

स्नातकोत्तर पाठ्यक्रम की परीक्षा योजना

प्रथम सेमेस्टर सत्र 2019-20 से अविरत

विषय - गृह विज्ञान Food and Nutrition

प्रश्नपत्र	प्रश्नपत्र का शीर्षक	अधिकतम अंक		न्यूनतम उत्तीर्णांक	
		सैध्दांतिक	सी. सी. ई.	सैध्दान्तिक	सी. सी. ई.
I	Applied Physiology	85	15	28	05
II	Advanced Nutritional Biochemistry	85	15	28	05
III	Public Nutrition	85	15	28	05
IV	Research methods and statistics.	85	15	28	05
Practical	Practical- I :- Human Physiology & Advanced Nutritional Biochemistry	50	—	17	—
Practical	Practical -II :- Public Nutrition.	50	—	17	—

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15/07/19

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Semester Wise Syllabus for Postgraduates
As recommended by Central Board of Studies and
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Department of Higher Education, Govt. of M.P.
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M.Sc. (Home Science)
Food and Nutrition

SEMESTER-I
PAPER-I
Applied Physiology

Objectives

M.M. 50

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 function 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.

May, 2023

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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 erthropoiesis - 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 rate, 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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M.Sc. (Home Science)

Food and Nutrition

Semester-I

Paper-II

Advanced Nutritional Biochemistry

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

Protein – Definition, classification and their structure, protein metabolism.

Plasma protein – Nature, properties and functions, purines and pyrimidines : synthesis and breakdown.

Unit-II

Energy – Energy value of foods, specific dynamic action of food, basal metabolic rate.

Water – Regulation of intracellular and extracellular, volume, osmolarity, water balance and its regulation, water imbalance and its implication.

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Unit-III

Carbohydrates – Definition, classification & their structure and carbohydrate metabolism – glycolysis, glycogenesis, citric acid cycle, hexose monophosphate pathways and gluconeogenesis.

Lipids – Definition, classification & their structure.

Lipid Metabolism – Beta-oxidation, de novo synthesis of fatty acids. Synthesis and breakdown of unsaturated fatty acids, cholesterol, phospholipids and triacylglycerol significance.

Unit-IV

Vitamins – Definition, classification, water and fat soluble and their role in health & nutrition.

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.

Minerals – Meaning & classification, macro and micro elements and their properties and role in health & nutrition.

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M.Sc. (Home Science)
Food and Nutrition

SEMESTER -I PAPER-I & II
Human Physiology & Advanced Nutritional Biochemistry

Practical-I

M.M. 50

Practical Section -A

1. Preparation and staining of blood film.
2. Identification of different component 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: G ratio 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 determination 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

M.M. 50

Objectives

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 strength respiratory fitness Harvard step test, squatting test
(ii) Non- nutritional indicators of nutritional status (Sociocultural, biological, environmental and economic)
(c) Monitoring & Evaluation
3. **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 programmes.

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 i.e. political support. Available resource (human infrastructural, financial)
2. **Programme 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 centre level and primary health centre level, community health centres.
 - (c) Health Care Systems.

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References

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4. State of the World's Children. UNICEF
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Manjiv Shau

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M.Sc. (Home Science)
Food and Nutrition

PRACTICAL-II
Public Nutrition
First Semester

M.M. 50

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.
 - (b) Evaluate her dietary assessment after a month for feedback
6. Case study of existing intervention programme in voluntary and government sector.
7. Development of a plan for nutrition intervention project in the community.

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Semester Wise Syllabus for Undergraduates
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FOOD & NUTRITION

M.Sc. - 1ST SEMESTER
COURSE -IV
RESEARCH METHODS AND STATISTICS

Marks : 50

OBJECTIVES :

- 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 hypothesis.
- 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 multi stage 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) Socio metric scale
 - (ii) Questionnaire
 - (iii) Schedule.
- Writing a research report

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विषय - गृह विज्ञान Food and Nutrition

प्रश्नपत्र	प्रश्नपत्र का शीर्षक	अधिकतम अंक		न्यूनतम उत्तीर्णांक	
		सैध्दांतिक	सी. ई.	सैध्दान्तिक	सी. ई.
I	Advances in Food Microbiology	85	15	28	05
II	Applied Biochemistry and Technique	85	15	28	05
III	Nutrition and health Problems	85	15	28	05
IV	Statistics and computer application	85	15	28	05
Practical	Practical- I :-Food Microbiology and Applied Biochemistry Techniques.	40 50 MPals	-	10 9 MPals	-
Practical	Practical -II A Nutrition & Health Problems.	30 25	-	10 9 MPals	-
Practical	Practical -III B Statistics and computer	30 25	-	10 9 MPals	-

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M.Sc. (Home Science)
Food and Nutrition

SEMESTER-II
PAPER-I
Advance in Food Microbiology

Objectives

M.M. 50

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 parameter. Conditions that influence microbial growth in food.

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M.Sc. (Home Science)
Food and Nutrition
Semester-II
Paper-II
Advanced Nutritional Biochemistry

Unit-I - No Change

Unit-II

Estimation and Isolation of Micro Organisms:

- Conventional methods : SPC
- Immunological Methods : RIA, ELISA, FIA
- Chemical Method : ATP measurement and PCR (Polymers-Chain Reaction)
- Microscope colony. Analysis. DMC (Direct Micro Scopic Count)
- Estimation of the number 'O' Microorganisms. MPN (Most Probable Numbers)

Unit-III

Microbiology of different foods:

- Major cause of food spoilage, principles of food preservation, control of micro organisms: by destruction and by retarding growth.
- Microbiology of milk, meat, egg, vegetables & fruits.
- Food born diseases – Salmonellosis, shigellosis, Ecoli
- Food born infection – Clostridium, Ecoli, Gastroenteritis, Cholera.
- Food born intoxication – Staphylococcal Poisoning, Bacillus Poisoning, Botulism.

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Unit-IV

Microbiology safety of foods:

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

Unit-V

- Food adulteration - definition, types and impact on health
- Apparent health benefits of fermented foods and the role of microbes.
- Definition, use and advantages and Characteristics of GMF.
applications: Future of Genetically modified foods.
- Naturally occurring toxicants – Animal food toxicants, Plant food toxicants, anti nutritional factors in foods.

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Journals

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M.Sc. (Home Science)
Food and Nutrition

SEMESTER-II
PAPER-II
Applied Biochemistry and Technique

Objectives

M.M. 50

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

Basic 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 performance

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 phosphorylation

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: 50 Sessional: 10 Viva: 10 Pract. Exam: 30 (15 Section A) (15 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: ^(any one) 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.~~ 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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Food and Nutrition

SEMESTER-II
PAPER-III
Nutrition and Health Problems

Objectives

M.M. 50

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

Uses of epidemiology

Epidemiology of communicable diseases

Dengue Plague cholera mumps tetanus rabies tuberculosis etc.

UNIT-II

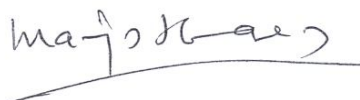
Dynamics of disease transmission

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 programme 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 & 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

Other nutritional problems

Lathyrism, dropsy, aflatoxicosis, alcoholism.

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M.Sc. (Home Science)
Food and Nutrition

SEMESTER-II
Nutrition and Health Problems

Practical-

M.M. 25

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 programme 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.

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Semester Wise Syllabus for Undergraduates
As Recommended by Central Board of Studies and
Approved by HE the Governor of M.P.
M.Sc. - Food and Nutrition

IIND SEMESTER
PAPER – IV
STATISTICS & COMPUTER APPLICATION

Marks : 50

OBJECTIVES

- 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, types - Single group-two group-Control & Experimental Group.
- Randomized block design
- Latin square design
- Factorial design

PRACTICAL

TOTAL MARKS: 25

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, Henry 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.
- Agrawal Basic Statistics.
- Sankhyaki ke mule sidhant (Hind) Or. H.K. Kapil.
Sankhakiya vidhiya vayvhar park vigyano mai by Dr. S.P Gupta.
Fundamental of research Keriliger
- Anusandhan Vidhiya By:Parasnath.

Majid Khan

स्नातकोत्तर पाठ्यक्रम की परीक्षा योजना
 तृतीय सेमेस्टर सत्र 2020-21 से अविरत
 विषय - गृह विज्ञान Food and Nutrition.

प्रश्नपत्र	प्रश्नपत्र का शीर्षक	अधिकतम अंक		न्यूनतम उत्तीर्णांक	
		सैध्दांतिक	सी.ई	सैध्दान्तिक	सी.ई
I	Advanced Nutrition	85	15	28	05
II	Clinical and Therapeutic Nutrition	95	15	28	05
III	Food Science & Current Trends	85	15	28	05
IV	Nutrition and Health of Child & Elderly.	85	15	28	05
Practical	Practical- I :-Clinical and Therapeutic.	50	-	17	-
Practical	Practical -II :- Food Science & Current Trends	50	-	17	-

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उच्च शिक्षा विभाग, म.प्र. शासन
स्नातकोत्तर कक्षाओं के लिये सेमेस्टर अनुसार पाठ्यक्रम
केंद्रीय अध्ययन मण्डल द्वारा अनुमोदित तथा म. प्र. के राज्यपाल द्वारा अनुमोदित
Session 2010-2011

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: III
Subject / विषय	: Food and Nutrition
Title of Subject Group	: Advanced Nutrition
विषय समूह का शीर्षक	:
Paper No. / प्रश्नपत्र क्रमांक	: I
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50
Particulars / विवरण	

Objectives :

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-1	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-2	Carbohydrates: Digestion and transpost review-dietary fibre fructooligosaccharides, resistant starch-chemical composition and physiological effects, Glycemic index of foods. Sweeteners-nutritive and non-nutritive.
Unit-3	(a) Protein: Digestion, absorption transpost-review .Protein quality; methods of evaluation protein needs. Therapeutic application of specific amino acids: Branched chain, amino acids and others.
Unit-4	Lipids: Digestion, absorption transport review. Functions of essential fatty acids. Role of n-3, n-6 fatty acids. Prostaglandins. Fat requirements.
Unit-5	Water: Regulation of intra and extra cellular volume osmolality, water balance and its regulation.

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Suggested Readings :

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. Mahan, 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.

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Session 2010-2011

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: III
Subject / विषय	: Food and Nutrition
Title of Subject Group	: Dietetics and Therapeutic Nutrition
विषय समूह का शीर्षक	:
Paper No. / प्रश्नपत्र क्रमांक	: II
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Objectives

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-1	<p>(A) Role of dietitian</p> <p>(a) Responsibilities of nutritional counselor. (b) Communication of dietary advice, skills of communication. (c) Motivation of patients. (d) Teaching aids used in dietary advice.</p> <p>(B) Principles of nutritional care</p> <p>(i) Nutritional care process (a) Assessment (b) Objectives of nutritional care (c) Implementation of nutritional care (d) Evaluation of nutritional care.</p>
Unit-2	<p>A) Nutritional intervention</p> <p>(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</p> <p>(2) Assessment of patients nutritional needs.</p>

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	<ul style="list-style-type: none"> (a) Dietary calculations. (b) Meal exchange system (c) Diet prescription (3) Diet Modification <ul style="list-style-type: none"> (a) Adequate normal diet as bases for therapeutic diet
Unit-3	<ul style="list-style-type: none"> (A) Nutritional care for hospitalized patients. <ul style="list-style-type: none"> (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-4	<ul style="list-style-type: none"> (A) Overweight and obesity <ul style="list-style-type: none"> (1) Definition <ul style="list-style-type: none"> (a) Classification (b) Assessment (c) Causes, Physiology of obesity, mathematics of weight reduction. (2) Treatment of obesity <ul style="list-style-type: none"> (a) Dietary management and calorie restriction plans (b) Exercise (c) Other approaches of weight reduction. (B) Underweight <ul style="list-style-type: none"> (1) Definition <ul style="list-style-type: none"> (a) Criterion (b) Etiology (2) Treatment <ul style="list-style-type: none"> (a) High calorie diet (C) Infection and fever:- <ul style="list-style-type: none"> (1) Metabolism, effect on body mechanism and classification 2) Etiology. Pathology symptoms and treatment of <ul style="list-style-type: none"> (a) Acute fever - viral fever (b) Chronic fever - typhoid and TB
Unit-5	<ul style="list-style-type: none"> (A) Diseases of gastro intestinal tract causes. Pathogenesis. Symptoms and Dietary management of: <ul style="list-style-type: none"> (1) Diseases of esophagus <ul style="list-style-type: none"> (a) Achalasia (b) Oesophagitis (2) Disease of stomach <ul style="list-style-type: none"> (a) Indigestion (b) Gastritis (c) Peptic ulcer (3) Disease of intestine <ul style="list-style-type: none"> (a) Constipation (b) Diarrhea (c) Hemorrhoids (d) Steatorrhoea (4) Inflammatory diseases of bowel.

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	(a) Diverticular disease (b) Ulcerative Colitis (5) Malabsorption Syndrome (a) Sprue (b) G-IT enzyme deficiency
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Practical :

M.M 50

1. Calculation of percent energy supplied by carbohydrate in the diet.
2. To find out the high fibre products available in market and critically evaluate the content.
3. Evaluation of protein quality of food preparations.
4. Dietary calculation using food exchange.
5. Planning, calculation and preparation of diets mentioned in theory.
6. Nutritional supplement, nutritional support substrats.

Suggested Readings :

1. Manual of Dietetics Practice - Brony Thomas
2. Nutrition in Health and Disease - Anderson
3. Normal and Therapeutic Nutrition - C.H. 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. Good hart
9. Nutrition Principles & Clinical Practices M. hunt 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
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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Post Graduate Semester wise Syllabus
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केंद्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म. प्र. के राज्यपाल द्वारा अनुमोदित

~~Session 2010-2011~~

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: III
Subject / विषय	: Food and Nutrition
Title of Subject Group	: Food Science
विषय समूह का शीर्षक	:
Paper No. / प्रश्नपत्र क्रमांक	: III
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Unit-1	Introduction of Food Science and Modern Development in Food Science (a) Physico chemical properties of food. <ul style="list-style-type: none"> ▪ Colloidal salts, stabilization of colloidal systems. ▪ Gels structure, formation and stabilization ▪ Emulsions; formation, stability surfactants and emulsifier. ▪ Faams
Unit-2	(a) Functional Role of Sugar in Food <ul style="list-style-type: none"> ▪ Sugar and Sweeteners: Sugars, syrups alcohols, potent sweeteners, sugar products. Alternative sweeteners. Browning. ▪ Reactions of sugar: Caramelization, Hydrolysis, Crystallization.
Unit-3	(a) Starch and Non-starch: Structure, gelatinization, methods for following gelatinization changes. <ul style="list-style-type: none"> ▪ Non-starch Polysaccharides: Cellulose, Hemicelluloses, Carboxymethyle cellulose (CMC) ▪ Classification of hydrocolloids by function- Pectin's gums. ▪ Characteristics and functional properties of Modified Starches. ▪ Use of Modified starch in food Industry.
Unit-4	(a) Fruits and Vegetables: <ul style="list-style-type: none"> ▪ Enzymes in fruits and vegetables. ▪ Classification and Nature of enzymes, stability and action. ▪ Biotechnological application of enzymes in food. ▪ Natural Pigments and natural color used in food.
Unit-5	(a) Cereals and Cereal Products: Cereal grains: Structure and Composition: Cereal products. Flours and flour quality. Extruded foods breakfast cereals wheat germ, bulgur, puffed and flaked cereals.

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Practical :

Prepare one recipe for each given practical below and identify the functional properties of the foods given below.

1. **Sugar-** Caramelization, crystallization syrups.
2. **Starches-** Gelatinization.
3. **Jams and Jellies-** Pectin content of fruits, jam and jelly formation.
4. **Fruits and vegetables-** Effect of acid and alkali on vegetable and fruits and estimation the PH value of fruits and vegetables.
5. **Cereals-** Effect of soaking time on the quality of dhal and rice Gluten formation in batters and doughs.

Suggested Readings :

1. Food Science- Shri Laxmi.
2. Food Science and Principles- SManey.
3. Food Science- Halen Charlies.
4. Food Prepration- Peckham.
5. Food Science- Niemann Potter.
6. Food Science- Mudambi.
7. Introductory food- Bennian Hughes.
8. Food Chemistry- Mayer.
9. Food Processing- Marwaha & Arora.
10. Food Processing and Preservation – Subblaxmi.
11. Biotechnology and Food ingredients- Goldberg.
12. Food Science Munual- Mohini Sethi & Iram Rao.
13. Experimental Cookery – Palmer
14. Experimental Cookery – Belly & Lowe.
1. Egg: Emulsion, thickening, binding, coagulation, coating, Foaming of egg white.
2. Pulses- Germination sprouting.
3. Colloidal system of foods- Formation of Sol, gel emulsion.
4. Leavening agents- Use of Leavening agents in cookery. Fermentation and fermented products
5. Fruits and vegetables- Effect of acid and alkali on vegetable and fruits and estimation the PH value of fruits and vegetables.
6. Cereals- Effect of soaking time on the quality of dhal and rice Gluten formation in batters and doughs.

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केंद्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म. प्र. के राज्यपाल द्वारा अनुमोदित

~~Session 2016-2017~~

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: III
Subject / विषय	: Food and Nutrition
Title of Subject Group	: Issues related to Women's Health
विषय समूह का शीर्षक	:
Paper No. / प्रश्नपत्र क्रमांक	: IV
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Unit-1	(A) Women and Work: Environmental stress, Nutrition, Health and gender, living condition, Occupational health, Health facilities.
Unit-2	(A) Current Nutrition and Health Status of Women and Children in India (B) Policies and programmes for promoting maternal and child nutrition
Unit-3	Effect of urbanization on Women. Impact of economic policies, industrialization, and globalization on women.
Unit-4	Policies and Legislations. (A) CEDAW (Conventions on Eliminations of all forms of Discriminations against Women) (B) WRLH (Women's Right to Life and Health)
Unit-5	Empowerment of women: Role of Education and various National Schemes.

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Suggested Readings :

- Census report, Government of India and Govt. of Madhya Pradesh.
- NFHS Reports, Govt. of India.
- UNICEF- States of the worlds children
- International child health; A digest of Current information.
- Textbook of Nutrition and Dietetics, Kumud Khanna
- Nutrition and child care, a practical guide, Shanti Ghosh.
- Diet and ageing, exploring some facts, Dr. Kalyan Bagchi and Seema Puri
- Nutrition in children, developing country concerns, H.P.S. Sachdev, Panna Choudhary
- National profile on women, health and development, Sarla Gopalan, Mira Shiva, Voluntary Health Association of India and WHO.

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स्नातकोत्तर पाठ्यक्रम की परीक्षा योजना

चतुर्थ सेमेस्टर सत्र 2020-21 से अविरत

विषय - गृह विज्ञान Food and Nutrition

प्रश्नपत्र	प्रश्नपत्र का शीर्षक	अधिकतम अंक		न्यूनतम उत्तीर्णक	
		सैध्दांतिक	सी. सी. ई	सैध्दान्तिक	सी. सी. ई
I	Health and fitness	85	15	28	05
II	Clinical and Therapeutic Nutrition	85	15	28	05
III	Food Science & Current Trend	85	15	28	05
IV	Optional Paper (Any one) a) Nutrition and Health of Women. b) Mass Communication. c) Dissertation.	85	15	28	05
Practical	Practical- I :-Clinical and Therapeutic Nutrition	50	-	17	-
Practical	Practical -II :- Food Science & Current Trends	50	-	17	-
Project	Project	100	-	-	-

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~~Sesim 2010-2011~~

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: IV
Subject / विषय	: Food and Nutrition
Title of Subject Group विषय समूह का शीर्षक	: Health and Fitness
Paper No. / प्रश्नपत्र क्रमांक	: I
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Objectives

- (1) Understand the components of health and fitness and the role of nutrition in these.
- (2) Make nutritional, Dietary and physical recommendations to achieve fitness and well-being.
- (3) Develop ability to evaluate fitness and well-being.

Unit-1	<p>(B) Body Composition</p> <p>(1) Methods</p> <ol style="list-style-type: none"> (a) Chemical analysis. (b) Nutritional anthropometry (c) Skin fold Thickness (d) Body density (e) Dilution Technique (f) ⁴⁰K Analysis (g) Other methods: Concept <p>(2) Compositional changes concept</p> <ol style="list-style-type: none"> (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. <p>(C) Holistic approach to the management of fitness and health: Nutrition, Exercise, Physical fitness and health inter-relationship</p> <ol style="list-style-type: none"> (a) Energy input and output (b) Diet and Exercise
Unit-2	<p>(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. Water electrolyte losses and their replenishment during exercise and sports events, effects of dehydration, Importance of sports drinks.</p>

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	(B) Diet for persons with high energy requirements stress and starvation.
Unit-3	(a) <u>Nutritional regulation of gene expression.</u> X (b) Inborn errors of metabolism: Sickle cell Anaemia, Thallasaemia, Cystinuria, Phenylketonuria, Hereditary Lactose intolerance, prot. <u>Gout</u>
Unit-4	(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) Non-nutritive food components with potential health effects: Polyphenols, tannis, phytate, phytoestrogens, Cyanogenic compounds, lectins and saponins
Unit-5	(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.

Note नोट	
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Suggested Readings :

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
8. Berdanier, CD. and Hargrove, JL. (ed) (1996): Nutrients and Gene Expression: Clinical Aspects. Boca Raton FL CRC Press.
9. Baeurle, P.A. (ed) (1994) Inducible Gen Expression Part-I: Environment Stresses and Nutrients Boston Birkhauser.
10. O. Chandra, R.K. (ED) (1992) Nutrition and Immunology. ARTS Biomedical St. John's Newfoundland.
11. Mahan, L.K. & Ecott Stump, S. (2000): Krause's Food Nutrition and Diet Therapy 10th
- 12.Sizer, F. & Whitney, E. (2000) Nutrition - Concepts and Controversies, 8th Edition, Edition, W.B. Saunders Ltd.
13. Hitney, E.N. & Rolfes, Wads worth, An International Thomson Publishing Co. 14 Ira Wolinsky (Ed) (1998): Nutrition in Exercise and Sports, 3rd edition CRC Press
14. 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.
15. McArdle, W. Katch, F. and Katch (1996) Exercise Physiology. Energy Nutrition and Human Performance 4th edition, Williams and wilking Philadelphia; Mahan.

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Post Graduate Semester wise Syllabus
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उच्च शिक्षा विभाग, म.प्र. शासन
स्नातकोत्तर कक्षाओं के लिये सेमेस्टर अनुसार पाठ्यक्रम
केंद्रीय अध्ययन मण्डल द्वारा अनुशंसित तथा म. प्र. के राज्यपाल द्वारा अनुमोदित

~~Session 2019-2021~~

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: IV
Subject / विषय	: Food and Nutrition
Title of Subject Group विषय समूह का शीर्षक	: Clinical & Therapeutic Nutrition
Paper No. / प्रश्नपत्र क्रमांक	: II
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50
Particulars / विवरण	

Objectives

- (1) Understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient's 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-1	(A) Diseases of liver exocrine pancreas and biliary system: Physiology Etiology, Pathogenesis, Symptoms and Management • (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) Pancreas
Unit-2	A) Nutritional care in Cardio-vascular disorders. 1. Hypertension- a) Definition. b) Criterion c) Types d) Causes e) Nutritional Management f) Drugs. 2. Hyperlipidemia a) Lipo- Proteins and their metabolism

Major marks

	<ul style="list-style-type: none"> b) Classification of hyperlipidemia c) Clinical and Nutritional aspects of hyperlipidemia. d) Dietary Care <p>3. Coronary Heart Diseases (CHD)</p> <ul style="list-style-type: none"> a) Atherosclerosis- i) Etiology ii) Pathogenesis b) Risk factors associated with CHD c) Management of CHD <ul style="list-style-type: none"> i) Dietary Management ii) Exercise d) Prevention of CHD <p>B. Cerebrovascular disorder and nutritional management</p>
Unit-3	<p>A. Diet in Disease of endocrine pancreas</p> <ul style="list-style-type: none"> (a) Etiology (b) Classification (c) Symptoms and diagnosis (d) Management clinical vs. Chemical control (e) Insulin Therapy (f) Oral hypoglycemic 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 <p>B. Nutritional care in Hypoglycemia</p> <ul style="list-style-type: none"> (1) Hypoglycemia <ul style="list-style-type: none"> (a) Symptoms (b) Types <ul style="list-style-type: none"> (i) Reactive Hypoglycemia (ii) Idiopathic Hypoglycemia (c) Dietary treatment
Unit-4	<p>A. Nutritional care for patient with disease of Kidney</p> <p>Review of physiology and function of normal kidney</p> <p>1. Nephritis</p> <ul style="list-style-type: none"> (a) Classification (b) Etiology (c) Characteristics (d) Nutritional care and management <p>2. Nephritic syndrome</p> <ul style="list-style-type: none"> (a) Etiology (b) Characteristics (c) Nutritional care and management <p>3. Acute and Chronic renal failure</p> <ul style="list-style-type: none"> (a) Etiology (b) Types (c) Nutritional care and management
Unit-5	<p>Nutritional care for patients having Surgery and Burns, Cancer.</p> <p>(A) Surgery</p> <ul style="list-style-type: none"> (1) Pre operation nutritional care (2) Post operative nutritional care <ul style="list-style-type: none"> (a) Gastric surgery (b) Gall bladder surgery

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	(c) Colon surgery (d) Tonsil surgery (e) Oesophagus surgery (f)
(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
D)	Latest researches and concepts in management of various life style problems.

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Practical :

अधिकतम अंक / Max.Marks :50

1. Planning calculation and preparation of diets mentioned in theory.
2. Interpretation of patient data and diagnostic tests 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.

Suggested Readings :

1. Manual of Dietetics Practice -Brony Thomas.
2. Nutrition in Health and Disease - Anderson
3. Normal in Therapeutic Nutrition C.H. Robinson
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. Good hart
9. Nutritional Principles and Clinical Practices M. Hunt and James
10. Nutrition in Critical Care - Zaroga
11. Fundamentals of Clinical Nutrition 93- Weinster
12. Dietetics - Shrilaxami
13. Nutrition and Dietetics - Shubhangini Joshi
14. Human Nutrition and Dietetics - Davidson Passmore
15. Clinical Dietetics and Nutritional F.P. Anita
16. Textbook of Nutrition and Dietetics - Kumud Khanna Etal
17. Mohan L.K. and (2000) Krause's Food Nutrition Diet Therapy 10th Edition W.B. Saundes Ltd.

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Session-2010-2011

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: IV
Subject / विषय	: Food and Nutrition
Title of Subject Group	: Food Science & Current Trends
विषय समूह का शीर्षक	:
Paper No. / प्रश्नपत्र क्रमांक	: III
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Compulsory
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Unit-1	(a) Pulses and Legumes: Classification, composition, denaturation non-enzymatic browning Functional properties of whole pulses and legumes germination and sprouting. (b) Leavened Products: Leavening agents, Biologically leavened and chemically leavened products. Fermentation process and fermented products.
Unit-2	(a) Milk and Milk Products: Composition, Physical and functional properties. Denaturation, effects of processing and storage and Dairy Products: Cultured milk, yoghurt, butter, whey cheese concentrated and dried products Frozen desserts, dairy product substitute.
Unit-3	(a) Spices and Condiments: Composition. Flavouring extracts natural and synthetic (b) Eggs: Structure and composition. Changes during storage. Functional properties of eggs, use in cookery. Egg Processing. Low Cholesterol egg substitutes.
Unit-4	(a) Fats, Oils and Related Products: Nuts and Oils seeds, Sources, Composition, effects of composition on fat properties. Functional properties of fat and uses in food preparations. Fat substitutes Fat deterioration and antioxidants. I 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.
Unit-5	II Biotechnology in Food: <ul style="list-style-type: none"> ▪ Algae as food spirulina ▪ Organic food ▪ Nutraceuticals

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Practical :

अधिकतम अंक / Max.Marks :50

Prepare one recipe for each given practical below and identify the functional properties of the foods given below.

1. Egg: Emulsion, thickening, binding, coagulation, coating, Foaming of egg white.
2. Pulses- Germination sprouting.
3. Colloidal system of foods- Formation of Sol, gel emulsion.

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4. **Leavening agents-** Use of Leavening agents in cookery. Fermentation and fermented products
5. **Fat and Oils-** melting point and smoking point. Permanent and semi permanent emulsions. fat absorption and its measurement.
6. **Milks and Milk Products:** Scalding of milk, preparation of curd. paneer, khoa, cheese, butter and fermented milk.

Suggested Readings :

1. Food Science- Shri Laxmi
2. Food Science and Principles- SManey.
3. Food Science- Helen Charlies.
4. Food Preparation- Peckham.
5. Food Science- Niemann Potter.
6. Food Science- Mudambi.
7. Introductory food- Bennian Hughes.
8. Food Chemistry- Mayer.
9. Food Processing- Marwaha & Arora.
10. Food Processing and Preservation – Subblaxmi.
11. Biotechnology and Food ingredients- Goldberg.
12. Food Science Manual- Mohini Sethi & Iram Rao
13. Experimental Cookery – Palmer
14. Experimental Cookery – Belly & Lowe.

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~~Section 2011-2012~~

Class / कक्षा	: M.Sc. (H.Sc.)
Semester / सेमेस्टर	: IV
Subject / विषय	: Food and Nutrition
Title of Subject Group	: Nutrition and Health of Women, Child and Elderly
विषय समूह का शीर्षक	
Paper No. / प्रश्नपत्र क्रमांक	: IV
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Optional (A)
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Unit-1	Maternal Health (a) Disease pattern and Reproductive health (b) Women-pregnancy and lactation (c) Safe Motherhood (d) Care of at-risk mothers (e) Health seeking behaviour (f) Women and AIDS
Unit-2	Issues related to Child Nutrition (a) Infant Physiology and pre-term and low birth weight infants- Implication for feeding and management. (b) Growth and development during infancy, childhood and adolescence. (c) Feeding of infants and children and dietary management
Unit-3	Issues related to Elderly (a) The ageing process Physiological, biochemical and body composition changes. (b) Theories of ageing
Unit-4	(a) Socio Psychological aspects of ageing especially problems of elderly women (b) Nutritional requirement of elderly and dietary management to meet nutritional needs.
Unit-5	(a) Chronic degenerative diseases and nutritional problems of elderly their etiopathogenesis, management, prevention and control. (b) Policies and programmes of government and NGO sector pertaining to the Elderly.

Note नोट	
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Suggested Readings :

- i. Census report, Government of India and Govt. of Madhya Pradesh.
- ii. NFHS Reports, Govt. of India.
- iii. UNICEF- States of the worlds children
- iv. International child health; A digest of Current information.
- v. Textbook of Nutrition and Dietetics, Kumud Khanna
- vi. Nutrition and child care, a practical guide, Shanti Ghosh.

Majumdar

- vii. Diet and ageing, exploring some facts, Dr. Kalyan Bagchi and Seema Puri
- viii. Nutrition in children, developing country concerns, H.P.S. Sachdev, Panna Choudhary
- ix. National profile on women, health and development, Sarla Gopalan, Mira Shiva, Voluntary Health Association of India and WHO.

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~~2010-2011~~

Class / कक्षा	: M.Sc. (Home Science)
Semester / सेमेस्टर	: IV
Subject / विषय	: Food & Nutrition
Title of Subject Group	: Mass Communication
विषय समूह का शीर्षक	:
Paper No. / प्रश्नपत्र क्रमांक	: IV
Compulsory / अनिवार्य या Optional / वैकल्पिक अनिवार्य	: Optional (B)
Max. Marks अधिकतम अंक	: 50

Particulars / विवरण

Objectives:

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

Unit-1	<ol style="list-style-type: none"> 1. Concept of communication 2. Elements and process of communication. 3. Functions of communication. 4. Non verbal communication-Sign, Gestures, body movement. 5. Verbal communication-Language and written communication.
Unit-2	<ol style="list-style-type: none"> 1. Types of communication - Intra personal, Inter personal, Group communication and Mass communication. 2. Feed back in communication. 3. Characteristics and method of feed back. 4. Elements of effective communication. <p>Barriers to communication</p>
Unit-3	<ol style="list-style-type: none"> 1. Print Media-Origin, development characteristics of News paper. 2. News agencies-United news of India (UNI). Press Trust of India (PTI) Reuter, tass and etc. 3. magazine-Format. Type and organization. 4. Concept of News, values, sources of News. Structure of News Report. 5. Features article, Editorial.
Unit-4	<ol style="list-style-type: none"> 1. Radio-Origin, development and characteristics of Radio. 2. radio as a mass medium. 3. Radio news, radio features. 4. various types of Interview. 5. Folk Media.
Unit-5	<ol style="list-style-type: none"> 1. Television-origin, developr: nt and characteristics of television. 2. T.V.News. 3. Contribution of T.V. in Social development. 4. Film-Origin. Development of India film. 5. Socio cultural effects of film as mass medium. Censorship, using-film for extension.

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References:

1. Denis Macwell - Mass communication theory & Introduction.
2. C.S. Rayudu - Communication
3. K.M. Shrivastava - Radio and T.V. Journalism
4. M.V. Kamath - Professional Journalism
5. डॉ. ओम प्रकाश सिंह - संचार मध्यमों का प्रभाव
6. डॉ. श्रीकांत सिंह - जनसंचार
7. डॉ. वेदप्रताप वैदिक - पत्रकारिता के विविध आयाम
8. डॉ. हरिमोहन - रेडियो एवं दूरदर्शन पत्रकारिता
9. डॉ. अर्जुन तिवारी - आधुनिक पत्रकारिता

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Food & Nutrition
Semester - IV
Paper - IV
Dissertation (Optional C)

M. Marks : 50

CHAPTER - I

Introduction.

CHAPTER - II

Review of Literature.

CHAPTER - III

Methodology.

CHAPTER - IV

Analysis and discussion.

CHAPTER - V

Conclusion and recommendation.
BIBLIOGRAPHY.

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