

Department of Higher Education, Govt. Of M.P.
Semester wise syllabus for Postgraduates
As recommended by Central board of Studies and
Approved by HE the Governor of M.P.

M.Sc. (Home Science) ,
Food and Nutrition

SEMESTER-I

PAPER-I

Applied Physiology

Dec - 2020

Objectives

M.M. 100

This course will enable students

1. To understand the integrated functions of all systems in the science of physiology.
2. To understand the structure and functions in various organs and systems in relation to the diseased conditions.
3. To understand the advance issues to the relevant topics of Human physiology.

UNIT-I

1. **Cell and Tissues:** Structure and fiction of cell, structural organization of cell organelle.
Tissues – Formation of tissues, organ and system, elementary tissues in Human body.
2. **Musculoskeletal System:** Types of muscles (skeletal, smooth, and cardiac muscles) their properties, characteristics, structure and functions Fatigue, exercise mechanism of contraction
Structural and function of Bone, cartilage and connective tissue. Disorders of skeletal muscle.

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UNIT-II

1. **Blood:** Formation, Functions and composition of blood, Hematopoiesis erythropoiesis, leukopoiesis, Formation and functions of plasma proteins Factors influencing erythropoiesis – RBC Indices – Blood groups, Blood clotting, Hemoglobin synthesis, Blood abnormalities.
2. **Immune system:** Natural Immune system cell mediated and humoral immunity components of immune mechanism (cellular and chemical) Role of Inflammation/defense (acute and chronic). Activation of WBC and production of anti bodies. Disorders – Immune deficiency, Hypersensitivity.
3. **Reproductive System:** Male and female reproductive organ, menstrual cycle spermatogenesis.

UNIT-III

1. **Circulatory System:** Structure and functions of heart and blood vessels, cardiac output and blood pressure, cardiac cycle, Heart rate and heart sound conditions affecting the heart, Heart failure, Hypertension, Mechanism of cardio vascular system.
2. **Respiratory system:** Structure and functions of respiratory tree, Mechanism of Breathing. Ventilation and its control. Exchange of gases and role of lungs in exchange of gases. Transport of O₂ and CO₂. Role of Hemoglobin and Buffer system Cardio respiratory response to exercise.

UNIT-IV

1. **Digestive System:** Introduction of digestive system structure of digestive tract functions of digestive system, Salivary glands and its secretion. Stomach and its section, pancreas, Bile, small Intestine, Large Intestine Digestive Juices. Gastrointestinal Hormones.
2. **Excretory system:** Structure and function of kidney, nephron, Role of Kidney in maintaining pH of blood, Mechanism of urine formation, Mechanism of filtration Electrolyte and acid-base balance. Renal function tests (Urine and blood) Diuretics.

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UNIT-V

1. **Endocrine glands:** Structure function and classification according to chemical signals. Hormones, role of hormone, regulation of hormonal secretions and its control, disorders of endocrine glands.
2. **Nervous system:** Structure and function of brain, spinal cord, neuron. Reflex and its classification; nerve impulse - Afferent and efferent nerves Hypothalamus and its role in various body functions - Obesity sleep and memory
3. **Sense organs:** structure and functions General Senses and special senses, receptors of sensory nerves and perception of stimuli.

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1. Ganong. W.F. (1985): Review of Medical Physiology, 12th Edition, Lange Medical Publication
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3. Guyton, A.C. (1985): Function of the Human Body. 4th Edition, B. Sanders Company, Philadelphia.
4. Gayton, A.C. and Hall, J.B. (1996): Text Book of Medical Physiology, 9th Edition, W.B. Sanders Company, Priser Books (Pvt.) Ltd. Bangalore.
5. Wilsion, KJ.W. and Waugh, A. (1996): Ross and Wilson Anatomy and Physiology in Health and illness, 8th Edition, Churchill Livingstone.
6. McArdle, W.D. , Katch, F.L. and Katch, VL. (1996): Exercise Physiology, Energy, Nutrition and Human Performance, 4th Edition, Williams and Wilkins Baltimore.
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- Text book of physiology Vol I & II



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M.Sc. (Home Science)
Food and Nutrition

SEMESTER-I
PAPER-II
Advanced Nutritional Biochemistry

M.M. 100

Objectives

- Augment this Biochemistry knowledge acquired at the undergraduate level.
- Understand the mechanism adopted by the human body for regulation of metabolic pathways
- Get on insight into interrelationship between various metabolic pathways: -Become proficient for specialization in nutrition
- Understand integration of cellular level metabolic events to nutrition disorder and imbalances.

UNIT - I

Plasma proteins nature, properties and functions. Purines, and pyrimidines: synthesis and breakdown

UNIT-II

Intermediary metabolism an overview and its regulation. Equilibrium and Non equilibrium reaction committed steps; allasteric modification, covalent modulation, hormonal induction and repression, cross over theorem, starve feed cycle, calorie homeostasis and futile

UNIT - III

1. **Carbohydrates:** glycolysis, gluconeogenesis, citric acid cycle, hexose monophosphate pathways and gluconeogenesis.
Lipids: Beta - oxidation, de novo synthesis of fatty acids. Synthesis and breakdown of unsaturated fatty acids. Cholesterol, phospholipids and triacylglycerol significance.

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UNIT-IV

Major alterations in protein, carbohydrates and fat metabolism and chronic nutritional related degenerative diseases e.g. diabetes and hypertension.

Nucleic acids: DNA replication and transcription. DNA repair system, DNA recombination, genetic mutation, regulation of gene expression and protein biosynthesis.

UNIT - V

Hormones: Mechanism of action. Negative feedback, hormone receptor, intracellular messengers.

Conversion of amino acids to specialized.

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M.Sc. (Home Science)
Food and Nutrition
SEMESTER I PAPER - I & II
Human Physiology & Advanced Nutritional Biochemistry
M.M. -100

Practical -I

Practical Section -A

1. Preparation and staining of blood film.
2. Identification of different components at blood in a blood film
3. Estimation of blood count WBC count, RBC count
4. Hemoglobin estimation
5. Recording of blood pressure.
6. Vital capacity and different components of vital capacity
7. Urine estimation (Renal function test)

Section - B(Any one)

Protein (a) Estimation of proteins in foodstuff.

(b) Estimation of albumin, globulin and A: Gratio in serum and urine

Estimation of glucose in blood and urine.

Glucose Estimation of glucose in blood and urine.

Lipid Estimation of lipid in food by soxholet extraction method.

Calcium Estimation of calcium in food and serum

Phosphorus Estimation of inorganic phosphorus in food and serum.

Buffer Preparation of phosphate, carbonate and acetate buffer and determine of their pH values.

survey survey of pathological laboratories to obtain information about different methods uses in blood serum anylis.

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M.Sc. (Home Science)
Food and Nutrition

SEMESTER I

PAPER - III- Public Nutrition

Objectives

M.M. 100

1. Develop a holistic knowledge base and understanding of public nutrition concept.
2. Understand the health economic, food situations and determinations of nutritional status.
3. Be familiar with various approaches to nutrition and health interventions, programmes and policies.

UNIT-I

1. Concept of Public Nutrition
2. Definition and concepts of health. Determinants of health
3. Relationship with health and nutrition.
4. Role public nutritionists the health care delivery.
5. Population dynamics: Demographic transition population structures fertility behavior. Nutrition and quality of life.

UNIT - II

1. Food and Nutrition security

(a) Food production. Access, Distribution, Losses and consumption

2. Nutritional Status

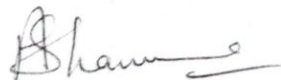
(a) Determinants of nutritional status

(b) (i) Nutrition Indicators - Functional indicators such as grip strele respiratory fitness

Harvard step test, squatting test

(ii) Non-mutational indicators of nutritional status (Socioculta biological, environmental and economic)

(c) **Health Economics and Economics of Malnutrition.** Its impact on productivity and national development



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UNIT-III

1. **National Food and Nutrition Policy, Plan of Action**
 - (a) Sectors and public relevant to nutrition - National and International organization of nutrition. Specific community nutrition programmes in India. Case studies of selected strategies and programs.

UNIT - IV

1. **Approaches and strategies for improving nutritional status.**
 - (a) Programmable Option: Health and nutrition based interventions, supplementary feeding, fortification and genetic improvement of foods.
 - (b) Merits and demerits of these options
 - (c) Factors in feasibility of these programmes ie political support available resource (human infrastructural financial)
2. **Program planning, implementation, Operation, monitoring surveillance and evolution.**
3. **Nutrition Education**
 - (a) Definition, purpose, importance
 - (b) Methods and tools
 - (c) Channels of nutrition education
 - (d) Evaluation of nutrition education

UNIT-V

1. **Public Health Administration**
 - (a) Central and State Health organizations
 - (b) Primary Health Care in India
 - (i) Elements of Primary Health Care
 - (ii) Principles of Primary Health Care
 - (iii) Primary - Health Care of village level sub center level and primary health centre level, community health centers.
 - (c) Health Care Systems



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References

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2. Paris KL (2000) Park's Textbook of Preventive and Social Medicine, 18th Edition M / s Banarasidas Bhanat, Jabalpur.
3. SCN News: UNACC / SCN Subcommittee on Nutrition.
4. State of the World's Children. UNICEF
5. Census Reports
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21. Fortification to End Micronutrient Malnutrition. The Micronutrient Initiative Ottawa Canada. Micronutrient initiative, Ottawa Canada.
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23. Mary C Lopez A. 'i eds; H99-V' Comparative Assessments in the Packages Collected articles from the Bulletin of the world f p organization Geneva Switzerland
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26. World Health Organization (1998) World Health Repent Life Center Report of the Director General WHO Center Switzerland.
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32. Rajiv Gandhi Drinking Water Mission Prevention and Control of Fluorosis Ministry of Rural Development.
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34. Gopalan C (RD) (1993) Recent Trends in Nutrition, oxtod I'niversity Press.
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36. Shils, ME Oison J.A. Shike, N. and Ross, A.C. (Ed) (1996) Modern Nutrition and Health & Disease. 9th Edition, Williams & Wilkins.
37. Bamji. M.S. Rao P.No. and Reddy V (Eds) (1996) Tested of Human Oxford & IBH Publishing Co. Pvt. Ltd. atonal Life science in Quite
38. Publication of the Intern
39. UNICEF's S State of the World's Children

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M.Sc.(Home Science)
Food and Nutrition
PRACTICAL-II
Public Nutrition
First Semester

M.M. 100

1. Collect data and compare the rural and urban communities through analysis for:
 - (a) Determinants of malnutrition.
 - (b) Socio - economic groups
 - (C) Types of nutritional problems in different segments and age groups
2. Development of methods and tools of nutritional education
3. Plan prepare and calculate one dish meal specific to your own region for
 - (a) Pregnant woman
 - (b) Lactating mother
4. Prepare and administer a food frequency questionnaire on a 4 - year old child to assess his intake of energy. proteins, iron and vitamin A rich food.
5. Dietary Assessment
 - (a) Conduct a 3 - days 24 - hours recall on an adolescent girl and comment on her nutritional status.
 - (c) Evaluate her dietary assessment after a month for feedback
6. Case study of existing intervention program in voluntary and government sector.
7. Development of a plan for nutrition intervention project in the community.

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FOOD & NUTRITION
M. Sc. - 1ST SEMESTER
Paper COURSE - IV
RESEARCH METHODS AND STATISTICS

Marks: 100

OBIECTIVES:

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

CONTENTS

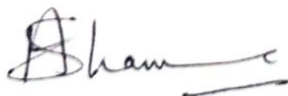
UNIT - I

- Research: Meaning, objectives and significance of research.
- Science, scientific methods, scientific approach.
- Role of statistics and research in Home Science discipline.
- Types of Research: Historical, descriptive, experimental, case study, social research, observation research.

UNIT - II

Definition and Identification of a Research Problem.

- Selection, justification & limitation of research problem.
- Hypothesis - meaning nature, characteristics, types & functions of hypotheses.
- Variables: Meaning, nature, type & selection of variables.



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UNIT- III

Sampling Methods

- Population and sample
- Probability & semi probability sampling - simple random, systematic random sampling, two stages and multistage sampling, cluster sampling.
- Non - Probability sampling purposive, quota and volunteer sampling.
- Merits & demerits sampling.

UNIT - IV

Research Design

- Meaning, features concept & purpose of research design.

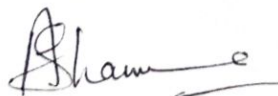
Qualitative research method

- Definition theory design types reliability & validity of :-
 - i. case study
 - ii. Interview
 - iii. Observation

UNIT - V

Quantitative research method

- Definition theory design types reliability & validity of
 - i. Sociometric scale
 - ii. Questionnaire
 - iii. Schedule
- Writing a research report



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M.Sc. (Home Science)

Food and Nutrition

SEMESTER-II

PAPER - I

Advance in Food Microbiology

June - 2021

Objectives M.M.100

1. The course will enable the students to gain deeper knowledge of micro organism in human environment and to understand the importance of microorganism in foods technology.
2. To understand legal aspects in the areas.
3. To develop skills in handling food safety
4. To know the food borne diseases and how to prevent it.

UNIT-I

Introduction to Food Microbiology:

1. Historical development of Microbiology and Food Technology Regulations and Standards in food legislation.
2. **Environmental Microbiology:** Bacteria Mold, fungi, yeast and virus their morphology, cultural characteristics biochemical activities, their sources in foods.
3. Factors affecting growth of micro organism in Foods Intrinsic and extrinsic parameters. Conditions that influence microbial growth in food.

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UNIT -II

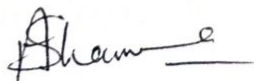
Estimation and Isolation of Micro Organisms:

1. Historical Development of Microbiology and Food Technology Regulations and Standards in Food legislation.
 - Conventional methods; SPC
 - Immunological Methods: RIA, ELISA, FIA
 - Chemical Method: ATP measurement and PCR (Polymers - Chain Reaction)
 - Rapid methods (new techniques)
2. Microscope colony count, Analysis, DMC (Direct Micro Scopic Count).
3. Estimation of the number 'O' Microorganisms, MPN (Most Probable Numbers)

UNIT - III

Microbiology of different foods:

1. Major cause of food spoilage, principles of food preservation control of microorganisms: by destruction and by retarding growth. Microbial Intoxication in food groups such as, Milk & Milk products cereals, Meat, fish egg, fruits & vegetables canned foods.
2. Foods, Borne diseases: (Bacterial and Virus) Signs / Symptoms and prevention
 - Staphylococcal Gastro enteritis
 - Clostridium perfringens
 - Botulinum and Vibrio
 - E - Coil, Salmonella, Shigellae
 - Poliomyelitis
 - Infectious Hepatitis.



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UNIT - IV

Microbiology safety of foods:

1. Indicators of food safety and quality, Indicator organisms methods for detection Microbiological criteria of various foods products and their significance definition sampling plan
2. HACCP System, Food safety used in controlling Microbiological Hazards
3. Antimicrobial compounds: Biologically based preservation system, probiotic Bacteria

UNIT V

Role of Microbes:

Its advantages and disadvantages in food production. Use of Microorganism in Dairy Products, Meat, Fish, Beverage.

Bread and Idli: Beer, Wine, Yoghurt etc.

Apparent health benefits of fermented foods and the role of microbes.

GMF (Genetically Modified Foods)

Definition, Use advantages and Characteristics of GMF. GM applications, Food future by genetically modified organisms.

References:

1. Topley and Wislons (1983) Principles of Bacteriology, Virology and Immunity, Edited by S.S. Wilson, A Miles and M.T. Parker, Vol. I: General Microbiology and Immunity, II: Systematic Bacteriology, 7th Edition Edward Arnold Publisher
2. Block, J.G. (1999) Microbiology Principles and Explorations, 4th Edition John Wiley and Sone Inc.
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Journals

12. Journal of Food Science Published by the Institute of Food Technologists, Chicago lu. USA
13. Journal of Food Science and Technology Published by Association of Food Scientists and Technology (India) CFTRI Mysore
14. Food Technology published by the Institute of Food Technologists, Chicago lu. USA



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M.Sc. (Home Science)
Food and Nutrition
SEMESTER - II
PAPER - II
Applied Biochemistry and Technique

Objectives M.M. 100

This course will enable students to:

1. Augment this Biochemistry knowledge acquired at the undergraduate level.
2. Understand the mechanisms adopted by the human body for regulation of metabolic pathways.
3. Get an insight into interrelationship between various metabolic pathways,
4. Become proficient for specialization in nutrition.
5. Understand integration of cellular level metabolic events to nutrition disorder and imbalances.
6. Understand the principals of various analytical for nutrition research.
7. Familiarize with the application of the above techniques.

UNIT - I

Vitamins and trace elements in the function of enzymes.

Detoxification in body metabolism of foreign compounds

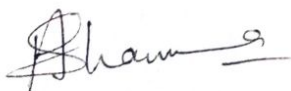
UNIT - II

Membrane structure assembly and function.

Hemoglobin and its metabolism.

UNIT - III

Basie of instrumentation physico-chemical principals and methodology colorimetry.
Photometry- flourimetry, flame photometry and atomic absorptionmetry



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UNIT – IV

Electrophoresis - principles and applications in paper and gel electrophoresis Chromatography
principals and applications in paper (circular, ascending and descending) ion exchange column
thin layer gas liquid and high performanus chromatographic techniques.

Isotopes and their use radio active and stable isotopes.

Immunological method RIA and ELISA.

UNIT - V

Bioenergetics and metabolism a survey of metabolism anabolic catabolic pathways, their
differences role of ATP cycle in bioenergetics.

Biological oxidation respiratory chain oxidative phophorylation

Project- project report to be submitted by the students guided by the teachers based on the course
content of the paper.

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M. Sc. (Home Science)
Food and Nutrition
SEMESTER - II
PRACTICAL - I
Food Microbiology and Applied Biochemistry & Techniques

Total Marks: 100 Seasonal 20 viva: 20 Pract. Exem. 60 (30 Section A) (30 Section B)

Section - A (Any five)

1. Preparation of common laboratory media and special media for cultivation of bacteria yeast and molds.
2. Staining of Bacteria: Gram's staining acid fast, spore, capsule and flagellar, staining, motility of bacteria.
3. Staining of yeast and molds.
4. Cultivation and identification of important molds and yeast (slides and mold culture)
5. Study of environment around us sources of transmission of micro - organism in foods: assessment of surface sanitation of food preparation units, swab and rinse techniques.
6. Bacteriological analysis of foods: both processed and un processed vegetables and fruits, cereal, spices and canned food, using conventional methods, yeast and mold count in foods.
7. Demonstration of available rapid methods and diagnostic kits used in identification of micro - organism or their products.
8. Visits (at least two) to food processing units or any other organization dealing with and advanced method in food microbiology.

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Section - B (*Any five*)

- | | |
|-------------------------|--|
| 1. Ascorbic acid: | Estimation of ascorbic acid in foods. |
| 2. Cholesterol: | Estimation cholesterol in serum. |
| 3. Enzyme assay: | Estimation of activity of serum. Alkaline phosphates and transaminase. |
| 4. Urea and creatinine: | Estimation of urea and creatinine in serum and urine. |
| 5. Acids and alkalis: | Preparation of dilute solutions of common acids and alkalis and determining their normalities |
| 6. Spectrometry: | Beer Lambert's Law, absorption maximum preparation of standard curve. Nutrient estimation in UV and visible range. |
| 7. Chromatography: | Paper, ion exchange and column chromatography, |
| 8. Electrophoresis: | Fractionation of plasma protein. |



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M.Sc. (Home Science)
Food and Nutrition
SEMESTER - II
PAPER - III
Nutrition and Health Problems

M.M. 100

Objectives

The course will enable students to:

1. Understand the nature of important nutrition problems and their prevention and control
2. Study and understand the Epidemiology of communicable diseases and nutrition related problems prevalent among the affluent and the less privileged groups
3. Study the biochemical and clinical manifestations preventive and therapeutic measures of common nutrition and health problems.

UNIT-I

Epidemiology

Definition aims and approaches

Measurements and its roles

Method in Epidemiology in brief

Use of epidemiology

Epidemiology of communicable diseases

Dengue Plague cholera mumps tetanus rabies tuberculosis etc.

UNIT - II

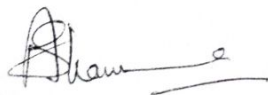
Dynamics of disease transmission

Sources Modes and susceptible host.

Disease prevention and control early diagnosis, notification, investigation, isolation, quarantine, treatment and disinfections.

Host defenses: Active and Passive Immunity.

Immunization program in India.



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UNIT - III

Nutritional problems of the community.

Problems of vulnerable groups

National and Global Nutritional problems prevention and control of Famine Disaster, War, Relief feeding Emergency feeding etc.

Basic concepts and facts about HIV / AIDS

- (a) Transmission of HIV infection, signs & symptoms of AIDS
- (b) Diagnosis of HIV infection.
- (c) Management & care of HIV infected persons.
- (d) Content of communication about HIV / AIDS
- (e) Preventive of HIV infection

UNIT - IV

Historical background, prevalence, etiology, biochemical and clinical manifestation, preventive and therapeutic measures for the following

Protein Energy Malnutrition

Vitamin A deficiency

Nutritional Anaemia

Iodine deficiency disorders

Rickets osteomalacia and osteoporosis

Fluorosis

UNIT - V

Historical Background, prevalence, etiology, biochemical and clinical manifestation, preventive and therapeutic measures for the following

Obesity and Overweight

Diabetes Mellitus

Coronary Heart Disease

Cancer

SARS, Covid 19

Other nutritional problems

Lathyrism, dropsy, aflatoxicosis, alcoholism.



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M.Sc. (Home Science)
Food and Nutrition
SEMESTER - II
Nutrition and Health Problems

M.M. 50

Practical-

1. Development of low.cost recipes suitable for various vulnerable groups.
2. Survey the local schools and plan 6 days cyclic menu for nutritious snacks / lunch for pre school children.
3. Plan a project for the prevention of any disease condition. (Deficiency or some other)
4. Study of various deficiency diseases: Prevalence and etiology on the basis of analysis of primary and secondary data.
5. Visit to any operational public nutrition program for field experience and writing a report.
6. One day activity in your college: to develop a questionnaire based on nutritional knowledge. Assess it on college going girls and provide nutritional counseling to them.
7. Develop a suitable teaching aid to increase awareness regarding AIDS, Drug abuses and anaemia among college going girls through lectures. Posters, charts, etc.

Ashwani

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**M.Sc. - Food and Nutrition
IIND SEMESTER
PAPER - IV
STATISTICS & COMPUTER APPLICATION**

OBJECTIVES MARKS: 100

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

Note: Special instructions should be send to paper setter to set one theoretical question and its option should numerical question.

UNIT - I

- Classification and tabulation of data,
- Graphic presentation, Frequency distribution, Histogram, frequency polygons, Ogive
- Average of position in individual, discrete and continuous series.

UNIT - II

- Normal distribution - Characteristics, deviation from normality
- Measures of variability - range quartile deviation, Mean Deviation, Standard Deviation or SD.

UNIT - III -

- Testing of hypothesis, Type I and Type II errors.
- Non parametric Methods Chi - square test, Application of student T test for small samples. Difference in proportion for means and difference in means - Critical ratio.

UNIT - IV

- Correlation - Meaning, types,
- Coefficient of correlation by scatter diagram, rank correlation, product movement method
- Analysis of variance - nature use & basic concept one and two - way.

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UNIT- V

- Experimental Designs- Nature type - Single group - two group control & Experimental Group.
- Randomized block design
- Latin square design
- Factorial design

PRACTICAL

TOTAL MARKS: 50

STATISTICS & COMPUTER APPLICATION

1. Tabulation.
2. Graphic Presentation, Frequency curve, Histogram, Frequency, Polygons, Ogive.
3. Calculation of Mean, Median, Mode.
4. Calculation of Standard Deviation.
5. Correlation.

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

Reference:

- Garrett, Henery E. (1971) Statistics in Psychology and education, David Heley and Co.
- Edwards: Experimental Design in Psychological Research.
- Kerlinger: Foundation of Educational Research.
- SPSS / PC for the IBM PC / Xt. SPSS inc.
- Goyal Mathematics statistics.
- Levin Statistics for Management.
- Yule An Introductory to the theory of statistics.
- Moud Introduction to the theory of statistics,
- Freund Mathematical statistics.
- Nag Mathematical statistics.
- Patri Statistical Methods.
- Choundan Statistics for Business and Economics
- Singh Principal of Statistics
- Thamligom research methodology,
- Kothari research methodology.
- Agrarwal Basic Statistics.
- Sankhyakike mule sidhant (Hind) Or. H.K. Kapil.
- Sanjhakiyavidhiyavayvhar park vigyanonai by Dr. S.P. Gupta.
- Fundamental of research Keriliger
- AnusandhanVidhiyaByParasnath.

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M.Sc (Home Science)

Food and Nutrition

SEMESTER - III ~~2020~~ Dec. 2021

PAPER - I

Advanced Nutrition

Objectives M.M. 100

The 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.
- Familiarize students with the recent advances in nutrition.

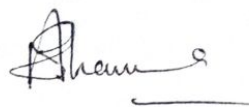
UNIT - I

Energy: Energy content of food. Physiological fuel value - review. Measurement of energy expenditure, BMR thermic effect of feeding and physical activity. Methods of measurement. Estimating energy requirement of individual and groups. Regulation of energy metabolism: control of food intake, digestion absorption and body weight

UNIT - II

Carbohydrates: Digestion and transpost review - dietary fiber fructooligosaccharides, resistant starch - chemical composition and physiological effects, glycemic index of foods . Sweeteners nutritive and non - nutritive.

Non-nutritive food components with potential helath effects: Polyphenols, tannis, phytate, phytostrongens. Cyanogenic compounds, lectins and saponins



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UNIT - III

- (a) **Protein:** Digestion, absorption transport- review, Metabolism of proteins role of muscle, liver and gastrointestinal tract.
- (b) **Protein quality;** methods of evaluation protein needs. Therapeutic application of specific amino acids: Branched chain, glutamine arginine homocysteine, cysteine.
- (c) Nutritional regulation of gene expression.
- (d) Inborn errors of metabolism: Sickle cell Anaemia, Thalassemia, Cystinuria. Phenylketonuria, Hereditary Lactose intolerance, crout.

UNIT - IV

Lipids: Digestion, absorption transport review.

Functions of essential fatty acids. Role of n-3, n-6 fatty acids. Prostaglandins. Fat requirements.

Minerals: Note: For each nutrient sources bioavailability, metabolism, function, determination of requirement RDI / ESADDI, deficiency and toxicity, interactions with nutrients are to be discussed.

Macro minerals: Calcium, phosphorus. Magnesium sodium, potassium and chloride.

Micro minerals: Selenium, cobalt, Chromium, vanadium, silicon, boron, nickel.

UNIT - V

(A) **Vitamins:** Historical Background, structure food sources, absorption and transport, metabolism, biochemical function, assessment of needs, interaction with other nutrients physiological, pharmacological and therapeutic effect toxicity and deficiency with respect to following

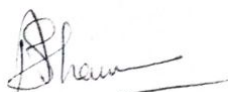
- I. Fat soluble : Vitamin A, D, E & K
- II. Water soluble: Thiamine, riboflavin, niacin, biotin, pyridoxine, folic acid, pantothenic acid, ascorbic acid, Cyanocobalmin, choline, Inositol.

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References:

1. Annual Reviews of Nutrition Annual Review Inc. California, USA
2. Shils, M.E., Osson, 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. (1998) Nutrient interactions. Marcel Dekker Inc. 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, CD. and Harrgrove, JI (ed) (1996): Nutrients and Gene Expression: Clinical Aspects. Boca Raton FL CRC Press.
9. Baurle, P.A. (ed) (1994) Inducible Gene Expression Part - I: Environmental Stresses and Nutrients Boston: Birkhauser.
10. O. Chandra, R.K. (ed) (1992) Nutrition and Immunology. ARTS Biomedical. St. John's New Foundland.
11. Malan, L.K & Ecott Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
12. Sizer, F & Whitney. E. (2000) Nutrition-Concepts & Controversies 8th Edition. Wadsworth Thomson Learning.
13. Whitney, E.N. & Rolfes, S.R. (1999): Understanding Nutrition, 8th Edition, West/Wadsworth, An international Thomson Publishing Co.
14. Ira Wolinsky (Ed) (1998): Nutrition in Exercise and Sports, 3rd Edition. CRC Press.
15. Shils, M.E. ; Olson, J.A. ; Shike, N. and Roos, A.C. (Ed) (1999): Modern Nutrition in Health and Disease 9th Edition, Williams and Wilkins,
16. McArdle, W.Katch, F. and Katch (1996) Exercise Physiology. Energy Nutrition and Human Performance 4th edition, Williams and Wilking, Philadelphia.



Dep

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Journals

1. Nutrition Reviews.
2. America Journal of Clinical Nutrition.
3. America 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 Nutrition Metabolism.



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M.Sc. (Home Science)
Food and Nutrition
SEMESTER - III
PAPER - II
Clinical and Therapeutic Nutrition

Objectives

M.M. 100

The course will be enable the students to:

- Understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
- Know the effect of the various diseases on nutritional status and nutritional and dietary requirements.
- Be able to recommended and provide appropriate nutritional care for prevention and treatment of various diseases.
- Orient the students with all the important state of the art methodology applied in nutritional assessment and surveillance of human groups.
- Develop specific skill to apply the most widely used method.

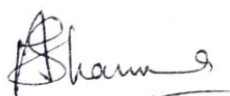
UNIT - I

(A) Role of dietitian

- (a) Responsibilities of nutritional counselor.
- (b) Communication of dietary advice, skills of communication.
- (c) Motivation of patients.
- (d) Teaching and used in dietary advice.

(B) Principles of nutritional care

- i. Nutritional care process
 - (a) Assessment
 - (b) Objectives of nutritional care
 - (c) Implementation of nutritional care
 - (d) Evaluation of nutritional care.



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(C) Nutritional intervention

1. Current methodologies of assessments of nutritional status in clinical situation their implementation and comparative application for the following
 - (a) Food consumption
 - (b) Anthropometry
 - (c) Clinical assessment
 - (d) Laboratory tests
2. Assessment of patients nutritional needs.
 - (a) Dietary calculations
 - (b) Meal exchange system
 - (c) Diet prescription
3. Diet Modification
 - (a) Adequate normal diet as bases for therapeutic diet.

UNIT - II

A. Nutritional care for hospitalized patients.

- 1) Identification of high risk patients.
- 2) Assessment of patients need based on interpretation of patient data clinical biochemical, biophysical etc.
- 3) Hospital food service.
- 4) Routine hospital diets (a) Regular (b) Light (c) Soft, (d) Fluid
- 5) Modes of feeding
- 6) External - tube feeding
- 7) Parenteral (i) Peripheral vein feeding (ii) Total Parenteral nutrition
- 8) Psychological factor in feeding the sick person
- 9) Effect of food, nutrients and nutritional status on drug dosage and efficiency.

UNIT - III

(A) Overweight and obesity

1. Definition
 - (a) Classification
 - (b) Assessment
 - (c) Causes, Physiology of obesity, mathematics of weight reduction.
2. Treatment of obesity
 - (a) Dietary management and calorie restriction plans
 - (b) Exercise
 - (c) Other approaches of weight reduction

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(B) Underweight

1. Definition
 - (a) Criterion
 - (b) Etiology
2. Treatment
 - (a) High calorie diet

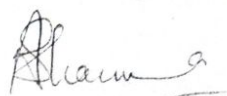
(c) Injection and fever

1. Metabolism, effect on body mechanism and classification
2. Etiology. Pathology symptoms and treatment of a
 - (a) Acute fever - viral fever, Conavirus
 - (b) Chronic fever - typhoid and TB

UNIT - IV

(A) Diseases of gastro intestinal tract causes. Pathogenesis. Symptoms and dietary management of:

- (1) Diseases of esophagus
 - (b) Achalasia
 - (c) Oesophagitis
- (2) Disease of stomach
 - (a) Indigestion
 - (b) Gastritis
 - (c) Peptic ulcer
 - (d) Esophagi tis
- (3) Disease of intestine
 - (a) Constipation
 - (b) Diarrhea
 - (c) Hemorrhoids
 - (d) Steatorrhoea
- (4) Inflammatory diseases of bowel.
 - (a) Diverticular disease
 - (b) Ulcerative Colitis
- (5) Malabosorbtion Syndrome
 - (a) Sprue
 - (b) G - IT enzyme deficiency



UNIT -V

A. Diseases of liver exocrine pancreas and biliary system Physiology Etiology, Pathogenesis. Symptoms and Management

1.
 - (a) Physiology of liver
 - (b) Diet and liver diseases

- (2) Liver diseases
 - (a) Cirrhosis
 - (b) Viral hepatitis
 - (c) Hepatic coma
 - (d) Wilson's disease

3. Disorder related to gall bladder
 - (a) Cholecystitis
 - (b) Gall stones

4. Disorders related to pancreas
 - (a) Pancreatitis

Practical: M.M. 100

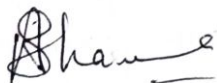
1. Calculating BMR using the Kymograph
2. Calculate the energy balance of an Individual
3. Calculate the energy carefully using the Satyanarayan Method.
4. Calculation of percent energy supplied by carbohydrate in the diet
5. To find out the high fiber products available in market and critically evaluate the content
6. Evaluation of protein quality of food preparations
 - (a) To calculate the chemical score of food item using the SAAP. PAAP reference protein
 - (b) Calculation of NDP cal% of dishes.
7. To estimate the calcium content of feces and urine and to assess the calone balance of an individual.
8. To estimate the total nitrogen intake based on the protein intake and calculate the N2 balance of and individual.
9. Dietary calculation using food exchange.
10. Planning, calculation and preparation of diets mentioned in theory.
11. Nutritional supplement, nutritional support substrats.

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References

1. Manual of Dietetics Practice - Brony Thomas
2. Nutrition in Health and Disease – Anderson
3. Normal and Therapeutic Nutrition - CH. Robinson
4. Basic Nutrition and Diet Therapy - William 10 /c
5. Nutrition and Diet Therapy - William 10 /c
6. Food Nutrition and Dietetics - URVI
7. Nutrition and Diet Therapy - Stanfield
8. Modern Nutrition in Health and Disease - Robert S. Goodhart
9. Nutrition Principles and Clinical Practices - Sara W. hunt and James.
10. Nutrition in Critical Care - Zaroga
11. Fundamentals of Clinical Nutrition 93 - Weinster
12. Dietetics - Shrilaxmi
13. Nutrition and Dietetics - Shubhangini Joshi
14. Human Nutrition and Dietetics - Davidson Passmore
15. Clinical Dietetics and Nutritional - F.P. Antia
16. Textbook of Nutrition and Dietetics - Kumud Khanna Etal
17. Mohan, L.K. and Excott Stump (2000) Krause's Food Nutrition Diet Therapy 10th Edition W.B. Saundes Ltd. Shils. M.F. Olson. J.A. Shike M. and Ross A.C. (1999)
18. Modern Nutrition Health and Disease 9th Edition Williams and Wilkins



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M.Sc. (Home Science)
Food and Nutrition
SEMESTER - III
PAPER - III
Food Science & Current Trends

Objectives: M.M. 100

This course is designed to:

- Provide an understanding of composition of various foods stuffs.
- Familiarize students with changes occurring in various foodstuffs as a result of processing and cooking.
- Enable students to use the theoretical knowledge in various application and food preparations.
- Create awareness regarding current trends, issues and researches in various aspects of food and nutrition.

UNIT - I

- (a) **Introduction of Food Science:** Development of Food Science as a discipline.
- (b) **Water and food dispersions:** Physical properties of water and ice chemical nature, structure of the water molecule.
- Absorption phenomena, types of water
 - Free and bound water

UNIT - II

- Physico chemical properties of food.
- Colloidal salts, stabilization of colloidal systems.
- Gels structure, formation and stabilization
- Emulsions; formation, stability surfactants and emulsifier.

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UNIT - III

- Starch: Structure, gelatinization methods for following gelatinization changes. Characteristics of some food starches. Effect of ingredients and conditions on gelatinization. Modified food starches
- Non - starch Polysaccharides: Cellulose, Hemicelluloses, Pectin's gums, animal polysaccharide
- Sugar and Sweeteners: Sugars, syrups, alcohols, potent sweeteners, sugar products. Alternative sweeteners. Browning
- Reactions of sugar: Caramelization, Hydrolysis; Crystallization, Indian Confectionery

UNIT - IV

Cereals and Cereal Products:

Cereal Grains: Structure and Composition

Cereal Products

Flour and Flour Quality

Extruded Foods breakfast cereals wheat germ, bulgur, puffed and flaked cereals,

UNIT - V

(a) **Milk and Milk Product:** Composition, Physical and functional properties: Denaturation, effects of processing and storage and dairy products: cultured milk, yogurt, butter, whey cheese concentrated and dried products Frozen desserts, daily product substitutes

(b) **Pulses and Legumes:** Classification, composition, denaturation non enzymatic browning and other

Practical's:MM 50

1. Effect of solutes of boiling point and freezing point of water
2. **Sugar and Jaggery Cookery:** Caramelization, crystallization factors affecting crystal formation. Preparation of standardized chikki, laddos gulabjammin, jalebi, shakarparas, chocolates,
3. **Starches, vegetable gums and cereals:** Gelatinization properties of starches, factors affecting gelatinization formation. To see the effect of soaking time on the quality of rice. To study the formation of gluten.
4. **Jams and Jellies:** Pectin content of fruits, role of acid pectin and sugar on jam and jelly formation
5. **Fat and Oils:** Flash point, melting point and smoking point. Role of fats and oils in cookery, plasticity of fats. Permanent and semi permanent emulsions. To study the effects of various factors affecting the fat absorption. Use of various types of fats (unsaturated & saturated) in cookery.

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M.Sc. (Home Science)
Food and Nutrition
IIIRD SEMESTER

PAPER IV

SCIENTIFIC WRITING & COMMUNICATION TECHNOLOGY OBJECTIVES

Marks: 100

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

1. Scientific writing as a means of communication.
 - different forms of scientific writing.
Articles in journals, Research
notes Monographs
bibliographies
2. 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 outline
 - Sentence outline, Combination of topic and sentence outlines.

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UNIT-II

3. Drafting titles, sub title, tables, illustrations.

- Tables as systematic means of presenting data in rows and lucid way of indicating relationships and results.
- Formatting tables, title, body tab, tab column, column head, spanner head Box, head.
- Appendices: Use and guidelines.

UNIT III

4. The writing process

Getting started

Use outline as a starting device

Drafting

Reflecting, Re-recording

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

5. Parts of dissertation /research report/article

- Introduction
- Review of Literature
- Method



As

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- Results and discussion
- Ask questions related to content, continuity. Clarity, validity, internal consistency and objectively during writing each of the above parts.

UNIT - V

Clearly state the question to be addressed
Rationale and importance of the question being addressed
Empirical 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 resources
Executive summary.

References:

1. APA (1984). publication manual of American psychological association (3rd edition), Washington: AP A
2. Cooper H.M. (1990) .integrating research: A guide for literature reviews (2nd edition). California: Sage.
3. Dunn, F.V. & others (Ed.) (1991). Disseminating research: Changing Practice NY. Sage.
4. Harman, E & Montagnes, I (Eds.) (1997) The thesis and the book. newdelhi: Vistaar.
5. Locke, L.F. and others (1987) Proposals that Work: A guide for planning Dissertations & Grant proposal (2nd Ed.) Beverly Hills: Sage.
6. Mullins, C.J (1997) A Guide to Writing and Publishing in social and

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behavioral sciences New York. John Whey & Sons. 7 Richardson L. Writing strategies
Reaching Diverse Audience, California: Sage.

PRACTICAL:

Total Marks: 50

OBJECTIVES

- To develop understanding regarding the vital aspects of communication and behaviors Audio and Visual Media and their use.
- To develop understanding regarding the new communication technologies and their use.
- To develop skills in developing using different communication technology for various presentations.

CONTENTS:

1. **Concept for communication, scope of communication, communication process.**
Approaches of communication.
2. Different media their characteristics and use.
3. Use of Video projector slide / Filmstrip projector computers.
4. Introduction to new communication technology.
 - Satellite distribution Broadcast networking.
 - Developing close circuit television package on (CCTV) Topics
 - Incorporating the use of video films in presentations i.e. the selected clippings.
 - Slide: making use of slides with audio commentaries for presentations.
 - Development and use of transparencies.
 - Digital method of communication technologies.
 - Computer graphic design.
5. **Preparation of graphics for research reports / seminars / other presentations.**
6. **Designing - Leaflets / pamphlets/Booklets/ Cover pages/Posters.**
7. **Presentations using power point.**

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Semester wise syllabus for Postgraduates
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M.Sc. (Home Science)
Food and Nutrition
SEMESTER-IV
PAPER I- Health and Fitness

June 2022

Marks: 100

OBJECTIVES

- Understand the components of health and fitness and the role of nutrition in these. Make nutritional. Dietary and physical recommendations to achieve fitness and well-being.
- Develop ability to evaluate fitness and will.

UNIT - I

(A) Body Composition

(1) Methods

- (a) Chemical analysis.
- (b) Nutritional anthropometry
- (c) Skin fold Thickness
- (d) Body density
- (e) Dilution Technique
- (f) ^{40}K Analysis
- (g) Other methods: Concept

(2) Compositional changes concept

- (a) Human foetal development
- (b) Material weight gain-Distribution composition
- (c) Compositional changes between birth and maturity
- (d) Compositional changes with weight changes: Physical activity, Obesity.

(B) Holistic approach to the management of fitness and health: Nutrition, Exercise, Physical fitness and health inter-relationship

- (a) Energy input and output
- (b) Diet and Exercise
- (c) Importance of yogic practices to increase the lungs vitality

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UNIT - II

- (A) Effect of specific nutrients on work performance and physical fitness shifts in carbohydrate and at metabolism, mobilization of fat stores during nutrition in sports: Sports specific requirements. Diet manipulation. Pre-game and Post game meals.

UNIT - III

- (A) **Water:** Regulation of intra and extra cellular volume osmolality, water balance and its regulation. Water electrolyte losses and their replenishment during exercise and sports events, effects of dehydration, importance of sports drinks
- (B) Diet for persons with high energy requirements stress and starvation.

UNIT - IV

- (A) Defining nutrition goals/guidelines appropriate to health, fitness and Prevention and management of Chronic degenerative disease diabetes mellitus CV disorders, bone, health and cancer
- (B) Nutrition and exercise regimes for management of obesity. Critical review of various dietary regime for weight and fat reduction. Prevention of weight cycling.

UNIT - V

- (A) Nutrition and exercise regimes for pre and post natal fitness.
- (B) Alternative systems for health and fitness like ayurveda yoga, meditation, vegetarianism and traditional diet.
- (C) Nutrition Management in special conditions: Space travel, high altitudes, low temperatures submarines.

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References

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2. Shils, M.E.: Osson, 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. (1998) Nutrient interactions. Marcel Dekker Inc. 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.
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Journals

1. Nutrition Reviews
2. America Journal of Clinical Nutrition
3. British Journal of Clinical Nutrition
4. European Journal of Clinical Nutrition
5. International Journal of Vitamin and Nutrition Research
6. International Journal of Food Science and Nutrition.

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M.Sc. (Home Science) 45

Food and Nutrition

SEMESTER - IV

PAPER - II - Clinical & Therapeutic Nutrition

Objectives M.M. 100

1. Understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patients need.
2. Know the effect of various diseases on nutritional requirement and nutritional status.
3. Be able to recommend and provide appropriate nutritional care for preventions and treatment of various diseases.
4. Orient the students with all the important state of art methodology applied in nutritional assessment and surveillance of human groups.
5. Develop specific skills to apply the most widely used methods

UNIT - I

A. Nutritional care in Cardio - vascular disorders.

1. Hypertension

- a) Definition
- b) Criterion
- c) Types
- d) Causes
- e) Nutritional Management
- f) Drugs.

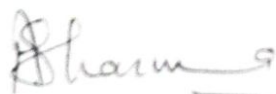
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2. Hyperlipidemia
 - a) Lipo Proteins and their metabolism
 - b) Classification of hyperlipidemia
 - c) Clinical and nutritional aspects of hyperlipidemia
 - d) Dietary Care
3. **Coronary Heart Disease (CHD)**
 - a) Atherosclerosis
 - i. Etiology
 - ii. Pathogenesis
 - b) Risk factors associated with CHD
 - c) Management of CHD
 - i) Dietary Management
 - ii) Exercise
 - d) Prevention of CHD

UNIT - II

- (a) **Cerebrovascular disorder and nutritional management**
 - a. Pathogenesis
 - b. Etiology
 - c. Nutritional
- (b) **Diet in Disease of endocrine pancreas**
 - (a) Etiology
 - (b) Classification
 - (c) Symptoms and diagnosis
 - (d) Management clinical vs. Chemical control
 - (e) Insulin Therapy
 - (f) Oral hydroglycemic drugs
 - (g) Glucose monitoring at home
 - (h) Dietary care with and without insulin
 - (i) Specific Diabetic food
 - (j) Sweetness and sugar substitutes
 - (k) Diabetic coma
 - (l) Insulin reaction
 - (m) Patient education



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UNIT - III

A. Nutritional care in Hypoglycemia

- (1) Hypoglycemia
 - (a) Symptoms
 - (b) Types
 - i. Reactive Hypoglycemia
 - ii. Idiopathic Hypoglycemia
 - (c) Dietary treatment

B. Nutritional care for patient with disease of Kidney

- 1) Review of physiology and function of normal kidney
- 2) Nephritis
 - (a) Classification
 - (b) Etiology
 - (c) Characteristics
 - (d) Nutritional care and management

C. Nephritic syndrome

- (a) Etiology
- (b) Characteristics
- (c) Nutritional care and management

D. Acute and Chronic renal failure


- (a) Etiology
- (b) Types
- (c) Nutritional care and management

UNIT IV

Nutritional care for patients having surgery and burns

A. Surgery

- 1) Pre operation nutritional care
- 2) Post operative nutritional care
 - (a) Gastric surgery
 - (b) Gall bladder surgery
 - (c) Colon surgery
 - (d) Tonsil surgery
 - (e) Oesophagus surgery



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B. Burns

1. Fluid and electrolyte replacement
2. Nutritional care
3. Rehabilitation

C. Cancer

- (1) Dietary factors and cancer causation
- (2) Cancer treatment: Radio therapy, surgery and chemotherapy
- (3) Alternative or complementary diets
- (4) Prevention

UNIT – V

Nutritional care HIV immune suppressed patients and management of infancy and childhood nutritional problems.

i. HIV diseases and AIDS

- (a) Nutritional problems associated with HIV diseases
- (b) Role of diet and nutritional support

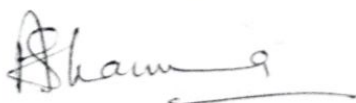
ii. Diets for immune suppressed patients

iii. Nutritional management of

- (a) Kwashiorkor
- (b) Marasmus
- (c) Vitamin A deficiency

iv. Latest researches and concepts in management of various life style problems. Practical: M.M. 100

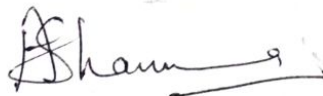
1. Planning calculation and preparation of diets mentioned in theory.
2. Interpretation of patient data and diagnostic test and drawing up of patient diet prescription using a case study approach
3. Follow up acceptability of diet prescription, compliance, discharge diet plan,
4. Preparation of diet counseling aids for common disorders.
5. Spotting



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4. Basic Nutrition and Diet Therapy - William 10 /c
5. Nutrition and Diet Therapy - William 10 /c
6. Food Nutrition and Dietetics
7. Nutrition and Diet Therapy - Stanfield
8. Modern Nutrition in Health and Disease - Robert S. Goodhart
9. Nutrition Principles and Clinical Practices - Sara W. hunt and James.
10. Nutrition in Critical Care - Zaroga
11. Fundamentals of Clinical Nutrition 93 - Weinster
12. Dietetics - Shrilaxmi
13. Nutrition and Dietetics - Shubhangini Joshi
14. Human Nutrition and Dietetics - Davidson Passmore
15. Clinical Dietetics and Nutritional - F.P. Antia
16. Textbook of Nutrition and Dietetics - Kumud Khanna Etal
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M.Sc (Home Science)
Food and Nutrition
Semester – IV
Paper-III
Food Science & Current Trends

Objectives: MM.100

This course is designed to:

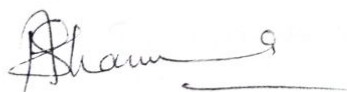
- Provide an understanding of composition of various food stuffs.
- Familiarize students with change occurring in various foodstuffs as a result of processing and cooking.
- Enable students to use the theoretical knowledge in various application and food preparations.
- Create awareness regarding current trends, issues and researches in various aspects of food and nutrition.

UNIT-I

- a. **Enzymes:** Nature of enzymes, stability and action. Proteolytic enzymes, oxidases, lipases decomposing carbohydrates and application Immobilized enzymes.
- b. **Meat and Poultry:** Muscle compositing, Characteristics and structure. Post mortem changes. Processing, Preservation and their effects. Heat induced changes in meat. Variables in meat preparation. Tenderizers. Meat Products

UNIT-II

- c. **Eggs:** Structure and composition. Changes during storage. Functional properties of eggs use in cookery. Egg Processing. Low Cholesterol egg substitutes.
- d. **Fish and Sea Food:** Types and composition, Storage and changes during storage changes during processing. By products and newer products.



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UNIT - III

- A. **Fats, Oils and Related Products:** Nuts and Oils seeds, Sources Composition, Effects of Composition on fate properties. Functional properties of fat and uses in food preparations. Fat substitutes Fat deterioration and antioxidants.
- B. **Fruits and Vegetables:** Plant anatomy, structure and composition, enzymes in fruits and vegetables, flavor constituents. Plant phenolics, pigments Post harvest changes. Texture for fruits and vegetables. Effects of storage processing and preservation.

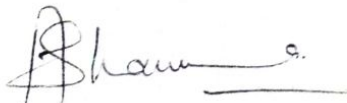
UNIT - IV

- e. **Leavened Products:** Leavening agents, Biologically leavened and chemically leavened products. Batters and dough.
- f. **Salt and substitutes.**
- g. **Spices and Condiments:** Composition, Flavoring extracts natural anti synthetic, Importance of ORAC (Oxygen Radical Absorbance capacity) value in spices.

UNIT - V

(A) **Biotechnology in Food:**

- Algae as food spirulina
- Organic food
- Nutraceuticals
- Low cost nutrients
- Supplement
- Space foods
- Food irradiation
- Packaging of foods
- Food safety and Standards, Quality Standards Entrepreneurship
- Entrepreneurship Management



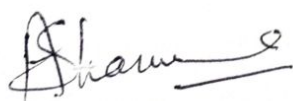
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Practical:

M.M. 50

Food Science

1. **Milks and Milk Products:** Scalding denaturation. Effect of acid salt, alkali, sugar, heat, enzymes, Rasgullas, Khoa, curd, paneer, Cheese (Ripened and unripened). Effect of fermentation on milk proteins.
2. **Egg:** Emulsion, thickening. Binding, gelling, Method of egg cookery and effects of heat. Egg white foams and factors and factors affecting foams. Determination of the egg coagulation at different temperature. Effect of cooking time on color, texture and acceptability of whole egg. Effect of cooking method on coagulation property of eggs. Effect of different factors on the gelation temperature and consistency of egg custard. Effect of temperature on the stability of natural emulsion. Effect of adding sugar and acid on the stability of milk emulsion. Preparation of mayonnaise using different variations and determining the best method of preparing a stable emulsion. Effect of salt, acid, sugar and fat on the consistency of egg white foam. Demonstrate the effect of foaming on the volume and texture of omelettes. Effect of foaming on the quality of hot and cold souffles. Effect of yolk contamination on the volume and texture of angel cake. Effect of foaming on the quality of hot and cold souffles. Effect of yolk contamination on the volume and texture of angel cake.
3. **Pulses:** Effects of various cooking and processing methods on various characteristics. Functional properties of pulses and their products. Time, temperature and water required for whole pulses and legumes. Time temperature and water required for sprouting whole pulses and legumes. Effect of cooking on whole and split pulses and legumes.
4. **Meat and Poultry:** Methods affecting tenderness of meat, effect of various methods of cooking and ingredients on color, volume texture flavor, aroma and water holding capacity.
5. **Gelation:** Gelation, get strength and factors effecting gelation. Ability to foam.
6. **Leavening agents:** Use of Leavening agents cookery.



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M.Sc. (Home Science)
Food and Nutrition
SEMESTER - IV
PAPER - IV (Optional)
Nutrition and Health of Women
UNIT - I

Women in family and community:

- (A) Demographic, Changes, Menarche, Marriage Fertility Morbidity, Morality, Life Expectancy, Sex Ratio, aging and Widow hood female headed families.

(B) **Women and Work:**

Environments Stress, Production Activates, Nutrition, Health and Gender, Living Condition, Occupational Health, Health Facilities

UNIT - II

- (A) Current Nutrition and Health Status of Women and Children in India
(B) Policies and Programmes for Promoting maternal and child nutrition
(C) Changing concepts and controversies in Maternal and Child Nutrition

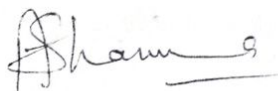
UNIT - III

- (A) Women's role their resource and contribution to family and community and effect on nutritional status.
(B) Effect of urbanization on women.
Impact of economic policies. industrialization, and globalization women.
(C) Concept of small family, methods of family planning, merits and demerits

UNIT - IV

Women and Health

- Health Facilities



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- Gender and Health
- Health seeking behavior
- Women and AIDS

Women and Nutrition

Situation of women in global and local context

Improving the Nutritional and Health Status

Interventions through the life cycles.

UNIT – V

A) Policies and Legislations.

CEDAW (Conventions on Eliminations of all forms of Discriminations Against Women)

WRLH (Women's Right to Life and Health)

B) Empowerment of women

Role of Education and various National Schemes.

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M.Sc. (Home Science)
H.D./F.N./T.C./R.M./Ext. Edu.
SEMESTER - IV
PAPER - IV (OPTIONAL)
Mass Communication

MM50

Objectives

- To understand the importance of communication
- To develop skill and communication ability
- Importance of audio - visual aids in communication

UNIT - I

- Concept of communication
- Elements and process of communication
- Functions of communication
- Non verbal Communication sign, Gestures, Body movement
- Verbal communication Language and written communication

UNIT - II

- Types of communication Intra personal, Inter personal, Group communication and mass communication
- Feedback in communication
- Characteristics and method of feedback
- Elements of effective communication
- Barriers to communication

UNIT - III

- Print Media-Origin, development characteristics of news paper
- News agencies- United News of India (UNI)
- Press Trust of India (PTI) Reuter, tass and etc.
- Magazine - Format. Types and organization
- Concept of news, values, sources of news.
- Structure of News Report
- Features article, Editorial

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UNIT - IV

- Radio - Origin, development and characteristics of Radio.
- Radio as a mass medium
- Radio news, radio features.
- Various types of Interview.
- Folk Media.

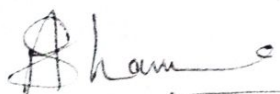
UNIT - V

- Television - origin, development and characteristics of television
- T.V. News
- Contribution of T.V. in Social Development
- Film Origin Development of India film
- Socio - cultural effects of film as mass medium. Censorship
- using film for extension.

M.M. 50

Practical:

1. Operation of various projectors
 - (b) OHP
 - (c) Slide
 - (d) Tape recorder
 - (e) VCR
 - (f) CD Player
 - (g) Computer
2. Preparation of
 - (a) Visual non projected materials
 - (b) Booklets
 - (c) Pamphlets
 - (d) Invitations
 - (e) Posters
 - (f) Manuals
 - (g) Cover pages and Posters
 - (h) Preparation of print advertisement
3. News script for TV Ratio and Newspaper
4. Visit mass media centers and slum area.
5. Seminar
6. Term paper



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3. KM Shirvastava - Radio and T.V. Journalism
4. M.V. Kamath - Professional Journalism

