

M.A./M.Sc. Human Development 2022-23

Years	Paper Code	No.	Paper Title	T+P	Credit
2022 I st Semester	A130701T	I	Research Methods	T	4
	A130702T	II	Statistics and Computer Application	T	4
	A130703T	III	History and Theories of Human Development	T	4
	AI30704 T	IV	Methods of Studying human	T	4
	A130705P	V	Practical based on 1,2,3,4	P	4
II Semester	AI30801T	I	Advanced study in Human Development	T	4
	A130802T	II	Management of Programme for Children and Families	T	4
	A130803T	III	Adolescence and Youth	T	4
	A130804T	IV	Principles of Guidance and Counselling	T	4
	A130805P	V	Practical based on 1,2,3,4	P	4
	A130806R	VI	Pilot survey and synopsis presentation	R	8
III Semester	AI30901T	I	Advanced study in Human Development II	T	4
	A130902T	II	Early childhood care Education	T	4
	A130903T	III	Culture and Physiology	T	4
	A130804T	IV	Study of family in Society	T	4
	A130805P	V	Practical based on I,II,III,IV	P	4
IV Semester	AI31001T	I	Persons with Disabilities	T	4
	AI31002T	II	Scientific Writing	T	4
	AI31003T	III	Development of creativity	T	4
	AI31004T	IV	Care of Elderly	T	4
	A131005P	V	Practical based on I,II,III,IV	P	4
	A131006R	VI	Dissertation	R	8

M.A./M.Sc. I Semester I Paper I

Research Methods (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130701T	Course Title : Research Methods	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture - 40		

Objectives:

- To understand the significance of statistics and research methodology in Home science research.
- To understand the types, tools and methods of research and develop the ability to construct data gathering instruments appropriate to the research design.
- To understand and apply the appropriate statistical technique for the measurement scale and design.

Contents:

Unit I

No.of Lecture-10

- Science, scientific methods, scientific approach.
- **Role of statistics and research in Home Science discipline.**

- **Types of Research:** Historical, descriptive, experimental, case study, social Research, participatory Research.
- **Definition and Identification of a Research Problem**
 - Selection of research problem
 - Justification
 - Theory, hypothesis, basic assumptions, limitations and delimitations of the problem.

Unit II

No. of Lecture-10

- **Types of variables**
- **Theory of probability**
 - Population and sample
 - Probability sampling: simple random, systematic random sampling, two stages and multi stage, cluster sampling.
 - Non-Probability sampling: purposive, quota and volunteer sampling/snowball sampling.

Unit I

No. of Lecture-10

- **Basic principles of Research Design**
 - Purposes of research design: Fundamental, applied and action, exploratory and descriptive, experimental, survey and case study, ex-post facto, longitudinal and cross sectional, co-relational
- **Qualitative Research Methods:**
 - Theory and design in qualitative research

- Definition and types of qualitative research
- Methods and techniques of data collection
 - Group Discussion
 - Interview : Key informants, in-depth interviews
 - Observations
 - Social mapping
 - Participatory rapid assessment
 - Participatory learning assessment

Unit IV

No. of Lecture-5

- **Data Gathering Instruments:**
 - Observation, questionnaire, Interview, scaling methods, case study, home visits, reliability and validity of measuring instruments.
- **Scales of Measurement and the appropriate statistical techniques.**

Unit V

No. of Lecture-5

- **Critical analysis of research.**
- **Writing a research proposal.**
- **Analysis of data and research report.**

References

1. Bandarkar, P.L. and Wikinson T.S. (2000): Methodology and Techniques of Social Research, Himalaya Publishing House, Mumbai.
2. Bhatnagar, G.L. (1990) ; Research Methods and Measurements in Behavioural and Social Sciences, Agri, cole publishing Academy, New Delhi.

M.A./M.Sc. I Semester I Paper II

STATISTICS & COMPUTER APPLICATIONS (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130702T	Course Title : STATISTICS & COMPUTER APPLICATIONS	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 30		

Objectives

- To understand the role of statistics and computer applications in research
- To apply statistical techniques to research data for analysing and interpreting data meaningfully.

Note : Students should be given hands-on experience to use appropriate software packages for selected statistical analysis.

Contents

Unit I

No. of Lecture-10

- **Conceptual understanding of statistical measures.** Classification and tabulation of data. **Measurement of central tendency, measures of variation**
- **Frequency distribution, histogram, frequency, polygons, Ogive.**

- **Binomial distribution**
- **Normal distribution** – Use of normal probability tables

Unit IV

No. of Lecture-8

- **Parametric and non-parametric tests.**
- **Testing of hypothesis.** Type I and Type II errors. Levels of significance
- **Chi-square test.** Goodness of fit. Independence of attributes 2x2 and rxc contingency tables.

Unit III

No. of Lecture-5

- **Application of student ‘t’ test for small samples.** Difference in proportion for means and difference in means.
- **Correlation, coefficient of correlation, rank correlation**

Unit IV

No. of Lecture-7

- **Regression and prediction**
- **Analysis of variance** – One way and two-way classification.
- **Experimental Designs**
 - completely randomized design
 - randomized block design
 - Latin square design

M.A./M.Sc. I Semester I Paper III

APPLIED PHYSIOLOGY (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130703T	Course Title : APPLIED PHYSIOLOGY	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 50		

Objectives

This course will enable students to:

- Advance their understanding of some of the relevant issues and topics of human physiology.
- Enable the students to understand the integrated function of all systems and the grounding of nutritional science in Physiology.
- Understand alterations of structure and function in various organs and systems in disease conditions.

Contents

Unit I

No. of Lecture-10

- **Cell structure and function**

Levels of cellular organisation and function- organelles, tissue, organs and systems- Brief review. Cell Membrane and intercellular communication, Regulation of cell multiplication

- **Nervous System**

- Review of structure and function of neuron, conduction of nerve impulse, synapses, role of neurotransmitters.
- Organisation of central nervous system, structure and function of Brain and spinal cord, Afferent and efferent nerves, Blood Brain Barrier, CSF, Hypothalamus and its role in various body functions-Obesity, sleep, memory.

Unit II

No. of Lecture-10

- **Endocrine System**

- Endocrine glands – structure, function, role of hormones, regulation of hormonal secretion. The neuroendocrine axis. Disorders of endocrine glands. Emphasis on physiology of diabetes and stress hormones.

- **Sense organs**

- Review of structure and function. Role of skin, eye, ear, nose and tongue in perception of stimuli.

- **Digestive system**

- Review of structure and function, Secretory, Digestive and Absorptive functions, Role of liver, pancreas and gall bladder and their dysfunction, Motility and hormones of GIT.

Unit III

No. of Lecture-10

- **Respiratory System**

- Review of structure and function. Role of lungs in the exchange of gases. Transport of oxygen and CO₂. Role of haemoglobin

and buffer systems. Cardio-respiratory response to exercise and physiological effects of training.

- **The Circulatory System**

- Structure and function of heart and blood vessels. Regulation of cardiac output and blood pressure, heart failure, hypertension.

Unit IV

No. of Lecture-10

- **Blood formation, composition, blood clotting and haemostasis:**

Formation and function of plasma proteins, Erythropoiesis, Blood Groups and histocompatibility. Blood Indices. Use of blood for investigation and diagnosis of specific disorders. Anemia

- **The excretory system**

- Structure and function of nephron, Urine formation, Role of kidney in maintaining pH of blood.
- Water, electrolyte and acid base balance, diuretics

Unit V

No. of Lecture-10

- **The Musculo- skeletal system**

- Structure and function of bone, cartilage and connective tissue. Disorders of the skeletal system.
- Types of muscles, structure and function.

- **Immune System**

- Cell mediated and humoral immunity. Activation of WBC and production of antibodies. Role in inflammation and defence.

- **Reproduction**

Menstrual cycle, spermatogenesis, physiological changes in pregnancy.

M.A./M.Sc. I Semester I Paper IV

ADVANCED NUTRITIONAL BIOCHEMISTRY (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130704T	Course Title : ADVANCED NUTRITIONAL BIOCHEMISTRY	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 40		

Objectives

This Course will enable the students to:

- Augment the biochemistry knowledge acquired at the undergraduate level
- Understand the mechanisms adopted by the human body for regulation of metabolic pathways.
- Get an insight into interrelationships between various metabolic pathways
- Become proficient for specialization in nutrition.
- Understand integration of cellular level metabolic events to nutritional disorders and imbalances.

Contents

Unit I

No. of Lecture-8

- **Heteropolysaccharides** : Definition, classification, structure and properties of glycoproteins and proteoglycans.
- **Plasma Proteins** – Nature, properties and functions

Unit II

No. of Lecture-8

- **Overview of regulations of intermediary metabolism:** Equilibrium and non-equilibrium reactions, committed steps, allosteric modifications, covalent modulation, hormonal induction and repression, cross-over theorem, starve-feed cycle, caloric homeostasis and futile cycles.

Unit III

No. of Lecture-8

- **Intermediary metabolism:** Reactions, standard free energy changes and regulation.
 - Carbohydrates- glycolysis, gluconeogenesis, citric acid cycle, hexose monophosphate pathway.
 - Lipids, beta-oxidation, de novo synthesis of fatty acids, synthesis and breakdown of unsaturated fatty acids, cholesterol, phospholipids and triacylglycerol.

Unit IV

No. of Lecture-8

- **Purines and pyrimidines** – Synthesis and breakdown.
- **Nucleic acids** – DNA replication and transcription, DNA repair systems, DNA recombinant Genetic mutation, regulation of gene expression and protein biosynthesis
- **Hormones** – Mechanism of action of hormones.

Unit V

No. of Lecture-8

- **Minerals** – Biological role of trace elements.
- **Detoxification in the body-** Metabolism of foreign compounds.
- **Major alterations in carbohydrates, protein and fat metabolism in chronic nutrition-related degenerative diseases.**

M.A./M.Sc. I Semester I Paper V

ADVANCE NUTRITIONAL BIOCHEMISTRY AND INSTITUTIONAL FOOD ADMINISTRATION (Practical)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130705P	Course Title : ADVANCE NUTRITIONAL BIOCHEMISTRY AND INSTITUTIONAL FOOD ADMINISTRATION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 40		

Practical

Objectives

This course will enable the students to :

- Understand the principles of biochemical methods used for analysis of food and biological samples.
- Perform biochemical analysis with accuracy and reproductibility.
 1. **Calcium** : Estimation of calcium in foods and serum.
 2. **Phosphorous** : Estimation of inorganic phosphorous in foods and serum.
 3. **Ascorbic acid** : Estimation of ascorbic acid in foods.

4. **Proteins** :
 - a. Estimation of protein in food stuffs.
 - b. Estimation of albumin, globulin and album/globulin ratio in serum and urine.
 - c. Estimation of hemoglobin
5. **Glucose** : Estimation of glucose in blood urine.
6. **Cholesterol** : Estimation of cholesterol in blood.
7. **Enzyme assay** : Estimation of activity of serum alkaline phosphatase and Transaminase
8. **Urea and Creatinine** : Estimation of urea and creatinine in serum and urine.
9. **Survey of pathological laboratories** : To obtain information about the methods used for blood/serum analysis.
10. Market survey and analysis of processed and finished products.
11. Evaluation of Food Service units-2 Conventional, commissary.
12. Market survey of Food service equipment.
13. Layout analysis of Kitchens-2
14. Planning menus for quantity.
 - Banquet
 - Outdoor catering
 - Packed meals
 - Restaurant
15. Standardizing recipes for quantity 100, 250,500
16. Cost Analysis of menus in

- College canteen
- Hostel mess
- Hospitals (private, charitable, government)

17. Analysis of Food safety and Hygiene

वीर बहादुर सिंह पूर्वाञ्चल विश्वविद्यालय, जौनपुर
(उत्तर प्रदेश राज्य विश्वविद्यालय)

नई अवस्था में निम्नानुसार सिर्फ विषयों को संकायों में वर्गीकृत किया गया है। अन्य प्रशासनिक एवं पाठ्यक्रम निर्धारण और अन्य व्यवस्था पूर्ववत् रहेगी।

A. Faculty of Language (भाषा संकाय)

1.Arabic (अरबी)	10.Modern Indian Languages and Literary Studies (आधुनिक भारतीय भाषा एवं साहित्यिक अध्ययन)
2.Communicative English (संचार अंग्रेजी)	11.Pali (पाली)
3.English (अंग्रेजी)	12.Prakrit (प्राकृत)
4.Farsi (फारसी)	13.Punjabi (पंजाबी)
5.Foreign Language (विदेशी भाषा)	14.Sanskrit (संस्कृत)
6.French (फ्रेंच)	15.Sindhi (सिंधी)
7.German (जर्मनी)	16.Tibbati (तिब्बती)
8.Hindi (हिन्दी)	17.Urdu (उर्दू)
9.Linguistics (भाषा विज्ञान)	

B. Faculty of Arts, Humanities and Social sciences (कला, मानविकी एवं सामाजिक विज्ञान संकाय)

1.Adult and Continuing Education (प्रौण, सतत् एवं प्रसार शिक्षा)।	15.Human Rights (मानवाधिकार)
2.Ancient History, Archaeology & Culture (प्राचीन इतिहास पुरातत्व एवं संस्कृति)	16. Indian history and culture (भारतीय इतिहास एवं संस्कृति)
3.Anthropology (मानवशास्त्र)	17.Journalism (पत्रकारिता)

4.Archaeology and Musicology (पुरातत्व एवं संग्रहालय)	18. Journalism and Communication (पत्रकारिकता एवं जनसंचार)
5.Astrology (ज्योतिष विज्ञान)	19.Library & Information Science (पुस्तकालय एवं सूचना विज्ञान)
6.Defense and Strategic Studies (रक्षा एवं सामरिक रणनीतिक अध्ययन)।	20.Mass Media (संचार मीडिया)
7.Early Childhood care and Education (बाल्यकाल की आरम्भिक देखभाल एवं शिक्षा)	21.Media and Communication (मीडिया एवं संचार)
8.Economics (अर्थशास्त्र)	22.Nutrition and Dietetics (पोषण एवं आहार)
9.Education (शिक्षा शास्त्र)	23.Philosophy (दर्शनशास्त्र)
10.Geography (भूगोल)	24.Physical Education (शारीरिक शिक्षा)
11.History (इतिहास) – Medieval and Modern History (मध्यकालीन और आधुनिक इतिहास)	25.Political Science (राजनीति विज्ञान)
12. Home Science (गृह विज्ञान)	26.Psychology (मनोविज्ञान)
13. Human Development (मानव विकास)	27.Public Administration (लोक प्रशासन)
14. Human Resources Development (मानव संसाधन विकास)	28.Social Workers (सामाजिक कार्य)
	29. Sociology (समाजशास्त्र)
	30. Women Studies (महिला अध्ययन)
	31.Yoga (योग शिक्षा)

M.A./M.Sc. I Semester II Paper I

METHODS OF INVESTIGATION (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130801T	Course Title : METHODS OF INVESTIGATION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 40		

Objectives

This course will enable the students to :

- To understand the principles of various analytical techniques available for nutrition research.
- To familiarize with the applications of the above techniques.

Contents

Unit I

No. of Lecture-8

- **Electrolytic dissociation** – Acids, bases, salts, buffers, Hendersen-Hasselbach equation.

Theory of indicators and principles of measurement of pH.

Unit II No. of Lecture-8

- Basics of Instrumentation– Physico-chemical principles and methodology- Colorimetry, photometry, fluorimetry, flame photometry and atomic absorptiometry.

Unit III No. of Lecture-8

- Chromatography– principles and application in paper (circular, ascending and descending), ion-exchange, column, thin layer, gas liquid and high performance liquid chromatographic techniques.

Unit IV No. of Lecture-8

- **Electrophoresis** – Principle and applications in paper and gel electrophoresis.
- **Bioassays** – Animal studies, Human studies, Microbiological assays.

Unit V No. of Lecture-8

- **Use of Isotopes** – Radioactive and stable isotopes.
- **NMR and its applications.**
- **Immunological Methods** – RIA, ELISA

References :

1. Boyer, R. (2000). 3rdEd. 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. Oser, B.L. (1965). 14th ed. Hawk's Physiological Chemistry. Tata McGraw Hill Publishing Co. Ltd.
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, Get Publishing House.
7. Srivastava, A.K. and Jain, P.C. (1986), 2nd Ed. "Chemical Analysis : An Instrumental Approach, S.Chand and Company Ltd.

M.A./M.Sc. I Semester II Paper II

PROBLEMS IN HUMAN NUTRITION (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130802T	Course Title : PROBLEMS IN HUMAN NUTRITION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 25		

Objectives

The course is aimed at providing an understanding of :

- Nutritional problems/nutrition-related diseases prevalent among the affluent and the less privileged groups, with reference to their incidence, etiology and public health significance.
- Biochemical and clinical manifestations, preventative and therapeutic measures of the same.

Contents

Unit I

No. of Lecture-15

- **Historical background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following:**

- PEM

- Vitamin A deficiency
- Nutritional anemias
- IDD
- Rickets, osteomalacia and osteoporosis
- Fluorosis

Unit II

No. of Lecture-10

- Historical background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for
 - Obesity and overweight
 - Diabetes melitus
 - CHD
 - Cancer

References

1. McCollum, E.V. (1957): History of Nutrition, Houghton Mifflin Co.
2. Waterlow, J.C. (1992) : Protein energy malnutrition, Edward Arnold, A Division of Hodder & Stoughton.

M.A./M.Sc. I Semester II Paper III

PUBLIC NUTRITION (Theory)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130803T	Course Title : PUBLIC NUTRITION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 50		

Objectives :

This course will enable the students to:

- Develop a holistic knowledge base and understanding of the nature of important nutrition problems and their prevention and control for the disadvantaged and upper socio-economic strata in society.
- Understand the causes/determinants and consequences of nutrition problems in society
- Be familiar with various approaches to nutrition and health interventions, programmes and policies.

Contents

Theory

Unit I

No. of Lecture-10

- **Concept of Public nutrition** – relationship between health and nutrition, role of public nutritionists in the health care delivery.

- **Sectors and Public Policies relevant to Nutrition**
- **Primary Health Care of the Community**
 - National Health Care Delivery System
 - Determinants of Health Status
 - Indicators of Health.

Unit II

No. of Lecture-10

- **Population Dynamics**
 - Demographic transition, population structure, fertility behaviour, population policy, fertility, nutrition and quality of life inter-relationship.
- **Food and Nutrition Security**
 - Food production, Access, Distribution Availability, Losses, Consumption, Food Security, Socio-cultural aspects and Dietary Patterns: their implications for Nutrition and Health.

Unit III

No. of Lecture-12

- **Nutritional Status**
 - Determinants of nutritional status of individual and populations: Nutrition and Non-nutritional indicators: socio-cultural, biologic, environmental and economic.
- **Major Nutritional Problems** – etiology, prevalence, clinical manifestations, preventive and therapeutic measures of:
 - Macro and Micro nutrient deficiencies.

- Other nutritional problems like lathyrism, dropsy, aflatoxicosis, alcoholism and fluorosis.
- Overweight, obesity and chronic degenerative diseases
- National Food and Nutrition Policy, Plan of Action and Programmes.

Unit IV

No. of Lecture-10

- **Approaches and Strategic for improving Nutritional status and health:** Programmatic options- their advantages and demerits. Feasibility, political support, available resources (human, financial, infrastructural) Case studies of selected strategies and programmes: their rationale and context, how to select interventions from a range of possible options:
 - Health-based interventions, Food-based interventions including fortification and genetic improvement of foods, supplementary feeding, Nutrition education for behaviour change.

Unit V

No. of Lecture-8

- Policy Analysis and Operational Research
- Programme Design Planning. Implementation, Operations Monitoring, Surveillance and Evaluation.
- Health Economics and Economics of Malnutrition – Its impact on productivity and national development. Cost-Benefit, Cost effectiveness and Cost efficiency

Contents

Theory

Unit I

No. of Lecture-10

- **Introduction to Food Service Systems**
 - Evolution of the food service industry
 - Characteristics of the various types of food service units
- **Approaches to Management**

Theories of management

 - Aspects of management
 - Styles of management
 - Management tools

Unit II

No. of Lecture-10

- **Strategies in Planning**
 - Conceptual strategy
 - Marketing strategy
 - Types of plans
- **Management of Resource**
 - Finance
 - Determining the finance needed to establish or run an unit
 - Budgets
 - Sources of finance

- Planning adequate cash flow

Unit III

No. of Lecture-10

- Space & Equipment
 - Steps in planning layouts
 - Determining equipments
 - Selection and placement
 - Maintenance of equipment
 - Layout analysis
- Material
 - Menu planning
 - Planning the material needed
 - Methods of selection
 - Storage
 - Quantity food production
 - Service and modes of delivery

Unit IV

No. of Lecture-10

- Staff
 - Manpower planning
 - Manpower placement
 - Recruitment, induction, training, motivation and performance appraisal

- Time and Energy
 - Measures of utilisation and conservation
- **Techno-economic feasibility of food production/service enterprise**
- **Cost accounting/analysis**
 - Food cost analysis
 - Records to be maintained
 - Reports and trend analysis

Unit V

No. of Lecture-10

- **Marketing and sales management**
 - Marketing strategies
 - Sales analysis
 - Market promotion
- **Quality assurance**
 - Food quality
 - Total quality management
- **Computer aided record maintenance and management**

References

Management

1. West, B.Bessie & Wood, Levelle (1988) Food Service in Institutions 6th Edition, Revised by Herger FV, Shuggart SG & Palgne-Palacio June Macmillan Publication company New York.

2. Sethi Mohini (1993) Catering Management An integrated Approach 2nd Edition Wiley Publication.
3. Kotas Richard & Jayawardardene, C (1994): Profitable Food and Beverage Management, Hodder & Stoughton Publication.
4. Brodner, J. Maschal, H.T., Carlon, H.M. (1982): Profitable Food and Beverage Operation 4th Edition, Hayden Book company New Jersey.
5. Green, E.F., Drake, G.G., Sweeny, J.F. (1978) Profitable Food and Beverage Management.

Planning

Operations

Hayden Book Company, New Jersey.

6. Knootz, H,O Donnel C (1968) Principles of Management McGraw Hill Book Company

Personnel Management

7. Desseler, Garry (1987) Personnel Management Modern Concepts and Techniques, Prentice Hall New Jersey
8. Kumar, H.L. (1986) Personnel Management in Hotel and Catering Industries, Metropolitan Book Company New Delhi.
9. Hichcock, M.J. (1980), Food Service System Administration, Macmillan Publishing Company.

Cost Control

10. Keiser, J. & Kaillo, E. (1974): Controlling and Analysis of Cost in Food Service Operations Wiley and Sons New York.
11. Kharl, W.L. (I) (1977): Introduction to Modern Food and Beverage Service. (1979) Advanced Modern Food and Beverage Service. Prentice Hall Series
12. Coltman, M.M. (1977) : Food and Beverage Cost Control, Prentice Hall Series.
13. Levison (1976) : Food and Beverage Operation Cost Control & System Management, Prentice Hall Series.

M.A./M.Sc. I Semester II Paper V

Methods of Investigation and Public Nutrition (Practical)

Programme/Class: Certificate	Year : 1	Semester : I
Subject : Home Science		
Paper Code : A130805P	Course Title : Methods of Investigation and Public Nutrition	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 30		

Practicals

Objective

This course will enable the students to :

1. Orient themselves regarding the use of various analytical techniques for specific estimations.
 2. Comprehend better the principles involved in different methods of investigation.
 3. Become efficient in the use of some of the most commonly used techniques and instruments in High quality research.
- 1. Acid and Alkalis:** Preparation of dilute solutions of common acids and alkalis and determining their exact normalities.

2. **Buffers:** Preparation of phosphate, carbonate-bicarbonate, boric acid, acetate, chloride and phthalate buffers and determination of their pH by the use of indicators and pH meters.
3. **Spectrometry:** Beer Lambert law, absorption maximum, Preparation of Standard curve and nutrient estimations in UV and visible range, AAS, AES, Flamephotometry.
4. **Fluorimetry:** Estimation of thiamin and riboflavin.
5. **Chromatography:** Paper – identification of amino acids by circular, ascending and descending methods, Ion-exchange separation of amino acids, Column – Separation of proteins. Thin layer – Identification of amino acids, Gas-liquid – Estimation of fatty acids. HPLC – Estimation of β -carotene and α -tocopherol.
6. **Electrophoresis :** Fractionation of plasma proteins.
7. Comparison of rural, urban and tribal communities for : (a) determinants of malnutrition (b) socio-economic groups (c) the types of nutritional problems in different segments and age groups through analysis of secondary data.
8. Critical appraisal of existing interventions and programmes in the voluntary sector and government and suggestions to improve the same vis-a-vis target groups in society and specific needs.
9. Development of a plan for a nutrition intervention project in the community (The target group(s) need to be specified).

Development of low cost nutritive recipes suitable for various vulnerable groups at micro, meso and macro levels.

10. Field experience in operational public nutrition programmes; nutrition rehabilitation centres, fortification programmes, cost analysis.

M.A./M.Sc. II Semester III Paper I

ADVANCES IN FOOD MICROBIOLOGY (Theory)

Programme/Class: Certificate	Year : 2	Semester : III
Subject : Home Science		
Paper Code : A130901T	Course Title : ADVANCES IN FOOD MICROBIOLOGY	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture - 40		

Objective

This course will enable the student to :

- Gain deeper knowledge of role of micro-organisms in humans and environment.
- Understand the importance of micro-organisms in food spoilage and to learn advanced, techniques used in food preservation.
- Understand the latest procedure adopted in various food operations to prevent food-borne, disorders and legal aspects involved in these areas.

Contents

Unit I

No. of Lecture-8

- **Introduction to historical developments** in food preservation, spoilage, infections and legislation.

- **Micro-organisms of Importance in food :** Their primary sources in foods, morphology, cultural characteristics and biochemical activities.

Unit II

No. of Lecture-8

- **Factors affecting the growth of microorganisms in food.** Intrinsic and Extrinsic parameters that effect microbial growth.
- **Methods of Isolation and detection of microorganisms or their products in food.**
 - Conventional methods
 - Rapid methods (Newer techniques)
 - Immunological methods: Fluorescent, antibody, Radio Immunoassay, ELISA etc.
 - Chemicals methods: Thermostable nuclear, ATP measurement and PCR (Polymers chain reactions) – only principles in brief.

Unit III

No. of Lecture-8

- **Spoilage of different groups of foods:** Cereal and cereal products, vegetables & fruits, meat & meat products, eggs and poultry, fish and other sea foods, milk and milk products, canned food.
- **Food Preservation:** Physical methods – Drying, freeze drying, Cold storage, Heat treatments, Irradiation, High pressure processing.
Chemicals preservatives and Natural antimicrobial compounds.
Biologically based preservation systems and Probiotic bacteria.

Unit IV

No. of Lecture-8

- **Food borne diseases:** Bacterial and viral food-borne disorders, Food borne important animal parasites, Mycotoxins.
- **Indicators of food safety and quality:** Microbiological criteria of foods and their significance.

Unit V

No. of Lecture-8

- **The H A C C P system and food safety used in controlling microbiological hazards.**
- **Role of microbes in fermented foods and genetically modified foods.**

References

1. Pelezar, M.I. and Reld, R.D. (1993) Microbiology McGraw Hill Book Company, New York, 5th Edition.
2. Atlas, M. Ronald (1995) Principles of Microbiology, 1st Edition, Mosby-Year Book, Inc, Missouri, U.S.A.

M.A./M.Sc. II Semester III Paper II

RESEARCH METHODS IN FOODS AND NUTRITION (Theory)

Programme/Class: Certificate	Year : 2	Semester : III
Subject : Home Science		
Paper Code : A130902T	Course Title : RESEARCH METHODS IN FOODS AND NUTRITION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 40		

Objectives

This course is designed to:

- Understand the scientific approaches used in accumulating knowledge in the field.
- Understand the various designs vis-a-vis the research problem.
- Be able to identify sources of variability and uncertainty in research in this field.

Contents

Unit I

No. of Lecture-24

- **Quantitative and Qualitative Research in Foods and Nutrition-
an overview**

A. Quantitative Research

1. Design Strategies in Research – Descriptive Studies

Brief overview of types of descriptive studies

- correlational studies (Populations/Individuals)
- case reports and case studies
- cross sectional surveys

Use of descriptive studies in research

Hypothesis formulation from descriptive studies

2. Design Strategies in Research – Analytic Studies

Analytic studies

- Observational studies
- Case-control studies
- Cohort studies – retrospective and prospective
- Intervention trials (Clinical trials)

Use of analytic studies

Issues in the design and conduct of case control studies, definition and selection of cases.

selection of control, ascertainment of disease and exposure status

Issues in Analysis and Interpretation of case-control studies

3. Design Strategies in Research – Analytic Studies II

- Overview of types of Cohort studies and Intervention Studies
- Issues in the design of Cohort studies (selection of the exposed population, selection of comparison groups, sources of data, sources of exposure information, sources of outcome data)

- Issues in the design and conduct of clinical trials (selection of study population, allocation of study regimens, maintenance and assessment of compliance, issues of factorial design, sample size considerations: statistical power etc.)
- Issues in Analysis and Interpretation of Cohort studies (role of bias, effect of loss to follow-up effect of nonparticipation)
- Strengths and limitations of intervention studies
- Unique problems of intervention studies
- Issues in Analysis and Interpretation of clinical and community trials

B. Qualitative Research in Foods and Nutrition

- Types of qualitative research
- Tools, techniques and methodologies
- RRA, PRA, PLA
- Data Analysis and Interpretation
- Rapid Assessment Procedures: Use of rapid assessment procedures for Nutrition programme planning, design, training, assessment
- Project reorientation and evaluation

Unit II

No. of Lecture-8

- **Summarizing Data, Analyzing Trend Data**
- **Application of non-parametric tests**
- **Introduction to meta-analysis**

Unit III

No. of Lecture-8

- **Criteria for evaluation of research problem/programme**
- **Ethics in research**

References

1. Scrimshaw, N.S. and Gleason, G.R. (1992): Rapid Assessment Procedures. Qualitative Methodologies for Planning and Evaluation of Health-related Programmes. International Nutrition Foundation for Developing Countries, Boston.

M.A./M.Sc. II Semester III Paper III

ADVANCED NUTRITION (Theory)

Programme/Class: Certificate	Year : 2	Semester : III
Subject : Home Science		
Paper Code : A130903T	Course Title : ADVANCED NUTRITION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 50		

Objectives

This course is designed to:

- Provide in depth knowledge of the physiological and metabolic role of various nutrients and their interactions in human nutrition.
- Enable students to understand the basis of human nutritional requirements and recommendations through the life cycle.
- Enable students to understand the pharmacological actions of nutrients and their implications.
- Familiarise students with the recent advances in nutrition.

Contents

Unit I

No. of Lecture-12

- **Energy:** Energy content of foods. Physiological fuel value – review. Measurement of Energy Expenditure: BMR, RMR, thermic effect of

feeding and physical activity, methods of measurement. Estimating energy requirements of individuals and groups. Regulation of energy metabolism: control of food intake, digestion, absorption and body weight.

- **Carbohydrates:** Types, classification, digestion and transport-review, dietary fibre, fructo-oligosaccharides, resistant starch-chemical composition and physiological effects Glycemic index of foods. Sweeteners – nutritive and non-nutritive.

Unit II

No. of Lecture-10

- **Proteins :** Classification, digestion, absorption and transport – review. Metabolism of proteins: Role of muscle, liver and gastro intestinal tract. Protein quality, methods of evaluating protein quality. Protein and amino acid requirements. Therapeutic applications of specific amino acids: Branched chain, glutamine arginine, homocysteine, cysteine, taurine.

Unit III

No. of Lecture-10

- **Lipids :** Classification, digestion, absorption, transport- review. Functions of EFA. Role of n-3, n-6 fatty acids in health and disease. Requirements of total fat and fatty acids. Trans fatty acids, Prostaglandine.
- **Water :** Regulation of intra and extra cellular volume. Osmolality, water balance and its regulation.
- **Minerals:** (Note: For each nutrient sources, bioavailability, metabolism, function, requirements, RDI/ESADDI, deficiency and toxicity, interactions with other nutrients are to be discussed).

Macro minerals: calcium, phosphorous, magnesium, sodium, potassium and chloride.

Micro minerals: Iron, copper, zinc, manganese, iodine, fluoride.

Trace minerals: Selenium, cobalt, chromium, vanadium, silicon, boron, nickel.

Unit IV

No. of Lecture-10

- **Vitamins:** Historical background, structure, food sources, absorption and transport, metabolism, biochemical function, assessment of status. Interactions with other nutrients. Physiological, pharmacological and therapeutic effects, toxicity and deficiency with respect to the following:
- **Non-nutritive food components with potential health effects:** Polyphenols, tannins, phytate, phytoestrogens, cyanogenic compounds, lectins and saponins.

Unit V

No. of Lecture-8

- **Nutritional regulation of gene expression.**
- **Nutrition management in special conditions:** Space travel. high altitudes, low temperatures, submarines.

Contents

1. Estimation of Protein Quality using different methods PER, B.V, N.P.U. NDP-Cal %
2. Estimation of energy value of foodstuffs using bomb calorimeter.
3. Estimation of Energy Requirement:

- BMR
 - Energy expenditure on physical activities
 - Factorial approach
4. Balance Studies
 - a. Nitrogen Balance
 5. Assessment of micronutrient status:
 - a. Iron
 - b. Vitamin C
 - c. Vitamin A
 - d. Vitamins from B-complex group
 6. Bioavailability of selected nutrients

References

1. Annual Reviews of Nutrition. Annual Review Inc. California, USA.
2. Shils, M.E.; Olson, J.; Shike, M. and Roos, C. (1998): Modern Nutrition in Health and Disease. 9th edition, Williams and Williams, A Beverly Co. London.
3. Bodwell, C.E. and Erdman, J.W.(1988) Nutrient Interactions. Marcel Dekker Inc. New York.
4. World Reviews of Nutrition and Dietetics.
5. WHO Technical Report Series.

6. Indian Council of Medical Research. Recommended Dietary Intakes for Indians-Latest Recommendations.
7. Indian Council of Medical Research, Nutritive Value of Indian Foods- Latest Publication.
8. Berdanier, C.D. and Haargrove, J.L(ed.) (1996): Nutrients and Gene Expression: Clinical Aspects, Boca Raton, FL CRC Press.
9. Baeurle, P.A.(ed) (1994) Inducible Gene Expression, Part I: Environmental Stresses and Nutrients. Boston: Birkhauser.
- 10.Chandra, R.K. (ed) (1992): Nutrition and Immunology, ARTS Biomedical, St. John's Newfoundland.

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 Foodn Science and Nutrition
8. Nutrition Research
9. Ann Nutr Metab

M.A./M.Sc. II Semester III Paper IV

FOOD SCIENCE (Theory)

Programme/Class: Certificate	Year : 2	Semester : III
Subject : Home Science		
Paper Code : A130904T	Course Title : FOOD SCIENCE	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 60		

Objectives

This course is designed to:

- Provides an understanding of composition of various food stuffs
- Familiarise students with changes occurring in various foodstuffs as a result of processing and cooking.
- Enable students to use the theoretical knowledge in various applications and food preparations.

Contents

Unit I

No. of Lecture-12

- **Introduction to Food Science:** Evolution of the food Industry and Allied Industries. Development of Food Science as a discipline.
- **Constituents of Foods:** Properties and Significance

- **Water and Food Dispersions** : Physical properties of water and ice, chemical nature, structure of the water molecule.
 - Sorption phenomena, types of water, solutions and colligative properties.
 - Free and bound water.
 - Water activity and Food spoilage
 - Freezing and Ice structure
 - Colloidal salts, stabilization of colloidal systems, Rheology of food dispersions.
 - Gels: Structure, formation, strength, surfactants and emulsifiers.
 - Foams: Structure, formation and stabilization.

Unit II

No. of Lecture-12

- **Polysaccharides, Sugars and Sweeteners**
 - Starch: Structure, gelatinization, methods for following gelatinization changes. Characteristics of some food starches. Effects of ingredients and conditions on gelatinization. Modified food starches.
 - Non-starch Polysaccharides: Cellulose, hemicelluloses, pectins, gums, animal polysaccharides.
 - Sugars and Sweeteners: Sugars, syrups, sugar alcohols, potent sweeteners, sugar products.

- Sweetener chemistry related to usage in food products. Structural relationships to sweetness perceptions, hydrolytic reactions, solubility and crystallization, hygroscopicity, colligative properties, textural contributions, fermentation, non-enzymatic browning.
- **Cereals and Cereal Products**
 - Cereal grains: Structure and Composition
 - Cereal products:
 - Flours and flour quality
 - Extruded foods, breakfast cereals, wheat germ, bulgar, puffed and flaked cereals.

Unit III

No. of Lecture-10

- **Fats, Oils and Related Products**
 - Sources, composition, effects of composition on fat properties. Functional Properties of fat and uses in food preparations. Fat Substitutes. Fat deterioration and antioxidants, Radiolysis, inter-esterification of fats.
- **Protein:** Classification, composition, denaturation, non-enzymatic browning, and other chemical changes.
- **Enzymes:** Nature of enzymes, stability and action. Proteolytic enzymes, oxidases, lipases, enzymes decomposing carbohydrates and applications. Immobilised enzymes.
- **Milk and Milk Products:** Composition, Physical and functional properties. Denaturation, Effects of processing and storage.

Dairy products: Cultured milk, yogurt, butter, whey, cheese, concentrated and dried products, frozen desserts, dairy product substitutes.

Unit IV

No. of Lecture-14

- **Meat and Poultry:** Muscle composition, characteristics and structure. Post mortem changes. Processing, preservation and their effects. Heat-induced changes in meat. Variables in meat preparation. Tenderizers. Meat Products.
- **Eggs:** Structure and Composition. Changes during storage. Functional properties of eggs, use in cookery, Egg processing. Low cholesterol egg substitutes.
- **Fish and Sea Food:** Types and composition, Storage and changes during storage changes during processing. By products and newer products.
- **Pulses and Legumes:** Structure, composition, processing. Toxic constituents.
- **Nuts and Oilseeds:** Composition, Oil extraction and by-products.
- **Protein Concentrates, hydrolysates and textured vegetable proteins, milk substitutes.**
- **Fruits and Vegetables:** Plant anatomy, gross composition, structural features and activities of living systems. Enzymes in fruits and vegetables. Flavour constituents. Plant phenolics, phenolics, Pigments, Post harvest changes. Texture of fruits and vegetables. Effects is storage, processing and preservation.

Unit V

No. of Lecture-12

- **Spices and Condiments** : Composition, flavouring extracts – natural and synthetic.
- **Processed Foods** : Jams, Jellies, Squashes, Pickles.
Beverages : Synthetic and natural, alcoholic and non-alcoholic, carbonated and non-carbonated, coffee, tea, cocoa, Malted drinks.
Confectioneries and chocolate products, bakery products, dehydrated products.
- **Traditional Processed Products:** Fermented Foods-cereal-based, pulse-based, fruits/vegetable-based, vinegar, pickles.
- **Leavened Products** : Leavening agents, Biologically leavened and chemically leavened products, Batters and Dough.
- **Salt and substitutes.**

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 Grosh, W. (1999): Food Chemistry, (2nd edition), Springer, New York.
4. Abers, R.J. (Ed) (1976): Foam, Academic Press, New York
5. Cherry, J.P. (Ed) (1981): Protein Functionality in Foods, American Chemical Society, Washington, D.C.

6. Pomeranz, Y. (Ed) (1991) : Functioning Properties of Food Components, (2nd edition), Academic Press, New York.
7. Duckworth, R.B. (Ed) (1978): Water Relation to Foods, Academic Press, London.
8. Parihar, P., Agrawal, R., Jain, D.K. and Mandhyan, B.L. (1977): Status Report on Dehydration of Eggs, PHT/CAE/Publishers.
9. Marshall, K.R. and Harper, W.J. (1988): Whey Protein Concentrates, IDF Bulletin NO. 233.
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11. Julians, B.O. (Ed) (1985): Rice Chemistry and Technology, (2nd edition). American Association of Cereal Chemists, St. Paul Mimesota, USA.
12. Bowers, J. (1992) : Food Theory and Applications, (2nd edition), MacMillan Publishing Co., New York.
13. Peckham, G. and Freeland – Graves, G.H. (1979) : Foundations of Food Preparation.
14. Becker, P. (1965). Emulsions: Theory and Practice, Reinhold, New York.

Journals

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

4. Journal of Agricultural and Food Chemistry
5. Cereal Science
6. Journal of Dairy Science
7. Journal of the Oil Chemicals Society

M.A./M.Sc. II Semester III Paper V

ADVANCE IN FOOD MICROBIOLOGY AND FOOD SCIENCE (Practical)

Programme/Class: Certificate	Year : 2	Semester : III
Subject : Home Science		
Paper Code : A130905P	Course Title : ADVANCE IN FOOD MICROBIOLOGY AND FOOD SCIENCE	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 60		

Practicals

- 1. Preparation of common laboratory media and special media** for cultivation of bacteria.
- 2. Staining of Bacteria:** Gram's staining, acid-fast, spore, capsule and flageller staining, Motility of bacteria, Staining of yeast and molds.
- 3. Cultivation and identification of important molds and yeast.** (slides and mold culture).
- 4. Study of environment around us as sources of transmission of microorganisms in foods.** Assessment of surface sanitation of food preparation units swab and rinse techniques.
- 5. Isolation of microorganisms:** Different methods and maintenance of culture of microorganisms.

- 6. Bacteriological analysis of Foods:** Both processed and unprocessed like vegetables and fruits, cereals, spices and canned foods, using conventional methods, yeast and mold count in foods.
- 7. Bacteriological analysis of water and milk,** Total count, MPN Coliform (Count) and MBRT, IMVIC etc.
- 8. To perform various biochemical tests used in identification of commonly found bacteria in foods:** IMVIC urease, H_2S_4 , Catalase, coagulase, gelatin and fermentation. (Acid/gas).
- 9. Demonstration of available rapid methods and diagnostic kits used in identification of microorganisms or their products.**
- 10. Visits (at least two) to foods processing unit or any other organization dealing with advanced methods in food microbiology.**
- 11. Effect of solutes on boiling point and freezing point of water.**
- 12. Effect of types of water on characteristics of cooked vegetables, pulses and cereals.**
- 13. Sugar and Jaggery Cookery:** Relative sweetness, solubility and sizes of sugars, stages of sugar cookery, caramelization, crystallization, factors affecting crystal formation.
- 14. Starches, Vegetable Gums and Cereals:** Dextrinization, gelatinization, retrogradation, thickening power, Factors affecting gels. Gluten formation and factors affecting gluten formation.

- 15.Jams and Jellies:** Pectin content of fruits, role of acid, pectin and sugar in jam and jelly formation. Use of gums as emulsifiers/stabilizers.
- 16.Fat and Oils :** Flash point, melting point and smoking point. Role of fats and oils in cookery as: shortening agent, frying medium. Factors affecting fat absorption. Fat crystals. Plasticity of fats. Permanent and semi-permanent emulsions.
- 17.Milk and Milk Products:** Scalding, denaturation, Effect of acid, salt, alkali, sugar, heat, enzymes, polyphenols on milk, Khoa, curd, paneer, cheese (ripened and unripened).
- 18.Egg:** Structure, assessing egg quality. Use of egg in cookery:- Emulsions, air incorporation, thickening, binding, gelling. Methods of egg cookery and effect of heat. Egg white foams and factors affecting foams.
- 19.Pulses:** Effect of various cooking and processing methods on various characteristics functional properties of pulses and their products.
- 20.Meat and Poultry:** Methods affecting tenderness of meat, effect in various methods of cooking and ingredients on colour, volume, texture, flavour, aroms and water holding capacity.
- 21.Fish and Sea Food :** Effects of different cooking methods on various fish and seafoods.
- 22.Gelatin :** Gelation, gel strength and factors affecting gelation. Ability to foam.

23.Fruits and Vegetables: Pigments: Effects of cooking, metal ions, pH. Effect of various cooking processes on different characteristics of vegetables. Prevention of enzymatic browning.

24.Leavened Products: Fermentation – Use of micro organisms (lactic acid, yeast), steam as an agent, egg as an agent, chemical agents.

25.Beverages : Factors affecting quality of beverages.

26.Frozen Desserts: Factors affecting ice crystal formation. Quality characteristics of frozen desserts.

M.A./M.Sc. II Semester IV Paper I

ASSESSMENT OF NUTRITIONAL STATUS (Theory)

Programme/Class: Certificate	Year : 2	Semester : IV
Subject : Home Science		
Paper Code : A131001T	Course Title : ASSESSMENT OF NUTRITIONAL STATUS	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 20		

Objectives

- Orient the students with all the important state of the art methodologies applied in nutritional assessment and surveillance of human groups.
- Develop specific skills to apply the most widely used methods.

Contents

Theory:

Unit I

No.of Lecture-5

- Nutritional assessment as a tool for improving the quality of life of various segments of the population including hospitalized patients.

Unit II

No.of Lecture-8

- Current methodologies of assessment of nutritional status, their interpretation and comparative applications of the following:
 - Food consumption
 - Anthropometry
 - Clinical and Laboratory
 - Rapid Assessment & PRA
 - Functional indicators such as grip strength, respiratory fitness, Harvard Step test, Squatting test.

Unit III

No.of Lecture-7

- Nutritional Surveillance – Basic concepts, uses and setting up of surveillance systems.
- Monitoring and Evaluation.

M.A./M.Sc. II Semester IV Paper II

MATERNAL AND CHILD NUTRITION (Theory)

Programme/Class: Certificate	Year : 2	Semester : IV
Subject : Home Science		
Paper Code : A131002T	Course Title : MATERNAL AND CHILD NUTRITION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 50		

Objectives

This course is designed to enable the students to:

- Understand physiological changes in pregnancy and lactation.
- Get acquainted with growth and development changes from conception till adolescence.
- Understand the inter-relationship between nutrition and growth and development during life cycle.

Contents

Unit I

No.of Lecture-5

- Current Nutrition and Health Status of Women and Children in India.
- Changing concepts and controversies in Maternal and Child Nutrition.

Unit II

No.of Lecture-15

- **Importance of Maternal Nutrition :**

- Importance of nutrition prior to and during pregnancy.
- Pre-requisites for successful outcome. Effect of undernutrition on mother-child dyad including pregnancy outcome and Maternal and Child Health – Short term and Long term.
- Physiology and endocrinology of pregnancy and embryonic and fetal growth and development
- Nutritional requirements during pregnancy
- Adolescent Pregnancy
- Pregnancy and AIDS
- Pregnancy and TB
- Intra-uterine growth retardation
- Complications of pregnancy and management and importance of antenatal Care.
- Congenital malformation, fetal alcohol syndrome and gestational diabetes mellitus.

Unit III

No.of Lecture-10

- **Lactation**

- Development of mammary tissue and role of hormones.
- Physiology and endocrinology of lactation– Synthesis of milk components, let down reflex, role of hormones, lactational amenorrhea, effect of breastfeeding on maternal health.

- Human milk composition and factors affecting breastfeeding and fertility.
- Management of lactation – Prenatal breastfeeding skill education. Rooming in problems – sore nipples, engorged breast, inverted nipples etc.
- Exclusive breastfeeding
- Baby friendly hospitals initiative
- Breastfeeding in the age of AIDS

Unit IV

No.of Lecture-10

- **Infant physiology and the preterm and LBW Infants: Implications for feeding and management.**
- **Growth and development during infancy, childhood and adolescence.**
- **Feeding of infants and children: and dietary management.**

Unit V

No.of Lecture-10

- **Malnutrition in mothers and children : etology and management (in brief)**
- **Concept of small family methods of family – planning, merits and demerits.**
- **Policies and programmes for promoting maternal and child nutrition and health.**

References

1. International Food Policy Research Institute (1997). Care and Nutrition: Concepts and Measurement International Food Policy Research Institute Washington DC., USA
2. International Child Health : A Digest of current information
3. Barker, D.J.P. (1998). Mothers, Babies and Health in Later Life. Edinburgh, Churchill Livingstone.
4. Ward, R.H.T; Smith, S.K; Donnai, D. (eds) (1994) Early Fetal Growth and Development, London, RCOG Press.
5. Sachdev, H.P.S. and Choudhary, P. (1995). Nutrition in Children- Developing Country Concerns. Cambridge Press, New Delhi
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7. Wallace, H.M. and Giri, K. (1990) Health Care of Women and Children in Developing Countries. Third Party Publishing Co. Oakland.
8. Tanner, J.M. (1988) Foetus into Man: Physical Growth from Conception to Maturity. Wheaton and Co Ltd. Great Britain.
9. Luke, B.Johnson, T.R.B.; Petrie, R.H. (1993). Clinical Maternal-Fetal Nutrition. Little Brown and Co. Boston
10. ACC/SCN Reports
11. WHO (1999) Nutrition for Health and Development: Progress and Prospects on the Eve of the 21st Century WHO/NHD/99.9 Geneva

12. Alderman, H.; Behrman, J.; Lavy, V.; Menon, R. (1997) Child Nutrition, Child Health and School Enrollment Policy Research Working Paper 1700. Washington DC. World Bank.

M.A./M.Sc. II Semester IV Paper III

SCIENTIFIC WRITING (Theory)

Programme/Class: Certificate	Year : 2	Semester : IV
Subject : Home Science		
Paper Code : A131003T	Course Title : SCIENTIFIC WRITING	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 50		

Objectives

To be able to appreciate and understand Importance of writing scientifically.

- To Develop competence in writing and abstracting skills.
- To write either a draft research proposal or a chapter of dissertation.

Contents

Unit I

No.of Lecture-10

- **Scientific writing as a means of communication.**
 - Different forms of scientific writing.
 - Articles of journals, Research notes and reports, Review articles, Monographs, Dissertation, Bibliographies.
- **How to formulate outlines.**
 - The reasons for preparing outlines

- as a guide for plan of writing
- as skeleton for the manuscript

Kinds of outline

- topic outlines
- conceptual outlines
- sentence outlines
- combination of topic and sentence outlines

Unit II

No.of Lecture-10

- **Drafting Titles, Sub Titles, Tables, Illustrations.**
 - Tables as systematic means of presenting data in rows and columns and lucid way of indicating relationships and results.
 - Formatting Tables: Title, Body stab, Stab column, Column Head, Spanner Head, Box Head.
 - Appendices: use and guidelines

Unit III

No.of Lecture-10

- **The writing process**
 - Getting started
 - Use outline as a starting device
 - Drafting
 - Reflecting, Re-reading
 - Checking organization

- Checking headings
- Checking content
- Checking clarity
- Checking grammar
- Brevity and precision in writing
- Drafting and Re-drafting based on critical evaluation

Unit IV

No.of Lecture-10

- **Parts of Dissertation/Research report/Article**

- Introduction
- Review of Literature
- Method
- Results and Discussion
- Ask questions related to: content, continuity, clarity, validity internal consistency and objectivity during writing each of the above parts.

Unit V

No.of Lecture-10

- **Writing for Grants**

- Clearly state the question to be addressed
- Rationale and importance of the question being address
- Emperial and theoretical conceptualization
- Presenting pilot study/data
- Research proposal and time frame

- Clarity, specificity of method.
- Clear organization
- Outcome of study and its implications
- Budgeting
- Available infrastructure and recourses
- Executive summary

References

1. APA (1984): Publication Manual of American Psychological Association (3rd Edition), Washington, APA.
2. Cooper, H.M. (1990); Integrating Research: A Guide for Literature Reviews (2nd Edition), California, Sage.
3. Dunn, F.V. & Others, (Ed.) (1994) : Disseminating Research: Changing Practice, NY : Sage.

M.A./M.Sc. II Semester IV Paper IV

NUTRITION IN EMERGENCIES AND DISASTERS (Theory)

Programme/Class: Certificate	Year : 2	Semester : IV
Subject : Home Science		
Paper Code : A131004T	Course Title : NUTRITION IN EMERGENCIES AND DISASTERS	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 40		

Objectives

This course is designed to:

- Familiarize students with various natural and manmade emergencies and disasters having an impact on nutrition and health status.
- Understand the special nutritional concerns arising out of these situations.
- Understand strategies for nutritional rehabilitation management of the health of emergency affected populations.

Contents

Unit I

No.of Lecture-8

- **Natural/Manmade disasters resulting in emergency situations:**
 - Famine, drought, flood, earthquake, cyclone, war, civil and political emergencies.

- Factors giving rise to emergency situation in these disasters.
- Illustration using case studies from Indian subcontinent.

Unit II

No.of Lecture-8

- **Nutritional problems in emergencies in vulnerable groups**

- Causes of malnutrition in emergency situations.
- Major deficiency diseases in emergencies.
- Protein – Energy Malnutrition
- Specific deficiencies

- **Communicable diseases: Surveillance and treatment.**

- Control of communicable diseases in emergencies– Role of Immunization and Sanitation.

Unit III

No.of Lecture-10

- **Assessment and surveillance of Nutritional status in emergency affected populations**

- Scope of assessment of malnutrition in emergencies
- Indicators of malnutrition. Clinical signs of screening acute malnutrition– Anthropometric assessment of Nutritional status. Indicators and cut-offs indicating seriously abnormal nutrition situation: Weight-for-height based indicators, MUAC, social Indicators.
- Organisation of nutritional surveillance and individual screening.

Unit IV

No.of Lecture-14

- **Nutritional Relief and Rehabilitation**

- Assessment of food needs in emergency situations
- Food distribution strategy– Identifying and reaching the vulnerable group- Targeting Food Aid
- Mass and Supplementary Feeding
- Therapeutic Feeding
- Special foods/rations for nutritional relief.
- Local production of special foods
- Local foods in rehabilitation
- Organisation of mass feeding/general food distribution.
- Feeding Centres,
- Transportation and food storage,
- Sanitation and hygiene.
- Evaluation of feeding programmes.
- Household food security and nutrition in emergencies

- **Public Nutrition approach to tackle nutritional problems in emergencies**

References

1. Goyet, Fish, V.; Seaman, J. and Geljer, U. (1978): The Management of Nutritional Emergencies in Large Populations, World Health Organisation, Geneva.

2. Refugee Nutrition Information System (RNIS): Newsletters UN ACC/SCN Sub-committee on Nutrition.
3. Field Exchange, Newsletters by Emergency Nutrition Network, Dept. of Community Health and General Practice, Ireland.
4. SCN News, Newsletters by UN ACC/SCN Sub-committee on Nutrition.
5. Bradley, A., Woodstuff and Arabella Duffield (July, 2000); Assessment of Nutritional Status in Emergency Affected Populations- Adolescents, Special Supplement, UN ACC/SCN Sub-Committee on Nutrition.
6. Steve Collins, Arabella Duffield and Mark Myatt (July, 2000); Assessment of Nutritional Status in Emergency Affected Populations- Adults, Special Supplement, UN ACC/SCN sub-committee on Nutrition.
7. World Disasters Report- Focus in Public Health, International Federation of Red Cross and Red Crescents Societies.
8. The Management of Nutrition in Major Emergencies WHO- In Collaboration with UNHCR, International Federation of Red Cross and Red Crescent Societies and WFP.
9. Disasters – International Public Nutrition and Emergencies: The Potential for Improving Practice. Special Issue – Vol. 23/4, Dec. 1999.

M.A./M.Sc. II Semester IV Paper V

ASSESSMENT OF NUTRITIONAL STATUS AND ADVANCE NUTRITION (Practical)

Programme/Class: Certificate	Year : 2	Semester : IV
Subject : Home Science		
Paper Code : A131005P	Course Title : ASSESSMENT OF NUTRITIONAL STATUS AND ADVANCE NUTRITION	
Credit : 4	Core Compulsory/Elective	
Max Marks : 75+25	Min. Passing Marks	
Total No. of Lecture – 40		

Practicals

1. Training in all assessment techniques applicable
2. Current methodologies of assessment of nutritional status, their interpretation and comparative applications of the following:
 - Food Consumption
 - Anthropometry
 - Clinical and Laboratory
 - Rapid Assessment & PRA
 - Functional indicators such as grip strength, respiratory fitness, Harvard Step test, Squatting test.
3. Nutritional Surveillance – Basic concepts, uses and setting up of surveillance systems.

4. Monitoring and Evaluation

5. Training in all assessment techniques applicable for individuals and community, including ones used for hospital – based patients

- Validity and reliability of these techniques.

The aim of the course is to:

6. Familiarize students with basic techniques used in Studies and Research in Nutritional Sciences

7. Acquaint students with the methods of estimating nutrient requirements.

8. Orient students towards planning of metabolic studies.