Equip them with the techniques

Theory

Unit I : (10)

- 1) Body measurements
 - Anthropometric measures
 - Method of taking body measurements for different garments
- 2) Silhouettes
 - Figure types. Designing for different figure types

Unit II : (10)

- 1) Pattern making
 - Techniques, Flat pattern, Draping, principles and application of flat patterns for different styles

Unit III : (10)

- 1) Fabrics for garment making
 - Handling of different types of fabrics

Unit IV : (10)

- 1) Dart manipulation and dart concealment techniques
- 2) Raglan and Kimono blocks and interpretation of various styles using these blocks.

Unit V : (10)

- 1) Sleeve styles
- 2) Neckline and collars
- 3) Stitching of dresses, kameezes and tops using raglan and kimono styles
- 4) Stitching housecoat, kalidar kurta, Trouser, skirt

Practical

- 1) Preparation of personal basic blocks, fitting the blocks (05)
- 2) Adaptation of the blocks and stitching of petticoats, saree-blouse, kameez, night dress (05)
- 3) Drafting and making of skirt, churidhar, salwar (05)
- 4) Introduction to draping : Basic pattern on dress form (05)
 - Basic upper block, basic lower block and dart manipulation

References :

- 1) Bane A. (1974) : Tailoring, McGraw Hill
- 2) Bane A. (1979) : Flat pattern design, McGraw Hill
- 3) Bray Nathalie (1978) : Dress pattern designing, London, Crossby Lockwood and staples
- 4) Bray Nathalie (1970) : More dress designing, London, Crossby Lockwood and Staples
- 5) Giselle D. A., Berte B. : Figure types and size ranges, Fairchild publication
- 6) Goulbourn M. (1971) : Introduction pattern cutting, grading and modeling, B.T. Batsford Ltd.
- 7) Goldsworthy M. (1980) : Simple dressmaking, London, Mills and Boon Ltd.
- 8) Littman Connie (1977) : Pattern making design, Litton Educational Publishing Inc.
- 9) Muka A. (1979) : French touch, Pittsburgh, Wolfsan Publishing Co., Incorporation Vol. I–III

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T.Y. B. Sc. (Home Science) – Sem.- VI

Paper – 25 : Children's Clothing

Theory	-	4 Hrs./Week	Theory	-	100 Marks
Practical	-	2 Hrs./Week	Practical	-	25 Marks

Focus

Proficiency in garment making has been given its due importance in this course.

Objectives :

To impart knowledge regarding the factors that affect making clothes for children and from the standpoint of texture, fabric, growth, development etc.

Theory

- Unit I :** (10)
- Essentials of children's clothing
- Importance of clothing
 - Psychological effect of clothing on children.
 - Effect of clothes and child's growth
 - Sociological and psychological aspects of clothing.
- Unit II :** (10)
- Children's Clothing
- Factors to be considered while selecting and making children's garments.
- Unit III :** (10)
- Clothing budget
- Clothing budget in relation to clothing budget.
- Unit IV :** (10)
- The Infant
- Desirable features in infants clothing
 - Safety and health
 - Essential in the Layette.
- Unit IV :** (14)
- The creeping Age
- Functional design for the creeping Age
 - Garments for the creeping Age.
 - Preschooler
 - School - Doing child.

Practical

- 1) Drafting of child's basic bodies block. (02)
- 2) Adaptation of child's basic bodies block to various advanced designs of child dress / bush shirt, skirts / trouser etc. and construction of these garments. (02)
- 3) Adaptation of basic block of to child's rompers / sunsuits and pedal . Pushers, different types of frocks and their construction. (02)

- 4) Drafting of sleeve: basic and its variations. (02)
5) Drafting of different types of collars suitable for children.

References :

- Cooklin, herry : Pattern grading for children's cloth, the technology for sizing, black well, science, Oxford, 1991, Vi. (304 P) (eng.)
- Doongaji, (1975) : Basic process and clothing construction, New Delhi, Raj Book Dept.
- F Aldarich : Matric pattern for women's wear.
- Lockword, Gillan (1970) : Making clothes for young children, London studio vista.
- Natali Bray : Dress fitting, Crosby Lockwood staples, Goranada Publishing, N.Y. 1978.
- Pandit Savitri (1967) : Manual for children's clothing, orient Longman limited Bombay.
- Sneek, Barbara : Marking clothes, New York, Taplingar.

Paper – 26 : Project Management, Entrepreneurship Development and Computer Skills

Theory	-	5 Hrs./Week	Theory	-	100 Marks
Practical	-	1 Hrs./Week	Practical	-	25 Marks

Objectives :- To enable students to –

- 1) Understand development project as a system and project implementation.
- 2) Understand the concept of entrepreneurship.
- 3) Develop entrepreneurship skills.

Unit I : (10)

- Project Management system
- Meaning
- Tasks of project manager
- Components of project management system
- Needs and problems, gathering information, feed back, analysis of information
- Planning and design of project
- Implementing and evaluating

Unit II : (10)

- Meaning of project, identification and project selection
- Significance of a project report, contents of project report, formulation of project report format of project
- Project appraisal – concept and methods of project appraisal

Unit III : (10)

- Entrepreneurship
- Concept, definition, need, scope and characteristics of entrepreneurship development
- Development of women entrepreneurship
- Role of banks and other agencies

Unit IV : (10)

- Application and scope of entrepreneurship development in the field of Home Science
- Entrepreneurship management like resource management (man, machine, material and human behaviour)
- Small enterprises – definition, characteristics, relation between small and large unit, objectives and scope, opportunities for entrepreneur carrier their role in economics development and problems

Unit V : **Computer skills** (10)

- Introduction to computers, evaluation of computer characteristics, classification, functions of computers, data representation, computer hardware, central processing unit, input/output devices, microprocessors (fundamentals), computer software – operating system, application software is like work processors (word star/word perfect/MS word) and spreadsheets (Lotus 1-2-3/MS Excel)

Practical :

- 1) Selection and formulation of project from any field of home science, prepare a product and try to market it. (02)
- 2) Prepare a project proposal for an enterprise (02)
- 3) Running canteen for one week (02)
- 4) Interaction with successful entrepreneur (02)
- 5) Report writing (01)
- 6) Practical exercise related to computer science relating to above theory contents. (01)

Distribution of practical marks

- Report writing	-	05 Marks
- Writing of a project proposal	-	05 Marks
- Preparation of one product of which project proposal is prepared	-	05 Marks
- Practical exercise on computer	-	05 Marks
- Viva	-	05 Marks

Total	-	25 Marks

Note :- The strength of a batch of practical and tutorials for under graduate classes shall be 16 with at addition of 10% with the permission of Vice Chancellor

References :

- 1) United Nations Asian and Pacific centre for women and development (1979) manual on Project Development United Nations Building, Bangkok, Z. Thailand and ESCAP.
- 2) Directory of Aid agencies, South Pacific Bureau of Economic Co-operation GPO Box 856, SUVA, FIJI.
- 3) APCWD women's resource book, ESCAP United Nations Building Rajadamnem Avenue, P.O. Box – 2-1136, Bangkok, Thailand.
- 4) Associated country women of the world. How to get help for your society some guidelines for the use of ACWW society headquarters contact ACWW, 50, Warmick square, Victoria, London, SWIV, 2 AJ, England.
- 5) International Foundation Directory, London U.K., 1974, Europe Publications.
- 6) Kergner, Harold (1987) Project Management – A systems Approach of Planning, scheduling and controlling, New Delhi, (B.S. publishers and distributions)
- 7) Wood Ford, Jerry C., Gestoff, Edwin, A and Cummins Robert, C. (1977) : Organisational communication. The keynote to managerial effectiveness. McGraw Hill Tokyo, Japan, Kgakusha Ltd.
- 8) Mc Grath, E.H. (1978) Basic managerial skills for all, Jamshedpur, Xavier Labour relations institute.
- 9) Coover, Virginia and others (1978) : Resource manual for a living revolution, Philadelphia movement for a new society.
- 10) Team Technologies Incorporation (1980) : Teams and project design, team-up work book, 3810, Concorde Parkway suite 1600, Chantilly P.A. 22021, USA.
- 11) Samsed and Stokkeland consulting logical framework approach : Hand book for objective oriented planning, The Netherlands, NORAD.
- 12) Jose Paul, N. Ajit Kumar, Entrepreneurship Development and Management, Himalaya Publishing.
- 13) Khanka S. S. Chand and Co. Ram Nagar, New Delhi, Entrepreneurship Development
- 14) M. Gangadhara Rao, "Entrepreneurship and Entrepreneurial development, Kanishka Publishing House, New Delhi – (1992).
- 15) Vasant Desai – Entrepreneurship Development, Himalaya Publishing House (1991)
- 16) Sami Uddin – Entrepreneurship Development in India, Mittal Publication, New Delhi.
- 17) Ron Mansfield, MS Office, BPB Publication, New Delhi.

Internship/Project
Marks – 50
(Inform of grade)

Internship/project will be organized with different organizations to place the students according to their area of interest. The staff in charge has to work out the details of operation and evaluation with the officers of the organization concerned.

T.Y.B.Sc. (Home Science)

Format of the Question Paper

Time : Three Hours

Maximum Marks: 100

N.B. : 1) All questions are compulsory
 2) Figures to the right indicate full marks.
 3) Draw need diagram where ever necessary.

- | | | |
|----|--|------|
| 1) | Attempt any ten (out of 13) of the following (one or two sentences each.) | [20] |
| 2) | Attempt any five (out of 7) of the following (five or six sentences each.) | [20] |
| 3) | Attempt any three (out of 5) of the following (25 to 30 sentences each.) | [30] |
| 4) | Attempt any two (out of 3) of the following (50 to 60 sentences each.) | [30] |

B. Sc. (Home Science)

Third Year – Food Science & Nutrition
Third year B.Sc. Home Science curricular includes two semesters.

Semester – V

Paper No.	Subject	Exam scheme							
		Theory		Practical		Total		Exam	
		Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	At	By
19	Institutional food service management	100	40	-	-	100	40	The end of Sem.	Pune University
20	Community Nutrition	100	40	-	-	100	40		
21	Diet Therapy I	100	40	-	-	100	40		
22	Food Preservation	100	40			100	40		
Pract-IX	Based on Paper No. 19 & 20	-	-	50	20	50	20	The end of Sem	Pune University
Pract-X	Based on Paper No. 21 & 22	-	-	50	20	50	20		
Total		400	160	100	40	500	200		

Semester – VI

Paper No.	Subject	Exam scheme							
		Theory		Practical		Total		Exam	
		Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks	At	By
23	Food Microbiology, Hygiene and Sanitation	100	40	-	-	100	40	The end of Sem.	Pune University
24	Nutrition Education and Community Nutrition	100	40	-	-	100	40		
25	Diet Therapy II	100	40	-	-	100	40		
26	Project management, entrepreneurship development and computer skills	100	40			100	40		
Pract- XI	Based on Paper No. 23 & 24	-	-	50	20	50	20	The end of Sem	Pune University
Pract- XII	Based on Paper No. 25 & 26	-	-	50	20	50	20		
Total		400	160	100	40	500	200		

Internship	50marks
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Semester - I

Paper - 19: Institutional Food Service Management

Theory	-	4 Hrs. / Week	Theory	-	100 Marks
Practical	-	2 Hrs. / Week	Practical	-	25 Marks

Objectives:-

- 1) To develop an understanding of various aspects of food service unit and gain knowledge regarding selection and purchase of food and equipment.
- 2) To gain knowledge of food service layout and maintenance of equipment.
- 3) To enable the students to understand the management of human and material management in food service.

Unit I **Food service systems and their development**

- Introduction to food service industry.
- Types of food service.
- Styles of service.
- Menu considerations and planning.

Unit II **Food Material Management**

- Meaning, definition, importance
- Food selection
- Purchasing, methods of purchasing, receiving and store room management.
- Control in relation to above operations.

Unit III **Financial Management**

- Book Keeping, Accounting, Organization Management.

Pricing of food

- Factors affecting it.
- Cost control
- Auditing.

Unit IV **Plant and equipment management**

- Maintenance, sanitation, safety,
- Garbage disposal, pest control.

Planning food service lay outs

- Emphasis on traffic patterns and activity centers.

Types of organization

- Different types and their organizational structure.

Unit V **Management**

- Attributes and responsibility of managers.
- Principles of management

- Functions of management
- Tools of management.

Laws

- Laws affecting food service operations.
- Labor policies and legislations.

Practical:-

Objectives

- 1) To develop skills in food service.

Content

Plan 4 recipes and prepare 1 standardized recipe for the following categories.

- 1) Low calories and high calories snacks.
- 2) Low calorie and high calorie dessert.
- 3) Low protein and protein snacks.
- 4) Low protein and high protein desserts.
- 5) Low calorie and high calorie beverages.
- 6) Low fibre and high fibre snacks.
- 7) Variety of salads.
- 8) Mineral – regional
- 9) Breakfast tray- prepare food in quality – 20 servings.

References :-

- 16) Boella M.J. (1963) : Personnel management in the hotel and catering industry, 3rd Ed., Hutchinson, London.
- 17) Drucker P.F. (1975) : Management, Allied Publishers, New Delhi.
- 18) Feam D. (1969) : Management systems for the hotel catering and allied industries.
- 19) Hitchcock M.J. (1980) : Food service systems administration, Macmillan, New York.
- 20) Koontz H., Dannel D. Weicrich H. (1983) : Essentials of management, Indian Ed.
- 21) Kotas R. (1972) : Accounting in the hotel and catering industry, Intertext Books, 3rd Ed. Butler and Tanner, London.
- 22) Moore C.L. and Jaediicke R.K. : Managerial accounting, South Western Publishing Co.

- 23) Sethi M., Malhan S. (1993) : Catering management : An integrated approach, Wiley Eastern, New Delhi.
- 24) Terry G.R. (1972) : Principles of management, 6th Ed. Irwin Dorsey International: London.
- 25) West B.B., Wood L. Revised by Harger V.F., Shugart G.S., Payne-Palacio J. (1989) : Food service in institutions, 6th Ed., Macmillan Pub. Co., New York.

Paper –20 : Community Nutrition

Theory	-	5 Hrs./Week	Theory	-	100 Marks
Practical	-	1 Hrs./Week	Practical	-	25 Marks

Focus :

The course is intended to introduce to students nutritional problems prevailing in the country, their causes, and implications and the Government policies and programmes for control and/or prevention of the same.

Objectives :

- This course will enable the students to -
- 2) Understand the factors that determine the availability and consumption of food
 - 3) Be familiar with the common nutritional problems of the community, their causes, symptoms, treatment and prevention
 - 4) Get exposed to the schemes, programmes and policies of Government of India to combat malnutrition

Theory

Unit I : (18)

Nutritional status assessment and surveillance

- Meaning and methods

Direct nutritional assessment of human groups

- Clinical signs, nutritional anthropometry, biochemical tests, biophysical methods.

Diet surveys

- Need and importance, methods of dietary survey – interpretation – concept of consumption unit, intra and inter individual distribution in family, adequacy of diet with respect to RDA, concept of family food security.

Clinical signs

- Need and importance, identifying signs of PEM, vitamin A deficiency and iodine deficiency. Interpretation of descriptive list of clinical signs.

Nutritional anthropometry

- Need and importance, standards for reference, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements and use of growth charts, biochemical.

Biochemical examinations

- Standard levels of biochemical parameters.

Unit II: (10)

Nutritional problems of the community and implications for public health

- Common problems in India
- Causes (Nutritional and non-nutritional)
- Incidence of nutritional problems, signs and symptoms, treatment

Unit III : (06)

Nutrition education

- Objectives, principles and importance of nutrition education
- Identification of nutritional problems and target groups
- Community techniques for individual, group and mass contact programme for imparting nutrition education

Unit IV : (10)

Food behaviour

- Factors affecting food behaviour agricultural, economic, environmental, socio-cultural, psychological, religious.
- Role of industrialization, work patterns and mass media.
- Food behaviour and linkages with health.

Food habits

- Knowledge, attitudes, practice.
- Food habits and dietary patterns in different regions and communities in India.
- Factors affecting food habits – family size, composition, structure, economic status, working status of mother, education

Unit V: (10)

Nutrition policies and programmes to combat nutritional problems in

India

- Prophylaxis programme
- Midday meal programme
- ICDS

Practical :

Objectives

This course should enable students to –

1. Take various anthropometric measurements for individuals of different ages
2. Assess the nutritional status of individuals and the communities
3. Know the merits and limitations of various parameters used to assess nutritional status
4. Collect data on food and nutrient intake
5. Know the significance and importance of various biochemical parameters
6. Train grassroots level workers in anthropometry and its interpretation

Note : Each student should be given the opportunity to do the measurements individually such that they develop the necessary skills.

1) Anthropometry (01)

- Measurement of infant length, height, weight, circumference, measurements, head, chest, mid-upper arm, waist, hip, precautions to be taken, Accuracy, precision and reliability of measurements. Intra and inter observer variability and errors. Tools used and sensitivity.

2) Comparison with norms and interpretation to assess nutritional (01)

- Status (weight for age, height for age, weight for height, MUAC, Z-scores, standard deviation, BMI, waist to hip ratio) and significance.

3) Tests for body composition – methods in brief and significance (01)

- Measurement of fat using skinfold thickness.

4) Growth charts-plotting of growth charts, growth monitoring and promotion (01)

5) Clinical assessment and signs of nutrient deficiency for the following - (01)

- PEM (Kwashiorkor, Marasmus), vitamin A, anaemia, rickets, B-complex deficiencies.

6) Biochemical parameters commonly used for assessing nutritional status (01)

- Norms and cut-off points for desirable, at risk/deficiency
- Proteins – total protein, albumin, transferrin, haemoglobin, ferritin
- TIBC, UIBC, plasma, iron, vitamins- fat soluble and water soluble
- Minerals, lipids

7) Estimating food and nutrient intake – Household food consumption data

per consumption, unit 24 hours dietary recall, 24 hour record (02)

- Weighment method, food diaries, food frequency data. Use of each of the above, information available through each and situations in which each can be used.
- Merits and limitations of each – formulation of the tool, collection of data, estimation of intakes.

8) Field visits for surveillance systems used in nutrition and health programmes. (02)

References :

- 1) Agrawal A. N. (1981) : Indian economy problems of development and planning.
- 2) Jelliffie D. B. (1968) : Child health in the tropics.
- 3) Ghosh S. (1989) : You and your child.
- 4) Misra S.K. and Puri V.K. (1992) : Indian economy.
- 5) Shukla P.K. (1982) : Nutritional problems in India.
- 6) Thankamma J. (1976) : Food adulteration.
- 7) Park J.E. and Park K. (1994) : Text book of preventive and social medicine.
- 8) Preventive of food adulteration act (1994) : Government of India.
- 9) Jelliffie D. B. (1968) : Assessment of the nutritional status of the community, World Health Organization.
- 10) Sain D.R., Lockwood R. and Scrimshaw N.S. (1981) : Methods for the evaluation of the impact of food and nutrition programmes, United nations university.
- 11) Ritchie J.A. (1967) : Learning better nutrition, FAO, Rome.
- 12) Gopalan C. : Nutrition and health care, Nutrition Foundation of India, Special publication series.
- 13) Beghin I., Cap M. and Dujardan B. (1968) : A guide to nutrition status assessment, W.H.O. Geneva.
- 14) Gopaldas T. and Seshadri S. (1987) : Nutrition monitoring and assessment, Oxford University Press.
- 15) Mason J.B., Hachicht J.P., Tabatabai H. and Valverde V. (1984) : Nutritional surveillance, W.H.O.

Paper – 21 : Diet Therapy I

Theory - 4 Hrs./Week
Practical - 2 Hrs./Week

Theory - 100 Marks
Practical - 25 Marks

Focus

This course emphasizes the importance of diet in therapeutic management and the role of the dietician as a part of the medical team engaged in ensuring patient health and well being.

Objectives :

This course will enable the students to

- 7) Know the principles of diet therapy
- 8) Understand the modifications of normal diet for therapeutic purposes
- 9) Understand the role of the dietician

Theory

Unit I :

Menu planning (08)

- Explanation of terms
- Planning of diets.
- Vegetarian diets .
- Low cost balanced diets.
- Food Security

Nutritional & Food Requirement for Infants (08)

- Growth & Development During Infancy.
- Nutritional Requirements.
- Food Requirements.

Unit II:

Nutritional & Food Requirements for Preschool Children (1-6) (08)

- Nutritional Requirements .
- Food Affecting Nutritional Status.
- Food Requirements.
- Nutrition Related Problems of Preschoolers.

Unit III :

Nutritional & Food Requirements for School Children (6-12) (08)

- Nutritional Requirements.
- Food Requirements.
- Packed Lunch.
- School Lunch.

Unit IV :

Nutritional & Food Requirements During Adolescent (08)

- Nutritional Requirements.
- Food Habits.
- Nutritional Problems.

Unit V :

Nutritional & Food Requirements For Expectant Mothers (08)

- Physiological changes.
- Nutritional Requirement.
- Dietary Modification.
- General Dietary Problems
- Complications.

Unit VI :

Nutritional & Food Requirements For Lactating Women (08)

- Role of hormones.
- Nutritional Requirement.
- Food Requirements.
- Indian Nursing Mothers.

Unit VII :

Nutritional & Food Requirements During Old Age (08)

- Process of Aging.
- Nutritional Requirements.

- Food Requirements.
- Nutrition Related Problems of Old Age.
- Degenerative Diseases.
- Drug-Food & Nutrient Reaction.

Unit VIII :

Role of Dietician in hospital (08)

- Classification.
- Responsibilities.
- Diet Counseling.
- The Dietician In India.

Practical :

Objectives :

To enable students to-

1. To be able to plan diets for therapeutic purposes.
2. To plan diets for different age groups in different conditions.

- 1) Standardization of common food preparations for portion size. (02)
- 2) Planning and preparation of normal diet. (02)
- 3) Planning and preparation of recipes using protein concentrates. (02)
- 5) Planning and preparation of low fat and low calorie recipes. (02)
- 6) Planning and preparation of high fiber recipes. (02)
- 7) Planning and preparation of low fiber and low residue recipes. (01)
- 8) Planning and preparation of weaning foods.
- 9) Planning and preparation of low cost recipes for different age groups (01)

References :

- 16) Anderson L., Dibble M.V., Turkki P.R., Mitchall H.S. and Rynbergin H.J. (1982) : Nutrition in health and disease, 7th Ed., J.B. Lippincott & Co., Philadelphia.
- 17) Antia F.P. (1973) : Clinical dietetics and nutrition, 2nd Ed., Oxford University Press, Delhi.
- 18) Mahan L.K., Arlin M.T. (1992) : Krause's food, nutrition and diet therapy, 8th Ed., W.B. Saunders Co., London.
- 19) Robinson C.H., Lawler M.R., Chenoweth W.L. and Garwick A.E. (1986) : Normal and therapeutic nutrition, 17th Ed., Macmillan Pub. Co.
- 20) Williams S.R. (1989) : Nutrition and diet therapy, 6th Ed., Times Mirror/Mosby college Pub. St Louis.
- 21) Raheena Begum (1989) : A textbook of foods, nutrition and dietetics, Sterling Pub., New Delhi.
- 22) Joshi S.A. (1992) : Nutrition and dietetics, Tata McGraw Hill Pub., New Delhi

Paper – 22 : Food Preservation

Theory	-	4 Hrs. / Week	Theory	-	100 Marks
Practical	-	2 Hrs. / Week	Practical	-	25 Marks

Objectives:-

- 1) To develop the ability in preserving foods by laboratory and household measures.
- 2) To make the students understand the basic principles underlying food preservation.

Unit I Introduction to food preservation and historical background. 10

- Meaning, definition and objectives.
- Importance, brief history & traditional methods of food preservation (in brief)

Post harvest technology

- Storage stability of foods and factors affecting storage stability.
- Different types of storage and ideal storage conditions for different foods in brief.

Unit II Basic Principles of Food preservation - 10

- Asepsis and aseptic handling of foods.
- Principles involved in the microbial decomposition of food and self decompositions of foods.
- Growth curve of microbial culture and its application in food preservation.

Unit III Methods of Food Preservation 10

- Asepsis or keeping out micro organisms – definition and different techniques applied for asepsis.
- Removal micro organisms – use of different filters

and other techniques of remove micro organism.

- Maintenance of anaerobic conditions to create and prevent the entry of oxygen in foods.
- Use of high temperature.
- Use of low temperature.
- Drying or dehydration.
- Use of chemical preservations and food additives.
- Irradiation.
- Other methods of food preservation.

***Unit IV* **Food Packaging** 8**

- Introduction, importance of packing different packaging materials.
- Characteristics of an ideal packaging material and selection criteria.

***Unit V* **Food poisoning and food infections** 10**

- Definitions and differentiation between food poisoning and infection.
- Causes and types of food poisoning and infections.
- Food laws, standards and specification, Agencies, cooking for preservation of food adulteration.

Practical:

Objectives -

- 1) To make students understand the basic principles underlying food preservation as an income generating activity.
- 2) To develop in students the ability to preserve foods by laboratory and household methods.

Contents -

- 1) Introduction to aseptic handling in laboratory.
Principles of food preservation and sources of contamination.
- 2) Preparation of pickles (on basis of expected shelf life) Short and long shelf life. Pickles, sweet pickles, spicy and sour pickles with or without oil.
- 3) Preparation of jam, jelly, morabbas, marmalade, fruit candies, candied peels, guava cheese, toffees.
- 4) Sauces – tomato ketchups, tomato sauce, red chilli sauce, green chilli sauce, tamarind sauce
- 5) Chutney – Tomato chutney, various dry chutneys.
- 6) Syrups and squashes – Lemon squash, orange squash, pineapple squash, grape squash, mango squash.
- 7) Instant foods – Masalas.
- 8) Freezing of fruits and vegetables.
- 9) Regional / common dehydrated foods.
- 10) Quantity foods production of some foods.
- 11) Spoilage of foods.
- 12) Visit to canning, cold storage plants and various food industries for developing an Awareness of commercial techniques of food preservation and packaging.

References :-

- 1) Frazier W. & Westhoff D. (1988) : Food Microbiology, Tata Mc Graw – Hill Publishers.
- 2) Desorosier N. W. (1963) : The Technology of Food Preservation. The AVT Publishing Company.
- 3) Salunke D. K. (1974) : Storage, Processing and Nutritional Quality of Fruits and Vegetables, C. R. S. Press, Cleveland Ohio.
- 4) Subbulakshmi G. and Udipi S. A. (2002) : Food Processing and Preservation, New Age International (P) Ltd. Publication.
- 5) Banwast G. J. (1989) : Basic Food Microbiology, Chapman &Hall Publication, New York.
- 6) Home scale processing and preservation of Fruits and Vegetables CFTRI Mysore, 1967.

Semester VI

Paper – 23 : Food Microbiology, Hygiene and Sanitation

Theory	-5 Hrs./Week	Theory	-	100 Marks
Practical	-1 Hrs./Week	Practical	-	25 Marks

Focus :

The role of micro organisms in food spoilage and the method used for prevention and control are the main highlights of this course.

Objectives :

This course will enable the students to:

1. Understand the nature of microorganisms involved in food - spoilage, food - infections and intoxications
2. Understand the importance of micro organisms in food biotechnology.
3. Understand the principle of various methods used in the prevention and control of the micro-organisms in foods.
4. Understand the criteria for microbiological safety in various food operations to avoid public health hazards due to contaminated foods.

Theory

Unit I :

(06)

Brief history of food microbiology and introduction to important micro organisms in foods.

Unit II:

(06)

Cultivation of micro organisms - Nutritional requirement of micro organism
types of media used, methods of isolation.

Unit III :

(06)

Primary sources of micro organisms in foods, physical and chemical methods
used in the destruction of micro organisms (sterilization and disinfection)

Unit IV :

(06)

Fundamentals of controls of micro organisms in food. Extrinsic and intrinsic
parameters affecting growth and survival of microbes, use of high and

low temp. dehydration, freezing, freeze - drying irradiation and preservative in food preservation.

Unit V: (06)
Food spoilage - contamination and micro organisms in the spoilage of different kinds of foods and their presentation. Cereal and cereal products, vegetable and fruits, fish and other sea foods, meat and meat products, eggs and poultry, milk and milk products, canned foods.

Unit VI : (06)
Public health hazards due to contaminated foods. food borne infections and intoxications symptoms, mode and sources of transmission and methods of prevention. Investigation and detection of food borne disease out break.

Unit VII : (06)
Microbes used in food biotechnology. Fermented foods and their benefits.

Unit VIII : (06)
Importance of sanitation and hygiene in foods, kitchen hygiene, employee health, food plant hygiene, food laws.

Unit IX : (06)
Indices of food, milk and water sanitary quality. Microbiological criteria of foods, water and milk testing (Bacteriological analysis)

Practical :

1. Demonstration of the different parts of the microscope, their use and care of the microscope including oil immersions lens. (01)
2. Preparation of bacterial smears, simple staining, differential staining, spore staining, staining of molds and yeast. (01)

3. Preparation of common laboratory media for cultivation of bacteria, yeast and modes. (01)
4. Isolation of micro organisms by for plate method (Dilution), spread plate and streak plate methods. (01)
5. Morphological identification of important molds and yeast in foods (slides & cultures) Rhizopus, Mucor, Aspergillus, Penicilium, Atternaaia, Helminthosporium (01)
6. Sampling of air, water, dust, soil, food, handlers to study the various sources of transmission of micro organisms in food. (01)
7. Demonstration of microbiological analysis of water, milk and food for Enumeration of standard plate count and coliform count. (02)
8. Assessment of surface sanitation of kitchens by swab rinse method. (02)

References :

- 1) Frazier, W. C. and Westhoff, D. C. (1988) : Fourth Edition, Food Microbiology, Mc Graw Hill inc.
- 2) Jay James, M. (1986) : Third Edition, Modern Food Microbiology, Van Nostrand Reinhold company Inc.
- 3) Pelezar, M. I. and Reid, R. D. (1978) : Microbiology Mc Graw Hill Book Company, New York.
- 4) Benson Harald, J. (1990) : Microbiological application Wn. C. Brown Publishers, U.S.A.
- 5) Collins. C. H. and Lyne. P. M. (1976) : Microbiological methods, Buttersworth, London.

Paper – 24 : Nutrition Education and Community Nutrition

Theory	-	4 Hrs. / Week	Theory	-	100 Marks
Practical	-	2 Hrs. / Week	Practical	-	25 Marks

Objectives:-

- 1) Understand the causes / derminants and consequences of nutritional problems in society.
- 2) Be familiar with various approaches to nutrition interventions and programmes.

Unit I	Nutrition Education	8
	<ul style="list-style-type: none">▪ Objectives, principles and importance of nutrition education.▪ Identification of nutritional problems and target groups.▪ Community techniques for individual, group and mass contact programme for imparting nutrition education.	
Unit II	Audio – visual aids	8
	<ul style="list-style-type: none">▪ Three dimensional, non-projected and electronic aids.▪ Developing and conveying messages for imparting nutrition education.▪ Planning an effective nutrition education programme for selected target groups.	
Unit III	Scope of community nutrition.	8
	<ul style="list-style-type: none">▪ Malnutrition among vulnerable groups.▪ Growth monitoring.▪ Assessment of nutritional status.	
Unit IV	Nutritional Problems	8
	<ul style="list-style-type: none">▪ Nutritional Problems prevalent in India and measures to combat them in the community.	
Unit V	National nutrition programmes	8
	<ul style="list-style-type: none">▪ Objectives and functions of national, international agencies and voluntary organisations.	

Practical:-

- | | |
|--|----|
| 1) Assessment of nutritional status of selected groups of community for interpretation of the results and identifying of nutritional problems. | 10 |
| 2) Preparation of nutrition education materials and practicing nutrition education on vulnerable sections. | 05 |
| 3) Tests for detecting food adulteration. | 05 |
| 4) Visit to ICDS and PHC/MCH to observe supplementary feeding and prophylactic programmes. | 05 |

References:-

- 1) Owen, A. Y. and Erankle R. T. (1986) : Nutrition in the community. The Art of Delivering services 2nd edition times mirror / mosby.
- 2) Park, K (2000) : Park's Text book of preventative and social medicine, 18th edition M/s. Banarasidas Bharat, Jabalpur.
- 3) SCN news un ACC / SCN sub committee on nutrition.
- 4) Bamji M. S. Rao, P. N. Reddy V (Eds) (1996) Textbook of Human nutrition, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.
- 5) Gopalan C. and K Kaur S (Eds) (1989) women and nutrition in India nutrition foundation of India.
- 6) Gopalan C and Kaur S (Eds) (1993) : Towards Better Nutrition, Problems and Policies, Nutrition foundation of India.
- 7) Gopalan, C (Ed.) (1987) : Combating under Nutrition Basic Issues and Practical Approaches, Nutrition foundation of India.
- 8) National Nutrition policy (1993) : Dept. of W.C.D. Govt. of India.
- 9) Micro Nutrient Initiative (1998) Food Fortification to End Micronutrient Malnutrition. The Micronutrient Initiative, Ottawa Canada.

Paper – 25 : Diet Therapy II

Theory - 4 Hrs./Week
Practical - 2 Hrs./Week

Theory - 100 Marks
Practical - 25 Marks

Focus

Based on the inputs given in Diet Therapy I, this course aims to build a more extensive knowledge base and skills regarding the nutritional and dietary management in various pathophysiological situations.

Objectives :

This course will enable the students to -

- 6) Understand the role of the dietician in preventive, promotive and curative health care
- 7) Be able to make appropriate dietary modifications for various disease conditions based on the pathophysiology

Theory

Unit I :

(10)

Basic concept of diet therapy

- Therapeutic adaptations of normal diet.
- Principals & classification of therapeutic diets.

Routine Hospital Diet

- Regular, Light, Soft, Fluid Diet.
- Parenteral & Enteral Feeding.
- Per- & post-operative Diets

Unit II:

(10)

Diet in Obesity & Underweight

- Etiology and assessment
- Prevention and treatment
- Dietary management

Diet in Fever

- Causes
- Types
- General dietary consideration.
- Typhoid, Influenza, Malaria.

Unit III :

(10)

Diet in Gastrointestinal Diseases

-Etiology, Symptoms, & management of,

- Peptic Ulcer.
- Constipation.
- Diarrhea.

Diet in Liver Diseases

- Functions of liver
- Liver function test
- Etiology, Symptoms, & management of,
 - Cirrhosis of Liver
 - Viral Hepatitis
 - Hepatic Coma

Unit IV :

(10)

Diet in Diabetes Mellitus

- Classification, Symptoms, Diagnosis, Management of Diabetes Mellitus.
- Oral Hypoglycemic agents.
- Nutritional Management.
- Special Diabetic Foods.
- Artificial Sweeteners.
- Patient Education.

Unit V :

(10)

Diseases of Cardiovascular System

- Hypertension:
Type, Etiology, Causes, Symptoms, Nutritional Management.
- Atherosclerosis:
Etiology & Risk Factors, Nutritional Management.
- Functional Foods.

Diet in Kidney Diseases

- Functions of Kidney.
- Etiology, Symptoms, Nutritional Management.
 - Acute Renal Failure
 - Chronic Renal Failure
 - Urinary Calculi
- Dialysis : Types, Dietary Management

Unit VI :

(10)

Food Allergy

Definition, Symptoms, Dietary Management

Diet in Cancer & HIV

Pathophysiology, Etiology, & Classification.
Nutritional Modification.

Practical

Objective

To enable students to apply the principles of planning therapeutic diets for various disease conditions.

- Planning & preparation of full fluid food preparation.
- Planning & preparation of clear fluid food preparation.
- Planning and preparation of diets, without insulin, with insulin, adult and juvenile, diabetes in pregnancy, diabetes and illness.
- Formulation of low sodium & low cholesterol recipes.
- Planning and preparation of diets hypertension.
- Planning and preparation of diets for acute renal failure.
- Planning and preparation of diets for chronic renal failure.
- Planning and preparation of diets for dialysis.

References :

- 1) Anderson L., Dibble M.V., Turkki P.R., Mitchell H.S. and Rynbergin H.J. (1982) : Nutrition in health and disease, 17th Ed., J.B. Lippincott and Co. Philadelphia.
- 2) Antia F.P. (1973) : Clinical dietetics and nutrition, 2nd Ed., Oxford University Press, Delhi.
- 3) Mahan L.K., Arlin M.T. (1992) : Krause's food nutrition and diet therapy, 8th Ed., W.B. Saunders Co., London.
- 4) Robinson C.H., Lawler M.R., Chenoweth W.L. and Garwick A.E. (1986) : Normal and therapeutic nutrition, 17th Ed., Macmillan Pub. Co.
- 5) Williams S.R. (1989) : Nutrition and diet therapy, 6th Ed., Times Mirror/Mosby college Pub. St Louis.
- 6) Raheena Begum (1989) : A textbook of foods, nutrition and dietetics, Sterling Pub., New Delhi.
- 7) Joshi S.A. (1992) : Nutrition and dietetics, Tata McGraw Hill Pub., New Delhi.
- 8) Bamji M. S. Rao, P. N. Reddy V (Eds) (1996) Textbook of Human nutrition, Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi.

Paper – 26 : Project Management, Entrepreneurship Development & Computer Skills

Theory	-	5 Hrs./Week	Theory	-	100 Marks
Practical	-	1 Hrs./Week	Practical	-	25 Marks

Objectives :- To enable students to –

- 4) Understand development project as a system and project implementation.
- 5) Understand the concept of entrepreneurship.
- 6) Develop entrepreneurship skills.

Unit I : (10)

Project Management system

- Meaning
- Tasks of project manager
- Components of project management system
- Needs and problems, gathering information, feed back, analysis of information
- Planning and design of project
- Implementing and evaluating

Unit II: (10)

Meaning of project.

- Identification and project selection
- Significance of a project report, contents of project report, formulation of project report format of project
- Project appraisal – concept and methods of project appraisal

Unit III : (10)

Entrepreneurship

- Concept, definition, need, scope and characteristics of entrepreneurship development
- Development of women entrepreneurship
- Role of banks and other agencies

Unit IV : (10)

Application and scope of entrepreneurship development in the field of Home Science

- Entrepreneurship management like resource management (man, machine, material and human behaviour)
- Small enterprises – definition, characteristics, relation between small and large unit, objectives and scope, opportunities for entrepreneur carrier their role in economics development and problems

Unit V: (10)

Computer skills

- Introduction to computers, evaluation of computer characteristics, classification, functions of computers, data representation, computer hardware, central processing unit, input/output devices, microprocessors (fundamentals), computer software – operating system, application software is like word processors (word star/word perfect/MS word) and spreadsheets (Lotus 1-2-3/MS Excel)

Practical :

- 7) Selection and formulation of project from any field of home science, prepare a product and try to market it.
- 8) Prepare a project proposal for an enterprise
- 9) Running canteen for one week
- 10) Interaction with successful entrepreneur
- 11) Report writing
- 12) Practical exercise related to computer science relating to above theory contents.

References :

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- 22) International Foundation Directory, London U.K., 1974, Europe Publications.
- 23) Kergner, Harold (1987) Project Management – A systems Approach of Planning, scheduling and controlling, New Delhi, (B.S. publishers and distributions)
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- 25) Mc Grath, E.H. (1978) Basic managerial skills for all, Jamshedpur, Xavier Labour relations institute.
- 26) Coover, Virginia and others (1978) : Resource manual for a living revolution, Philadelphia movement for a new society.
- 27) Team Technologies Incorporation (1980) : Teams and project design, team-up work book, 3810, Concorde Parkway suite 1600, Chantilly P.A. 22021, USA.
- 28) Samsed and Stokkeland consulting logical framework approach : Hand book for objective oriented planning, The Netherlands, NORAD.
- 29) Jose Paul, N. Ajit Kumar, Entrepreneurship Development and Management, Himalaya Publishing.
- 30) Khanka S. S. Chand and Co. Ram Nagar, New Delhi, Entrepreneurship Development
- 31) M. Gangadhara Rao, "Entrepreneurship and Entrepreneurial development, Kanishka Publishing House, New Delhi – (1992).
- 32) Vasant Desai – Entrepreneurship Development, Himalaya Publishing House (1991)
- 33) Sami Uddin – Entrepreneurship Development in India, Mittal Publication, New Delhi.
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Project cum Internship (Community Nutrition)

Focus

To develop skills in designing research and intervention projects in order to assess, analyse and improve nutrition and health problems.

Objectives

This course will enable the students to:

- 1) Make use of all the knowledge and skills acquired during the entire course to deal with the community
- 2) Undertake situational analysis of nutrition and health problems of the community
- 3) Devise ways and means to bring about possible improvements in the quality of life of the community

Unit 1 : Meaning of scientific research and its methods

- Formulation of project design

Unit 2 : Types of project design

- Exploratory, descriptive, experimental, cross-sectional or longitudinal

Unit 3 : Methods

- Survey, case study, anthropological or experimental

Unit 4 : Tools and techniques

- Observation, interviewing, questionnaire schedules or rating scales

Unit 5 : Tabulation and interpretations

- Elementary statistical procedures, tabular and graphic representation of data and its interpretation

OR

Project cum Internship (Institutional Food Service Management)

Focus

Project and internship aims to give practical experience and apply the knowledge of principles of food service management.

Objectives

This course will enable the students to:

- 1) Make use of all the knowledge and skills acquired during the entire course in the practical application of food service management
- 2) Undertake situational analysis of different types of food service management institutions
- 3) Devise ways and means to bring about possible improvements in the existing system

Internship

Objectives

1. Understand the principles of planning, organizing and controlling in food service institutions
2. Develop skills in meal planning and service in catering institutions
3. Gain knowledge to manage manpower and establish good human relations
4. Gain experience in financial management
5. Understand the principles of sanitation and hygiene

Internship – aspects to be covered

1. Visit to different types of catering institutions.
2. Market survey to study the availability and cost of equipment.
3. Meal planning and costing menus in institutional food service management.
4. Quantity production of cereals, pulses, vegetables, milk, fruits and fleshy foods and their quality assurance.
5. Practical experience in layout planning, work simplification, methods, time and motion study.
6. Project based on : Fuel economy, waste disposal.

OR

Project cum Internship (Dietetics)

Focus

To give practical experience and apply knowledge in the diet counselling.

Objectives

This course will enable the students to:

1. Make use of all the knowledge and skills acquired during the entire programme in practicals during diet counseling.
2. Devise ways and means to bring about possible improvements in the existing system

Internship – Aspects to be covered

Job Training

2-4 weeks in Hospitals / Health club.

Course content

- 1) Study commonly used tests for diagnosis of various diseases system-wise.
- 2) Interpretation of patient data and diagnostic tests and drawing up of patient diet prescription alongwith discharge diet plan, using a case study approach.
- 3) Observation and study of organization and management of diet and nutrition counseling department.

T.Y.B.Sc. (Home Science)

Format of the Question Paper

Time : Three Hours

Maximum Marks: 100

- N.B. :
- 1) All questions are compulsory
 - 2) Figures to the right indicate full marks.
 - 3) Draw need diagram where ever necessary.

- 1) Attempt any ten (out of 13) of the following (one or two sentences each.) **[20]**
- 2) Attempt any five (out of 7) of the following (five or six sentences each.) **[20]**
- 3) Attempt any three (out of 5) of the following (25 to 30 sentences each.) **[30]**
- 4) Attempt any two (out of 3) of the following (50 to 60 sentences each.) **[30]**