

M.Sc. Home Science

COURSE SYLLABUS

(2018 onwards)



UNIVERSITY OF KERALA

Senate House Campus, Palayam

Thiruvananthapuram-695034

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UNIVERSITY OF KERALA

SCHEME AND SYLLABUS FOR POST GRADUATE DEGREE

IN HOMESCIENCE

Introduction

Home Science is a unique course that focuses upon every phase of human life. It touches every segment of the population men and women, the young and the old, the enriched and the impoverished, the gifted and the disabled. The different courses encompass every aspect of human life- family and resource management, extension and community work, health and nutrition, diet and diseases. The scope of Home Science is not limited to the activities within the home, but has a wider perspective that forms the basis of challenging professions in varied fields. Home Science course addresses the current challenges confronting the country and looks prospectively at issues that will be required in the near future.

The focus of Masters programme is to develop professionals in different spheres of the community like Interior designers and consultants, Extension workers in government and non-governmental sectors, Social entrepreneurs, Nutritionists and Dieticians, Food Scientists, Researchers and Teachers. The curriculum focuses to foster a firm theoretical background with amalgamation of practical skills and development of research related abilities, so that the postgraduates are capable of critical and analytical thinking. The students would thus be competent to address the various issues of the society.

Objectives

The Post-Graduate programme will focus on developing knowledge and competence for:

- (i) Teaching and research in academic and other institutions
- (ii) To prepare a cadre of professionals to work with governmental and non-governmental organisations in various capacities.
- (iii) To enhance self-employment potential through entrepreneurial skill training.
- (iv) To mould consultants and trainers in the health care system.

M.Sc. HOME SCIENCE

BRANCH X-B

FAMILY RESOURCE MANAGEMENT

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION

M.Sc. HOME SCIENCE

Branch XB Annexure Family Resource Management- Course & Mark distribution

Semester	Paper code	Title of the paper	Distribution of hour / semester	Instructional hrs/week		ESE duration	Maximum Marks		
				L	P		CA	ESA	Total
1	HS211B	Advanced Human Resource Management	110	6	-	3	25	75	100
	HS212B	Hospitality Management	110	6	-	3	25	75	100
	HS213B	Food Service Management	110	6	-	3	25	75	100
	HS214B /C/D/E	Research Methodology	120	7	-	3	25	75	100
		Total	450	25	-	-	100	300	400
2	HS221B	Hospitality Management (Internship & Viva Voce)	120	-	7		25	75	100
	HS222B	Advanced Landscape Designing	110	6	-	3	25	75	100
	HS223B	Housing & Interior Designing	110	6	-	3	25	75	100
	HS224B	Housing & Interior Designing, (Practicals)	120	-	7	3	25	75	100
		Total	450	12	14	-	100	300	400
3	HS231B	Consumerism	110	6	-	3	25	75	100
	HS232B	Ergonomics	110	6	-	3	25	75	100
	HS233B	Entrepreneurship Development	110	6	-	3	25	75	100
	HS234B /C/D/E	Statistics and Computer Application	120	7	-	3	25	75	100
		Total	450	25	-	-	100	300	400
4	HS241B	Furniture and Furnishings	110	6	-	3	25	75	100
	HS242B	Energy & Environment	110	6	-	3	25	75	100
	HS 243B	Applied Nutrition & Extension (Theory)	110	6	-	3	25	75	100
	HS 244B	Women's studies	110	6	-	3	25	75	100
		Total	450	24	-	-	100	300	400
	HS245B	Dissertation	-	-	-	-	-	100	100
	HS246B	Comprehensive Viva	-	-	-	-	-	100	100
		Tutorial work	5hrs/week	-	-	-	-	-	-
		Grand Total		86	14	-	400	1400	1800

**L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment
ESA-End semester assessment.**

UNIVERSITY OF KERALA
MSc –HOME SCIENCE-Semester System
(2018 ADMISSION ONWARDS)

Branch XB FAMILY RESOURCE MANAGEMENT

Semester –I

- 1.1 Advanced Human Resource Management.
- 1.2 Hospitality Management.
- 1.3 Food Service Management.
- 1.4 Research Methodology.

Semester –II

- 2.1. Hospitality Management (Internship)
- 2.2. Advanced Landscape Designing.
- 2.3. Housing and Interior Designing.(Theory)
- 2.4. Housing and Interior Designing.(Practicals)

Semester –III

- 3.1. Consumerism.
- 3.2. Ergonomics.
- 3.3. Entrepreneurship Development.
- 3.4. Statistics and Computer Application.

Semester –IV

- 4.1. Furniture and Furnishings.
- 4.2. Energy and Environment.
- 4.3. Applied Nutrition and Extension. (Theory)
- 4.4. Woman Studies
- 4.5. Dissertation
- 4.6. Viva Voce

Branch X B Family Resource Management

Semester	C.A*	ESA**	Total
Semester I	100	300	400
Semester II	100	300	400
Semester III	100	300	400
Semester IV	100	300	400
Dessertation			100
Comprehensive Viva Voce			100
Grand Total			1800

- *C A Continuous Assessment
- **ESA End Semester Assessment

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER –I
HS211B PAPER-I-ADVANCED HUMAN RESOURCE
MANAGEMENT
(Theory) SYLLABUS

Total Hours: 110

Objectives

1. To introduce students to resources, principles and skills of management.
2. To familiarise students with micro and macro level management practices.
3. To enable students to gain knowledge on
 - a) Concepts of management.
 - b) Managerial abilities
 - c) Philosophy and values in life

UNIT I: Introduction to Management process, functions and Value orientation

Introduction to management, significance and scope, The evolving discipline of management- classical, behavioural and system approach, Management as a process, classification of managerial functions, –planning, organizing, staffing, directing and controlling, Levels of management. Importance of goals, standards and values. Management by objectives (MBO), meaning, objectives of MBO, steps in MBO process

UNIT II: Decision Making and Communication

Decision making - Definition, types, steps in decision making process, decision tree Conflicts - methods to resolve conflicts, a study of problem situations and decision making practices of homemakers. Communication – meaning, significance, key elements in communication, means of effective communication, barriers in communication, utility of media for communication effectiveness.

UNIT III: Introduction to Human Resource Management:

Introduction, concept of human resource management, scope of human resource management, functions of human resource management, role of HR executives.

UNIT IV: Human Resource Planning:

Process of human resource planning, need for human resource planning

UNIT V: Recruitment and Selection:

Concept of Recruitment, Factors Affecting Recruitment, Sources of Recruitment, Recruitment Policy, Selection, Selection Process, Application Forms, Selection Test, Interviews, Evaluation , Placement, Induction.

UNIT VI: Job Evaluation, Job Analysis and Design:

Concept of job evaluation, objectives, techniques, advantages and limitations. **Job Analysis and Design:** Concept of job analysis and design, process of job analysis, method of job analysis, Job analysis information, concept of job design.

UNIT- VII: Employee Misconduct and Disciplinary Procedure:

Meaning and objectives of discipline, principles for maintenance of discipline, basic guidelines of a disciplinary policy, Disciplinary action - - penalties, procedure for disciplinary action. **Grievances and Grievances Procedure:** Concept of grievance, causes of grievances, forms and effect of grievance, the grievance handling procedure, need for grievance redressal procedure, **Employee Welfare and Working Condition:** Concept of employee welfare, Welfare measures, types, employee welfare responsibility, the business benefits of employee welfare activities.

UNIT VIII: Human Resource Control and Emerging Horizons In Resource Management

Human resource records, research and audit. Human resource accounting and information system. Human resource management in virtual organisation.

International human resource management. Human resource management in the changing environment.

Related Experience:

1. Visit to government / private organisations to survey management practices.

References:

- An introduction to family resource management . Seetharaman P., Bata.S, Mehra .P. 2005 CBS Publishers and distributors, New Delhi.
- Appraising and developing managerial performance, Academy of Human Resource Development. B.K.Publishers, Delhi.
- Appraising and developing managerial performance , Academy of Human Resource Development . B.K Publishers , Delhi
- Financial management : An approach and conceptual approach . Tata Mc Graw Hill, New Delhi.
- Human resource management . Gupta .S.K and Joshi .R., Kalyani Publishers. New Delhi.
- Managing Human Resources, Cascio Wayne . F (1985) Mc Graw Hill Book Co. . NewYork.
- Personal and Human Resource Management. Decenzo. D.A. and Robins.S.P. 1993. Prentice Hall . New Delhi.
- Human Resource Management , Gupta.C.B (2010) Sultan Chand and Sons , New Delhi

UNIVERSITY OF KERALA
M.Sc HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-I
HS212B PAPER-II HOSPITALITY MANAGEMENT
(Theory) SYLLABUS

Total hours: 110

Objectives:

To enable students

- Gain insight into aspects of hospitality for guest satisfaction.
- Impart knowledge on the organizational and procedural aspects of front office and housekeeping departments of various hospitality institutions.
- To accomplish effective communication etiquettes and manners in dealing with guests, colleagues and management

UNIT I: Introduction to hospitality institutions and their organizational structure

Classification of hotels and other hospitality Institutions, importance of tourism for hospitality industry, types of operations, Departmental classifications, room types and rates of rooms and food plans

UNIT II: Front Office – structure and, functions

Importance of the department, Layout and planning, Staffing pattern and duties, Basic Terminology used in the department, Qualities and etiquettes of front office staff , VIP Procedures, Computerized reservation, Arrival and departure, C-Form, procedures of check- in and check-out, Key handling and control, Lobby management, Co-ordination and communication of front office with other departments; Importance of reports in the front office, the front desk log, electronic front office, room status indicator, accounting equipment, Book Keeping and Record Maintenance.

UNIT III: Functions of Housekeeping

Importance and need of Housekeeping Department, Organization and duties, Hierarchy and Job descriptions, Layout, Inter-departmental coordination and communication, Interrelationship with Personnel Department: Importance and functions, Qualities and role of housekeepers

UNIT IV: Linen room and Laundry management

Classification and selection of linen, Par stock determination, storage, Distribution and control of linen and uniforms, Condemnation and reuse, bed making and turning down, Layout and physical attributes of Linen room and linen storage, Laundry: Types, Staff and duties, Equipments, Methods of washing, finishing processes and stain removal .

UNIT V: Upkeep, Sanitation and Safety Aspects

Cleaning Guest rooms and service areas, Rules, procedures and principles, types of room cleaning- daily, weekly, spring cleaning etc, Equipments, cleaning agents and maid's trolley, Sterilization, disinfection, Control of infestation, Room inspection checklist, Integrated Waste Management (IWM), First Aid and safety means and measures, fire preventions and control, accident prevention, major security measures

UNIT VI: Aesthetic Treatments of Interior Environment

Interior decoration in Commercial / hospitality areas, window treatments, Selection and care of Furniture, furnishings, lighting and accessories, Floral decorations and table setting and layout, Indoor gardens and Landscaping.

Reference:

- Andrews S., (2000) Hotel Front Office Training Manual, Tata Mc Graw Hill Publications, New Delhi
- Andrews S., (2000) Hotel Housekeeping Training Manual, Tata Mc Graw Hill Publications, New Delhi
- Ball S. et al, (2003) Hospitality Operation-A System Approach, Thomson Learning, U. K.

- Branson J.C. and Lennox M., (1988) Hotel, Hostel and Hospital Housekeeping, Edward Arnold Publishers, London
- Chakravarthy, Hotel Management (Vol. I and II)
- Express Health Care Management

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER -I
HS213B PAPER -III FOOD SERVICE MANAGEMENT
(Theory) SYLLABUS

Total hours: 110

Objectives:

To enable students

- To acquire knowledge on the functions of various areas in a food service institution
- Understand the various aspects of volume food production and service

UNIT I: Introduction To Food Service

History, scope and development of food service institutions, Factors affecting development, recent trends, Types of food service establishments (commercial and non-commercial)and their characteristic features, Departments in food service operations.

UNIT II: Organisation And Management Of Food Service

Definition, Organisation structure, Types of organisation, Tools of organisation, Functions of management, Principles of management, Tools of management -Organisation chart, Job description, Job specification, Work schedule, Job analysis, Total Quality Management (TQM).

UNIT III:Facility Design And Equipment

Design considerations for kitchen, Layout of kitchen, Types of kitchen, Work centres in the kitchen layout, Maintenance of kitchens, Storage area –location, types of storages, planning and layout of storage spaces, Service area – location and planning, Equipment for kitchen and service areas – classification, selection, purchase, care and maintenance.

UNIT IV: Volume In Food Production

Types of foods, Classification of beverages, Purchasing, receiving, storage and issuing of food, Menu – Definition, functions, classes, French classical menu, Factors considered while planning menus, Advantages of menu planning, Menu groupings, Menu balance, Steps in menu construction, Menu display / designing the menu card / cover, Food production process, Large quantity cooking techniques, Standardisation of recipes, Portion control.

Unit V: Table Setting And Arrangement

Table setting, Points to be remembered while laying a cover, Napkin folding techniques, Indian and Western styles of table settings, Table etiquettes, Flower arrangement.

UNIT VI: Food Service

Food service delivery system (centralised and decentralised), Type of food service systems (conventional, commissary, ready prepared, assembly), service styles (table, counter, tray, silver, plated, cafeteria, buffet, self, English, Russian, French, Continental), Specialised forms of service (hospital, airline, rail, home delivery, catering and banquet, room and lounge service).

References

1. Sudhir Andrews (2013), Food and beverage service- Training manual, Tata McGraw – Hill company Ltd.
2. Mohini Sethi and Surjeet Malhan (1995), Catering Management – An Integrated Approach, Wiley Eastern Ltd.
3. R Singaravelavan (2014), Food and Beverage service, Oxford University Press.
4. Parvinder S Bali (2014), Food Production Operations, Oxford University Press.
5. Bobby George and Sandeep Chatterjee (2008), Food and Beverage Service and Management, Jaico publishing house, Mumbai.
6. Jagmohan Negi (2013), Food and Beverage Service Operation, S Chand and Company Pvt Ltd, New Delhi.

7. Jagmohan Negi (1997), Professional Hotel Management, S Chand and Company Pvt Ltd, New Delhi.
8. John Cousins, Dennis Lillicrap, Suzanne Weekes (2014), Food and Beverage Service, 9th ed., Hachette UK.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE – SEMESTER SYSTEM
(2018 ADMISSION ON WARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER – I
HS214B PAPER-IV RESEARCH METHODOLOGY
(Common to all Branches X-B, C, D and E)
(Theory) SYLLABUS

Total hours : 120

Objectives:

1. To have a basic knowledge about research and its methodologies.
2. To identify and define appropriate research problems.
3. To organize and conduct research in a more appropriate manner.
4. To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

- a. Organisation – editing, coding and classifying – tabulation
- b. Analysis – descriptive and statistical.
- c. Interpretation
- d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

1. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
2. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.
3. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.

4. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
5. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,
6. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
7. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-II
HS221B PAPER-V HOSPITALITY MANAGEMENT
(Internship) SYLLABUS

One and a half month internship in front office and housekeeping department in any institution and produce a report on the personal experience in the role play of guest handling, Bed making, Table setting, Flower Arrangement, Curtain styles

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M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-II
HS222B PAPER-VI - ADVANCED LANDSCAPE
DESIGNING (Theory)
SYLLABUS

Total hours: 110

Objectives:

To enable the students

1. To gain knowledge on landscape gardening.
2. To acquire skills in cultivation of different garden plants.

UNIT I: Landscaping

Meaning and importance of landscaping, elements and principles. Components of landscaping – Hardscaping – definition, elements of hardscaping - walkways, driveways, patios, decks, pergolas, swimming pools, fountains, stone benches, sheds, gazebos, pergolas, arbors, trellises and gates. Material choices for hardscaping - stone, rock and wood. Softscaping – definition, elements of softscaping - soil, trees, hedges, ground covers, flowers, and shrubs. Sustainable gardening – definition and methods - reducing lawn size, conserving & controlling water on site, organic pest control, composting and mulching, using native plants, plant perennials, intersperse fruits and vegetables among ornamentals and lasanga garden.

UNIT II: Styles and Types of Garden

Styles of garden - Formal garden - Italian, French, Mughal and Persian gardens. Informal garden – English and Japanese garden. Small, medium and large gardens. Special types of garden – rock garden, water garden, butterfly garden, vertical garden, terrace garden and terrarium. Indoor garden and kitchen garden.

UNIT-III: Garden Preparation

Soil and its preparation- physical texture and composition, soil types, soil pH, preparation of beds. Organic manures and substrates- farmyard manure, compost, leaf

mould, bone meal, oil cakes, wood ash charcoal, liquid manures, peat moss, shredded bark, saw dust and wood shavings, vermicompost.

Potting, repotting and transplantation – plants suitable for pot culture, potting on different kinds of pots. Transplanting seedlings, corns, bulbs, large trees. Garden tools and implements. Routine duties in a garden.

UNIT IV: Care of the Garden

Watering and fertilizer use – water needs, how and when to water plants, different methods of irrigation. Application of fertilizer, organic fertilizer, biofertilizer.

After care of the plants – weeding, top dressing, staking, disbudding, defoliation, defruiting, pruning and shaping

UNIT V: Plant Propagation

Types – Seed propagation - advantages. Vegetative / asexual propagation – advantages, methods - Cuttings – stem leaf and root. Layering – tip, simple, compound, mound and air layering. Budding – T- budding, chip budding, patch budding. Grafting – cleft graft, bark graft, whip graft, inarch graft, approach graft, side graft and bridge graft. Tissue culture.

UNIT VI: Bonsai and Topiary.

Bonsai- principle, Containers for bonsai – choosing pots, training pots, potting and repotting and growth media. Basic styles – formal upright, informal upright, slanting, cascade, semicascade. Shaping bonsai – pruning, nipping and wiring and additional training techniques. Care and maintenance, displaying bonsai.

Topiary – definition, plants suitable for topiary, care - watering, feeding, pest control and clipping and creating shapes.

UNIT VII: Lawn Making

Site and soil, drainage, leveling, lawns from seeds, turf and chopping. Mowing, top dressing and weeding.

UNIT VIII: Ornamental Plants

Herbs- annuals and biennials. Shrubs – flowering and foliage. Climbers and creepers. Perennials – bulbs, tubers, ferns, succulents, cacti. Ornamental grass, bamboo and palm. Trees- arboriculture, importance and value of trees, selection , planting, maintenance and care, role of trees in landscaping.

Related Experience

Collection of pictures/photographs of different types of garden, propagation methods, bonsai and topiary.

Prepare the layout of a small/medium/large garden suitable for residential building.

Preparation of a terrarium.

Visit to nurseries.

Visit to a residence and an institution to observe the landscaping and evaluate it on the basis of principles of design.

Record.

Reference

- Richard . N. Arteca , 2015, Introduction to Horticultural Science, Cengage learning.
- Pat Lucke Morris and Sigrun Wolff Sapphire, 2011, Growing Bonsai Indoors, Brooklyn Botanic Garden.
- Jenny Hendy , 2015,Topiary: A Practical Guide to the Art of Clipping ,Training and Shaping Plants, Anness Publishing.
- Nina Greene, 2014, Garden Styles: Introduction to 25 Garden Styles, Speedy publishing LLC.
- Marietta Loehrlein, 2014, Sustainable Landscaping: Principles and Practices, Taylor and Francis Group,LLC.
- V.L. Sheela, 2011, Horticulture, MJP Publishers, Chennai.
- Deena Beverley, 2004, Practical Gardening, Paragon book,UK
- K.Manibhushan Rao, 2005, Textbook of Horticulture, Mac Millan India Ltd, New Delhi.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-II
HS223B PAPER-VII HOUSING AND INTERIOR
DESIGNING(Theory)
SYLLABUS

Total hours: 110

Objectives: -

To help students to:

1. Learn aesthetic skills in applying principles of Interior Decoration
2. Apply practical knowledge and skill in treating home decoration and commercial centres.
3. Become a good Interior Designer

UNIT I: Creating a life space

Factors and goals in planning a life space, creating a life space, classification of life space – group space, private space and support spaces. **Planning space and designing interior space-** Objectives, process, schematic diagram, Selection of site, principles of house planning, Types of plans, house plans for different income groups, low cost design materials and techniques. Developing house plan for a new house, selecting and evaluating an existing plan, remodeling plans.

History and Evolution of housing, Residential architectural design for various life styles and Housing typology - independent, twin / row/ pent houses, apartments / flats, studio apartments, villas, condominiums, vernacular and traditional domestic architecture

UNIT II: Design Fundamentals

Importance of good taste. Definition and classification of design **Design types** – i) structural (functional) ii) ornamental (decorative) – Naturalistic, stylized, Geometrical, Historical, Traditional, Modern, and Abstract; **Elements of design-** line, form, colour, texture, light, space. **Principles of design-** balance, rhythm, proportion, harmony and emphasis.; **Study of colour in detail:** Introduction,

Characteristics of colours, Colour systems 2D and 3D – Prang's, Munsell's and Ostwald – Colour harmonies, psychological effect of colours and its use in interior .Application of design principles in interiors.

UNIT III: Resource Materials

Materials for interior use, properties, care and cost. Wood and wood substitutes, stone, brick, plastic, metals, glass, foam rubber etc, wall finishes, floor finishes, materials for ceiling and false ceiling and furniture finishes.

UNIT IV: Fundamentals of Building construction, Materials

Basic construction Techniques, Building Components / Elements – Foundation, wall, floor, ceiling, roof, structural openings, means of vertical transport, Building materials.

Building finishes External Wall Finishes- painting, pointing, polishing, etc., Building Services- Electrical layout and wiring, Plumbing and sanitation, Construction Techniques for safety- damp proofing, fire proofing, termite Proofing, sound proofing, security features

UNIT V: Environmental factors and home lighting

Environmental factors and their influence on human work. Home lighting - types of lighting, adequacy of lighting in various area, sustainable lighting.

UNIT VI: Accessories in Interior

Definition, classification, selection and placement of accessories; pictures, art, crafts, sculptures, antiques, indoor plants and flower arrangements.

UNIT VII: Space Saving Techniques

Need for saving indoor space, technique such as combination/multipurpose rooms, combination/multipurpose furniture, in-built furniture, techniques of creating illusion with the help of lighting effect, mirror use and colour use.

UNIT VIII: History of Housing and Architecture

Fundamentals of architecture and overview of ancient architecture - Egyptian, Greek, Roman, Chinese, Gothic, Renaissance, Modern and Contemporary

Architecture. Indian- Hindu, Jain, Buddhist, Mughal, Colonial, Study of Domestic Architecture –Traditional built environment in Kerala, Introduction to Vaastu.

References

1. Bayer Glenn-A Factual Analysis
2. Agan Tessie-The House- Its Plan and Use
3. Deshpande, R.D. Modern Ideal Homes for India.
4. Current Journal and Magazines
5. National Building Organisation Publication.
6. Cenus Report
7. India Year Book
8. Report of National Sample Surveys.
9. Khanna P.N Indian Practical Civil Engineers Hand Book, Engineers Publications (1985)
10. Modak, N.V and Ambedkar, V.N 1971. Town Country, Planning and Housing Orient Longman Company.
11. Venugopal K Engineering Drawing Made Easy. Wiley Eastern Co. 1992.
12. Ranwala S.C Engineering Materials (Material Science) Charotar Publishing House.
13. Kasu. A Interior design, Ashis Book Centre, Mumbai
14. Khanna. G Art of Interior Design, Indica Publishers, Delhi.
15. Craig H.T and Rush C.D , Homes with Character, DC Health and Company, Boston.
16. Goldstein H and Goldstein V, Art In Every Day Life, Macmillan Company New York.
17. Punmia B.C (1993) Building Construction , Laxmi Publications, New Delhi.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 ADMISSION ONWARDS)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-II
HS224B PAPER -VIII - HOUSING AND INTERIOR DESIGNING
(Practicals)

SYLLABUS

Total Hours:120

1. Types of house plans

- a) Low income group b) Middle income group c) High income group d) Apartment (one room)

2. Kitchen Arrangement

- a) U-Shaped b) L-shaped c) Two wall or corridor Kitchen d) One wall or Gallery Kitchen
e) Island Kitchen f) Peninsula Kitchen

3. Colour

- a) Prang colour system b) Munsell colour system c) Value and intensity
d) Pastel colours
e) Neutral colours f) Warm and cool colours g) Rainbow colours
h) Colour harmonies → Monochromatic, Analogous, Direct complementary, Double complementary Split Complementary, Alternate Complementary, triads, tetrads

4. Storage Areas of Various Room

- a) Kitchen b) Bed room c) Drawing room d) Dining room

5. Furniture Arrangement of Different Rooms

1. Bed room 2. Dining room 3. Drawing room 4. Kids room
5. Study cum bedroom for a college girl / boy.

6. Identification and collection of:-

- a) Building materials b) Draftsmanship tools c) Plumbing Fixtures
d) Electrical Fixtures e) Latest building materials.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER -III
HS231B PAPER IX - CONSUMERISM
(Theory)
SYLLABUS

Total hours: 110

Objectives

- To enlighten students about the duties and responsibilities of a wise consumer
- To provide a firm grounding in consumer behaviour
- To impart knowledge on consumer acts and regulations.

UNIT I: Role of consumer in the economy

Consumer- definition, classification.Consumer behavior – meaning, features, model and factors influencing consumer behaviour and steps in buying decision process .Buying motives- definition and types.

UNIT II: Consumer problems

Meaning and definition of consumer behaviour. Nature and characteristics of Indian consumers. Consumer problems and causes. Consumer redressal forum and its functions.

UNIT III: Consumer co-operatives

Structure and functions of consumer co-operatives.

UNIT IV: Adulteration

Definition, types, methods adopted for adulteration, detection methods, health hazards of adulteration, measures to control adulteration.

UNIT V: Consumer Acts

Consumer protection- importance, scope of laws in consumer protection. Consumer Protection Acts1986, Standard institutions - BIS, AGMARK, ISO.

UNIT VI: Advertisement

Definition, objectives and importance.

Classification of advertisement

Product – Related Advertising (a) Pioneering Advertising (b) Competitive Advertising (c) Retentive Advertising.

- Public Service Advertising
- Functional Classification (a). Advertising Based on Demand Influence Level - Primary Demand (Stimulation) - Selective Demand (Stimulation) (b) Institutional Advertising (c) Product Advertising - Informative Product Advertising , Persuasive Product Advertising , Reminder-Oriented Product Advertising
- Advertising based on Product Life Cycle (a) Consumer Advertising (b) Industrial Advertising
- Trade Advertising (a) Retail Advertising (b) Wholesale Advertising
- Advertising Based on Area of operation (a) National advertising (b) Local advertising (c) Regional advertising
- Advertising According to Medium Utilized
- Advertising planning framework.

UNIT VII: Consumer Education

Need and significance, objectives of consumer education, consumer rights. Consumer aids – standardization and labels, trademarks, brand names, patents, warranty, guarantee and after sale service.

UNIT VIII: Public utilities and services

Role and functions.

References

1. Consumer behaviour, Suja Nair, 2002, Sultan Chand and sons, New Delhi.
2. Consumerism a growing concept, , Sethi.M, Seetharaman .P 1994. Phoenix publishers, New Delhi.
3. Consumer behaviour, Sharma.S.S, 1992, Arihant Publishing.

4.The Indian Economy : Poverty and development, Chaudhri,P.K, Vikas Publishers,1974.

5.Consumerism strategies and tactics , Sethi.M,Seetharaman .P, 2001, CBS publishers , New Delhi.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER III
HS232B PAPER X - ERGONOMICS
(Theory) SYLLABUS

Total hours: 110

Objectives

1. To make students aware of the role of ergonomics in improving work efficiency
2. To make them understand the importance of adopting good work postures
3. To understand the ergonomical considerations in the designing of workspaces
4. To understand the relation of work environment and performance of work

UNIT I: Introduction to Ergonomics

Meaning, importance and basic ergonomic principles, Scope of ergonomics in modern society, Man-Machine-Environment system interactions, Proactive ergonomics.

UNIT II: Physiology of Work

Structure and function of muscles, Physiology of muscular work, Energy for muscle action, Efficiency of muscle contraction, Static and dynamic muscular work, Muscular strength and endurance, Assessment of muscular strength and endurance, Benefits of muscular strength and endurance, Workload, Classification of workload, Muscular work in occupational activities– heavy dynamic muscular work, manual materials handling, static muscular work, repetitive work, Acceptable workload in occupational activities, Prevention of muscular overload.

UNIT III: Energy Management

Types of work-light, moderate and heavy, Energy cost of various household activities, Working heights-normal and maximum reaches, Fatigue – muscular and general, Measurement of fatigue, Factors affecting degree of fatigue, Causes of

fatigue and methods of alleviating fatigue, Work simplification – meaning and techniques, Body mechanics, Mundell’s classes of changes, Work curve, Work – rest cycle.

UNIT IV: Body Postures and Musculo Skeletal Disorders (MSDs)

Common postures at work -standing, sitting, reaching, moving, Factors that influence working posture – user characteristics, task requirements and design of the workspace, Effect of wrong postures on cardiovascular and muscular skeletal system, Suggestive techniques of / guidelines for safe body postures at work, Assessment of work postures using Rapid Upper Limb Assessment(RULA) tool and Rapid Entire Body Assessment (REBA) tool, Work-related MSDs – definition, causes, types and their prevention.

UNIT V: Work Space Design

Basic ergonomic principles for workstation design, Ergonomic principles basic to hand tool design, Design considerations for kitchen and office ,Universal Design Considerations -Wheelchairs, Crutches, canes and walkers, Knobs, handles and controls, Access ramps and stairs, Work triangle , Physical space arrangements, Hazards of ill designed work station.

UNIT VI: Anthropometry and its Applications

Definition of anthropometry and anthropometric variables /measurements, Percentile humans, Types of anthropometric data used in ergonomics - Structural, Functional and Newtonian, Anthropometric database, Techniques for measuring body dimensions –Direct method and indirect method, Standing measurements and sitting measurements, Applications of anthropometry.

UNITVII: Work Environment

Effect of hot and cold environments on work performance. Control of exposure to / protection against heat and cold, Effect of noise on work performance, Methods to reduce noise, Effect of light on work performance, Effect of colour on work performance, Effect of furniture on work performance.

UNIT VIII: Motion and Time Study

Definition and Principles of motion economy.

Reference

1. Stephen Pheasant (2003), *Bodyspace, Anthropometry, Ergonomics and the Design of Work*, Taylor & Francis Ltd, London.
2. Grandjean E (1985), *Fitting the task to man – An ergonomic Approach*, Taylor and Francis, London.
3. www.ilocis.org
4. Barnes R M, *Motion and time study*, John Wiley & Sons.
5. Nag P K, *Ergonomics and work design*, New Age International Pvt Ltd, New Delhi
6. Varghese M A, Saha P N and Atreya N (2000), *Ergonomics of women at work*, Allied Publishers Ltd, Mumbai.
7. R S Bridger, *Introduction to Ergonomics*, Taylor and Francis, London.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER III
HS233B PAPER-XI -ENTREPRENEURSHIP DEVELOPMENT
(Theory)
SYLLABUS

Total hours: 110

Objectives: - To enable the students to:

1. Understand the nature of entrepreneurial activities
2. Seek self employment ventures
3. To impart information on the various sources of finance and also on the process of setting up small enterprise.
4. Acquire skills in planning project proposals.

UNIT I : Entrepreneurship

Entrepreneurship –Definition, Types, Characteristics and Importance .Factors stimulating Entrepreneurship. Factors affecting entrepreneurial growth-economic, social, cultural and personal. Theories of Entrepreneurial origin. Qualities of Entrepreneurs. Importance of self employment.

UNIT II: Training for Development and Methods of building Entrepreneurship.

Need for training. Phases of EDP. Development of achievement motivation, projective techniques. Self rating exercises.

UNIT III : Women Entrepreneur

Concept, Functions and Challenges of women entrepreneurs. Policies and schemes for women entrepreneurs in India. Suggestions for development of women entrepreneurs.

UNIT IV: Entrepreneurship and Institutional Support

Objectives, functions and assistance given by-SIDCO, SIDO ,IDBI ,SIDBI ,SGSY ,JGSY Agencies promoting Entrepreneurship and role of NSIC, SIETI, CSIO ,DIC, DRDA and other voluntary agencies.

UNIT V: Organisations

Meaning and Definition of organisations. Types of organisation-Sole proprietorship, partnership, joint stock company ,State enterprises and Co-operative societies – meaning, merits and demerits of each. Factors influencing the choice of organisation.

UNIT VI: Small Scale Industry

Definition ,type, procedure for setting a small scale unit. Training facilities for small scale units. Problem faced by emerging SSU and their remedies.

UNIT VIII: Project Formuation

Meaning, Concept , Needs, ,Significance ,Objective , Elements, Classification, Identification, Constraints-Internal and External, and Feasibility Analysis. 6M's of an industry .

UNIT VIII: Book Keeping and Accounting

Concepts and basics of accounting methods-Journal and ledger, balancing, trial balance, cash book. How to calculate and procedures for payment. Sales tax.Meaning and types. Calculation of profit and losses.

References:

- Akhouri, M.M.P. Entrepreneurship for women in India, New Delhi, NIESBUD, 1990.
- Jain, D. Women's Employment, Possibilities of Relevant Research Institute of Social Studies, 1980.
- Nayak, J. Pinto, T. and Costa, S. Towards Self reliance, Income Generation for Women, ISI Programme of Women's Development, 1980.

- Paul, J: Kumar, N.J. and Mampilly, Paul J. Entrepreneurship development, Himalaya Publishing House, Mumbai, 1996.
New Delhi, 1998.
- Arora, S. P., Business Organization, Vikas Publishing House Pvt. Ltd. New Delhi, (1980)
- Bhattacharyya, S.K Accounting for Management, Vikas Publishing House Pvt. Ltd., New Delhi
- Bhushan, Business Organization, Sultan Chand & Sons, New Delhi, (1985)
- Chetnakal, Women and Development, Discovery Publishing House, New Delhi (1991)
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- Desai, V. (1996). Entrepreneurial Development – Principles, Programmes and Policies (Vol.I), Formulation, Appraisal and Financing (Vol. II) and Programmes and Performance (Vol. III), Bombay, Himalaya Publishing House.
- Desai, V. (1997). Dynamics of Entrepreneurial Development and Management, Mumbai, Himalaya Publishing House.
- Devi, I. (1987). Changing Status of Women, New Delhi, Sterling Publisher.
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- Gupta, G.L. (1988). Indian Women – Problems, Plights and Programmes, New Delhi, Inter India Publications.
- Kanikar Entrepreneurs and Micro Enterprises in Rural India, New Age International Publishers Ltd., New Delhi (1995)

- Khanka S.S, Entrepreneurial Development, S.Chand&Co.Ltd., New Delhi, (1999)
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- Sherlekar S.A, Principles of Business Management, Himalaya Publishing house, New Delhi, (1999)
- Shukla M.C., Business Organisation, S. Chand & Co. New Delhi, (1970)
- Winze, M.D. (1987). Women Entrepreneurs in India, New Delhi, Mital Publications.

Periodicals:

- Yojana, Publication Division, New Delhi
- Kurukshetra Publication Division, New Delhi

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER - III
HS234 B – PAPER XII – STATISTICS AND COMPUTER
APPLICATIONS
SYLLABUS
(Theory)

(Common to all Branches X-B, C, D and E)

Total Hrs : 120

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications.

Unit I- Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II – Data Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III – Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean.
- Measures of dispersion – range, variance, standard deviation, standard error, co efficient of variation.
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive.

Unit IV – Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools.

Unit V – Normal Distribution and its Properties

- Normal distribution – importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI – Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- ‘t’ test, paired ‘t’ test, ‘F’ Test

Unit VII- Chi square test and its interpretation

- Chi square test and its interpretation – general features, goodness of fit
- Independence of Attributes

Unit VIII – Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX – Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X – Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and II errors.

Unit XI – Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS
- Histogram, pie diagram, scatter diagram graphs – presentation using SPSS / excel.

Unit XII – Presentation using Power point

- Creating presentations.

References:

1. Gosh, B.N. Scientific methods and social research, Sterling Publishers Pvt. Ltd. New Delhi.
2. Kothari, C.R. 2014. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi.
3. Sharma, B.A.V. Prasad, R D and Satyanarayana, P. 1990. Research Methods in Social Science, Sterling Publishers Pvt. Ltd.
4. Agarwal, Y.P. 1990. Statistical Methods, Sterling Publishers Pvt. Ltd.
5. Gupta, S. 2001. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi.
6. Gupta, S.P. 1996 Practical Statistics, 37th edn, S. Chand, New Delhi,.
7. Gupta, S.C. 2000 Fundamentals of Statistics, Himalaya Publishers, Mumbai.
8. Gupta, S.P. 2000. Statistical Methods, Sultan Chand & sons, New Delhi.
9. Nagar, A.L. & Das, R.K, 1997. Basic Statistics, 2nd ed., OUP, Delhi.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMANT
SEMESTER -IV
HS 241B PAPER XIII - FURNITURE AND FURNISHINGS
(Theory) SYLLABUS

Total hours: 110

OBJECTIVES:

- 1.To enable the students to learn about the types and importance of furniture
2. To know about the selection, care and arrangement of furniture.
3. To enable the students to learn about types of windows and window treatments
- 4.To understand the role of fabric in interior decoration
5. Develop skills in designing and construction of curtains.

FURNITURE IN INTERIORS :

UNIT I: History of furniture and its classification

Brief introduction - Traditional, Contemporary and Modern design.
Need for furniture, Factors influencing selection of furniture – climatic condition, family needs and preferences, availability, principles of design and financial limit.

Furniture for different purpose -(Sitting furniture, Table furniture, Bed furniture, Storage furniture (incl. in/built wardrobes and hall furniture), Office furniture and Kitchen furniture.

UNIT II : Guidelines for Selection and arrangement of furniture

Types –dual purpose, built-in, modular furniture, mobile furniture, molded furniture. Furniture requirements for various rooms –Living room, dining room, bedroom, kitchen, study room, office.

UNIT-III: Familiar furniture materials and Finishes

Materials-Wood (teak, rose wood, walnut, cedar, mahogany, pine, birch, sal, ply wood, bamboo, cane,) metals, plastics, leathers. Finishes- coats of oil, wax, lacquer or paint. Construction features of furniture – fittings and other

components, shaping, carving, turning, fluting, reeding, joining and finishes, upholstering – techniques and designs.

UNIT -IV :Care and maintenance

Wooden furniture, wicker and cane, metal furniture, plastic, upholstered furniture, wood finishes and furniture polishes.

UNIT-V :Soft furnishings

Meaning, Importance ,Classification- functional and decorative. Selection criteria in relation to background in walls, floors and ceilings. Factors influencing furnishing of interior space- Climate, family needs and preferences , materials available, design, principles, financial limits.

UNIT-VI: Window Treatments

Types of windows, curtains styles, draperies, hanging curtains, pelmets, swags and valances, accessories, blinds, shades, curtain rods , selection of fabric.

UNIT-VII :Types of furnishings and Designs

Cushion, Cushion Covers, Slip Covers, Bed Linens, Table linens, Bath Linen, And Kitchen Linen. Design and Decorative Finishes.-Floor coverings- Carpets and rugs – types, selection, laying.

UNIT-VIII: Care and maintenance

Soft furnishings – stain removal, mending and darning, laundering, storage of furnishings.

REFERENCES:

1. Philips B, (2000), Hamlyn book of decorating, octopus publishing Ltd, London.
2. Clifton.c. etal (1991), The complete Home decorator conran octopus Ltd, London.
3. Luke. H., (1996), soft furnishings, New Holland publishers Ltd, Singapore.
4. Stepat, D.D, (1971), Introduction to Home furnishings, The Mac Millan Co, NewYork.
5. Wilhide, E and Copestick, I. (2000) contemporary decorating, conron octopus Ltd., London.
6. Levine M (1998), Living rooms, Rockport publishers, USA.
7. Faulkner. R and Faulkner. S, (1987), Inside today's home, Rinehart Winston, New York.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER -IV
HS 242B PAPER -XIV - ENERGY AND ENVIRONMENT
(Theory) SYLLABUS

Total hours: 110

Objectives

To acquaint the students with

1. The physical environment and its components.
2. The need for energy conservation.
3. The action needed for checking environmental threats.

UNIT I: Introduction to Energy and Environment

Meaning and definition of energy and environment. Scope of the subject.

Dimensions of environment, land, air and water.

UNIT II: Energy

Sources of energy- renewable and non renewable. Classification. Advantages and disadvantages of fossil fuels, wind energy, tidal energy, geothermal energy, hydel energy and nuclear energy.

UNIT III: Solar Energy

Significance. Solar radiation. Solar collectors. Solar energy applications- Solar cooker, solar water heater, solar photovoltaic cell. Advantages and limitations of solar energy.

UNIT IV: Biomass Energy

Classification/Types of biomass. Biomass conversion process. Biogas generation. Factors affecting bio digestion. Classification/Types of biogas plants. Advantages and Limitations of biogas plants.

UNIT V: Land Pollution

Land as a resource, Land pollution sources, Major health hazards, Waste management – classification of waste, characteristics, methods of waste disposal.

UNIT VI: Air Pollution

Air pollutants, Sources, Health hazards. Green house effect, acid rain and ozone layer depletion- impact and control measures.

UNIT VII: Water Pollution

Water as a resource. Water pollution- sources and pollutants. Health hazards. Water management- ways of augmenting water resources - rain water harvesting, irrigation- drip and sprinkler methods, Water purification techniques, Water quality and standards.

UNIT VIII: Environmental Protection

Need, Environmental Protection programs, laws and social movements.

References

- 1.Jadhav .H. V (!977), Energy and Environment ,Himalaya Publishers,Mumbai.
- 2.Pawar.S.N and Patil, R.B(1998)Sociology of Environment, Rawat Publisher,Jaipur.
- 3.Karpagam,M(1993),Environmental Economics :A Text book ,Sterling Publishers,New Delhi.
- 4.Varshney,.C.K.Water Pollution and Management(1983)
- 5.Pal.CEnvironment Pollution and Developmwent: Environmental Law, Policy and role of Industry ,Mittal Publishers New Delhi(1999)
- 6.Ghanta R and Rao,B.D :Environmental Education Problems and Prospects,New Delhi,(1998)

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-IV
HS243B PAPER- XV APPLIED NUTRITION AND EXTENSION
(Theory) SYLLABUS

Total hours:110

Objectives:

1. To understand about the prevalence and extend of malnutrition in India.
2. To know the different ways to assess the nutritional status of the community.
3. To equip with the knowledge of planning and conduction nutrition education programmes.

Unit I: Malnutrition

Types of malnutrition . Factors responsible for malnutrition . Methods of detecting malnutrition and measures to overcome it. Application of basic principles of nutrition to improve the dietary practices of communities. Methods of enhancing nutritive value of foods- Combination, Fermentation and Germination .

Unit II: Nutritional Problem of the Community

Methods for assessing nutritional problems of the community. Techniques of diet and nutrition surveys .Nutrition and health statistics. Food Security.

Unit III: Deficiency Diseases

Causes and prevention of deficiency diseases.

Protein Energy Malnutrition -Marasmus, Kwashiorkor, Marasmic Kwashiorkor.
Mineral Deficiencies-Deficiency of Iron,Iodine,Calcium,Flourine.

Vitamin Deficiencies- Deficiencies of Vitamin A, B –complex, C ,D,E and K.
Hypervitaminosis.

Planning of low cost diets Diet for a marasmic child, Kwashiorkar child, pregnant women,underweight labourer, calcium deficiency lactating women,Thiamine deficient old man, vitamin A deficient child, vitamin C deficient college girl.

Unit IV: Nutrition Education

Need for Nutrition education. Principles of planning executing and evaluating nutrition education programmes.

Preparation of teaching aids in nutrition

Unit V: National Organisations institutions and Programme concerned with Food and Nutrition

- a) Nutrition advisory committee of State Nutrition Council and Bureaus, NNMB.
- b) Central and State Health Education Bureaus
- c) Voluntary organisations promoting community Nutrition.
- d) ICMR, ICAR,CSIR, CFTRI,CTCRI,NIN,CSIR. Measures to overcome malnutrition Measures to overcome malnutrition
- e) Community Development and Extension Programmes.
- f) Applied Nutrition Programmes-Genesis and Operation.

Unit VI: International Organisations Concerned with Food and Nutrition.

FAO,WHO,UNICEF,AFPRO,UNRRA,IRRI.

Unit VII: Food adulteration

Contributing factors. Food adulterants –Health hazards caused by them, test to detect them. Food laws.

Unit VIII: Food toxins

Toxicants in foods, contaminants, food additives.

References

- Devadas,P.R.Nutrition in TamilNadu,Sangham Publishers,1972.
- Devadas,P.R and Radhakumari A, The School Lunch Programme, Ministry of Education.

- Major, J Human Nutrition, Spring Field 1972.
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UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE-SEMESTER SYSTEM
(2018 Admission Onwards)
BRANCH XB-FAMILY RESOURCE MANAGEMENT
SEMESTER-IV
HS244 B PAPER- XV WOMEN'S STUDIES
(Theory)
SYLLABUS

Total hours:110

Objectives

- To create an awareness among the students about the status of women in India.
- To familiarize with the issues and problems of women
- To motivate students to work for the betterment of women

UNIT 1: Introduction

The Concept and Significance of Women's Studies. Scope of Women's Studies. Women's Studies as an academic discipline. Women's Movements- Pre independent, Post independent and Current women movements. Need for empowerment of women.

UNIT 2: Status of women in India

Demographic profile of women with reference to health, education, employment, social and political aspects. Gender bias. The Indian girl child. The changing role of women.

UNIT 3: Special Issues and Problems

Infanticide, Foeticide, Dowry, Domestic violence, Sexual harassment and abuse, Child Marriage, Portrayal of women in mass media. Women in distress: Single, Widowed, and Divorced women, Unmarried mothers. Maternal and reproductive health issues.

UNIT 4: Women in workforce

Concept of work- productive and non productive work. Use value and market value. Women in organized and unorganized sectors, Special problems and needs. Gender division of work. Micro enterprises and women entrepreneurship development. NGOs

and women development. Globalization and impact on women's employment. Role of SHGs.

UNIT 5: Women and Law

Indian constitution and provisions relating to women. Need for legal literacy, Laws pertaining to Marriage, Divorce, Dowry, Succession/Property rights, Sexual abuse, Immoral Traffic, and Abortion, Indecent Representation of Women Act 1986, Family courts, Enforcement machinery – Police and Judiciary. Human Rights as Womens Rights.

UNIT 6: Developmental Programmes for Women

Services for protection, care and rehabilitation, Poverty alleviation and economic empowerment, Nutrition and health care programmes, Education and legal literacy. National and State Commissions for women.

Related experiences

1. Visit to an institution providing care and support to needy women
2. Debate on the pros and cons of dowry
3. Interact with women in a self-help group and understand its functioning.
4. Visit to any unit for women in a self-help group and understand its functioning
5. Visit to A family court.
6. Discuss the procedure for availing help by women in distress.

References

- Ashok S Kolaskaer and Motilal Dash (2012), *Women and Society ;The road to change* Oxford University press.
- Charu Gupta (2012), *Gendering Colonial India,Reforms,Print, Caste and Communalism*,Orient blackswan
- Mary E. John ed.(2008), *Women's Studies in India: A Reader*, New Delhi: Penguin Books India,

M.Sc. HOME SCIENCE

BRANCH X-C

EXTENSION EDUCATION

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION
M.Sc. HOME SCIENCE
Branch XC Annexure EXTENSION EDUCATION
Course & Mark distribution

Seme ster	Paper code	Title of the paper	Distri bution of hour / semes ter	Instruc tional hrs/week		ESE dura tion	Maximum Marks		
				L	P		CA	ESA	Total
1	HS 211C	Extension and Social Development in India	110	6	-	3	25	75	100
	HS212C	Developmental approaches and Panchayat Raj	110	6	-	3	25	75	100
	HS213C	Human Development and Welfare	110	6	-	3	25	75	100
	HS214B/C/ D/E	Research Methodology	120	7	-	3	25	75	100
		Total	450	25	-	-	100	300	400
2	HS221C	Lifelong learning for development	110	6			25	75	100
	HS222C	Social Entrepreneurship	110	6	-	3	25	75	100
	HS223C	Development Communication	110	6	-	3	25	75	100
	HS224C	Development Communication– (Practical)	120	-	7	3	25	75	100
		Total	450	18	7	-	100	300	400
3	HS231C	Science and Technology for Rural Development	110	6	-	3	25	75	100
	HS232C	Programme Design and Evaluation	110	6	-	3	25	75	100
	HS233C	Population Studies	110	6	-	3	25	75	100
	HS234B/C/ D/E	Statistics and Computer Applications	120	7	-	3	25	75	100
		Total	450	25	-	-	100	300	400
4	HS241C	Women and Gender Studies	110	6	-	3	25	75	100
	HS242C	Community Health, Nutrition and Extension- theory	110	6		3	25	75	100
	HS 243C	Community Health, Nutrition and Extension – Practicals	110		7	3	25	75	100
	HS 244C	Trends and Issues in Home Science Extension- Internship	120	-	6	3	25	75	100
		Total	450	12	13	-	100	300	400
	HS245C	Dissertation	-	-	-	-	-	100	100
	HS246C	Comprehensive Viva	-	-	-	-	-	100	100
		Tutorial work	5hrs/ week	-	-	-	-	-	-
		Grand Total		80	20	-	400	1400	1800

**L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment
ESA-End semester assessment.**

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XC EXTENSION EDUCATION

Semester –I

- 1.1 Extension and Social Development in India
- 1.2 Developmental approaches and Panchayat Raj
- 1.3 Human Development and Welfare
- 1.4 Research Methodology

Semester –II

- 2.1 Life long learning for development
- 2.2 Social Entrepreneurship
- 2.3 Development Communication
- 2.4 Development Communication– (Practical)

Semester –III

- 3.1 Science and Technology for Rural Development
- 3.2 Programme Design and Evaluation
- 3.3 Population Studies
- 3.4 Statistics and Computer Applications

Semester –IV

- 4.1 Women and Gender Studies
- 4.2 Community Health, Nutrition and Extension- theory
- 4.3 Community Health, Nutrition and Extension - Practicals
- 4.4 Trends and Issues in Home Science Extension- Internship
- 4.5. Dissertation
- 4.6. Viva Voce

branch X C EXTENSION EDUCATION

Semester	C.A*	ESA**	Total
SemesterI	100	300	400
SemesterII	100	300	400
SemesterIII	100	300	400
SemesterIV	100	300	400
Dessertation			100
Comprehensive Viva Voce			100
Grand Total			1800

- *C A Continuous Assessment
- **ESA End semester assessment

Semester I

- 1.1 Extension and Social Development in India
- 1.2 Developmental approaches and Panchayat Raj
- 1.3 Human Development and Welfare
- 1.4 Research Methodology

Semester II

- 2.1 Life long learning for development
- 2.2 Social Entrepreneurship
- 2.3 Development Communication
- 2.4 Development Communication– (Practical)

Semester III

- 3.1 Science and Technology for Rural Development
- 3.2 Programme Design and Evaluation
- 3.3 Population Studies
- 3.4 Statistics and Computer Applications

Semester IV

- 4.1 Women and Gender Studies
 - 4.2 Community Health, Nutrition and Extension- theory
 - 4.3 Community Health, Nutrition and Extension - Practicals
 - 4.4 Trends and Issues in Home Science Extension- Internship
- Dissertation

UNIVERSITY OF KERALA
MSc HOME SCIENCE – SEMESTER SYSTEM (2018)
BRANCH XC- EXTENSION EDUCATION
SEMESTER 1
HS 211 C PAPER 1 – EXTENSION AND SOCIAL
DEVELOPMENT IN INDIA

Total Hrs : 110

Objectives : The course will enable the students to:

1. Become aware of the socio-economic structure, organization and problems of rural, urban and tribal communities.
2. Study the basic concepts in economic structure of India
3. Understand the implications of social changes in the process of development through extension.

Unit I: Extension Education- definition, meaning, objectives, principles, philosophy, interrelation between teaching, research and extension. Home science extension-inputs in national development.

Unit II: Society – Concepts, definition, characteristics of a community (Rural, Urban and Tribal); Society – its classification and characteristics, Structure and organization of rural, urban and tribal communities, Social groups- classification of groups, formation of social groups.

Unit III: Social Institutions- Family, caste, marriage, values, norms, customs, occupation, religion, kinship, and gender roles.

Unit IV: Social Change – Nature, meaning and directions of social change, Impact of industrialization and urbanization on rural community, Planned social change, Role of change agents and role of women in social change.

Unit V: Basic Institutions- Types of institutions in rural, urban and tribal areas- School as an agency of social change; Co-operatives- types, history and functions of Co-operatives; Panchayat- as an institution for social change and their role in village development. The role of rural industries, cottage industries, rural finance, and rural banks in the development of rural, urban and tribal areas.

Unit VI: Inequalities in the Society – Rural, urban and tribal inequalities- social and economic inequalities- Caste, traditionalism, unemployment, health, illiteracy, migration, poverty, overpopulation, housing, slums and pollution.

Unit VII: Basic economic structure – Nature and significance of agriculture in the Indian economy. Indicators of economic development. Poverty- definition, concept of poverty, web of poverty, vicious cycle of poverty, causes and consequences of poverty. Detailed study on the ongoing poverty alleviation programmes in India, with special reference to Kerala.

Unit VIII: Marginalization and Globalization – its impact on various societies.

Field Experiences:

1. Study of the social structure of different communities.
2. Problems of people in various communities.
3. Visit to basic institutions – Schools, cooperatives and Panchayats.

References

1. Bhoose, S.G.R. Joel (2003) NGOs and Rural Development, Concept Publishing Company, New Delhi.
2. Desai, Vasant (2015) A Study of Rural Economy, Himalaya Publishing House, Mumbai.
3. Desai, Vasant (2008) Rural Development, Himalaya Publishing House, New Delhi.
4. Dubey, M.K. (2000) Rural and Urban Development in India, Common wealth Publishers, New Delhi.
5. Sharma. O.P. (2012) Development perspectives of Extension education; Agrotech publishing academy, Udaipur.
6. Satya Sundaram, I (1999) Rural Development, Himalaya Publishing House, Mumbai.
7. Supe. S. V. (2012) Text book of Extension education; Agrotech publishing academy, Udaipur.

Journals:

1. International Journal of Home Science
2. Journal of Rural Development
3. Kurukshetra
4. Journal of Sociology and Social Anthropology
5. Indian Journal of Extension Education.

UNIVERSITY OF KERALA
MSc HOME SCIENCE – SEMESTER SYSTEM (2018)
BRANCH XC- EXTENSION EDUCATION
SEMESTER 1
HS 212 C PAPER 1I – DEVELOPMENT APPROACHES AND
PANCHAYAT RAJ
(Theory) SYLLABUS

Total Hrs : 110

Objectives: The objective of this course is to orient the students to :

1. Understand the concepts, approaches and programmes for Development.
2. Analyze the role of developmental programmes at National and State level.
3. Study the importance of administration and management in rural development.
4. Evaluate the role of Panchayat raj system in the developmental process.

Unit I: Developmental approaches- Concept, genesis and approaches for development – Welfare, Development, Integrated, Gandhian, Area, Sectoral, Cluster, Target and sustainable development approach.

Unit II: Five year plans of India – Rural development through the five year plans – ongoing development programmes in India, Urban Development Programmes. Planning machineries in India and Kerala.

Unit III: Employment- Types of employment, Income types, Causes and remedies for rural indebtedness. Income inequalities – causes, measures to overcome it. Problems of unemployment, types of unemployment, role of ongoing employment generation programmes, Skilling India Campaign

Unit IV: Principles of Administration and Management in Rural Development – Role of POSDCORB (Planning, Organising, Staffing, Directing, Co-ordinating, Reporting, Budgetting) – and their individual importance and limitations in rural development.

Unit V: Rural Development Administration and Panchayat Raj Institutions- Democratic decentralization and evolution of Panchayat raj system (three tier) its set up, officials and non-officials in Panchayat raj, functions of Panchayat raj, 73rd and 74th amendments in the constitution.

Unit VI: Role of women in Panchayat raj system – Reservation, support structure and training programme by Government and other agencies, Impact of women participation in rural development.

Unit VII : Training – Training of different personnel working in Panchayats, types of training, agencies offering training for rural development and tribal development – need and importance of training in rural development.

Unit VIII: Institutions and Agencies – A detailed study on District Rural Development Agency (DRDA), Central Social Welfare Board (CSWB), State Social Welfare Board (SSWB), National level voluntary agencies like Council for Advancement of Peoples Action and Rural Technology (CAPART), Khadi and Village Industries Corporation (KVIC), Agriculture Technology Management Agency (ATMA), National Bank for Agriculture and Rural Development (NABARD) Local level voluntary agencies; People’s organizations at grass roots – Self Help Groups (SHG), Kudumbasree.

Field Experiences:

1. Study of the working of a Voluntary agency/ SHGs/ Youth Club/ Kudumbasree.
2. Visit to SIRD / NIRD

References

1. N. Gregory Mankiw; (2012) Principles of Economics, Cengage Learning India Pvt. Ltd, New Delhi.
2. Datt & Sundaram; (2013) Indian economy; Chand publishers, New Delhi
3. Sanjeev Varma; (2012) The Indian economy; Unique publishers, New Delhi.
4. Meenu Jain (2012) Rural Development programmes in India; Deep & Deep Publications Pvt. Ltd.
5. V.K. Dubey; K.N. Pandey; Ransankar Pandey (2009) Development Communication Applied to Journalism & Mass Communication, Extension Education & Communication, Rural Development and Management Studies.

6. Vasant Desai (2012), A study of Rural Economics – a systems approach, Himalaya Publishing House, New Delhi.
7. Agarwal and Agarwal (2015) Indian Economy, Wiley Eastern Limited, Chennai.

Journals:

1. Kurukshetra
2. Journal of Rural Development
3. Journal of Rural and Industrial Management
4. Indian Journal of Extension Education
5. Indian Farming
6. Indian Journal of Economics and Research
7. Review of Social Sciences
8. Economics and Political Weekly

UNIVERSITY OF KERALA

MSc HOME SCIENCE- SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER I

HS 213 C PAPER III- HUMAN DEVELOPMENT AND WELFARE

(Theory) SYLLABUS

Total hrs: 110

Objectives:

This course is designed to help the students

1. To orient the students towards the integrated development of children, adolescents and aged.
2. To make them aware of the various strategies, programmes and measures adopted for their welfare.

Unit I- Integrated Development of Children (0-6 years)- Milestones of development – gross motor skills and fine motor skills, language and cognitive development; social and emotional development- identification of developmental delay.

Unit II Childhood Education- Need for early childhood education centres. Role of anganwadi in the development of children, Requisites of an ideal anganwadi (physical setup, location), Services delivered through anganwadi, Role of anganwadi worker, Records and registers to be kept in anganwadi.

Unit III- Curriculum for anganwadi children - Methods and materials for anganwadi teaching, preparation of need based curriculum for anganwadi children. Preparation, selection and use of different kinds of teaching/learning materials for the target group.

Unit IV- Development and Challenges of Adolescents – Adolescent development (physical and motor, social, emotional and cognitive development) Issues and Concerns of adolescents, academic pressure, health issues, reproductive health issues, Poly Cystic Ovary Syndrome (PCOS), Mental health issues- anxiety, depression, suicide. Eating disorders- anorexia, bulimia nervosa. Substance abuse, social issues, peer pressure, sexual abuse, anti- social behavior and addiction to cyber space.

Unit V- Social Gerontology- Nature and Scope, Concepts- ageing – old age- senior citizenship, social gerontology. Theoretical perspectives on aging, Ageing in traditional societies- ageing in modern societies –changing role and status of the elderly in India and Kerala. Quality of life of the elderly – an overlook on health issues like Dementia, Alzheimer’s and Parkinson.

Unit VI: Extension in Elderly Care- Social Dimensions of elderly care, Types and Agencies of Care and the role of extension support systems for the aged. New paradigms in care-relationship-centered care- Assisted Support Living, Retirement Communities. Pathways to disablement. Contributions of the environment and society in dealing with disability.

Module VII: Welfare programmes- Review on the policies and programmes for the different groups of population- children, adolescents, aged. Rights of the children. Legislations pertaining to children, legal protection, International, National and nongovernmental organisations working with children and aged.

Field experiences

1. Visit to NISH to understand the children in difficulties / Visit to institutions for the aged and critical evaluation.
2. Case study on a child/ adolescent/ elderly with any difficulty
3. Arrange community intervention programmes for children with difficulties / adolescent clubs/ elderly care centres.

References

1. Richardson B &Barusch A. 2005. Gerontological Practice for the 21stCentury. Columbia University Press.
2. Sheets D, Bradley D & Hendricks J. 2005. Enduring Questions inGerontology. Springer.
3. Bhatla, P.C. : Lecture series in Geriatrics- National Institute of Primary Health 2000.
4. Binstock, Robert, H & Shana, Ethel : Hand Book of Ageing and the Social Science.
5. Bord, John &Coleman, Peter : Ageing in Society.
6. Choudhar, S.K : Problems of the Aged and of Old Age Homes.
7. Desai, K G &Naik, R.D: Problems of Retired People in Greater Bombay.

8. De Souza, Alfred, S&Fernandes, Walter: Ageing in South Asia – Theoretical Issues and Policy Implications.
9. Dhillon, P, K. : Psycho-social aspects of Ageing in India.
10. Dwyer, Jeffery, W. : Gender, Families and Elder Care.

Journals:

1. Journal of Social Research
2. Introduction to Gerontology
3. Indian Journal of Gerontology
4. Journal of Ageing and Health
5. Age and Ageing
6. Ageing and Society
7. Teens
8. Journal on Adolescent health

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE – SEMESTER SYSTEM
(2018 ADMISSION ON WARDS)
BRANCH XC- EXTENSION EDUCATION
SEMESTER – I
HS214C PAPER-IV RESEARCH METHODOLOGY
(Common to all Branches X-B, C, D and E)
(Theory) SYLLABUS

Total hours : 120

Objectives:

1. To have a basic knowledge about research and its methodologies.
2. To identify and define appropriate research problems.
3. To organize and conduct research in a more appropriate manner.
4. To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

- a. Organisation – editing, coding and classifying – tabulation
- b. Analysis – descriptive and statistical.
- c. Interpretation
- d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

8. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
9. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.

10. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.
11. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
12. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,
13. Sharma, B.A. V, Prasad, R.D. and Styandarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
14. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA

MSc. HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

**HS 221 C PAPER V – LIFE LONG LEARNING FOR
DEVELOPMENT**

(Theory) SYLLABUS

Total Hours: 110

Objectives:

1. To develop in the students the national and international perspective of various aspects of theory and practice of lifelong education.
2. To improve their knowledge, understanding, skills and abilities related to organizing and managing an adult learning setup.
3. To equip them with the skills of involving the community in participatory planning, development and transaction of curriculum as well as training, evaluation and research processes related to adult education and development.
4. To enhance their understanding and skills of networking at local, state, national and international levels for their personal, social and professional development.

Unit I: Concept- Concept of education – formal, informal, non-formal, incidental learning – social education, functional literacy, Adult education, Continuing Education, Lifelong learning.

Unit II: Programmes for Adult Education – genesis and growth of adult education in India- National Adult Education Programme (NAEP), National Literacy Mission (NLM), Total Literacy Campaign (TLC), Jan Shikshan Sansthan. Role of adult educators.

Unit III: Motivation in adult education- Types of Motivation – techniques of motivating adult learners.

Unit IV: Curriculum for adult learning – meaning, definition and principles of curriculum. Preparation of need based curriculum and development of learning

materials for different kinds of life long learning programmes. Teaching literacy through Improved Pace and Content of Learning (IPCL).

Unit V: Teaching literacy- Principles and approaches of analytic, synthetic, eclectic methods, Theories and principles of adult learning –factors influencing the same.

Unit VI: Preparation of teaching materials – Teaching aids and materials, print and electronic media, computer assisted auto instructional materials. Selection, gradation, approaches to material production, presentation and evaluation, materials for self-learning.

Unit VII : Continuing Education – Importance of continuing education, identification, mobilization and organizations of resources for continuing education. Role of Continuing education centers, National Open School, distance education, vocationalisation in life long learning.

Unit VIII: Agencies promoting lifelong learning – Role of IAEA, SRC, Directorate of Adult Education. Role of Universities and colleges in lifelong learning.

Field Experiences:

1. Visit to State Resource Centre to understand the functions, administration and activities.

References :

1. Dimensions of Adult Learning; adult education and training in a global era: Griff Foley, 2004; Open University Press, London.
2. Adult Education in India (2016) B. Krishna Reddy : Crescent Publishing Corporation, Delhi.
3. National Literacy Mission Hand book on Training Methods, MHRD. Government of India, New Delhi, 2001.
4. National Literacy Mission, Continuing Education: Manual for Training of Preraks, MHRD, Government of India, New Delhi, 2001.
5. National Literacy Mission, Continuing Education: Manual for Training of Key Resource persons, MHRD, Government of India, New Delhi, 2001.
6. Adult Education: K Singh (2009) Motilal Banarsidass Publishers Private Limited, New Delhi.
7. Adult Education and extension : Bharat Jethithor (2008) Motilal Banarsidass Publishers Private Limited, New Delhi.

Journals:

1. Indian Journal of Adult Education.
2. Adult Education Quarterly – SAGE.
3. Journal of Adult and Continuing Education.

UNIVERSITY OF KERALA
MSc. HOME SCIENCE – SEMESTER SYSTEM (2018)
BRANCH XC- EXTENSION EDUCATION
SEMESTER 1I
HS 222 C PAPER VI – SOCIAL ENTREPRENEURSHIP
(Theory) SYLLABUS

Total Hours: 110

Objectives: This course aims to:

1. Provide conceptual inputs regarding different types of entrepreneurship.
2. Sensitize and motivate the students towards entrepreneurship management.
3. Orient and impart knowledge towards identifying and implementing entrepreneurship opportunities.
4. Develop management skills for entrepreneurship management.

Unit I: Conceptual Analysis – Meaning, definition, characteristics and types of entrepreneurship, entrepreneur and enterprise. Merits and demerits of entrepreneurship. Role of enterprise in national and global economy.

Unit II: Social Entrepreneurship – Meaning, nature and significance of social entrepreneurship. Developing social entrepreneurial competencies – requirements and understanding the process, interpersonal skills, creativity, assertiveness achievement, factors affecting entrepreneur’s role.

Unit III: Launching and organizing an enterprise- Environment scanning – information sources, schemes of assistance, problems. Enterprise selection, market assessment, enterprise feasibility study, SWOT Analysis. Resource mobilization – finance, technology, raw material, site and manpower. Costing, marketing management and quality control.

Unit IV: Identification – Identification of Social Entrepreneurship ventures and challenges of entrepreneurship in Home Science.

Unit V: Gender Issues in Entrepreneurship- Need for women entrepreneurship, problems, measures taken for the development of women entrepreneurship in Kerala and India.

Unit VI: Project Formulation – Project, meaning, types, project identification, generation of project idea, sources of project, screening, project formulation – steps involved.

Unit VII: Project reporting – Writing a business plan through planning, mobilization of resources and market surveys.

Unit VIII: Government policies and schemes for support in enterprise development and management. Agencies for training, infrastructure, financial help, marketing – DIC, SIDO, NSIC, TCO, SISI, STEP, STED, KITCO, CIDCO, KVIC.

Field Experience:

1. Visits to agencies involved in development of entrepreneurship.
2. Visit to one or two enterprises.
3. Interaction with one or two social / women entrepreneurs.

References:

1. Gupta. C.B. & Sreenivasan N.P, Entrepreneurship Development in India, New Delhi, sultan Chand, 2007
2. Desai. V., Dynamics of entrepreneurial development & management, Mumbai, Himalaya Publishing house, 2011.
3. Khanka. S.S., entrepreneurial development, S Chand & Co Ltd., Ram Nagar, New Delhi, 2009.
4. Jain, N.K & V Varshney. R.L, Entrepreneurship Development – RBSA Publications, Jaipur, 2009.

Journals:

1. Indian Journal of Social Entrepreneurship
2. Entrepreneurship Development and Management
3. International Journal of Gender and Entrepreneurship

UNIVERSITY OF KERALA

MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

HS 223 C PAPER VII – DEVELOPMENT COMMUNICATION

(Theory) SYLLABUS

Total Hours: 110

Objectives:

1. To understand the concept of development communication in the context of social change and India's development initiative.
2. To enable the learners get an appreciation of the role of information, communication and media in development.

Unit I: Communication – Meaning and concept, elements, function, types and models of communication, barriers in communication.

Unit II: Concepts related to Development Communication - Concept of development Development Indicators, Approaches to development, Problems of development, role of mass media in development communication, Communication for social change and nation building, Development communication as feedback for policy framing.

Unit III: Adoption process - Innovation, adoption and diffusion, meaning and importance, process of diffusion of innovations, stages in adoption and diffusion processes, factors responsible for adoption, adopter categories, measurement and rate of adoption.

Unit IV: Extension teaching methods and Audio visual aids - Classification of extension teaching methods according to form and use, Procedure, advantages and limitations of each method, factors guiding the selection and use of each method. Place and role of audio visual aids in Home science and Extension communication, Classification, Cone of experience, merits and limitations of audio visual aids.

Unit V: Traditional media in India – History, regional diversity, content, form, utility in tribal and weaker sections, evaluation. Various forms of traditional media, folk songs, dance and drama in India, role and advantages of folk media over other means of communication for development.

Unit VI: Content Development for Communication methods – Print media-reporting and editing, Electronic media- principles of writing for radio and television, scripts for radio talks, documentaries and dramas.

Unit VII: Information and Communication Technology (ICT) in development – Communication technology-concept and scope, various ICT tools and their uses, role of ICT in development, web page development, research and development in ICT

Field Experiences:

1. Visits to EDUSAT, AIR, Chitranjali studio, Press, Print, Channel institutions, Doordarshan Kendra, Community Radio Station.

References:

1. Srinivas Raj, and Steves L,(2015) communication for Development, Sage Publications, USA.
2. Modi Bella (1991) Designing message for Development communication and audience participation – based approach, Sage Publications, New Delhi.
3. Ila Virginia C, Ongkiko, Alexander G Flor (2003) Introduction to Development communication, Published by University of Philippines.
4. Thomas 1 Mcphail (2009) Development communication : reframing the role of the media. Blackwell publishing Ltd.
5. Dua, M R and Gupta VS. (1994) Media and development, AMIC Singapore and HAr Anand Publications, New Delhi.
6. Dharma O P and Bhatnagar O P (1980) Education and communication for development. Oxford and IBH Publishing.
7. Melcote, S R and Vallath (1992) Communication gap in development, Rawat Publications, Jaipur.

Journals:

1. Journal of Global Communication
2. Journal of Development communication
3. Journal of mass communication and journalism.

UNIVERSITY OF KERALA

MSc HOME SCIENCE – SEMESTER SYSTEM (2018)

BRANCH XC- EXTENSION EDUCATION

SEMESTER 1I

HS 224 C PAPER VIII – DEVELOPMENT COMMUNICATION –

Practicals SYLLABUS

Total Hours: 110

Objectives:

To enable the learners to handle different media for community development activities

- I. Preparation of radio scripts – for rural community / Preparation of a script for a television programme based on any rural issue.
- II. Analysis of programmes in radio, TV and films.
- III. Writing news articles.
- IV. Conducting an exhibition using different aids.
- V. Audience analysis – readership, viewership, listenership.
- VI. Preparation of a multimedia educational kit / a documentary for a rural community development programme.
- VII. Preparation of a folk art form and its application in a tribal community.

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XC – EXTENSION EDUCATION
SEMESTER - III
HS231 C – PAPER IX – SCIENCE AND TECHNOLOGY FOR
RURAL DEVELOPMENT
(Theory) SYLLABUS

Total Hrs : 110

Objectives

- To understand appropriate and affordable technology for rural living.
- To study alternate sources of fuels.
- To understand waste management and recycling techniques.

Unit I - Rural technology- meaning and classification of rural technology- appropriate, affordable, frontier, intermediate technologies. Need for rural technology in empowering rural population.

Unit II - Science and Technology in Agriculture – Scientific methods of cultivation. Post harvest technology –need and importance of post harvest technology; Improved grain storage structures and methods at domestic level, farm level and at large scales.

Unit III – Waste Management – classification of waste, solid waste management with reference to India and Kerala, 5 R's in waste management – Reduce, Recycle , Reuse, Recover, and Repair. Role of voluntary agencies in solid waste management in Kerala.

Unit IV – Food Preservation – Principles and methods of food quality control during preparation and Food Standards and Food Quality control.

Unit V – Rural Housing- meaning, methods and innovations in the technologies adopted for promoting rural housing. Case studies on rural housing at Rural Technology Park, NIRDPR.

Unit VI – Biomass – meaning of biomass, biogas. Scope of biogas fuels; principles of biogas plant – Models promoting the use of biogas- 1)the floating-drum plant with a cylindrical digester (KVIC model), 2. the fixed-dome plant with a brick reinforced, moulded dome (Janata model) 3. the floating-drum plant with a hemisphere digester

(Pragati model) 4. the fixed-dome plant with a hemisphere digester (Deenbandhu model); advantages and disadvantages of biogas.

Unit VII- Renewable energy sources- Use of solar energy – Scope and advantage of the use of solar energy – Wind energy, hydropower, tidal energy, wave energy.

Unit VIII – Agencies involved in promoting Science and Technology for Rural Development – DST, Indian Renewable Energy Development Agency (IREDA) Ministry of New and Renewable Energy, Solar Energy Corporation of India (SECI), Sardar Swaran Singh National Institute of Bio-Energy (SSS-NIBE, ANERT).

Field Experiences:

1. Visit to ANERT
2. Visit to Biogas plants/ Waste Recycling unit/ Solar unit
3. Visit to Food Preservation unit

References:

1. Gusain P. P. S., Cooking Energy in India, Har Anand Publication.
2. Raiky and Singh, (1990), Energy consumption in India, Deep and Deep Publications.
3. Maheswar Dayal, Renewal Energy, Environment and Development
4. Chauvan D. S. and Srivastava S. K., (2014), Non –conventional Energy Resources, New Age International
5. Hosetti B. B., (2006), Prospects and Perspectives of Solid Waste Management
6. Mital K. M., (2007), Biogas Systems: Policies, Systems, Progress and Prospects
7. Singh S. Kunda and Singh S., (1998), Agriculture Management
8. Anilkumar De and Arnab Kumar De, (2009), Environmental Studies
9. Beena Shah, (1990), Energy Education
10. Nijaguna B. T., (2009), Biogas Technology
11. Mukerjee and Chakrabartby, (2007), Fundamentals of Renewable Energy Systems
12. Jadav and Purohit, (2011), Enviornment and Management

UNIVERSITY OF KERALA
MSc HOME SCIENCE – SEMESTER SYSTEM (2018)
BRANCH XC- EXTENSION EDUCATION
SEMESTER III
HS 232 C PAPER X– Programme Design and Evaluation
(Theory) SYLLABUS

Total Hours: 110

Objectives:

1. To understand the key concepts and skills in effective programme designing and evaluation.
2. To demonstrate the ability to develop, implement and constructively evaluate programme and evaluation plans.
3. To develop tools for monitoring and evaluation of extension programmes

Unit I: Community development and community participation – Meaning of community development, concept of community development, objectives behind community development, guiding principles of community development, area of community development.

Unit II: Programme Design in Extension – Meaning and principles of programme building process, Situation analysis, Needs and Objectives – Types of needs, methods of identifying needs, Objectives- types, levels and characteristics, steps involved in programmes building process, programme development cycle, planning models and framework, planning and developing teaching methods, precautions used in programme building.

Unit III: Participatory planning – Engaging the community and other stake holders, organisations and committees, role of officials, non-officials, groups and agencies in programme building process for extension work. Utilisation of local infrastructure, Resources for Program Planning, Meaning and Types of Resources, Identification and Appraisal of Resources, Resource Mapping.

Unit IV: Plan of work – Meaning, importance, components of a plan of work, developing a plan of work, factors to be considered in preparing the plan of work, pre

requisite for developing plan, guidelines for developing a written annual plan, criteria for judging the plan of work

Unit V: Programme Implementation- Strategies and Approaches, aspects of execution, factors responsible for the successful conduct of a programme, role of officials and non-officials in programme implementation, linkages with other agencies, problems in implementation.

Unit VI: Monitoring and Evaluation- Approaches to monitoring, tools for monitoring, principles, indicators. Evaluation – meaning, purpose, elements, steps, criteria for evaluation, types of evaluation, methods of evaluation, challenges and issues in monitoring and evaluation. Ethical issues in monitoring and evaluation

Unit VII: Documentation and follow up – Need for reporting and recording, procedure for recording- aspects to be covered. Records and registers to be maintained in programme implementing institutions, Meaning and need for follow up, methods- correspondence, spot visit, meetings.

Field Experiences:

1. Planning, implementing and evaluating of a programme for rural children/youth/women/elderly for 1 week.
2. Preparing proposals for funding from internal and external sources.

References:

1. Sharma, FL, Shri Ram, (2013) Extension Teaching Methods, Agrotech Publishing Company, Udaipur.
2. Dangi, KL and Santhosh Devi Samota, (2013) Agrotech Publishing Academy, Udaipur.
3. Mikkelsen, Britha, (2002), Methods of development work and research. New Delhi: Sage Publications.
4. Dale R, (2004) Evaluating Development programmes and projects. New Delhi: Sage Publications.
5. Reddy, A (1998) Extension education, Sree Lakshmi press, Bapatala.
6. Gopal lal Jain, (1997) Rural development, MA Angaldeep publications, Jaipur.
7. Subah Singh Yadav, Ramkumar, Rural Development and poverty alleviation, Pinter Publishers, Jaipur.

8. Misgnaw, Seraw, (2011) Extension programme planning and evaluation. LAP Lambert Academic Publishing.

Journals:

1. Social Welfare
2. Kurukshetra
3. Rural India
4. Kerala Calling
5. Indian Journal of Extension Education
6. Indian Journal of Rural Development

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XC – EXTENSION EDUCATION
SEMESTER - III
HS233 C – PAPER XI – POPULATION STUDIES
(Theory) SYLLABUS

Total Hrs : 110

Objectives: This course is designed

To enable students to understand the population trends in India.

1. To know the problems of population explosion.
2. To understand various solutions to population problems.

Unit I- Introduction to Population Studies – Nature, scope and importance of population education, concepts and definitions, source of population data – census – Population of India as given by the latest census data, vital statistics – importance, uses and limitations. Demographic variables – fertility, mortality, migration.

Unit II – Population Problems – Population problems in general, population education as changing agent, the role of different agencies for finding out solutions.

Unit III – Population and Development Education – Meaning, nature and concept of Development Education, overcoming population problems through development education.

Unit IV – Methods of Demographic / Population Analysis – Rates, Ratios, Proportions, Percentages, Person, Months / Years, incidence, prevalence. Rates of Population Growth: Arithmetic, Geometric and Exponential Rates of Growth. Crude rates and standardized methods. Methods of population projections.

Unit V – Population Theories - Theories of Population Growth – Malthus to modern; limits to population growth. Theory of Demographic Transition. Theories related to fertility. Theories related to migration and urbanization.

Unit VI – Family life and responsible parenthood – Family life cycle, marriage and preparation for marriage, age at marriage, consequences of early marriage and delayed marriage, fertility – factors affecting fertility, small family norm. Responsible sexual behaviour and family planning, Responsible parenthood, Child care, Immunisation schedule, Physical Quality of Life Index (PQLI), Human Development Index (HDI)

Unit VII – Sustainable Development

Population Explosion and sustainable development. Implications of population growth on food supply, water, sanitation, housing, employment, health, education.

Unit VIII – Social Issues

Alcoholism, prostitution and trafficking, Violence -against women and in the community, suicide, drug abuse, sexually transmitted infections STI / HIV / AIDS.

References:

1. Fatima Siddiq and Ranganathan Sarala (2001). Handbook on women and Human Rights part 2. Kaniskka Publishers.
2. Park K. (2009) Park's Textbook of preventive and social medicine 20th edition Banarsidas Bhanot Publishers, Jabalpur.
3. Neeraja K. P. (2008) Essentials of mental health and psychiatric nursing Vol. one Jaypee Brothers, Medical Publishers.
4. Srinivasan K. (1997) India towards population and development goals Oxford University Press, Chennai.
5. Sharma R.D. (1998) Population trends in India, Millan Prakasham, New Delhi.

6. Journals

1. Family Planning Association of India.
2. The Journal of Family welfare.

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XC – EXTENSION EDUCATION
SEMESTER - III
HS234 C – PAPER XII – STATISTICS AND COMPUTER
APPLICATIONS
(Common to all Branches X-B, C, D and E)
(Theory) SYLLABUS

Total Hrs : 120

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications.

Unit I- Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II – Data Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III – Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean.
- Measures of dispersion – range, variance, standard deviation, standard error, co efficient of variation.
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive.

Unit IV – Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools.

Unit V – Normal Distribution and its Properties

- Normal distribution – importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI – Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- ‘t’ test, paired ‘t’ test, ‘F’ Test

Unit VII- Chi square test and its interpretation

- Chi square test and its interpretation – general features, goodness of fit
- Independence of Attributes

Unit VIII – Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX – Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X – Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and II errors.

Unit XI – Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS
- Histogram, pie diagram, scatter diagram graphs – presentation using SPSS / excel.

Unit XII – Presentation using Power point

- Creating presentations.

References:

1. Gosh, B.N. Scientific methods and social research, Sterling Publishers Pvt. Ltd. New Delhi.
2. Kothari, C.R. 2014. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi.
3. Sharma, B.A.V. Prasad, R D and Satyanarayana, P. 1990. Research Methods in Social Science, Sterling Publishers Pvt. Ltd.
4. Agarwal, Y.P. 1990. Statistical Methods, Sterling Publishers Pvt. Ltd.
5. Gupta, S. 2001. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi.
6. Gupta, S.P. 1996 Practical Statistics, 37th edn, S. Chand, New Delhi,.
7. Gupta, S.C. 2000 Fundamentals of Statistics, Himalaya Publishers, Mumbai.
8. Gupta, S.P. 2000. Statistical Methods, Sultan Chand & sons, New Delhi.
9. Nagar, A.L. & Das, R.K, 1997. Basic Statistics, 2nd ed., OUP, Delhi.

UNIVERSITY OF KERALA
MSc HOME SCIENCE – SEMESTER SYSTEM (2018)
BRANCH XC- EXTENSION EDUCATION
SEMESTER 1V
HS 241 C PAPER XIII– WOMEN AND GENDER STUDIES
(Theory) SYLLABUS

Total Hours: 110

Objectives: This course is designed

1. To appreciate gender as a socio cultural constraint.
2. To understand the concept, need, relevance and dimensions of women's empowerment, programmes and policies to empower women.
3. To enable students to identify gender disparities, imbalances and problems of women.
4. To gain an understanding of legal and other support systems aimed at women's empowerment.
5. To develop gender concerns in students and work for creating a gender just society.

Unit I: Gender and Feminism – Gender – definition- gender roles – Feminism – Historical background of feminism – feminist theories – liberal feminism – radical feminism – Marxist feminism – socialist feminism – functions of feminist theory – feminist movement in India – pre and post Independent India. Conceptual analysis – WID, WAD and GAD.

Unit II: Women's studies and gender studies – Women's studies definition – goals – scope – from women's studies to gender studies – a paradigm shift – status of women in pre and post Independent India.

Unit III: Demography (with special emphasis to women)- Population –as per the latest census data – Indicators – health – sex ratio- Age at marriage – life expectancy- infant mortality rate, maternal mortality rate. Literacy – Male and female literacy rates. Employment – male and female work participation rates. Political participation of women – the changing scenario at the National and State levels for all indicators.

Unit IV: Gender equality and empowerment of women – Empowerment of women – meaning and definition-qualitative and quantitative indicators of empowerment – dimensions of empowerment. National policy for empowerment of women 2001 and other policies for empowerment of women in India – Role of UN in the various platforms for action to eliminate discrimination against women beginning with the International Women’s Year – culmination of Convention on the Elimination of all forms of Discrimination Against Women (CEDAW), Gender mainstreaming and gender budgeting.

Unit V: Women and Poverty- Providing women with access to savings and credit mechanisms and institutions – Self Help Groups (SHG’s) – definition – advantages – Kudumbasree –Harithashree – skill and capacity building through STEP – process of empowerment through them. Micro credit systems – definition- needs- characteristics – eg. RMK, Role of NABARD, Role of NGO’s, Indira Mahila Yojana (IMY), Kerala Women Development Corporation. Wage Employment Programmes – Sampoorna Grameen Rozgar Yojana (SGRY), Development of Women and Children in Urban Areas (DWCUA). Using ICT (Information Technology) for poverty alleviation. Food Security Programme.

Unit VI: Gender and Law – Need for legal literacy – Indian Marriage Laws – Hindu, Christian, Muslim marriage acts, Special Marriage Act, legal provisions to safe guard women – family courts – Alimony. The National and State Commission for women – Human Rights Commission.

Unit VII: Women and Health – Factors affecting the nutritional and health status of women in India – women and work related health problems – factors influencing women’s access to health services. Policies in Nutrition and Health – National Nutrition Policy – National Health Policy – National Population Policy – Health Programmes for women – Reproductive and Child Health Programme (RCH), National Rural Health Mission (NRHM), Child Survival and Safe Motherhood programme (CSSM).

Unit VIII: Gender and Education – Factors responsible for poor female literacy rates and school drop outs – girls education in ancient, medieval India and during colonial (British) administration. Girls education since independence – The National Policy on Education (NPE), Other educational programmes - The Mahila Samakhya

Programme, National Literacy Mission (NLM), The Total Literacy Campaign (TLC), Non formal education, DPEP, UGC, Sarva Shiksha Abiyan (SSA), RUSA.

Field Experiences:

1. Study of gender issues in the community.
2. Feedback on developmental programmes related to gender issues.
3. Case studies on gender issues.

References:

1. Mandakranta Bose (2000) Faces of the feminine in ancient, medieval and modern India, Oxford University Press.
2. Lourdes Rita and Jebaselvi (2015) Women empowerment, Neel Kamal Publications, Hyderabad.
3. Textbook on Women and Development, Centre for Women's Studies (2005) Avinashlingam Institute for Home science and Higher education for Women, Coimbatore.
4. Kant. Anjana (1997) Women and the law, APH Publishing Corporation, New Delhi.
5. Reshmi Agarwal and BVL N. Rao (2004) Gender Issues: A ROAD MAP to Empowerment, Shipra Publications.
6. Goel. Aruna (2004) Violence and Protective Measures for Women Development and Empowerment, Deep and Deep Publications Pvt. Ltd.
7. Tinku Paul (2009) Women Empowerment through work participation, New Century Publications, New Delhi.

Journals:

1. Indian Journal of Gender Studies
2. Gender and Society.

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XC – EXTENSION EDUCATION
SEMESTER - IV
HS242 C – PAPER XIV COMMUNITY HEALTH, NUTRITION
AND EXTENSION
(Theory) SYLLABUS

Total Hrs : 110

Objectives:

1. To understand the concept of health
2. To know the health management system
3. To understand the prevalence and extent of malnutrition in India and remedial measures
4. To know the different ways to assess the nutritional status of the community
5. To equip the students with the knowledge of planning and conducting nutrition education programmes.

Unit I- Health Care of the Community –Concept of health care, Health system – levels of health care – primary, secondary, tertiary, Health for all, Millennium Development Goals, Health Problems of India, Health care services in India, Health Care systems in India in the Public Health Sector and Private Sector, Primary health Centre, Indian Public health standards for Primary Health Centers.

Unit II – Malnutrition in India, prevalence – factors responsible for malnutrition, measure to overcome malnutrition, protein energy malnutrition – etiology, clinical features, tests, prevention.

Unit III – Assessing the food and nutritional problems of the Community – Methods available – Anthropometric, Clinical, Biophysical or radiological, Functional, Biochemical, Dietary Assessment, Vital health Statistics.

Unit IV – Deficiency diseases. Deficiency diseases their causes and prevention – vitamin deficiencies – Deficiencies of Vitamin A, B, C, D, E and K and hypervitaminosis. Mineral deficiencies – deficiencies of Iron, Iodine, Calcium, Fluorine, and Toxicity.

Enhancing the nutritive value of foods through Fermentation, combination, germination, fortification.

Unit V – Nutrition Education

Need for Nutrition education, objectives, Nutrition education methods, channels, training imparted for personnel involved. Principles of planning, executing and evaluating nutrition education programmes.

Unit VI – Role of National and International organizations concerned with Research & Combating Nutritional problems- ICAR, ICMR, NIN, Food and Nutrition Board, NNMB, CFTRI, WHO, FAO, UNICEF, IRRI.

Unit VII- Food adulteration

Definition, types of food adulterants, simple tests to detect adulterants, health hazards, food laws, Nutritional labelling – importance of labelling and food additives.

Unit VIII - Health information system

Components of Health information system – its uses, Sources of health information--- Census, Registration of vital events, Sample Registration system, Notification of diseases, Hospital records , Disease registers, Record linkage, Epidemiological surveillance, Other health service records, Environmental health data, Health manpower statistics, Population surveys, Other routine statistics related to health and Non- quantifiable information.

References:

1. Park.K. (2009); Park's Textbook of Preventive and Social Medicine, 20th edition Banarsidas Bhanot Jabalpur, India.
2. Srilakshmi B (2009); Nutrition Science Third edition, New Age International (p): Limited, New Delhi.
3. Srilakshmi B (1997); Food Science, New Age Internation (P) Limited, New Delhi, Bangalore.
4. Chadha.R & Mathur P.(2015): Nutrition A Life Cycle Approach Orient Blackswan Private Ltd.
5. Swaminathan M (2010) Essentials of Food and Nutrition, Vol.1 & 2 The Bangalore Printing and Publishing Co Ltd.
6. Srilakshmi B (2014) Dietetics 7th edition 'New Age International (p) Limited , New Delhi.

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XC – EXTENSION EDUCATION
SEMESTER - IV
HS 243 C – PAPER XV - COMMUNITY HEALTH, NUTRITION
AND EXTENSION PRACTICALS
SYLLABUS

Total Hrs : 120

Objectives:

1. To gain understanding in organizing nutrition education programmes for the community.
2. To understand feeding practices in the community.
3. To understand diet planning for the vulnerable groups.
 1. Visit to rural and urban communities to study the food and nutrition patterns.
 2. Analysis of Anthropometric measurements of children.
 3. One week weight survey and report.
 4. Field visits to observe feeding practices in
 - a. Pediatric wards / Orphanage
 - b. Welfare Centers
 - c. Midday meal programmes
 - d. Homes for aged
 - e. Report on visit to a PHC (Primary Health Centre) / Hospital to understand Health Management and Information Systems.
5. Imparting Nutrition education through the conduct of an Exhibition in a village / community/ school/ college.
6. Planning and preparation of low cost diets with teaching aids.
 - a. Diet for a kwashiorkor child.
 - b. Diet for a preschool child suffering from Vitamin A deficiency.
 - c. Diet for a pregnant anemic mother.
 - d. Diet for an underweight labourer man.
 - e. Diet for a lactating mother with deficiencies in calcium and vitamin C.
 - f. Diet for an old man suffering from dentition problems and deficient in thiamine.
 - g. Diet for an adolescent girl with deficiency in iron and vitamin C.

UNIVERSITY OF KERALA
MSc HOME SCIENCE – SEMESTER SYSTEM (2018)
BRANCH XC- EXTENSION EDUCATION
SEMESTER IV
HS 244 C - PAPER XVI – TRENDS AND ISSUES IN HOME
SCIENCE EXTENSION INTERNSHIP
SYLLABUS

Total Hours: 110

Objectives of the Internship are to enable the students

1. Integrate classroom theories and concepts with micro, mezzo and macro extension and community work practice in a variety of community settings that address the effects of poverty, discrimination and oppression; influence changes at the individual, family and group level; and bring about organizational and societal change.
2. Enhance skills across the spectrum of culturally appropriate community work services, including direct practice skills such as engagement, assessment, goal-setting, intervention, evaluation and termination; mezzo practice skills such as case management, resource/referral, family work and support system engagement; and macro practice skills such as community organizing, fund development and grant writing, policy analysis and program development, implementation and evaluation.
3. Develop professional use of self through observation of professional extension and community workers, self-reflection, understanding of community work values and implementation of those values in internship placements.

The Core Competencies that are expected to develop through the internship are: -

Professional Identity, Ethical Practice, Critical Thinking and Diversity in Practice
Human Rights & Justice Research Based Practice Human Behavior, Policy Practice
Contexts Engage, Assess, Intervene, Evaluate.

Unit I: Identification of individual core areas relevant to extension work.

Unit II: Preparation of proposal- proposal development.

Unit III: Execution of the proposed work- identification of the organization for internship – internship process.

Unit IV: Documentation and Reporting.

Internship in any one of the following (For a period of one month)

1. Community Development Centres
2. Old age Homes
3. Anganwadis
4. Welfare centers for women and children/ Sakhi
5. NGO's
6. Extension Training Centres
7. Kudumbasree

There will be both internal and external evaluation for the report; at the end of the fourth Semester, along with the practical examination of Community Health, Nutrition and Extension.

M.Sc. HOME SCIENCE

BRANCH X-D

FOOD AND NUTRITION

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION

M.Sc. HOME SCIENCE

Branch XD Annexure Food and Nutrition- Course & Mark distribution

Sem ester	Paper Code	Title of the paper	Distributi on of hour / semester	Instructio nal hrs/week		ESE dura tion	Maximum Marks		
				L	P		CA	ESA	Total
1	HS 211D	Human Physiology	110	6	-	3	25	75	100
	HS212D	Medical Nutrition Therapy	110	6	-	3	25	75	100
	HS213D	Food Microbiology and Sanitation	110	6	-	3	25	75	100
	HS214B/ C/D/E	Research Methodology	120	7	-	3	25	75	100
		Total	450	25	-	-	100	300	400
2	HS221D	Applied Food Science	110	6			25	75	100
	HS222D	Nutrition Through Life Cycle	110	6	-	3	25	75	100
	HS223D	Advanced Food Technology and Engineering	110	6	-	3	25	75	100
	HS224D	Applied Food Science – Practical	120	-	7	3	25	75	100
		Total	450	18	7	-	100	300	400
3	HS231D	Food Safety and Quality Assurance	110	6	-	3	25	75	100
	HS232D	Public Health Nutrition	110	6	-	3	25	75	100
	HS233D	Nutrition for Sports, Space Travel and During Disasters	110	6	-	3	25	75	100
	HS234B/ C/D/E	Statistics and Computer Applications	120	7	-	3	25	75	100
		Total	450	25	-	-	100	300	400
4	HS241D	Biochemistry	110	6	-	3	25	75	100
	HS242D	Advanced Human Nutrition	110	6		3	25	75	100
	HS 243D	Biochemistry Practical	110		6	3	25	75	100
	HS 244D	Advanced Human Nutrition Practical	120	-	7	3	25	75	100
		Total	450	12	13	-	100	300	400
	HS245D	Dissertation	-	-	-	-	-	100	100
	HS246D	Comprehensive Viva	-	-	-	-		100	100
		Tutorial work	5hrs/week	-	-	-	-	-	-
		Grand Total		80	20	-	400	1400	1800

**L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment
ESA-End semester assessment.**

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XD FOOD AND NUTRITION

Semester –I

- 1.1 Human Physiology
- 1.2 Medical Nutrition Therapy
- 1.3 Food Microbiology and Sanitation
- 1.4 Research Methodology

Semester –II

- 2.1 Applied Food Science
- 2.2 Nutrition Through Life Cycle
- 2.3 Advanced Food Technology and Engineering
- 2.4 Applied Food Science – Practical

Semester –III

- 3.1 Food Safety and Quality Assurance
- 3.2 Public Health Nutrition
- 3.3 Nutrition for Sports, Space Travel and During Disasters
- 3.4 Statistics and Computer Applications

Semester –IV

- 4.1 Biochemistry
- 4.2 Advanced Human Nutrition
- 4.3 Biochemistry Practical
- 4.4 Advanced Human Nutrition Practical
- 4.5. Dissertation
- 4.6. Viva Voce

Branch X D Food and Nutrition

Semester	C.A*	ESA**	Total
SemesterI	100	300	400
SemesterII	100	300	400
SemesterIII	100	300	400
SemesterIV	100	300	400
Dessertation			100
Comprehensive Viva Voce			100
Grand Total			1800

- *C A Continuous Assessment
- **ESA End semester assessment

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
Semester I
BRANCH X D- FOOD AND NUTRITION
HS 211 D PAPER I - HUMAN PHYSIOLOGY
(Common to Branches X D & X E)
Theory (SYLLABUS)

Total hrs: 110

Objectives: To enable the students to

1. Gain knowledge about Human Physiology
2. Understand the metabolic changes in different health and disease conditions

UNIT I - Blood

Composition & Functions of the blood, Cellular Content of Blood- their properties and functions, Blood Groups, Blood transfusion, Bleeding disorders, lymph, Tissue fluids, Reticuloendothelial system, Blood volume, coagulation.

UNIT II - Circulatory System

Structure of heart, Physiology and properties of cardiac muscle, Cardiac cycle, Cardiac output, Heart rate, Heart sound and ECG

UNIT III - Digestive System

Physiology of digestive system-Structure, function, secretion; movement of gastrointestinal tract, Digestion of protein, carbohydrate and fat

UNIT IV - Respiratory System

Structure of Respiratory organ, Mechanism of respiration, Exchange and transport of gases, Respiratory volume, Respiratory adjustments in health and diseases, spirometry.

UNIT V - Excretory System

Physiology of the kidney, urine formation, Micturition-normal and abnormal constituents of urine, elementary principles of dialysis, maintenance of homeostasis.

UNIT VI - Endocrine System

Endocrinology-Hormones- pituitary, thyroid, parathyroid, adrenal, sex hormones, pancreas; Effects of Hypo and Hyper functions of the glands.

UNIT VII - Nervous System

Neurons, Synapse and neurotransmitters, Central and Peripheral nervous system, Autonomic nervous system; Brain: Parts and functions; Spinal cord, Cerebrospinal Fluid, Reflex action. The physiology of sleep, Circadian rhythm.

UNIT - Sense Organs

Eye: Anatomy of Eye & Physiology of Vision, Ear: Structure of Ear & Physiology of Hearing, Nose: Sense of Smell, Tongue: Sense of Taste, Skin: Structure & Functions of skin.

UNIT IX - Skeletal & Muscular System

Bone: Types, Functions Structure and Development of bone; Vertebral Column, Thoracic System Cage; Joints: Types of joints, Main synovial joints of the limbs, Classification & function of muscles, Anatomy and Physiology of skeletal muscle.

UNIT X - Reproductive System

The female reproductive organs-menstrual cycle, The male reproductive system organs - The process of reproduction

UNIT XI - Immunology

Natural immune system, cell mediated and humoral immunity, components of immune mechanism (cellular and chemical). Role of inflammation/defence (acute and chronic), Immunoglobulins and production of antibodies. Disorders –Immune deficiency, Hypersensitivity.

RELATED EXPERIENCE

1. RBC/WBC Count, Total count Determination of plasma proteins
2. Determination of Blood pressure
3. Qualitative test of urine for normal and pathological conditions

SUGGESTED REFERENCES

BOOKS

1. Elaine N. Marieb, Katja N. Hoehn; Human Anatomy & Physiology, Global Edition, Pearson Education Ltd,2016
2. Thomson, R.H.S. and King, E.O. Biochemical Disorders of Human Diseases A.P., New York.
3. Anne Waugh & Allison Grant, Ross and Wilson Anatomy and Physiology in Health and Illness, 12th Edition, Elsevier, New York, 2014
4. Stuart Fox, Human Physiology, 13th edition, McGraw-Hill Education publishers, 2012.
5. Bruce M. Koeppen, Bruce A. Stanton, Berne & Levy Physiology, 6th Edition, Elsevier, 2010
6. John E. Hall, Guyton & Hall Textbook of Medical Physiology, 13th edition, Elsevier, New York, 2016
7. Chatterjee, C.C; Human Physiology, 11th Edition, CBS Publishers and Distributors Pvt Ltd,

JOURNALS

1. Israel Journal of Medical Sciences, Israel Medical Association, National Council for Research and Development.
2. The Journal of Laboratory and Clinical Medicine, C.V. Mosby Company.
3. The Indian Journal of Medical Research, ICMR. New Delhi.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester I
HS 212 D PAPER II MEDICAL NUTRITION THERAPY
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hours: 110

Objectives: To enable the students to

1. Understand the role of nutrition for good health.
2. Obtain knowledge of different Therapeutic diets and their preparation.
3. Develop capacity and attitudes for taking up dietetics as a profession

UNIT I - Introduction to Dietetics

Meaning and scope of dietetics Role of dietician in hospital and community, Registered Dietitian, Indian Dietetic Association, Nutrition Society of India

UNIT II - Hospital Diet

The Hospital Diet- Clear fluids. Liquid diet, Soft diet, Balanced normal diet, Feeding methods, Enteral nutrition, Calculation of diet using the Ready Reckoner 1200 cal, 1500cal, 1800 cal, 2000cal. Commercial supplement available in the market, Assessment of patient's needs, SGA, diet counselling using foods models, standardized vessels, food samples; education of the patient and follow up. Common biochemical tests affecting nutritional needs–lipid profile, AC/PC (fasting & post-prandial sugars), Liver Function tests, Homocysteine, Kidney function tests.

UNIT III - Febrile and Surgical Conditions

Fevers of short duration, chronic fevers and infections, Dengue, Chikungunya, Severe Acute Respiratory Syndrome (SARS) pre-operative and post-operative nutrition, tube feeding and parenteral feeding.

UNIT IV - Disease of the Gastrointestinal

Peptic ulcer, Disorders of the gastro intestinal Tract- Diarrhoea, Constipation, Cohn's Disease, Lactose intolerance, Ulcerative colitis, Diverticulitis, Tropical sprue, Irritable Bowel Syndrome, Diseases of the liver, gall bladder

UNIT V - Metabolic disorders

Diabetes Mellitus- Type 1, Type 2, Gestational diabetes, Food exchange lists, My Plate Planner, Insulin carb counting, glycaemic index, Hypo and Hyperthyroidism, Gout.

UNIT VI - Obesity and Underweight.

Causes, Prevention, Dietary modifications, Conservative management-low calorie diets, surgical procedures- Gastrectomy, Post Bariatric surgery diet, popular diets in the modern society: Atkins diet, Paleo diet.

UNIT VII - Cardiovascular Diseases

Atherosclerosis, Myocardial Infarction, Heart Failure, Blood Pressure & Hypertension, causes, prevention and dietary modification.

UNIT VIII - Disease of the Kidney

Nephritis- acute and chronic. Glomerulonephritis, Nephrosclerosis, and Kidney stones, Uraemia, proteinuria, haematuria and haemoglobinuria, azotaemia, End stage renal disease, Dialysis

UNIT IX - Diet in Genetic diseases

Galactosemia, Phenylketonuria and Glycogen storage disease

UNIT X - Cancers

Types of cancers and diet related carcinogens, Anti-cancer agents in foods, cancer cachexia, feeding the cancer patients, nutrient needs, Neutropenic diet

UNIT XI - Diet for Allergy

Allergy and its manifestations, diet

UNIT XII - HIV/AIDS

Dietetic management of HIV/AIDS

RELATED EXPERIENCE

1. Visit to Dietetics Kitchen.
2. Market survey of commercial nutritional supplements
3. Plan diets for various disease conditions using the Ready Reckoner
4. To conduct mock diet clinics and provide nutritional counselling
5. To design research study in clinical settings

JOURNALS

1. Journal of American Dietetic Association. The American Dietetic Association Mount Marries, Illinois, USA.
2. The American Journal of Clinical Nutrition USA
3. The Indian Journal of Medical Research. The Indian Council of Medical Research, New Delhi.
4. British Medical Journal UK
5. The American Journal of Clinical Nutrition, Published by the American Society for Clinical Nutrition, USA
6. Nutrition Abstracts and Reviews, CNB International, UK.
7. The Indian Journal of Nutrition and Dietetics, Sri Avinashilingam Home Science College for Women, Coimbatore. India
8. Clinical Nutrition, Bell and Bain Ltd, Scotland. UK
9. Food and Nutrition Bulletin, United Nations University, Press, Japan.
10. Indian Journal of Endocrinology and Metabolism, India
11. Nutrition Reviews, Nutrition Foundation, Washington. USA

TEXTBOOKS

1. Antia F.P. Clinical Dietetics and Nutrition, Oxford University Press, Mumbai, 1989
2. Corinee et.al. "Nutrition and Diet Therapy Principle and Practice" 2nd Edition, West Publishing Company, St. Paul 1989
3. Clare M Lewis, Nutrition and Nutritional therapy in Nursing, Appleton-Century Crofts, Connecticut, 1986

4. Davidson, S. Passmore, R. Brook, J.F. and Trustwell, Human Nutrition and Dietetics, 9th edition, F. and S Livingstone Ltd., Edinburgh and London 1993
5. B. Srilakshmi, Dietetics, New Age International Private Ltd, New Delhi, 1995
6. Nihal Thomas, K.J. (2012). A Practical Guide to Diabetes Mellitus (New Delhi: Jaypee).
7. Robinson C.H. , Lawler, M.R., Chenoweth, W.L., Garwich, A.E. Normal and Therapeutic Nutrition 7th Edition, Macmillan Publishing Co. New York 1994.
8. Krause M.V. Hunscher, M.A. Food, Nutrition and Diet Therapy, W.S. Saunders Co. Philadelphia, London, 1980
9. Maurice E Shills, James A Oslen, Moshe Shike, Modern Nutrition on Health and Disease" Vol I & II, VIII edition, Lea and Pebiger, Philadelphia 1984
10. World Cancer Research Fund and American Institute for Cancer Research; "Food, Nutrition and Prevention of Cancer. A Global Perspective, "American Institute for Cancer Research, Washington, 1997.

UNIVERSITY OF KERALA
MSc HOME SCIENCE — SEMESTER SYSTEM
(2018 Admission)
BRANCH XD — FOOD AND NUTRITION
SEMESTER I
HS 213D-PAPER III - FOOD MICROBIOLOGY AND
SANITATION
(Theory) SYLLABUS

Total: 110 hours

OBJECTIVES:

To Enable Students to

1. Understand the common organisms associated with food borne illnesses.
2. Gain knowledge on the necessity for cleanliness in preparation and service of foods.

Unit I - Fundamentals Of Microbiology

Development of microbiology, Bacteria, Introduction Morphology, reproduction, physiology. Growth curve and biochemical changes in bacteria, Sterilization: Physical agents — light desiccation electricity and heat. Chemical agents, removal of microorganism and filtration.

Yeasts - Morphology, Methods of multiplication process of Hybridization physiology classification and importance of yeasts. Moulds - Morphology, multiplication, physiology and nutrition. Significance of moulds and common house hold moulds. Viruses - discovery, bacteriophages, morphology, reproduction, human viral diseases, identification and control and viruses in relation of food science.:

Unit II - Development of microbiology

Microorganisms in Food –Bacteria, Moulds, Role and Significance of Microorganisms in Foods. Parameters Affecting Microbial Growth: Intrinsic, Extrinsic factors, hurdle concept. Food born infections and intoxication.

UNIT III - Microbiology of Foods

Kinds of microorganisms in milk. Sources of contamination, pathogens in milk, control of microorganisms, quality and methods of study, Microbiology of dairy

products — Fermented milk, butter and cheese. Fruits and Vegetables, External contamination, preservation and spoilage of fruits, contamination and control of microorganisms in vegetables. Cereals and cereal products: Organism associated with grains, spoilage, classification and control of moulds in bread.

Flesh foods spoilage of flesh foods, bacteria found in meat, microbiology of poultry, fish and meat products. Effect of salt on microorganisms, role of sugars in foods and role of spices in food preservation.

Unit IV - Applications of Food Microbiology

Microorganisms in Intestine- Beneficial role of Bacteria-Concept of Prebiotics and probiotics

Unit V - Quality Control In Food Microbiology

Food Preservation & Principles of Quality Control: Chemicals, antibiotics, Radiation, Low and high temperature, High-Pressure Processing, Pulsed Electric Fields. Aseptic Packaging, Nanothermosonication, Microbiological quality standards of food, FDA, Hazard Analysis Critical Control Point (HACCP).

Unit VI - Microbiology in Food plant

Sanitation, sanitation procedures, chemicals, disinfectants, Good Manufacturing Practices and health of employees Microbiological criteria of foods, Enforcement and control agencies.

RELATED EXPERIENCES

Visit to microbiology labs in Government and Private sectors

Microbial Examination of different microorganisms in food samples

REFERENCES

1. Jay MJ (1986) Modern Food Microbiology, 3rd edition, Van Nostrand Reinhold, New York.
2. Banwart JG (1987) Basic Food Microbiology, 1st edition, CBS publishers and Distributors.
3. Frazier WC and Westoff DC (1988) Food Microbiology, 3rd edition, Tata McGraw Hill Publishing Company

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE – SEMESTER SYSTEM
(2018 ADMISSION ON WARDS)
BRANCH XD- FOOD AND NUTRITION
SEMESTER – I
HS214D PAPER-IV RESEARCH METHODOLOGY
(Common to all Branches X-B, C, D and E)
(Theory) SYLLABUS

Total hours : 120

Objectives:

1. To have a basic knowledge about research and its methodologies.
2. To identify and define appropriate research problems.
3. To organize and conduct research in a more appropriate manner.
4. To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

- a. Organisation – editing, coding and classifying – tabulation
- b. Analysis – descriptive and statistical.
- c. Interpretation
- d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

1. Best J M and Kahn, J.V. Research in education, 10th edition, Prentice Hall of India, New Delhi, 2006.
2. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalaya, Coimbatore, 1989.
3. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.

4. Kothari, C.R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014.
5. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,
6. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
7. Wilkinson, T.S. and Bhandarkar, P.L. Methodology and Techniques of Social Research, Himalaya Publishing House, Bombay.

UNIVERSITY OF KERALA
MSc HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D - FOODS AND NUTRITION
Semester II
HS 221D - PAPER V - APPLIED FOOD SCIENCE
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hrs: 110

Objectives:

To enable the students to

1. Gain knowledge on sources and properties of food.
2. Develop skills to judge the quality of cooked foods.
3. Apply the principles while preparing and cooking foods.

UNIT I - Physiochemical Changes

Introduction to food science, Different methods of cooking, Physical and physiochemical changes in foods in relation to cookery, Gel formation, denaturation of Proteins properties of colloids, emulsions stabilizers, browning reactions, Enzymatic and non- enzymatic changes in cooking.

UNIT II - Carbohydrates

Sugar Cookery — sources, uses and properties, Carbohydrates Crystallization of sugar, stages of sugar Cookery. Starch Cookery: Sources and use of starch. Factors affecting, Gelatinization, syneresis and Retrogradation, types of Flours, baking qualities. Bread making –role of ingredients, portion of ingredients, leavening agents.

UNIT III - Proteins

Meat- Structure, cuts of meat and post mortem changes -methods of cooking Fish- Kinds of fish, constituents, selection and cooking. Eggs- structure, composition and selection, coagulation. Milk and milk products, constituents, processing-clarification, homogenization, pasteurization. cheese making –basic steps, Pulses and legumes processing- germination, fermentation.

UNIT IV - Fats and Oils

Sources and extraction of edible fats and oils-characteristics of fats, physical, chemical properties. Changes in fat during storage and cooking - uses of fat-shortening , emulsifying and creaming agent

UNIT V - Fruits and Vegetables.

Structure, pigments and acids in Vegetables and fruits, Role of pectin substances. Effect of acids, alkalis and heat on pigments.

UNIT VI - Food Preservation

Needs, benefits, principles and methods of food Preservation, Use of irradiation and microwave for Preservation.

UNIT VII - Product Development and evaluation

Sensory evaluation of food. Factors to be considered in food testing. Types of sensory tests. Sensory panel. Planning, standardization and testing of a new food product.

UNIT VIII - Food additives and adulteration

Definition, Types of Food Additives, Food Adulteration.

UNIT IX - Convenience foods

Fast foods, ready to eat foods - merits, demerits.

TEXTBOOKS

1. Food Science: Fifth Edition (Food Science Text Series) 5th Edition.by Norman N. Potter and Joseph H. Hotchkiss
2. Introduction to Food Engineering, Fifth Edition (Food Science and Technology)
Aug 16, 2013. R Paul Singh and Dennis R. Heldman
3. Essentials of Food Science (Food Science Text Series) 4th ed. 2014 Edition.
Vickie A. Vaclavik and Elizabeth W. Christian
4. Lawrie's Meat Science, Eighth Edition; Woodhead Publishing Series in Food Science, Technology and Nutrition; Fidel Toldra.
5. Flavor, Satiety and Food Intake Beverly Tepper and Martin Yeomans. ISBN: 978-1-119-04489-5

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester II
HS222D PAPER VI - NUTRITION THROUGH LIFE CYCLE
(Theory) SYLLABUS

Total Hrs 110

Objectives: To enable the students to

1. Understand the role of nutrition in different stages of life cycle.
2. Gain knowledge about the nutritional problems, its implications and appropriate diet during different life cycles.

Unit I Food Groups and Recommended Daily Allowance

Different food groups and planning diets using the Ready Reckoner to meet the requirement of different socio economic levels, Recommended Daily allowances for Indians- Basis for requirement, computation Comparison of India's Recommended allowances with that of U.K,

USA, and FAO/ WHO standards

Unit.II Nutrition in Pregnancy

Nutritional requirements in pregnancy, weight gain during pregnancy. Physiological cost of pregnancy, Nutritional complications of pregnancy. Effects of alcohol and smoking on foetal growth, RDA, balanced diet for pregnant woman using the Ready Reckoner.

Unit III - Nutrition in lactation

Nutritional needs in lactation, Physiological changes during lactation, common problems related to breast feeding, RDA, balanced diet for a lactating mother using the Ready Reckoner.

Unit III - Nutrition in infancy

Nutritional requirements of infants, assessment of Infant growth, growth charts- Indian, WHO, breast feeding, breast feeding versus formula feeding, weaning foods, food square, feeding the premature infant. Baby friendly hospitals, significance of the first 1000 days of life, RDA for Indian infants

Unit IV - Nutrition in Preschool age

Nutritional requirements in Preschool age, assessment of nutritional status of pre-schoolers, Growth and development of preschool children, common nutritional problems in pre-schoolers- macronutrient and micronutrient deficiencies, Severe acute malnutrition, Kwashiorkor, RDA, balanced diet for pre-schoolers using the Ready Reckoner.

Unit V- Nutrition during school age

Nutritional requirements, assessment of nutritional status, Physical development during school age, common nutritional deficiencies in children, Breakfast and scholastic performance, RDA, balanced diet for school going child using the Ready Reckoner.

Unit VI - Nutrition during adolescence

Nutritional requirements, assessment of nutritional status, Puberty and growth related changes, Common nutritional problems of adolescence-obesity/overweight/skipping meals, eating disorders, RDA, balanced diet for an adolescent using the Ready Reckoner.

Unit VII - Nutrition for the adults

Nutritional requirements for the adults, assessment of nutritional status, body composition of male and female, Non communicable diseases (NCDs) in adults, RDA for adults involved in all levels of physical activity, balanced diet for the adult using the Ready Reckoner.

Unit VIII - Nutrition for the aged

Nutritional requirements, assessment of the aged, Factors affecting food intake, nutritional problems seen in the aged, RDA, balanced diet for aged using the Ready Reckoner.

Related Experience

Assessment of nutritional status of children/adults/aged in their environment

Plan balanced diets for different individuals using the Ready Reckoner.

JOURNALS

1. Reports of the State of World's Children, Who and UNICEF, Oxford University.
2. Reports of National Family Health Survey, International Institute for Population Science, Mumbai.
3. World Development Reports, Investing in Health, World Development Indication.
4. Indian Journal of Medical Research, ICMR, New Delhi,
5. Indian Journal of Paediatrics,
6. Indian Journal of Nutrition and Dietetics, Avinashlingam Deemed University, Coimbatore.

TEXTBOOKS

1. Robinson C.H. , Lawler, M.R., Chenoweth, W.L., Garwich, A.E. Normal and Therapeutic Nutrition 7th Edition, Macmillan Publishing Co. New York 1994.
2. . Davidson,S. Passmore,R. Brook, J.F. and Truswell, Human Nutrition and Dietetics, 9th edition, F. and S Livingstone Ltd., Edinburgh and London 1993
3. Jelliffe, B.E. Assessment of the Nutritional status of the community, WHO, Geneva, 2nd edition 1989.
4. Shanti Gosh, The feeding and care of infants and young children, voluntary health association of India,, New Delhi 6th edition 1992.
5. Rao, D.H and Vijayaraghavan, K (1996), Anthropometric assessment of nutritional status in “Text Book of Human Nutrition”, New Delhi; (eds. Bamji, M.S, Rao, N.P and Reddy, V.); Oxford and IBH Publishing Co. Pvt. Ltd., P 515.
6. Srilakshmi, B (2008), “Dietetics”, New Delhi; New Age International (P) Ltd. Publishers, Pp 319-325.
7. Thimmayamma, B.V.S and Rao, P (1996), Dietary assessment as part of nutritional status in “Textbook of Human Nutrition”, New Delhi; (eds.

Bamji, M.S, Rao, N.P and Reddy, V.); Oxford and IBH Publishing Co. Pvt. Ltd., P 135.

8. Indian Council of Medical Research (2010), “Nutrient requirements and Recommended Dietary Allowances for Indians”, Hyderabad; National Institute of Nutrition, Pp 7-230.
9. Mahan, L.K and Stump, S.E (2004), “Krause’s Food Nutrition and Diet therapy”, Philadelphia; WB Saunders Co., Pp 534-555.
10. Emma, M.L (2008), “Handbook of Nutrition and Food”, London; CRC Press, Taylor and Francis group, Pp 373-388.
11. FAO/WHO/UNU (1985), "Energy and Protein Requirements", Geneva; World Health Organisation.
12. Gopalan, C; Sastri, B.V.R and Balasubramanian, S.C (1989), “Nutritive Value of Indian Foods”, Hyderabad; National Institute of Nutrition, ICMR, Pp 45-95.

WEBLIOGRAPHY

1. http://www.eeb.cornell.edu/biogeonanc/Food_Feed/table%201%20gopalan%20et%20al%201989.pdf _Nutritive Value of Indian foods

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester II
HS223D PAPER VII - ADVANCED FOOD TECHNOLOGY &
ENGINEERING
(Theory) SYLLABUS

Total hrs 110

Objectives: To enable the students to

1. Understand the role of technology in food processing.
2. To learn principles of principles of food processing methods.

UNIT I - Introduction to Food Technology

Concept of Food Technology, Classification of food – Organic food, fabricated foods, ethnic food, Physico-chemical properties of food – Boiling point, melting point, smoking point, freezing point.

UNIT II - Food Grain and Oil Technology

Processing Technology of cereals -Avario process, Conversion process, Malek process. Breakfast cereals – Processing- Batch cooking, continuous cooking, extrusion cooking. Processing technology of pulses - traditional and modern methods of milling. Processing technology of oil seeds – Oil expulsion and extraction, Textured protein products.

UNIT III- Dairy Technology

Special milk products – Homogenized, Reconstituted, Recombined and Toned milk.

UNIT III - Meat, Fish and Poultry Technology

Grading, meat quality. Application of freezing system in meat and fish processing. Egg-Quality parameters, Product - Egg powder.

UNIT IV - Beverage technology

Processing technology of alcoholic beverages – Wine making and Types- white, red and sparkling wine, Carbonated soft drinks – Ingredients and preservatives used in carbonation, Tea and coffee – General processing technique. Types – Green and Oolong Tea, Espresso and Instant Coffee.

UNIT V -Application of Bio-Technology in Food and Nutrition

Impact and significance of biotechnology on the nutritional quality of foods. Genetic Engineering in foods.

UNIT VI - Advances in Food Technology

Nutrigenomics, Nutraceuticals, Xenobiotics, Nano Technology in Foods, Single cell protein, Novel proteins.

UNIT VII- Food Engineering

Principles of food engineering, Mechanical Operations – mixing, filtration, clarification, and dehydration system, Mechanical separation, Food freezing – Individual Quick Freezing (IQF), Fluidized bed freezer, Cryogenic freezing.

UNIT VIII- Post-harvest technology

Need for post- harvest technology, Food loss in the Post- harvest period- Types and reasons for losses of food, extent of losses, Agents causing food loss- Control of spoilage agents.

UNIT IX- Storage of grains

Role of Food Corporation of India FCI, Central Warehousing Corporation CWC, State Warehousing Corporation SWC, Indian Grain Storage Institute IGSI, Save Grain Campaign SGC in controlling food losses.

UNIT X- Packaging Technology

Concepts, classification, packaging materials, Selection of packaging materials for specific food materials.

RELATED EXPERIENCE

Visit to Food Processing Plant.

BOOK REFERNCE

1. Fellows, P.J. 2000. Food processing Technology: Principles and Practice, Second Edition, CRC Woodhead Publishing Ltd., C
2. Von Loesecke, H.W. 1998. Food Technology Series: Drying and dehydration of foods, Allied Scientific Publishers, Cambridge.
3. Horseny R.C. 1986. Principles of Cereal Science and Technology. American Association of Cereal Chemicals, St. Paul MN.
4. Sahu, J.K Introduction to Advanced Food Process Engineering. 2014. CRC Press Reference 717 Pages - 91 B/W Illustrations. ISBN 9781439880715 - CAT# K13794.
5. Zeki Berk. 2015. Food Process Engineering and Technology (Second Edition) A volume in Food Science and Technology. ISBN: 978-0-12-415923-5.

WEB REFERENCES

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2. www.sciencedirect.com/science/book/9780124159235
3. onlinelibrary.wiley.com/doi/10.1002/9781118406281.fmatter/pdf
4. <https://www.elsevier.com>
5. https://www.researchgate.net/publication/304571979_Latest_Food_Technology

JOURNALS:

1. Food Technology, Journal of Institute of Food Technology, Illinois, U.S.A
2. Journal of Food Science and Technology by Association of Food Scientists and Technologists, India.
3. Food Technology, Abstracts, Central Food Technological Research Institute, Mysore.
4. Packaging in India, Indian Institute of packaging, Mumbai.
5. Journal of Technology, Institute of Technology, Illinois, U.S.2N.
6. Food Technology, Abstracts Control Food Technological Research Institute.
7. Advance Journal of Food Science and Technology
8. American Journal of Food Technology
9. Annual review of food science and technology.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester II
HS 224D PAPER VIII- APPLIED FOOD SCIENCE (Practical)
SYLLABUS

Total Hours 120

1. Sugar Cookery- sources, Crystallization of sugar, stages of sugar Cookery, fondant, fudge, caramel and brittles , Indian preparations (Halwa and Syrup of Gulab jamoon) coconut burfi, peanut brittle and an indigenous food item (eg. athirasam)
2. Starch cookery -use of flour mixtures, cereals and pulses, Microscopic examination of starch. Gelatinization of starch, preparation of dosai, iddli, appam, puri, chappathis and parathas (Batters and dough)
3. Demonstration of Bakery Products.
4. Fats-Smoking temperature-deep fat fried foods
5. Meat, fish and poultry- changes in cooking during different cooking methods and tenderness
6. Coagulation of egg proteins- Eggs cooked in shell, poached eggs, custards, egg white foams, Omelette, Cakes, Emulsion-mayonnaise.
7. Milk- principles involved in the preparation of tomato soup, cooking vegetables in milk, Cheese curry, setting of curds.
8. Fruit and vegetable cookery
9. Evaluating the acceptability of food through subjective and objective methods
10. Food preservation- Preparation of jams, jellies, squash, wine -dehydration, pickling

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester III
HS 231D PAPER IX – FOOD SAFETY AND QUALITY
ASSURANCE
(Theory) SYLLABUS

Total hrs 110

Objective

1. To enable the students to gain theoretical information and practical experience, directly and indirectly
2. To get a better understanding of food safety problems, their origin and solutions.
3. To ensure Food safety and quality in the food industry.

UNIT I - Food Safety Basics

Basic quality concepts, Food Hazards

UNIT II - Food Laws and Regulations

Food Safety and Standards Authority of India (FSSAI), The Prevention of Food Adulteration Act (PFA), The Bureau of Indian Standards (BIS), Agricultural Marketing Quality Certification Standard (AGMARK), Indian standard institute, International Organization for Standardization (ISI), Codex Alimentarius (CODEX), International Organisation for Standardisation (ISO).

UNIT III - Hazard Analysis Critical Control Point (HACCP)

Principles and pre- requisites of HACCP - Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), Good Agricultural Practice (GAP), Total Quality Management (TQM), Sanitation and safety in food services.

UNIT IV- Food Toxicology

Principles of toxicology, Toxic chemicals that cause diseases in humans.

UNIT V- Toxins in food

Natural toxins of importance in food- toxins of plant and animal origin; microbial toxins (e.g., bacterial toxins, fungal toxins and Algal toxins)

UNIT VI- Environmental contaminants and drug residues in food:

Fungicide and pesticide residues in foods; heavy metal and their health impacts; use of veterinary drugs (e.g. Malachite green in fish and β - agonists in pork); radioactive contamination of food, Food adulteration and potential toxicity of food adulterants.

UNIT VII -Processing contaminants

Indirect contaminants- contaminants during packaging, storage and transport: cleaners, sanitizers and cross contaminants.

RELATED EXPERIENCE

Visit to any food quality lab.

JOURNAL REFERENCES

1. Journal of Food: Microbiology, Safety & Hygiene.
2. Journal of Food Safety and Hygiene
3. Comprehensive Reviews in Food Science and Food Safety.
4. Journal of Food and Chemical Toxicology.
5. Journal of Food Quality and Preference.
6. Journal of Food Protection.

BOOK REFERENCES

1. Early, R. (2006) Guide to Quality Management Systems for the Food Industry, Blackie, Academic and professional, London.
2. Gould, W.A and Gould, R.W. (2005) Total Quality Assurance for the Food Industries, CTI Publications Inc. Baltimore.
3. Pomeraz, Y. and MeLoari, C.E. (2008) Food Analysis: Theory and Practice, CBS publishers and Distributor, New Delhi.
4. Bryan, F.L. (2007) Hazard Analysis Critical Control Point Evaluations A Guide to Identifying Hazards and Assessing Risks Associated with Food Preparation and Storage. World Health Organization, Geneva.
5. Kirk, R.S and Sawyer, R. (2005) Pearson's Composition and Analysis of Foods, Longman Scientific and Technical. 9th Edition, England.

6. FAO (2006) Manuals of Food Quality Control. 2-Additives Contaminants Techniques, Rome.
7. Pelczar, M.I., and Reid, R.D. (2009) Microbiology, 5th Ed., McGraw Hill Inc., New York.
8. James, M.J. (2007) Modern Food Microbiology, 2nd Ed., CBS Publisher, New Delhi
9. Adams, M.R., and Moss, M.G., (2005) Food Microbiology, 1st Ed., New Age International (P) Ltd., New Delhi.
10. Frazier, W.C. (2008) Food Microbiology, 4th Ed., McGraw Hill Inc., New York.
11. Doyle, P., Bonehat, L.R. and Mantville, T.J. (2007) Food Microbiology, Fundamentals and Frontiers, ASM Press, Washington DC.
12. The training manual for Food Safety Regulators. Vol.II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi.
13. AOAC International. (2005) Official methods of analysis of AOAC International. 17th Ed., current through 1st revision. Gaithersburg, MD, USA, Association of Analytical Communities.
14. Branen, A.L., Davidson, P.M. & Salminen, S. (2007) Food Additives, 2nd Ed., Marcel Dekker.
15. George, A.B. (2006) Encyclopedia of Food and Color Additives, Vol. III, CRC Press, LLC. Boca Raton, FL.
16. George, A.B. (2008) Fenaroli's Handbook of Flavor Ingredients, 5th Ed, CRC Press, LLC. Boca Raton, FL.
17. Madhavi, D.L., Deshpande, S.S., & Salunkhe, D.K. (2006) Food Antioxidants: Technological, Toxicological and Health Perspective, Marcel Dekker
18. Morton, I.D., & MacLeod, A.J. (2008) Food Flavors, Part A, B & C. Elsevier.
19. Nakai, S., & Modler, H.W. (2007) Food Proteins. Processing Applications. Wiley VCH.

20. The training manual for Food Safety Regulators. Vol.II- Food Safety regulations and food safety management. (2011) Food safety and Standards Authority of India. New Delhi
21. Mortimore, S., and Wallace, C., (2005) HACCP: A practical approach, 2nd Ed, Aspen Publication
22. Surak, J.G., and Wilson, S. (2007) American Society for Quality, 2nd Ed., Quality Press
23. Helferich, W., and Winter, C.K. (2007) Food Toxicology, CRC Press, LLC. Boca Raton, FL.
24. Shibamoto, T., and Bjeldanes, L. (2009) Introduction to Food Toxicology, 2nd Ed. Elsevier Inc., Burlington, MA.
25. Watson, D.H. (1998) Natural Toxicants in Food, CRC Press, LLC. Boca Raton, FL
26. Duffus, J.H., and Worth, H.G. J. (2006) Fundamental Toxicology, The Royal Society of Chemistry.
27. Stine, K.E., and Brown, T.M. (2006) Principles of Toxicology, 2nd Ed. CRC Press.
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WEB REFERNCES

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2. www.thanut-swu.com/images/BOT331/food%20quality%20assurance.pdf
3. www.sciencedirect.com/science/book/9781845690106
4. onlinelibrary.wiley.com/doi/10.1002/9781118846315.ch10/summary
5. www.value-chains.org/.../GTZ-Food_Quality_And_Safety_Referencebook-Ed_2007

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester III
HS 232D PAPER X – PUBLIC HEALTH NUTRITION
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hrs :110

Objectives:

To enable the students to

1. Gain insight into the public health problems and their implications
2. Develop skills in organizing and evaluating nutrition, projects in the community.
3. Appreciate the national and international contribution towards nutrition improvement in India

UNIT I - Public Health Nutrition – An Overview

Concept and importance of public health nutrition, public health issues and problems, Health care system in India, Role of public nutritionist in health care delivery.

UNIT II - Public Health Problems I

Grade of malnutrition, Protein Energy Malnutrition (PEM), Severe acute malnutrition (SAM); Micronutrient deficiencies – Vitamin. A, Iron Deficiency Anaemia (IDA), Iodine Deficiency Disorders (IDD), Zinc deficiency, Vitamin deficiencies – Beri-beri, Ariboflavinosis, Pellagra, Folic acid and B₁₂ deficiency, Scurvy, Rickets and Osteomalacia- prevalence and management.

UNIT III- Public Health Problems II

Incidence and prevalence of Communicable diseases – Tuberculosis, Cholera, Diarrhoea and AIDS Non-Communicable diseases- Obesity, Cardio-vascular diseases, Diabetes, Cancer-their preventive measures.

UNIT IV- Economics of Nutrition

Malnutrition and its economic consequences, Economics in Nutrition – Food security, food production and food pricing.

UNIT V- Assessment of nutritional status in Community settings

Methods of nutritional assessment -ABCD technique, Dietary assessment – family diet survey, Assessment of dietary intake of individuals, qualitative diet surveys, institutional diet surveys, food balance sheet.

UNIT VI-Strategies to combat Public Health Problems

Improving food and nutrition security – Green, White and Blue revolution, Nutrition education Principles of planning – where, when, whom, Kitchen garden, Audio-Visual Aids, food fortification, food enrichment, Public Distribution System, Primary Health Centres (PHC).

UNIT VII- Nutrition Intervention programmes

National Nutrition Policy, Preschool feeding programme, Integrated Child Development Services Scheme (ICDS), Mid-day meal Programs (MDM), Special Nutrition Programs (SNP),Wheat Based Nutrition Programs (WNP), Applied Nutrition Programs (ANP), Balwadi Nutrition Programs (BNP),National Nutritional Anaemia Prophylaxis Program (NNAPP), National Program for Prevention of Blindness due to Vitamin A Deficiency, National Goitre Control Program, Food and Nutrition Board (FNB),and other programmes. Organised by the governmental and non- governmental agencies for the vulnerable sections of the population.

UNIT VIII - Role of national and International Organizations to combat malnutrition

International organizations concerned with food and nutrition Food and Agriculture Organisation (FAO), World Health Organisation (WHO), United Nations Children Fund (UNICEF), Co-operative for Assistance and relief everywhere (CARE), Action for Food Production (AFPRO), Child Welfare Services (CWS), Corporate Social Responsibility Programmes (CRS), World Bank and others. National organizations concerned with Food and Nutrition- Indian Council of Medical Research (ICMR), Indian Council for Agricultural Research (ICAR), Central Health Education Bureau (CHEB), Central Social Welfare Board (CSWB), State Social Welfare Board (SSWB).

RELATED EXPERIENCE

Weighment of food intake by a family for 7 days (report)

Visiting a few local feeding centres and evaluating the conduct of the programmes.

Planning, conducting and evaluating nutrition education programme in rural areas.

JOURNALS

1. Proceedings of the Nutrition Society of India, Nutrition Society of India, New Delhi.
2. Nutrition Newsletter, Food and Agricultural Organization of the United Nations.
3. Ecology of Food and Nutrition, Gordon and Breach Science Publishers, London.
4. Social Welfare, Central Social Welfare Board, New Delhi.
5. WHO Chronicle, WHO, Geneva.
6. Swasth Hind, Central Health Education Bureau, New Dan.
7. Journal of Home Science, Sri Avinashlingam Home Science College, Coimbatore.
8. The Indian Journal of Nutrition and Dietetics, Sri Avinashlingam Home Science College, Coimbatore.

BOOK REFERENCES

1. Gulani, K.K. 2005. Community Health Nursing. 1st Edition. Kumar Publishing House. New Delhi. Pp – 662 to 664.
2. Gupta M.C., Mahajan B.K. 2003. Textbook of Preventive and Social Medicine. Third Edition. Jaypee Brothers Medical Publishers. New Delhi. India. Pp- 355-357.
3. Kishore J. 2007. National Health Programmes of India. 7th Edition Century Publication. New Delhi.Pp- 340-361.

WEB REFERENCES

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3. http://wcd.nic.in/sites/default/files/nnp_0.pdf
4. "Nutrition and Anaemia" (PDF). Retrieved 2009-11-26.
5. "A campaign to end malnutrition in Bihar". www.ideasforindia.in.
6. National nutrition problems in India- a power point presentation - <https://www.slideshare.net/harshahirdyani/national-nutritional-programmes-in-india-43239816>
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UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester III

**HS233D PAPER IX – NUTRITION FOR SPORTS, SPACE
TRAVEL AND DURING DISASTERS**

Theory (SYLLABUS)

Total Hrs 110

Objectives: To enable the students to

1. To get an insight into the role of nutrition in different Sports activities, Space travel and various natural disasters
2. To provide nutritional support for sportspersons, for space travel and during disasters.

UNIT I - Exercise and Metabolism

Energy pathways during exercise of various duration and intensity- aerobic, anaerobic, very short duration, long duration, endurance, fatigue, onset of fatigue, nutrition and fatigue.

UNIT II - Carbohydrates

Carbohydrates and Exercise, Endurance training and fatigue, carbohydrate loading

UNIT III - Fats

Fats and exercise, Fat loading, Ergogenic effects of fats in exercise

UNIT IV - Proteins

Proteins and exercise, Protein requirements of sports –power sports/endurance athletes/

UNIT V - Ergogenic Aids

Commonly used Supplements

UNIT VI- Fluids & electrolytes

Water requirements, temperature regulation, loss of water and electrolytes during exercise, fluid and electrolyte replacements, sports drinks.

UNIT VII - Requirements & Nutritional problems

Macronutrients and micronutrients, requirements of sports person involved in various levels of activity, Balanced diets for individuals involved in various sports; Sports anaemia, female athlete triad, Eating disorders.

UNIT VIII-Space Travel

Dietary modification and nutritional requirements- Space diet, Space foods

UNIT IX - Disasters and Nutrition

Impact of the disasters (earthquakes, extreme weather conditions, war) on food availability.

RELATED EXPERIENCE

1. Provide nutritional counselling and suggests pre, post event food options to sportsperson
2. To identify nutritional deficiencies in the female sportsperson.

JOURNALS

1. Journal of Sports Nutrition and Exercise metabolism
2. Journal of Sports Science and Medicine
3. Physical Sports Medicine
4. Journal of Allied Sport Psychology
5. Physiology of Sports Medicine
6. Journal of Strength conditioning Research
7. Current Sports Medicine Reports
8. Sports Medicine
9. British Journal of Sports Medicine
10. Medicine Science of Sports Exercise
11. International Journal of Sports Nutrition and Exercise Metabolism

12. Clinical Sports Medicine

TEXTBOOKS

1. International Life Sciences Institute, Sports Authority of India and National Institute of Nutrition (2009), “Nutrition and Hydration guidelines for Excellence in Sports Performance”, Hyderabad; ILSI, SAI & NIN, Pp 1-60.
2. McArdle, W.D; Katch, F.I and Katch, V.L (2009), “Exercise Physiology-Energy, Nutrition and Human Performance”, Philadelphia; Lippincott Williams and Wilkins, 5th edition
3. Williams, M.H (2005), “Nutrition for Health, Fitness and Sport”, Boston; MacGraw-Hill Higher Education, Pp 294-313, 397- 400.
4. Jamison D.T, Breman J.G, Measham A.R, et al., editors: The International Bank for Reconstruction and Development / The World Bank; Washington DC New York: Oxford University Press; 2006

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2. http://www.athleticadvisor.com/weight_room/athletic_nutrition.htm
3. <http://www.nhs.uk/Conditions/Sports-injuries/Pages/Causes.aspx>
4. <http://www.nimh.nih.gov/health/publications/eating-disorders/complete-index.shtml>
5. <http://www.nof.org/>
6. <http://www.sportsmedicine.about.com/cs/nutrition/a/012604.htm>
7. <http://www.time-to-run.com/>
8. <http://www.wordiq.com/definition/Sports>
9. www.innvista.com/ailments/anemias/sports-anemia
10. <http://www.fao.org/3/a-i4434e.pdf> *Disasters*
11. https://www.cartercenter.org/resources/pdfs/health/ephti/library/lecture_notes/health_extension_trainees/disasterpreventionpreparedness.pdf *Disasters*

12. <http://nptel.ac.in/courses/105105110/pdf/m6102.pdf>- *Drought and Flood management*
13. http://www.wamis.org/agm/meetings/anadia06/Sivakumar_Overview.pdf-*an overview of Disasters*
14. <https://spaceflight.nasa.gov/shuttle/reference/factsheets/food.html>- *space foods*
15. https://www.nasa.gov/audience/forstudents/postsecondary/features/F_Food_for_Space_Flight.html -*space foods*
16. <https://airandspace.si.edu/exhibitions/apollo-to-the-moon/online/astronaut-life/food-in-space.cfm>- *space foods*

UNIVERSITY OF KERALA
MSc. HOME SCIENCE-SEMESTER SYSTEM (2018)
BRANCH XD – D- FOOD AND NUTRITION
SEMESTER - III
HS234 D – PAPER XII – STATISTICS AND COMPUTER
APPLICATIONS
(Common to all Branches X - B, C, D and E)
(Theory) SYLLABUS

Total Hrs : 110

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications.

Unit I- Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II – Data Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III – Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean.
- Measures of dispersion – range, variance, standard deviation, standard error, co efficient of variation.
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive.

Unit IV – Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools.

Unit V – Normal Distribution and its Properties

- Normal distribution – importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI – Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- ‘t’ test, paired ‘t’ test, ‘F’ Test

Unit VII- Chi square test and its interpretation

- Chi square test and its interpretation – general features, goodness of fit
- Independence of Attributes

Unit VIII – Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX – Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X – Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and II errors.

Unit XI – Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS

- Histogram, pie diagram, scatter diagram graphs – presentation using SPSS / excel.

Unit XII – Presentation using Power point

- Creating presentations.

References:

1. Gosh, B.N. Scientific methods and social research, Sterling Publishers Pvt. Ltd. New Delhi.
2. Kothari, C.R. 2014. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi.
3. Sharma, B.A.V. Prasad, R D and Satyanarayana, P. 1990. Research Methods in Social Science, Sterling Publishers Pvt. Ltd.
4. Agarwal, Y.P. 1990. Statistical Methods, Sterling Publishers Pvt. Ltd,
5. Gupta, S. 2001. Research Methodology and Statistical Techniques., Deep and Deep, New Delhi.
6. Gupta, S.P. 1996 Practical Statistics, 37th edn, S. Chand, New Delhi.
7. Gupta, S.C. 2000 Fundamentals of Statistics, Himalaya Publishers, Mumbai.
8. Gupta, S.P. 2000. Statistical Methods, Sultan Chand & sons, New Delhi.
9. Nagar, A.L. & Das, R.K1997.. Basic Statistics, 2nd ed., OUP, Delhi.

UNIVERSITY OF KERALA

M.Sc. HOME SCIENCE - SEMESTER SYSTEM

(2018 Admission)

BRANCH X D- FOOD AND NUTRITION

Semester IV

HS 241 D PAPER XIII- BIO CHEMISTRY

SYLLABUS

(Theory)

Total hrs 110

Objectives:

To enable the students to

1. Obtain depth in the study of Biochemistry of major nutrients and metabolic pathways.
2. Understand the application of Biochemistry in the field of Foods and Nutrition.

UNIT I - Carbohydrates

Structure and properties of monosaccharides, Pentose (Ribose, deoxyribose) hexoses (glucose, galactose and fructose), disaccharides (Structural, elicitation is not necessary) polysaccharides (starch, glycogen and cellulose).

UNIT II - Metabolism of Carbohydrates

Glycogenesis, glycolysis, TCA cycle, HMP shunt, energy production in the above cycles, gluconeogenesis.

UNIT III - Lipids

Classification, reactions of fatty acids, Triglycerides, phospholipids and other conjugated Lipids, characteristics of fats, (free and esterified).

UNIT IV - Metabolism of lipids

Oxidation of fatty acids, Biosynthesis of fatty acids, biosynthesis of cholesterol.

UNIT V - Proteins

Structure, classification, properties of proteins and amino acids.

UNIT VI - Metabolism of Proteins

General Pathways of Metabolism of Amino Acids: Deamination, Transamination, Decarboxylation, Urea Formation, Synthesis and Breakdown of Haemoglobin, Bile Pigments, Bio-Synthesis of Proteins.

UNIT VI - Nucleic acids

Composition, functions and classification Isolation, structure and properties of DNA and RNA (M-RNA, T-RNA and R-RNA) Biosynthesis and breakdown of purine and pyrimidine.

UNIT VII - Techniques in biochemistry

Chromatography - Principles and applications of Chromatography; Electrophoresis Principles and applications of electrophoresis; Colorimetry - Principles and applications of colorimetry, fluorimetry, spectrophotometry; Isotopes - Radioactive and stable isotopes used in biological investigations and food preservation.

Related experiences

Visit to a lab to observe the various techniques in biochemistry

REFERENCES

1. Harold. A. Harper, Review of Physiological Chemistry, 16th Ed. The Kothari book Depot, Bombay
2. Albert, L. Lehninger, Biochemistry 2nd Ed. The Johns Hopkins University school of Medicine, 1975
3. White, A., Andler, P. and Smith, E.L. Principle of Biochemistry, 5th ed. Mc Graw Hill, Kogakusha. Ltd. 1975
4. Henry, R, Mahler and Eugene H. Cordes, Basic Biological Chemistry, 2nd ed., Harper International Ed., Harper and Row Publications, New York, 1968
5. West, E.S. Todd, W.R. Mason, H.S and Van Burggen, J.T. Text Book of Biochemistry, IV Ed . Mac millan Co., New York, 1968
6. Nikola, Experimental Methods, Biophysical Methods, John Wiley & Sons, Inc.
7. Sepal, Biochemical calculation, Holland Publishing Co, 1970
8. Viewing Instrumental methods, chemical analysis, Mc Graw Hill Co.

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10. Harold Varley, Practical Clinical Biochemistry, Arnold Pvt Ltd,1975
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UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester III
HS 242 D PAPER XIV- ADVANCED HUMAN NUTRITION
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hr.: 110

Objectives:

To enable the students to

1. Obtain in-depth knowledge of both macro and micro nutrients.
2. Understand the role of each nutrient in various stages of life and diseases due to their deficiencies and excess intake.

UNIT I - Energy

Energy content of food, energy measurement, direct and indirect calorimetry, basal metabolism, physical activity, specific dynamic actions of food, energy requirements, ICMR standards, energy balance and control of body weight.

UNIT II- Carbohydrates

Nutritional importance of Carbohydrates; Dietary fibre- Components, types, sources, significance, consequence of over consumption.

UNIT III- Proteins and Amino acids

Source of energy, protein requirements- ICMR, computation of protein requirements through factorial method and balance study, dietary protein quality.

UNIT IV- Lipids

Lipids transformation in the liver, lipotropic factors, role of essential fatty acids, deposition of fats in the body. Effects of deficiency and excess of fats.

UNIT IV- Macro elements

Calcium- Calcium in skeleton and other tissues, measurements, bone mass, effect of diet and immobilization, calcium absorption and utilization, calcium balance, calcium requirements, source, hypercalcemia and hypocalcaemia. Phosphorus- Concentration

in the body, phosphorus - calcium ratio, phosphorus absorption and utilization, phosphates in blood.

UNIT V -Micro elements

Iron- Iron intake, sources, availability, absorption, transport, utilization and storage, Fluorine- physiology and sources. Role of fluoride in the prevention of dental caries and toxic effects of fluoride.

UNIT VI- Trace elements

The concept of trace elements, mode of action of trace elements, trace elements interaction. Physiology, sources, deficiency and toxicity of the following -Iodine and thyroid, recommended intakes and deficiency.

UNIT VII - Vitamins- Fat soluble vitamins

Introduction - units of measurements of Vitamins, Fat soluble vitamins- Classification, physiological action, transport-, storage, RDA and deficiency diseases- Toxicity.

UNIT VIII -Water Soluble Vitamins

Classification, physiological action, transport, storage, RDA, deficiency diseases and Toxicity.

BOOKS REFERENCES

1. Gray and Hill, S. The complete Handbook of Nutrition, Robert Spell and Sons Publishers Inc. New York, USA, 1972.
2. World Review of Nutrition and Diabetics, All the Volumes Published.
3. Brown, H. Protein Nutrition, Published by Charles, V. Thomas Publisher, Springfield, Illinois, USA. 1974.
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JOURNALS REFERENCES

1. All Monographs and Technical Reports of FAO and WHO.
2. The Nutrition Foundation Inc. Nutrition Reviews, Present Knowledge in Nutrition, Fourth Edition, New York, Washington, 1976.
3. Beston, G. H and McHenry, W. W. Nutrition- A Comprehensive Treatise- Volume I, II and III. Academic Press, 1977.

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOOD AND NUTRITION
Semester IV
HS 243 D PAPER XV - BIO CHEMISTRY (Practical)
(Theory) SYLLABUS

Total hrs. 110

1. Qualitative estimation a. Sugars- mono, di and poly -saccharides.. Proteins and amino acids.
2. Analysis of blood for a. Glucose b. Haemoglobin c. Cholesterol d. Serum phospholipid e. serum protein
3. Analysis of Urine for a. Creatinine b. Urea c. Calcium, d. phosphorus e. Vitamin C.
4. Operation of pH meter determination of serum proteins. Electrophoresis, isoelectric precipitation of protein.
5. Estimation of RNA & DNA
6. Chromatography of sugar amino acids- ascending; circular, column and chromatography of carotenoids.
7. Study of Electrophoresis technique.
8. Visit to Isotopes Laboratory observation of counting (Report)

UNIVERSITY OF KERALA
M.Sc. HOME SCIENCE - SEMESTER SYSTEM
(2018 Admission)
BRANCH X D- FOODS AND NUTRITION
Semester IV
HS 244 D PAPER XVI – ADVANCED HUMAN NUTRITION
(Practical)
SYLLABUS

Total
Hours 120

1. Experiments in Nutrition: (Individual Experiments)-
 - (a) Analysis of Food for Fibre, Moisture, Nitrogen by Macro Kjeldhal method, Ash,
Calcium, Phosphorus, Iron, Carotene, Vitamin C and Fat.
 - (a) Fats, sap value, iodine number, Acid number, Extraction of lipids from egg Yolk.
 - (b) Sorensen formal titration.
2. Food Adulteration, test for common adulterants.
3. Estimation of titrable acidity and alkalinity of fruit juices.
4. Therapeutic tube feed preparation – high calorie and low calorie feeds, high protein feeds.
5. Report of Four Weeks internship in a hospital with dietary department/food quality lab/food industry/food research institute.

M.Sc. HOME SCIENCE

BRANCH X-E

NUTRITION AND DIETETICS

SEMESTER SYSTEM

2018 ONWARDS

COURSE STRUCTURE & MARK DISTRIBUTION

M.Sc. HOME SCIENCE

Branch XE Annexure Nutrition and Dietetics

Sem-ester	Paper Code	Title of the Paper	Distribution of hours per semester	Instructional hours/week		ESE duration	Maximum Marks		
				L	P	(Hrs)	CA	ESA	Total
I	HS211E	Human Physiology	110	6	-	3	25	75	100
	HS212E	Medical Nutrition Therapy	110	6	-	3	25	75	100
	HS213E	Nutritional Biochemistry	110	6	-	3	25	75	100
	HS214E	Research Methodology	120	7	-	3	25	75	100
	Total for S1			450	25	-	-	100	300
II	HS221E	Applied Food Science	110	6	-	3	25	75	100
	HS222E	Nutrition in Critical Care	110	6	-	3	25	75	100
	HS223E	Medical Nutrition Therapy (Practical)	110	-	6	3	25	75	100
	HS224E	Internship & Case study in a life style disease management clinic	120	-	7	-	25	75	100
	Total for S2			450	12	13	-	100	300
III	HS231E	Hospital Internship	110	-	6	-	25	75	100
	HS232E	Public Health Nutrition	110	6	-	3	25	75	100
	HS233E	Applied Nutrition	110	6	-	3	25	75	100
	HS234E	Statistics and Computer Applications	120	7	-	3	25	75	100
	Total for S3			450	19	6	-	100	300
IV	HS241E	Paediatric & Geriatric Nutrition	110	6	-	3	25	75	100
	HS242E	Advanced Human Nutrition	110	6	-	3	25	75	100
	HS243E	Pathophysiology in Diseases	110	7	-	3	25	75	100
	HS244E	Techniques in Clinical Nutrition (Practical)	120	-	6	3	25	75	100
	Total for S4			450	19	6	-	100	300
	Dissertation							100	100
	Comprehensive Viva							100	100
	Grand Total		-	75	25	-	400	1400	1800
L-Lecture, P-Practical, ESE-End semester examination, CA-Continuous assessment ESA-End semester assessment.									

UNIVERSITY OF KERALA

MSc –HOME SCIENCE-Semester System

(2018 ADMISSION ONWARDS)

Branch XE NUTRITION AND DIETETICS

Semester –I

- 1.1 Human Physiology
- 1.2 Medical Nutrition Therapy
- 1.3 Nutritional Biochemistry
- 1.4 Research Methodology

Semester –II

- 2.1 Applied Food Science
- 2.2 Nutrition in Critical Care
- 2.3 Medical Nutrition Therapy (Practical)
- 2.4 Internship & Case study in a life style disease management clinic

Semester –III

- 3.1 Hospital Internship
- 3.2 Public Health Nutrition
- 3.3 Applied Nutrition
- 3.4 Statistics and Computer Applications

Semester –IV

- 4.1 Paediatric & Geriatric Nutrition
- 4.2 Advanced Human Nutrition
- 4.3 Pathophysiology in Diseases
- 4.4 Techniques in Clinical Nutrition (Practical)
- 4.5. Dissertation
- 4.6. Viva Voce

Branch X E Nutrition and Dietetics

Semester	C.A*	ESA**	Total
SemesterI	100	300	400
SemesterII	100	300	400
SemesterIII	100	300	400
SemesterIV	100	300	400
Dessertation			100
Comprehensive Viva Voce			100
Grand Total			1800

- *C A Continuous Assessment
- **ESA End semester assessment

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester I
Paper I - HS211E - Human Physiology
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hrs: 110

Objectives

- To enable the students to understand the metabolic changes in different health and disease conditions
- To enable the students to gain knowledge about nutritional physiology

Unit I – Blood

- Composition & Functions of the blood
- Cellular Content of Blood- their properties and functions
- Blood Groups, Blood transfusion, Bleeding disorders
- Lymph, Tissue fluids, reticuloendothelial system, Blood volume, coagulation

Unit II – Circulatory system

- Structure of heart, Physiology and properties of cardiac muscle
- Cardiac cycle, Cardiac output, Heart rate, Heart sounds, and ECG

Unit III – Digestive system

- Physiology of digestive system-Structure, function, secretions
- Movements of gastrointestinal tract
- Digestion of protein, carbohydrate and fat

Unit IV – Respiratory system

- Structure of Respiratory organ
- Mechanism of respiration
- Exchange and transport of gases
- Respiratory volumes, Respiratory adjustments in health and diseases, spirometry

Unit V – Excretory system

- Physiology of the kidney, urine formation, micturition
- Normal and abnormal constituents of urine
- Elementary principles of dialysis, maintenance of homeostasis

Unit VI – Endocrine system

- Endocrinology – Hormones - pituitary, thyroid, parathyroid, adrenal, sex hormones, pancreas
- Effects of Hypo and Hyper functions of the glands

Unit VII – Nervous system

- Neurons, Synapse and neurotransmitters
- Central and Peripheral nervous system, Autonomic nervous system
- Brain: Parts and functions
- Spinal cord, CSF, Reflex action
- The physiology of sleep, Circadian rhythm

Unit VIII – Sense Organs

- Eye: Anatomy of eye and physiology of vision
- Ear: Structure of ear and physiology of hearing
- Nose: sense of smell
- Tongue: Sense of Taste
- Skin: Structure & Functions of skin

Unit IX – Skeletal and Muscular System

- Bone: Types, Functions Structure and Development of bone
- Vertebral Column, Thoracic cage
- Joints: Types of joints, Main synovial joints of the limbs
- Classification & function of muscles
- Anatomy and Physiology of skeletal muscle

Unit X – Reproductive System

- Female reproductive organs-menstrual cycle
- Male reproductive system organs
- Process of reproduction

Unit XI – Immunology

- Natural immune system, cell mediated and humoral immunity
- Components of immune mechanism (cellular and chemical)
- Role of inflammation / defense (acute and chronic)
- Immunoglobulins and production of antibodies
- Disorders –Immune deficiency
- Hypersensitivity

References

1. NM Muthaya (2010). Human Physiology. 4th ed. Jaypee Brothers PVT LTD, New Delhi.
2. Vidya Ratan (2004) Handbook of Human Physiology. 7th ed. Jaypee Brothers PVT LTD, New Delhi.
3. Sudha V Khanorkhar (2012) Insights in Physiology. 1st ed. . Jaypee Brothers PVT LTD, New Delhi.
4. R Chandramouli (2010) Textbook of Physiology. 3rd edition. . Jaypee Brothers PVT LTD, New Delhi.
5. R L Bijlani & S Mnajunatha (2010) Understanding Medical Physiology. 4th edition. Jaypee Brothers PVT LTD, New Delhi.

UNIVERSITY OF KERALA
M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester I

Paper II - HS212E - Medical Nutrition Therapy
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hours: 110

Objectives

- To enable the students to understand the role of nutrition for good health
- To obtain knowledge of different Therapeutic diets and their preparation
- To develop capacity and attitude for taking up dietetics as a profession

Unit I – Introduction to Dietetics

- Meaning and scope of dietetics
- Role of dietician in hospital and community
- Registered Dietitian, IDA, NSI

Unit II – Hospital Diets

- Hospital Diet - Clear fluid, Liquid diet, Soft diet, Balanced normal diet
- Feeding methods, Enteral nutrition, Calculation of diet using the Ready Reckoner 1200 cal, 1500cal, 1800 cal, 2000cal
- Commercial supplement available in the market
- Assessment of patient's needs, SGA
- Diet counselling using foods models, standardized vessels, food samples; education of the patient and follow up
- Common biochemical tests affecting nutritional needs–lipid profile, AC/PC, Liver Function tests, Kidney function tests, Homocysteine

Unit III – Febrile and Surgical Conditions

- Fevers of short duration
- Chronic fevers and infections, Dengue, Chikungunya, SARS
- Pre-operative and post-operative nutrition
- Tube feeding and parenteral feeding

Unit IV – Disease of the gastrointestinal tract

- Peptic ulcer, Diarrhoea, Constipation, Crohns' Disease, Lactose intolerance, Ulcerative colitis, Diverticulitis, Tropical sprue, Irritable Bowel Syndrome
- Diseases of the liver, gall bladder

Unit V – Metabolic disorders

- Diabetes Mellitus- Type 1, Type 2, Gestational diabetes
- Food exchange lists, My Plate Planner, Insulin carb counting, glycemic index
- Hypo and Hyperthyroidism, Gout

Unit VI – Obesity and Underweight

- Causes, Prevention, Dietary modifications
- Conservative management
- Surgical procedures- Sleeve gastrectomy, Post Bariatric surgery diet
- Popular diets in the modern society: low calorie diets, Atkins diet, Paleo diet

Unit VII – Cardiovascular Diseases

- Atherosclerosis, Myocardial Infarction, Heart Failure
- Blood Pressure & Hypertension, causes, prevention and dietary modification

Unit VIII – Disease of the Kidney

- Nephritis - acute and chronic
- Glomerulonephritis, Nephrosclerosis, Kidney stones
- Uremia, proteinuria, hematuria and hemoglobinuria, azotemia
- ESRD, Dialysis

Unit IX – Diet in Genetic diseases

- Galactosemia, Phenylketonuria, Glycogen storage disease

Unit X – Cancers

- Types of cancers and diet related carcinogens
- Anti-cancer agents in foods
- Cancer cachexia
- Feeding the cancer patients, nutrient needs, Neutropenic diet

Unit XI – Diet for Allergy

- Allergy and its manifestations, diet

UNIT XII – HIV/AIDS

- Dietetic management of HIV/AIDS

References

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
3. Escott-Stump, S. (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkins.
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5. Williams, S.R. (1993): Nutrition and Diet Therapy, 7 th Edition, Times Mirror/Mosby College Publishing.
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Journals

1. World Review of Nutrition and Dietetics
2. Journal of the American Dietetic Association
3. American Journal of Clinical Nutrition
4. European Journal of Clinical Nutrition
5. Nutrition Reviews

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Semester I

Paper III – HS213E – Nutritional Biochemistry
(Theory) Syllabus

Total hours: 110

Objectives

- To enable the students to learn the chemistry, properties and metabolism of macronutrients
- To understand the biophysical techniques

Unit I - Introduction to nutritional biochemistry

- Meaning, development and contemporary interests

Unit II - Carbohydrate metabolism

- Chemistry, classification, properties
- Metabolism with energetics - Glycolysis, TCA cycle, Gluconeogenesis, Glycogenesis, Glycogenolysis, HMP pathway
- Electron transport chain, oxidative phosphorylation, electron transport inhibitors
- Biosynthesis of Vitamin C

Unit III - Fat metabolism

- Chemistry, classification, properties - fatty acids, phospholipids, steroids, eicosanoids
- Metabolism of fatty acids, cholesterol and phospholipids
- Lipogenesis, Bile salts, Fatty liver, Ketosis
- Hyperlipoproteinaemias

Unit IV - Protein metabolism

- Chemistry, classification, properties, metabolism: transamination, deamination and decarboxylation
- Amino acid metabolism : essential and non-essential

- Urea cycle, Metabolism of haemoglobin and bile pigments

Unit V - Nucleic acid metabolism

- Composition, Functions, Classification, DNA and RNA – properties, differences and types
- Metabolism of nucleic acids: purines and pyrimidines
- Protein synthesis

Unit VI – Enzymes

- Definition, Classification, specificity, inhibition, factors influencing enzyme activity, co-enzymes
- Role of enzymes in metabolism and clinical diagnosis
- Biomarker enzymes : Heart, liver and kidney

Unit VII – Hormones

- Mode of action of hormones in carbohydrate and fat metabolism

Unit VIII - Biophysical Techniques

- Separation of sugars and amino acids by chromatography
- Electrophoretic separation of protein, colorimetry, spectrophotometry & radioimmunoassay (Principle & Procedure)
- Atomic absorption spectroscopy and flame photometry (Principle & Procedure)
- PCR (Principle & Procedure)
- Radio isotopes in clinical diagnosis

Unit IX - Xenobiotics

- Artificial Detoxification in the body
- Metabolism of Xenobiotics

Unit X - Antioxidants and Free Radicals

- Artificial and diet derived antioxidants, mode of action, role of free radicals in human pathology and disease

Related Experience

- Visit to a research institute to observe the biophysical techniques in nutrition.

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Semester I

Paper IV – HS214E – Research Methodology

(Common to all Branches X-B, C, D and E)

(Theory) SYLLABUS

Total Hours: 120

Objectives:

- To have a basic knowledge about research and its methodologies.
- To identify and define appropriate research problems.
- To organize and conduct research in a more appropriate manner.
- To understand various steps in writing a research report, thesis and research proposal.

UNIT I : Research Methodology

Meaning, objectives and significance of research. Types of research, research approaches and scientific methods. Research process and criteria of good research.

UNIT II : Definition and identification of a research problem

Selection of research problem, justification, limitations and delimitations of the problem, Development of hypothesis and its significance, hypothesis testing, Variables – types and characteristics.

UNIT III : Review of Literature

Functions, sources, steps in carrying out a literature review.

UNIT IV : Research Design

Meaning and needs, features of a good design; Important concepts relating to research design; Different research designs – exploratory, descriptive and diagnostic (epidemiology and clinical trials); Pilot studies.

UNIT V: Methods and tools of Data Collection –

Interview, Case study, Survey, Scaling methods, Schedules and questionnaires, Reliability and validity of measuring instruments.

UNIT VI : Sampling Design

Population and sample, Steps in Sample Design, Criteria for selecting a sampling procedure, Different types of sampling techniques – probability sampling and non-probability sampling. Merits and demerits of sampling.

UNIT VII : Organisation, Analysis and interpretation of Data

- a. Organisation – editing, coding and classifying – tabulation
- b. Analysis – descriptive and statistical.
- c. Interpretation
- d. Formulation of conclusions and generalisations.

UNIT VIII : Ethics in Research in Home Science

Research strategies in Home Science – Issues in design, conduct, analysis and interpretation – Descriptive studies (correlation, case studies, cross-sectional surveys) – Analytical studies (observational, case-control, cohort studies – prospective and retrospective) – experimental studies (clinical / intervention trials including randomized controlled trials)

UNIT IX : Scientific Writing as a Means of Communication

Principles and steps in report writing - Different forms – research articles / notes, review articles, monographs, dissertations and reports. Components of dissertation / research report / article. Importance of illustrations. Methods of presenting research findings – oral / poster. Formulation of research design / proposal.

References

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9. Devadas, R.P. A Handbook on methodology of research. Sri Ramakrishna Vidyalyaya, Coimbatore, 1989.
10. Gosh B.N. Scientific methods and social research.4th edition, Sterling Publishers Pvt. Ltd. New Delhi, 2012.
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12. Kulbir Singh, Sidhu. Methodology of Research in Education, Sterling Publishers Pvt. Ltd. New Delhi,

13. Sharma, B.A. V, Prasad, R.D. and Styanarayana, P. Research methods in Social Science, Sterling Publishers Pvt. Ltd.
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Semester II

Paper V – HS221E – Applied Food Science

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total Hours: 110

Objectives

- To gain knowledge on sources and properties of food
- To develop skills to judge the quality of cooked foods
- To enable application of principles while preparing and cooking foods

Unit I – Physiochemical Changes

- Introduction to food science
- Different methods of cooking
- Physical and physiochemical changes in foods in relation to cookery, Gel formation, denaturation of proteins
- Properties of colloids, emulsions, stabilizers
- Browning reactions; Enzymatic and non-enzymatic changes in cooking

UNIT II – Carbohydrates

- Sugar Cookery — sources, uses and properties, crystallization of sugar, stages of sugar cookery
- Starch Cookery: Sources and use of starch; factors affecting, Gelatinization, syneresis and retrogradation
- Types of Flours, baking qualities
- Bread making – role of ingredients, portion of ingredients, leavening agents

Unit III – Proteins

- Meat - Structure, cuts of meat and post mortem changes — methods of cooking
- Fish - Kinds of fish, constituents, selection and cooking
- Eggs — structure, composition and selection, Coagulation

- Milk and milk products, constituents, processing - clarification, homogenization, pasteurization, cheese making. –basic steps
- Pulses and legumes processing-germination, fermentation

Unit IV – Fats and Oils

- Sources and extraction of edible fats and oils - characteristics of fats, physical, chemical properties.
- Changes in fat during storage and cooking — uses of fat-shortening, emulsifying and creaming agent

Unit V – Fruits and Vegetables

- Structure, pigments and acids in vegetables and fruits,
- Role of pectic substances.
- Effect of acids, alkalis and heat on pigments

Unit VI – Food Preservation

- Needs, benefits, principles and methods of food preservation
- Use of irradiation and microwave for preservation

Unit VII – Product Development and evaluation

- Sensory evaluation of food. Factors to be considered in food testing. Types of sensory tests. Sensory panel.
- Planning, standardization and testing of a new food product

Unit VIII – Food additives and adulteration

- Definition and types of Food Additives
- Food Adulteration

Unit IX - Convenience foods,

- Fast foods, ready to eat foods
- Definition, merits, demerits

References

1. Charley, H. (1982): Food Science (2nd edition), John Wiley & Sons, New York.
2. Potter, N. and Hotchkiss, J.H. (1996): Food Science, Fifth edition, CBS Publishers and Distributors, New Delhi.
3. Belitz, H.D. and Grosch, W. (1999): Food Chemistry, (2nd edition), Springer, New York.
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5. Bowers, J. (1992): Food Theory and Applications, (2nd edition), MacMillan Publishing Co., New York.
6. Marwaha, S.S. and Arora, J.K. (2000) Food Processing : Biotechnological Applications Asiatech Publishers Inc, New Delhi.

Journals

1. Journal of Food Science
2. Advances in Food Research
3. Journal of Food Science and Technology
4. Journal of Agricultural and Food Chemistry

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Semester II

Paper VI – HS222E – Nutrition in Critical Care
(Theory) Syllabus

Total Hours: 110

Objectives

- To understand the physiology, metabolism and special requirements of the critically ill
- To familiarize the special nutritional support techniques and feeding formulations for critically ill

Unit I - Nutritional screening and nutritional status assessment of the critically ill

Unit II - Enteral Nutrition

- Indications, sites, tubes and care, types of feeds, advantages and disadvantages of home based feed, commercial formula feeds, requirements of nutrients according to problems viz renal, respiratory.

Unit III - Total Parenteral Nutrition

- Indications, importance, long term effects, uses, sites, care, composition.

Unit IV - Understanding special nutritional requirements

- Goals and monitoring therapy in critical illnesses like: stroke, surgery, dialysis, respiratory failure, multi organ failure, cancer, hepatic failure, GI tract surgery, neurosurgery, trauma, sepsis, burns and ketoacidosis.

Unit V -Nutritional supports

- Role of immune enhancers, conditionally essential nutrients, immune suppressants and special diets in critical care

Unit VI - Complications of nutritional support system

- Refeeding syndrome and rehabilitation diets

Unit VII - Diet related ethical issues in the terminally ill

Unit VIII - Stress

- Definition, Types, Stressors, Psychosomatic disorders
- Biological effects on brain, cardiovascular system and respiratory system
- Stress enhancing foods and nutrients and nutritional management of stress.

References

1. Maurice E. Shils, James A. Olson, Moshe Shike, 2006. Modern Nutrition in Health & Diseases – Eds 10th edition, Vol I and II, Lippincott Williams & Wilkins Publication.
2. Kathleen Mahan & Krause, Sylvia Escott Stump, 2004. 11th edition. Food, Nutrition and Diet Therapy Sylvia Escott Stump, Saunders Co.
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Semester II

Paper VII – HS223E – Medical Nutrition Therapy Practical
Syllabus

Total Hours: 110

Objectives

- To have practical experience in planning and preparation therapeutic diets
 - To develop skills in customized diet planning
 - To enable the use of ready reckoner in computing nutritional requirements
1. Diet in disorders of energy balance- obesity, underweight.
 2. Nutrition in fever and infections- typhoid, tuberculosis, AIDS.
 3. MNT for upper gastrointestinal tract diseases- peptic ulcer, gastric surgery.
 4. MNT for lower gastrointestinal tract diseases- constipation, diarrhoea, steatorrhoea.
 5. Disease of large intestine - diverticular disease, irritable bowel syndrome
 6. MNT for diseases of hepato- biliary tract- hepatitis, cirrhosis, hepatic coma, cholecystitis, pancreatitis
 7. MNT for Kidney diseases – nephritis, renal calculi
 8. MNT for life style diseases – Diabetes- IDDM, NIDDM, hypertension, atherosclerosis, Cancer

Related Experience

- A record to be maintained and submitted for external valuation.

References

1. Mahan,L.K and Shump,S.E.Krause's Food Nutrition & Diet therapy, W.B Saunder's Company,XII edition, 2001.
2. Shills,E.M, Olson,S.J and Shiks,M.C.Modern Nutrition in health and disease Lea and Febringer,Philadelphia,8th edition,1994.
3. Srilakshmi,B.Dietetics,New Age International Publishers Pvt Ltd,Chennai,2006.
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Semester II

**Paper VIII – HS224E – Internship & Case Study at a Life Style
Disease Management Clinic**

SYLLABUS

Total Hours: 120

Objectives

- To understand principles and develop skills for nutritional management of life style diseases in clinical practice
- To interact effectively with patients and their families to give nutritional care and advice in order to achieve health and well being
- To develop standards of dietetic practice consistent with expanding database and advancement in the field of clinical dietetics
- To develop expertise in doing case study, preparation of teaching aids and acquiring professional competency.

A full time one and a half month internship in a multi-specialty hospital under a registered dietitian during the semester wherein the student should undergo training in diet counselling and should complete 3 case study on any diseases listed below and should submit a report on internship and case study for evaluation.

Contents:

A. Case – Study Approach – Interpretation of patient data handling:

- i) Nutritional status and Diagnostic tests
- ii) Drawing-up of patients prescription
- iii) Discharge diet plans and follow-up where possible
- iv) Acceptability and compliance
- v) Preparation of teaching aids
- vi) Monitoring patients progress for any 3 of the following:
 1. Weight imbalance- Obesity, thyroid disorders, PCOD
 2. Diabetes Mellitus

3. Renal disorders
4. Liver disorders
5. Respiratory disease
6. Cardiovascular disease
7. Cancer

B. Internship Report

- i. Hospital- History, Organization, Departments, Functions, Services
- ii. Case Study – 3 life style disease with teaching aids
- iii. Internship Outcome

A report to be maintained and submitted for external valuation

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Semester III

Paper IX – HS231E – Hospital Internship

Syllabus

Total hours: 110

Objectives

1. To attain exposure to the dietary department in a hospital setting
2. To understand the duties and responsibilities of dietitians
3. To cater the needs of patients
4. To possess a sound knowledge of food and nutrition, quantitative food production, biological sciences, pathophysiology of disease, and the ability to act in a variety of capacities in clinical, administrative, and community settings.
5. To become competent to be a dietitian and to set up a diet clinic

A full time one and a half month internship in a multi-specialty hospital under a registered dietitian during the semester wherein the student should undergo training in dietary department and should understand the duties of dietitian and working of dietary department and complete 3 case study on any diseases and should submit a report on internship and case study for evaluation.

Contents:

A. Case – Study Approach – Interpretation of patient data handling:

- i) Nutritional status and Diagnostic tests
- ii) Drawing-up of patients prescription
- iii) Discharge diet plans and follow-up where possible
- iv) Acceptability and compliance
- v) Preparation of teaching aids
- vi) Monitoring patients progress for any 3 diseases

B. Internship Report

- i) Hospital- History, Organization, Departments, Functions, types of feeds, supervision and preparation of feeds, Schedule & Services with emphasis to dietary department
- ii) Case Study – 3 disease with teaching aids
- iii) Internship Outcome

A Report to be maintained and submitted for external valuation.

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Semester III
Paper X – HS232E – Public Health Nutrition
(Common to Branches X D & X E)
(Theory) SYLLABUS

Total hours: 110

Objectives

- To gain insight into the public health problems and their implications
- To develop skills in organizing and evaluating nutrition projects in the community
- To appreciate the national and international contribution towards nutrition improvement in India

Unit I - Public Health Nutrition – An Overview

- Concept and importance of public health nutrition
- Public health issues and problems
- Health care system in India
- Role of public nutritionist in health care delivery

Unit II - Public Health Problems I

- Grade of malnutrition, PEM, Severe acute malnutrition (SAM)
- Micronutrient deficiencies – Vit. A, IDA, IDD, Zinc deficiency
- Vitamin deficiencies – Beri-beri, Ariboflavinosis, Pellagra, Folic acid and B₁₂ deficiency, Scurvy, Rickets and Osteomalacia
- Prevalence and management

Unit III - Public Health Problems II

- Incidence and prevalence of Communicable diseases – Tuberculosis, Cholera, Diarrhoea and AIDS
- Non Communicable diseases- Obesity, Cardio-vascular diseases, Diabetes, Cancer and their preventive measures

Unit IV - Economics of Nutrition

- Malnutrition and its economic consequences
- Economics in Nutrition – Food security, food production and food pricing

Unit V - Assessment of nutritional status in community settings

- Methods of nutritional assessment - ABCD technique
- Dietary assessment – family diet survey, assessment of dietary intake of individuals, qualitative diet surveys, institutional diet surveys, food balance sheet

Unit VI - Strategies to combat Public Health Problems

- Improving food and nutrition security - Green White and Blue revolution
- Nutrition education - Principles of planning – where, when, whom, Kitchen garden, AV Aids, food fortification, food enrichment, PDS, PHC

Unit VII - Nutrition Intervention programmes

- National Nutrition Policy
- Preschool feeding programme: Integrated Child Development Services Scheme (ICDS)
- Mid-day meal Programs (MDM)
- Special Nutrition Programs (SNP)
- Wheat Based Nutrition Programs (WNP)
- Applied Nutrition Programs (ANP)
- Balwadi Nutrition Programs (BNP)
- National Nutritional Anaemia Prophylaxis Program (NNAPP)
- National Program for Prevention of Blindness due to Vitamin A Deficiency
- National Goitre Control Program
- Food and Nutrition Board (FNB) and other programmes organised by the governmental and non- governmental agencies for the vulnerable sections of the population.

Unit VIII - Role of national and International Organizations to combat malnutrition

- International organizations concerned with food and nutrition - FAO, WHO, UNICEF, CARE, AFPRO, CWS, CRS, World Bank and others.
- National organizations concerned with Food and Nutrition - ICMR, ICAR, CHEB, CSWB, SSWB

RELATED EXPERIENCE

Visiting a few local feeding centre and evaluating the conduct of the programmes. Planning, conducting and evaluating nutrition education programme in rural areas.

References

1. Oxford textbook of Public Health Ed. Roger Detels, James McEwen, Robert Beaglehole, and Heizo Tanaka Oxford University Press (OUP) 4th Edition: 2002.
2. Public Health at the Crossroads – Achievements and Prospects. Robert Beaglehole and Ruth Bonita 2nd Edition Cambridge University Press
- 3) Maxcy-Rosenau-Last Public Health & Preventive Medicine, Fourteenth Edition Ed Robert Wallace, MD, et al.
- 4) Epidemiology and Management for Health Care: Sathe , P.V. Sathe, A.P., Popular Prakashan, Mumbai, 1991
- 5) International Public Health: Diseases, Programs, Systems, and Policies by Michael Merson, Robert E Black, Anne J Mills - Jones and Bartlett Publishers
- 6) Preventive and Social Medicine, K Park, Bansaridas Bhanot Publishing House.

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Semester III

**Paper XI – HS233E – Applied Nutrition
(Theory) SYLLABUS**

Total hours: 110

Objectives

- To understand the significance of nutrition in the different stages of life cycle and in special conditions
- To gain knowledge about functional foods and nutraceuticals in health and disease.

Unit I - Menu Planning

- Rationale for menu planning
- Factors affecting food choice - Nutritional factors, other factors
- Menu Planning for adults - Recommended daily allowances, portion sizes for different age groups
- Food composition tables and their significance

Unit II - Nutrition during Pregnancy and lactation

- Physical and physiological changes during pregnancy
- Placental transfer of nutrients and maternal weight gain
- Nutritional needs during pregnancy
- Maternal nutrition and foetal outcome
- Nutritional management of high risk pregnancies
- Nutrition related disruptions in fertility (under and over nutrition)
- Physiology of lactation
- Human milk composition
- Infant growth and development
- Nutrient requirements during lactation, Galactogogues
- Breast feeding Vs bottle feeding, Benefits of Breast Feeding, Contraindications

Unit III - Nutrition in Infancy and preschool children

- Growth and development
- Nutrient needs and recommended dietary allowances
- Feeding of Low birth weight and premature infants
- Weaning: Homemade foods versus commercial foods
- Problems of infant and nutrition

Unit IV - Nutrition in School-going children and adolescents

- Nutritional requirements for School going children
- Factors to be considered while planning diet for school going children
- Influence of television on eating habits of school going children, packed lunch
- Adolescents: Sequence of developmental changes, Role of hormones on growth, development and maturation
- Nutritional requirements during adolescence
- Challenges in adolescence: weight control, skipping meals, anorexia, fast foods, smoking, alcohol and drug abuse, teenage pregnancy

Unit V - Nutrition during old age

- Physiological changes associated with ageing and complications
- Changing body composition and techniques for measuring body composition
- Nutritional requirements and dietary modification in the diet of the elderly

Unit VI - Nutrition for fitness and Sports

- Physical fitness and its measurement
- Measurement of body composition
- Sources of energy in the body – carbohydrates, protein and fat
- Factors affecting fuel utilization
- Nutritional requirements of athletes
- Hydration –water and other fluids
- Sport supplements
- Pre-competition, during competition and post competition meal

Unit VII - Nutrition in special conditions

- General adaptive mechanisms to extreme environments
- Nutritional requirements for extreme environments
- Health Hazards associated with extreme environments and high altitude
- Nutritional requirements for space missions

Unit VIII - Nutritional regulation of Gene Expression, Epigenetic & Nutrigenomics

- Introduction to Gene Expression
- Role of specific nutrients in controlling gene expression – Proteins, Lipids
- Definition and principles – epigenetics, nutrigenomics

Unit IX - Functional foods and nutraceuticals in health and disease

- History, Definition, Classification, Sources, Physiological effects - effects on human health and potential applications in risk reduction of diseases of the following:
 - Prebiotics
 - Probiotics
 - Synbiotics
 - Non-digestible carbohydrates/oligosaccharides: Dietary fibre, Resistant starch, Gums
 - Other Food Components
 - Polyphenols: Flavonoids, catechins, isoflavones, tannins
 - Phytoestrogens and Phytosterols
 - Pigments : Lycopene, Curcumin
 - Organo sulphur compounds

Related experience

Plan balanced diets for different age groups

References

1. Food, Nutrition and Diet Therapy – Kathleen Mahan & Krause, Sylvia Escott Stump, Saunders 2004
2. Modern Nutrition in Health & Diseases – Eds – Maurice E. Shils, James A. Olson, Moshe Shike, 10th edition, Vol I and II, Lippincott Williams & Wilkins Publication 2006.
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Journals

1. Journal of American Dietetic Association USA – The American Dietetic Association.
2. Nutrition Reviews, New York Springer Verlag
3. The American – Journal of Clinical Nutrition – USA Official Journal of the American Society for Clinical Nutrition Inc
4. The Indian Journal of Nutrition and Dietetics

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Branch XE Nutrition and Dietetics

Semester III

Paper XII – HS234E – Statistics and Computer Application

(Common to all Branches X - B, C, D and E)

(Theory) SYLLABUS

Total hours: 120

Objectives

- To enable the students to develop knowledge in statistical tools and computer applications

Unit 1 - Introduction to Statistics

- Definition, understanding of statistical measures
- Popular concepts and misuse of statistics

Unit II - Data Management and Analysis

- Quantitative analysis, descriptive statistics, inferential statistics: Uses and limitations
- Summation sign and its properties
- Proportions, percentages, ratios

Unit III - Measures of central tendency and dispersion

- Mean, median, mode, arithmetic mean and its uses, mid – range, geometric mean, weighted mean
- Measures of dispersion - range, variance, standard deviation, standard error, coefficient of variation
- Grouped data-frequency distribution, histogram, frequency polygons, percentiles, quartiles, ogive

Unit IV - Data Analysis

- Coding of data
- Parametric and non-parametric tests
- Use of statistical tools

Unit V - Normal Distribution and its Properties

- Normal distribution –importance and properties of normal distribution
- Theory of attributes,
- Probability, use of normal probability tables
- Area under normal distribution curve

Unit VI - Large and Small Sample tests and interpretation

- Z-test for single proportions and difference between proportions
- Large sample test for single mean and difference between means
- Small sample tests- 't'-test, paired 't'-test, 'F' Test

Unit VII - Chi square test and its interpretation

- Chi square test and its interpretation-general features, goodness of fit
- Independence of Attributes

Unit VIII - Correlation and Regression and its interpretation

- Basic concepts, linear regression and correlation coefficient
- Regression, Rank correlation

Unit IX - Analysis of Variance and its interpretation

- One-factor analysis of variance
- Two-factor analysis of variance

Unit X - Concepts of Hypothesis

- Null and Alternative Hypothesis
- Type I and type II errors

Unit XI - Introduction to SPSS and Excel: its Applications

- Application of excel and SPSS
- Histogram, pie diagram ,scatter diagram graphs - presentation using SPSS
/excel

References

1. Gosh, B. N. Scientific methods and social Research , Sterling Publishers Pvt Ltd.New Delhi
2. Kothari, C. R. Research Methodology – methods and techniques, 3rd edition, New age International Publishers, New Delhi, 2014
3. Sharma, B. A. V. Prasad, R D and Satyanarayana, P. Research Methods in social science, Sterling Publishers Pvt.Ltd ,1985.
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7. Gupta, S.C. Fundamentals of Statistics, Himalaya Publishers, Mumbai, 2000.
8. Gupta, S.P. Statistical Methods, Sultan Chand & Sons, New Delhi, 2000.
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Semester IV

Paper XIII – HS241E – Paediatric and Geriatric Nutrition
(Theory)Syllabus

Total hours: 110

Objectives

- Realize the importance of nutritional care and nourishment of children and elderly
- Understand the specific needs of children and the effects of various diseases on nutritional status and nutritional requirements

Unit I –Paediatric Nutritional Assessment

- Anthropometric measurements, biochemical parameters, clinical and dietary data
- Measuring, recording and plotting growth

Unit II - Identification of sick new born

- Detection of abnormal signs- cyanosis, jaundice, respiratory distress, bleeding, seizures, refusal of feed, abdominal distention, failure to pass meconium and urine, Apgar Score

Unit III - Nutritional considerations for LBW children, and children with developmental disabilities

- Premature, LBW babies, children with developmental disabilities- Autism Spectrum Disorders, Attention Deficit Hypertensive Disorder(ADHD); characteristics, causes, complications, Dental carries, allergies, Feeding methods, diet pattern/principles
- Failure to thrive, underweight nutrition

Unit IV - Immunization Schedule

- During pregnancy, infancy and childhood, types of vaccines, controversies in vaccine mandates

Unit V - Nutritional management in various diseases

- Childhood Obesity
- Inborn Errors of Metabolism: Nutritional Care Management
 - Disorders of Carbohydrate metabolism - Galactosemia, Glycogen storage disorder, lactose intolerance, fructose intolerance
 - Disorders of amino acid metabolism – alkaptonuria, Phenylketonuria, Maple syrup urine disease, Homocystinemia
- **Gastrointestinal diseases and disorders:** Diarrhoea, gluten sensitive enteropathy, inflammatory bowel disease, constipation
- **Neurological disease in children:** causes - congenital, pre/perinatal, acquired; Epilepsy (Ketogenic diets), Cerebral palsy, Neural tube defects, mental retardation, Down syndrome
- **Pulmonary disease in children:** perinatal respiratory distress, pneumonia, tuberculosis, cystic fibrosis
- **Renal disease in children:** Nephritic syndrome, acute and chronic renal failure

Unit VI - Geriatric Nutrition

- **The ageing process:** Theories of ageing, physiological, socio- psychological, and metabolic aspects of ageing, body composition changes and impact on health and nutritional status, special problems of elderly
- **Nutritional and health status of elderly:** Factors influencing food and nutrient intake - health status including lifestyle pattern, medication
- **Chronic degenerative diseases** – Osteoporosis, Dementia, Alzheimer's disease, Parkinson's disease and nutritional problems of the elderly-their causes, management and prevention
- **Policies and Programmes** of the Government sector pertaining to the elderly

Related Experience

1. Measuring, recording and plotting growth of infants
2. Problems of elderly- Report

References

1. Garrow, J.S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone, New York
2. Mahan,L.K and Escott Stump,S. 2000.Krause's Food Nutrition and Diet Therapy.10th edition,W.B Saunders Ltd.
3. Modern Nutrition in Health & Diseases – Eds – Maurice E. Shils, James A. Olson, Moshe Shike, 10th edition, Vol I and II, Lippincott Williams & Wilkins Publication 2006.
4. Escott-Stump,S. 1998. Nutrition and Diagnosis Related Care.4th edition, Williams and Wilkins.
5. Davis,J and Sherer,K.1994.Applied Nutrition and Diet therapy for Nurses .2nd edition.W.B Saunders Co.
6. Guyton, A.C and Hall, J.E, 2006. Textbook of Medical Physiology. 11th edition. W.B Saunders Co.
7. Madhu Sharma, 2009. Basic Paediatric Nutrition. Jaypee Publishers(P) LTD. New Delhi.
8. Rimple Sharma, 2013. Essentials of Paediatric Nursing. Jaypee Publishers (P) LTD. New Delhi.
9. Padmaja, A, 2016. Text book of Child Health Nursing. Jaypee Publishers (P) LTD.New Delhi.
10. Rabindra Nath Roy & Indranil Saha, 2013.Mahajan & Gupta Text Book of Preventive and Social Mediicne. Jaypee Publishers (P) LTD. New Delhi.
11. Chernoff Ronni, c2014.Geriatric Nutrition: The Health Professionals Handbook 4th ed. Burlington, M A : Jones & Bartlett Learning. CRC Press.

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M.Sc. Home Science

Branch XE Nutrition and Dietetics

Semester IV

Paper XIV – HS242E – Advanced Human Nutrition

(Common to Branches X D & X E)

(Theory) SYLLABUS

Total hours: 110

Objectives:

To enable the students to

1. Obtain in-depth knowledge of both macro and micro nutrients.
2. Understand the role of each nutrient in various stages of life and diseases due to their deficiencies and excess intake.

UNIT I - Energy

- Energy content of food, energy measurement, direct and indirect calorimetry, basal metabolism, physical activity, specific dynamic actions of food, energy requirements, ICMR standards, energy balance and control of body weight.

UNIT II- Carbohydrates

- Nutritional importance of Carbohydrates; Dietary fibre- Components, types, sources, significance, consequence of over consumption.

UNIT III- Proteins and Amino acids

- Source of energy, protein requirements- ICMR, computation of protein requirements through factorial method and balance study, dietary protein quality.

UNIT IV - Lipids

Lipids transformation in the liver, lipotropic factors, role of essential fatty acids, deposition of fats in the body. Effects of deficiency and excess of fats.

UNIT IV Macro elements

- Calcium- Calcium in skeleton and other tissues, measurements, bone mass, effect of diet and immobilization, calcium absorption and utilization, calcium balance, calcium requirements, source, hypercalcemia and hypocalcaemia. Phosphorus- Concentration in the body, phosphorus - calcium ratio, phosphorus absorption and utilization, phosphates in blood.

UNIT V Micro elements

- Iron- Iron intake, sources, availability, absorption, transport, utilization and storage, Fluorine- physiology and sources. Role of fluoride in the prevention of dental caries and toxic effects of fluoride.

UNIT VI Trace elements

- The concept of trace elements, mode of action of trace elements, trace elements interaction. Physiology, sources, deficiency and toxicity of the following -Iodine and thyroid, recommended intakes and deficiency.

UNIT VII. Vitamins- Fat soluble vitamins

- Introduction - units of measurements of Vitamins, Fat soluble vitamins- Classification, physiological action, transport-, storage, RDA and deficiency diseases- Toxicity.

UNIT VIII. Water Soluble Vitamins

- Classification, physiological action, transport, storage, RDA, deficiency diseases and Toxicity.

References

1. Gibney M.J. Introduction to Human Nutrition, 2nd edition, Wiley- Blackwell Publishers, 2009.
2. Modern Nutrition in Health & Diseases – Maurice E. Shils, James A. Olson, Moshe Shike, 10th edition, Vol I and II, Lippincott Williams & Wilkins Publication 2006.
3. Food, Nutrition and Diet Therapy – Kathleen Mahan & Krause, Sylvia Escott Stump, Saunders 2004
4. Nutrition Science, B. Srilakshmi, 5th edition, New Age International Publishers, 2016.

Journals

1. Nutrition Reviews
2. Journal of Nutrition
3. American Journal of Clinical Nutrition
4. British Journal of Nutrition
5. European Journal of Clinical Nutrition
6. International Journal of Vitamin and Nutrition Research
7. International Journal of Food Science and Nutrition
8. Nutrition Research
9. Ann Nutr Metab

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M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester IV

Paper XV – HS243E – Pathophysiology in Diseases
(Theory) SYLLABUS

Total hours: 110

Objectives

- To enable the students to understand the biochemical and physiological changes in disease conditions
- Relate an understanding of normal body functions to the pathologic changes that occur as a result of illness, as well as the body's ability to compensate for these illness-related changes
- Assess the multiple pathological factors which affect the patient's clinical presentation
- To be able to process the data available from history, physical signs and initial investigations of the selected clinical cases to achieve a meaningful conclusion about the possible diagnosis.

Unit I - Concepts of pathophysiology and adaptation in metabolic stress

- Cellular response to injury and injurious agents
- Systemic inflammatory response
- Multiple organ dysfunction syndrome
- Metabolic response to Stress and physiologic effects
- Pathophysiology of head injury and major burns
- Cellular proliferation and cancer

Unit II - Food drug and nutrient interactions

- Pharmacologic aspects of food-drug interactions- Pharmacodynamics, Pharmacokinetics, Pharmacogenomics
- Risk factors of food-drug interactions
- Effects of food on drug therapy
- Effects of drugs on nutrition and nutritional status

Unit III - Pathogenesis of obesity, malnutrition and starvation

- Pathogenesis, Metabolic changes

Unit IV - Pathophysiology of gastrointestinal tract diseases

- Manifestations of gastrointestinal dysfunction
- Pathophysiology of:-
 - Indigestion and dyspepsia, Gastritis, Peptic ulcer, Carcinoma of stomach, Dumping syndrome
 - Celiac disease, Inflammatory bowel diseases- Crohn's disease, Ulcerative colitis, Irritable bowel syndrome, Diverticulosis

Unit V - Pathophysiology of liver diseases and metabolic disorders

- Progression of liver diseases, metabolic and nutritional implications, role of alcohol, biochemical and pathophysiological changes in Diabetes mellitus, hypo and hyperthyroidism

Unit VI - Pathophysiology of cardio-vascular diseases

- Pathophysiology of Atherosclerosis, Thrombosis
- Alterations of cardio-vascular functions, metabolic and nutritional implications
- Dyslipidemias, Hypertension

Unit VII - Renal and urological biochemistry and pathophysiology

- Manifestations of renal diseases
- Alterations of renal and urinary tract function
- Pathophysiology of Nephritis, Nephrotic syndrome, Renal failure, ESRD, Kidney stones

Unit VIII - Organ Function Tests

- Liver, kidney, thyroid, pancreatic and gastric function tests (2 each)

References

1. Food, Nutrition and Diet Therapy – Kathleen Mahan & Krause, Sylvia Escott Stump, Saunders 2004 11th edition.
2. Chatterjea, M.N and Shinde, R. Textbook of Medical Biochemistry, JayPee Brothers. Medical Publishing Pvt Ltd. New Delhi. 2007 and Seventh edition.
3. Lehninger, A.L, Nelson, D.L and Cox, M.M. Principles of Biochemistry. CBS Publishers, Jain Bhavan, Bhala Natu Nagar. 2004 and Fourth edition.

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M.Sc. Home Science
Branch XE Nutrition and Dietetics
Semester IV

Paper XVI – HS244E – Techniques in Clinical Nutrition
Syllabus (Practicals)

Total hours: 120

Objectives

- To develop skills in the estimation of biochemical parameters
- To understand the levels of biochemical parameters in health and disease
- To develop skills in biophysical techniques in clinical nutrition

1. Analysis of blood for

- a) Glucose
- b) Haemoglobin
- c) Cholesterol
- d) Serum A/G ratio and total protein
- e) Serum Vitamin A

2. Analysis of urine for

- a) Creatinine
- b) Urea
- c) Calcium
- d) Vitamin C
- e) Protein
- f) Glucose

Related Experience

- A record to maintained and submitted for external valuation
- A Visit report on biophysical techniques observed in a research centre

References

1. Boyer, R. (2000). 3rd Ed. Modern Experimental Biochemistry. Person Education, Asia.
2. Dawes, E.A. (1980) 6th Ed. Quantitative Problems in Biochemistry. Longman Group Ltd.
3. Khosla, B.D., Garg, V.C. and Khosla, A. (1987). 5th Ed. Senior Practical Physical Chemistry. R. Chand & Co. New Delhi.
4. Bhagya, D (2015) Techniques in Clinical Nutrition: A Manual. ISCA, Indore.1-68.
5. Raghuramulu N.; Madhavan Nair and K. Kalyanasundaram, S. (1983). A Manual of Laboratory Technique. NIN. ICMR.
6. Sharma, B.K. (1999). 8th Ed. Instrumental Methods of Chemical Analysis. Gel Publishing House.
7. Srivastava, A.K and Jain, P.C. (1986). 2nd Ed. Chemical Analysis: An Instrumental Approach. S Chand and Company Ltd.
8. Varley, H.; Gowenlock, A.H. and Bell, M. (1980). 5th ed. Practical Clinical Biochemistry. Heinemann Medical Books Ltd.