



UNIVERSITY OF CALICUT

Abstract

General & Academic - CBCSS PG Regulations 2019 - Scheme and Syllabus of M.Sc Homescience (Nutrition & Dietetics) Programme w.e.f 2020 Admission onwards -Incorporating Outcome Based Education - Implemented - Subject to ratification of Academic Council - Orders Issued.

G & A - IV - J

U.O.No. 5030/2021/Admn

Dated, Calicut University.P.O, 30.04.2021

- Read:-*1) U.O.No. 11588/2019/Admn Dated 29.08.2019.
2) U.O.No. 1741/2020/Admn Dated 11.02.2020.
3) Item no.6 in the minutes of the meeting of Board of Studies in Home Science, Dated 10.03.2021.
4) Remarks of the Dean, Faculty of Science, Dated 30.03.2021.
5) Orders of the Vice Chancellor in the file of even no, Dated 30.03.2021.

ORDER

1. The scheme and syllabus of M.Sc Home Science (Nutrition & Dietetics) Programme under CBCSS PG Regulations 2019, w.e.f 2019 admission onwards has been implemented, vide paper read (1) above and same has been modified, vide paper read (2) above.
2. The Board of Studies in Home Science has resolved to rectify some anomalies in the course structure and the scheme of evaluation of MSc Home Science (Nutrition & Dietetics) and also resolved to incorporating Outcome Based Education (OBE) in the scheme and syllabus of M.Sc Homescience(Nutrition & Dietetics) Programme, in tune with the new CBCSS PG Regulations 2019 with effect from 2020 Admission onwards, Vide paper read (3) above.
3. The Dean, Faculty of Science, vide paper read (4) above, has approved to implement the scheme and syllabus of M.Sc Homescience (Nutrition & Dietetics) Programme (CBCSS-PG-2019) incorporating Outcome Based Education (OBE) syllabus forwarded by the Chairperson, Board of Studies in Home Science, in tune with the new CBCSS PG Regulations 2019 with effect from 2020 Admission onwards.
4. Considering the urgency, the Vice Chancellor has accorded sanction to implement the scheme and syllabus of M.Sc Home Science(Nutrition & Dietetics) Programme incorporating Outcome Based Education (OBE) syllabus forwarded by the Chairperson,Board of Studies in Home Science in tune with the new CBCSS PG Regulations with effect from 2020 Admission onwards, subject to ratification by the Academic Council.
5. Scheme and syllabus of M.Sc Home Science(Nutrition & Dietetics) Programme (CBCSS) incorporating Outcome Based Education (OBE) is therefore implemented with effect from 2020 Admission onwards, subject to ratification by the Academic Council.
6. Orders are issued accordingly.
7. U.O.No. 1741/2020/Admn Dated 11.02.2020, is modified to this extend.(Modified syllabus appended)

Ajitha P.P

Joint Registrar

To

The Principals of all Affiliated Colleges
Copy to: PS to VC/ PA to Registrar/PA to CE/JCE I/JCE V/DoA/EX and EG Sections/GA IF/CHMK
Library/Information Centres/SF/DF/FC

Forwarded / By Order

Section Officer

**M Sc DEGREE PROGRAMME IN
HOME SCIENCE
(NUTRITION AND DIETETICS)**

UNIVERSITY OF CALICUT
(CBCSS-PG 2019)

SYLLABUS
2020 ADMISSION ONWARDS

PROGRAMME SPECIFIC OUTCOMES

PSO1 Understand the concepts of biochemistry, food chemistry and food microbiology

PSO2 Comprehend methods of assessing human nutritional requirements, nutritional assessment and diet planning

PSO3 Apply theoretical concepts in laboratory setting as per standard methods in the above mentioned areas

PSO4 Understand the applications of nutritional sciences in clinical interventions, communication for health promotion, food service management, food science and processing

PSO5 To equip students to plan diets for clinical and therapeutic conditions within a hospital, fitness center or gym setting.

PSO6 To impart students a systematic approach to basic and applied aspects of food processing and technology.

PSO7 To provide students with an opportunity to conduct independent research.

M SC HOME SCIENCE (NUTRITION AND DIETETICS)

COURSE STRUCTURE AND SCHEME OF EXAMINATION UNDER CBCSS

SI No.	CORE COURSE	TITLE OF THE COURSE	INSTRUCTION HRS/WK		CREDIT	EXAM HRS	SCHEME OF EVALUATION	
			T	P			EE weight (80%)	IE weight (20%)
I	HND1 C01	HUMAN PHYSIOLOGY	5		4	3	4	1
	HND1 C02	NUTRITION THROUGH LIFE CYCLE	5		4	3	4	1
	HND1 C03	ADVANCED FOOD SCIENCE	5		4	3	4	1
	HND1 C04	MACRO NUTRIENTS	4		4	3	4	1
	HND1 C05	RESEARCH METHODS & STATISTICS	6		4	3	4	1
	TOTAL			25		20		
II	HND2 C06	ONCOLOGY NUTRITION	5		4	3	4	1
	HND2 C07	FOOD SERVICE MANAGEMENT	6		4	3	4	1
	HND2 C08	CLINICAL AND THERAPEUTIC NUTRITION	6		4	3	4	1
	HND2 C09	NUTRITIONAL MANAGEMENT IN LIFE STYLE DISEASES	4		2	3	4	1
	HND2 L01	PRACTICAL- CLINICAL AND THERAPEUTIC NUTRITION		4	4	3	4	1
	TOTAL			25		18		
III	HND3 C10	VITAMINS AND MINERALS	5		4	3	4	1
	HND3 C11	COMMUNITY NUTRITION	6		4	3	4	1
	HND3	PAEDIATRIC NUTRITION	6		4	3	4	1

	C12							
	HND3 E01 (1)	ELECTIVE COURSES 1. SPORTS NUTRITION	4		4	3	4	1
	HND3 E01 (2)	2.ENTREPRENEURIAL DEVELOPMENT						
	HND3 E01 (3)	3. NUTRITIONAL COUNS ELLING & EDUCATION						
	*HND4 I01	HOSPITAL INTERNSHIP AND COMMUNITY NUTRITION EDUCATION PROGRAMME		4	4	3	4	1
	TOTAL		25		20			
IV	HND4 C13	METABOLIC AND BIOCHEMICAL CHANGES IN DISEASES	6		4	3	4	1
	HND4 L02	PRACTICAL- METABOLIC AND BIOCHEMICAL CHANGES IN DISEASES		4	2	3	4	1
	HND4 E02 (1)	ELECTIVE COURSE 1.DIABETIC CARE AND MANAGEMENT	5		4	3	4	1
	HND4 E02 (2)	2. QUANTITY FOOD PREPARATION TECHNIQUES						
	HND4 E03 (1)	1.FOOD SAFETY AND QUALITY CONTROL	5		4	3	4	1
	HND4E03 (2)	2.PUBLIC NUTRITION AND HEALTH						
	HND4 P01	PROJECT		5	4		4	1
HND4 V01	VIVA VOCE			4		4	1	

	TOTAL		25	22		
	TOTAL CREDITS (CORE, ELECTIVES,PROJECT AND VIVA)		80			
I	HND1 A01	AUDIT COURSE I AEC- INDUSTRY TRAINING/SEMINAR PRESENTATION		4	2	
II	HND2 A02	AUDIT COURSE II PCC- SPSS		4	2	

- **Course will be conducted in the III semester and the evaluation will be conducted in the IV semester**

GRADING AND EVALUATION

(1) Minimum Credits for pass

Accumulated minimum credit required for successful completion of the course shall be 80.

(2) A **project work** of 4 credits is compulsory and it should be done in III & IV semesters. Also a comprehensive Viva Voce may be conducted by external examiners at the end of IV Semester and carries 4 credits.

(3) Evaluation and Grading:

All grading starting from the evaluation of papers is done on 5 point scale (A, B, C, D, E) and SGPA and CGPA – between 0 to 4 and in two decimal points. An overall letter grade (Cumulative Grade) for the whole programme shall be awarded to the student based on the value of CGPA using a 7-point scale given below.

Overall Grade in a Programme

CGPA	Overall Letter Grade
3.80 to 4.00	A+
3.50 to 3.79	A
3.00 to 3.49	B+
2.50 to 2.99	B
2.00 to 2.49	C+
1.50 to 1.99	C
1.00 to 1.49	D

(4) Weightage of Internal and External valuation:

The evaluation scheme for each course shall contain two parts (1) internal evaluation (2) external evaluation. Its weightage are as follows:

Evaluation	Weightage
Internal	1 (or 20%)
External	4(or 80%)

Both internal and external evaluation will be carried out using Direct Grading System

A) Theory: Every Semester

Pattern of question Paper -**External marks distribution**

Division	Type	No. of Questions	Weightage	Total Weightage
Part A	Short Answer	4 out of 7	2	8
Part B	Short Essay	4 out of 7	3	12
Part C	Essay	2 out of 4	5	10
Total Weightage				30

Internal marks distribution

Sl.No	Criteria	Weightage
1	Attendance	1
2	Assignments	1
3	Seminar	1
4	Test papers-2-	2
Total		5

B) PRACTICAL

Internal marks distribution

Sl.No	Criteria	Weightage
1	Lab skill	4
2	Record	3
3	Practical test	3
Total		10

External marks distribution**HND2 L01 PRACTICAL –CLINICAL AND THERAPEUTIC NUTRITION**

Sl . No	Criteria	Weightage
	Presentation	4
	Taste and serving	2
	Time & cleanliness	2
	Principle	4
	Menu plan	5
	Calculation	4
	RDA	4
	Record	5
TOTAL		30

HND3 I01 HOSPITAL INTERNSHIP AND COMMUNITY NUTRITION EDUCATION PROGRAMME

Sl . No	Criteria	Weightage
1	Performance in Hospital Internship	12
2	Weekend Hospital Training	4
	Report and presentation	4
3	Community Nutrition Camp	8
	Community Nutrition Camp-report	2
Total		30

HND4 L02 PRACTICAL – METABOLIC AND BIOCHEMICAL CHANGES IN DISEASES

Sl . No	Criteria	Weightage
1	Principle	4
2	Procedure	6
3	Calculation	4
4	Graph	2
5	Result	5
6	Record	5
7	Viva	4
Total		30

HND4 P01 -PROJECT

Internal Marks distribution

Sl.No	Criteria	Weightage
1	Initiative	1
2	Interest in Research	1
3	Regularity	1
4	Efficiency	2
5	Writing Skills	1
6	Viva	4
Total		10

External marks distribution

Sl.No	Criteria	Weightage
1	Choice & relevance of the topic	4
2	Introduction and Objectives	2
3	Review of literature	2

4	Methodology	8
5	Results and Discussion	4
6	Quality and Presentation	4
7	Viva	16
	TOTAL	40

HND4V01- Viva Voce

Internal Marks distribution

Sl.No	Criteria	Weightage
1	Preparation	1
2	Presentation	2
3	Knowledge	2
4	Total	5

External marks distribution

Sl.No	Criteria	Weightage
1	Preparation	10
2	Presentation	10
3	Knowledge	10
4	Total	30

SEMESTER I
HND1 C01 HUMAN PHYSIOLOGY

Objectives

1. To enable students to understand the metabolic changes in health and different disease conditions.
2. Gain knowledge about the relationship between nutrition and human system.

COURSE OUTCOMES

CO1	To enable students to understand the metabolic changes in health and different diseases
CO2	Gain knowledge about the relationship between nutrition and human system
CO3	Explain physiological processes of all body systems in detail and on an appropriate level (knowledge, comprehension, application and analysis)
CO4	Explain the role of body systems and mechanisms in maintaining homeostasis
CO5	Explain how the activities of organs are integrated for maximum efficiency
CO6	Introduces basic anatomical and physiological terms, tissues, the integumentary, skeletal, muscular and nervous systems including nervous histology, physiology, spinal cord and nerves .

UNIT I BLOOD

Blood and its composition, Functions of each constituents of blood, important indices of RBC & WBC, Blood group, Rhesus factor, ESR, Blood viscosity, blood coagulation, Erythroblastosis foetalis, Blood transfusion and its importance, Blood vessels and its type Lymphatic System- Lymph, Composition, Lymph gland and functions.

UNIT II CARDIOVASCULAR SYSTEM

Structure and Functions of Heart. Special conducting tissues Properties of cardiac muscle, Heart rate & regulation. cardiac cycle, Heart sound, Cardiac output, Conduction system of the heart, hemorrhage. Compensatory changes after hemorrhage ECG & its significance. Pulse, Tachycardia and Bradycardia. Hemorrhage, compensatory changes after hemorrhage. Blood Pressure, Cardiovascular modification during exercise. Different types of circulation- foetal circulation, pulmonary, hepatic, capillary. Techniques to identify cardiovascular disorders –angioplasty, angiogram.

UNIT III RESPIRATORY SYSTEM

Organs & functioning, control of respiration, Mechanism of respiration, Chemical respiration, dyspnoea, asphyxia, hyperpnoea, orthopnoea, resuscitation and its methods. Gaseous exchange in lungs and tissues.

UNIT IV DIGESTIVE SYSTEM

Structure and functions of Alimentary tract, Functions of various secretions and juices- Saliva, Gastric, Bile, Intestinal, Pancreatic secretion and its composition. Functions of enzymes indigestion, Mechanism of secretion of digestive juices and its regulation, movements of stomach, small intestine, villi, defecation. Digestion of nutrients- protein, fats, carbohydrates. Liver, gallbladder, pancreas, spleen – anatomy & physiology Functions of bile salts.

UNIT V URINARY SYSTEM

Structure and functions of kidney, structure of nephron, , GFR, Urine formations, composition of normal and abnormal urine , regulation of reabsorption, Micturition, Role of Kidney in maintaining Ph of Blood, Acid base balance.

UNIT VI NERVOUS SYSTEM

Structure of a nerve cell- fibre, reflex action, nervous transmission- classification of nervous systems (only the parts and general functions), common test in neurological disorders- EEG, EMG, MRI, NCV

UNIT VII ENDOCRINE SYSTEM

Endocrine secretions, glands, role and regulatory functions of endocrine, site of secretions, regulation of secretions.

UNIT VIII REPRODUCTIVE SYSTEM

Male and female reproductive system- organs, structure and functions. Menstruation, menstrual cycle, puberty, menarche, menopause, fertilization, conception, implantation. Male and female contraception's- Etiology of male and female infertility

RELATED EXPERIENCE

1. Demonstration of measuring BP using sphygmomanometer.
2. Demonstration of blood group determination.
3. Microscopic examination of blood, TC, DC of WBC, RBC, ESR

REFERENCES

1. Chatterjee.C.C, Human Physiology (11th edition), vol 1 & 2, Medical Allied Physiology (1987).
2. Guyton.A.C, Textbook of medical physiology, 9th edition, Philadelphia, WB Saunders, 1991.

3. Guyton AC, Function of Human Body, 4th edition, Philadelphia, WB Saunders, 1985.
4. Wilson.K.J.W&Waugh.A, 1996, Ross & Wilson Anatomy & Physiology in Health & illness, 8th edition, Church hill living stone.

SEMESTER I
HND1 C02 NUTRITION THROUGH LIFE CYCLE

Objectives

1. Understand the role of nutrition in different conditions.
2. Develop competency in planning diets to meet the nutritional requirements of different socio economic levels

Course outcome

CO1 Understand the role of nutrition in different conditions
CO2 Develop competency in planning diets to meet the nutritional requirements of different socioeconomic level
CO3 Identify whether a group or an individual is suffering from malnutrition of any kind
CO4 Assess nutritional status of individuals in various life-cycle stages and determine nutrition-related conditions and diseases by applying knowledge of metabolism and nutrient functions, food sources, and physiologic systems.

UNIT I NUTRITION AND DIET IN HEALTH

Vital link between nutrition and health. Review –concept of adequate nutrition, under nutrition and malnutrition. Different food groups – guide in menu planning.

UNIT II RECOMMENDED DIETARY ALLOWANCES

ICMR Recommend Dietary Allowances (RDA) for Indians. Basis for requirements. Balanced diets.

UNIT III NUTRITION IN PREGNANCY

Nutritional status and general health. Importance of preconceptual nutrition. Weight gain during pregnancy and the nature of weight gain. Factors affecting maternal nutritional status. Physiological adaptations, physiological & metabolic changes in pregnancy. Requirements, storage of nutrients in normal pregnancy, physiological cost, complications of pregnancy and nutritional problems in young and too old expectant mothers, LBW babies – causes and complications. Immunization schedule & tests during pregnancy.

UNIT IV NUTRITION IN LACTATION

Physiological adjustments during lactation, lactation in relation to growth and health of infants, efficiency of milk production, diet during lactation.

UNIT V NUTRITION IN INFANCY

Nutritional status of the infants, rate of growth as the indicator. Nutritional allowances for the infants, breast feeding Vs formula feeding, food square, weaning foods suitable for infants, feeding the premature infants and LBW infants, interventions to prevent malnutrition.

UNIT VI NUTRITION IN PRESCHOOL AGE

Growth and development of preschool children, food habits and nutrient intake of preschool children. Dietary allowances – supplementary foods, reasons for under 5 MR. Interventions to prevent malnutrition among preschoolers.

UNIT VII NUTRITION DURING SCHOOL AGE

Physical development, nutritional status of school going children, food habits, nutritional requirements, nutrition and academic performance, interventions to prevent malnutrition.

UNIT VIII NUTRITION DURING ADOLESCENCE

Changes of growth, assessment of growth – sexual maturity rating, physical, physiological and psychological changes in adolescents. Nutritional needs of the adolescents, changes needed to prevent malnutrition in adolescents.

UNIT IX NUTRITION FOR THE ADULTS

Nutrition for the adult-Nutritional requirements according to the mode of activity. Nutrition and health of women-general nutritional problems of women, anemia, osteoporosis, pre and postmenopausal syndrome, hormonal changes during menopause. Infertility – risk factors, prevention, methods of detection.

UNIT X NUTRITION IN OLD AGE

The ageing process- physiological, biochemical, metabolic, body composition changes and impact on health and nutritional status. Nutritional & health status of elderly.

UNIT XI NUTRITION IN SPECIAL EVENTS

Sports nutrition – Energy systems, carbohydrate loading, nutritional requirements, role of water and electrolytes in sports nutrition.

Space nutrition

RELATED EXPERIENCE

Planning diets to meet the requirements at different economic level- low, middle and high income for the following conditions.

1. Pregnancy
2. Lactation
3. Preschool age
4. School age
5. Adolescents
6. Adult

7. Old people
8. Athletes

REFERENCES

1. Mahan.L.K and Stump SE, Krause's Food, Nutrition and Diet Therapy, WB Saunders Company, 10th edition, 2001.

SEMESTER I
HND1 C03 ADVANCED FOOD SCIENCE

Objectives

1. To understand the nutritive value of foods.
2. To understand the principles and chemistry of foods and apply the principles during preparation & cooking

Course outcome

CO1 Explain the chemistry underlying the properties of various food components.
CO2 Discuss the major chemical reactions that occur during food preparation and storage.
CO3 Discuss the important pathogens and spoilage microorganisms in foods.
CO4 Explain the effects of common food preparation methods and food storage conditions on survival and growth of microbial contaminants.
CO5 Discuss basic principles of common food preservation methods.
CO6 To understand the nutritive value of foods
CO7 To understand the principles and chemistry of foods and apply the principles during preparation and cooking

UNIT I FUNCTIONAL PROPERTIES OF FOODS

Definition and properties of colloids, solution, sol, gel, emulsion, food dispersion. Enzymes- definition, classification, specificity of enzymes, enzyme inhibition, allosteric enzymes, application of enzymes in food industry. Sensory tests . Types of tests. Procedures for determination and monitoring of shelf life

UNIT II FOOD GROUPS

CEREALS & MILLETS

1. Cereal- Structure and composition. Parboiling, germination. Cereal cookery — effect of moist and dry heat, gluten- factors affecting gluten formation, Starch granules structure and characteristics. nonstarch poly saccharides- (fibres,cellulose, hemicellulose, pecticsubstances,gums, carboxy methyl cellulose(CMC))Application in food industry batters and dough, breakfast cereals , fermented products

2. PULSES, NUTS AND OILSEEDS

Nutritive value, Importance of germination & fermentation, protein concentrates and isolates, Anti nutritional factors present in pulses.

3. VEGETABLES AND FRUITS

Nutritional importance,pigments and acids in vegetables and fruits, browning reactions- enzymatic and non-enzymatic browning

UNIT III FLESH FOODS

Meat - Composition, post-mortem changes in meat

Fish – Composition, importance of fish.

Egg- Structure and nutritive value ,Effect of heat on egg proteins, Quality of egg , and egg products.

Milk -Composition, physical properties and processing, effect of heat, milk products

UNIT IV FOOD ADDITIVES AND EMERGING TRENDS IN FOOD SCIENCE

Food additives , FSSAI , HACCP, Principles of food packaging and labeling.

Food Fortification, GM foods, novel foods, SCP, Leaf Protein, Nanotechnology in food industry

UNIT V NUTRACEUTICALS

Classification, probiotics, prebiotics, --health effect .Classification , sources and importance of polyphenols, Foods with nutraceutical effects- green tea grape seed, wheat grass, *Garcinia cambogia* and aloe vera.

RELATED EXPERIENCE

1. Microscopic examination of different starch granules and effect of heat on starch (cake and bread making) Determination of gluten content of different flours
2. Preparation of stable emulsion (mayonnaise)
3. Stages of sugar cookery, crystalline and non-crystalline candies- Fondant, fudge, marshmallow.
5. Preparation of foam and effect of additives on stability, Meringue.
6. Effect of heat on milk / scum formation. Preparation of any 3 products.
7. Changes in pigments due to different cooking methods.
8. Enzymatic browning of fruits and vegetables.
9. Sensory evaluation of foods.
10. Product development- preparation and standardization of novel nutritious recipes.
11. Market survey on new processed items available in the local markets.
12. microbiological test for foods

REFERENCES

1. Potter, N. Hotchkiss, H.J, Food Science, 5th edition, CBS publishers and distributors, New delhi, 1996.
2. Srilakshmi, B, Food Science, New Age International Pvt. Ltd., Chennai, 2006
3. Beckhan. C.G & Graves.H.J, Foundations of food preparations, Macmillan Publishing Co, New Delhi, 1979.

SEMESTER I HND1 C04 MACRO NUTRIENTS

Objectives

1. Obtain depth on the study of major nutrients and
2. Develop competence for undertaking nutritional investigations.

Course outcome

CO1 Give the chemistry of carbohydrates, fat and protein and how macronutrients are absorbed, stored and metabolized
--

CO2 Discusses how macronutrients may impact health
--

CO3 Obtain depth on the study of major nutrients
--

CO4 Develop competence for undertaking nutritional investigations

CO5 Understand the mechanisms of regulation of metabolic pathways in human body.
--

CO6 Gain insight into interrelationships between various metabolic pathways

UNIT I UNDERSTANDING NUTRITION

Nutrition science: Basic concepts. Methods for studying the nutrient requirements.

UNIT II CARBOHYDRATES

Digestion, absorption & utilization. Metabolism: Glycolysis, gluconeogenesis, TCA cycle, HMP shunt, glycogenesis, glycogenolysis, bioenergetics. Regulation of blood glucose concentration, threshold for glucose, abnormal levels in blood glucose. Glycemic index. Dietary Fiber & Resistant starch. Inborn errors of metabolism: galactosemia, glycogen storage disease, fructosuria, pentosuria. Modification of carbohydrate intake for specific disorder.

UNIT III PROTEINS

Digestion, absorption, utilization, RDA. Metabolism: General catabolism of amino acids, deamination, transamination, decarboxylation, urea cycle. Disorders of amino acid metabolism: phenylketonuria, cystinuria, albinism, alkaptonuria, maple syrup disease. Protein quality evaluation, Protein turnover, amino acid balance. Commercial uses of proteins. Novel proteins. Deficiency and toxicity.

UNIT IV FATS AND LIPIDS

Classification. Functions. Digestion. Absorption, transportation & utilization. Food sources & RDA. Metabolism of lipids: biosynthesis and oxidation of saturated and unsaturated fatty acids, cholesterol and regulation, bile acids and their metabolism. Toxicity and Deficiency. Plasmalipoproteins and their significance, lipotropic factors and ketone body formation.

UNIT V ENERGY

Definition. Direct and indirect calorimetry. Energy value of food- Bomb Calorimeter. Components of energy expenditure- Resting Energy Expenditure, Thermic Effect of Food, Energy expended in Physical Activity. Methods of estimation of energy expenditure, BMR- definition and factors affecting BMR. Physiological value of food. Energy Requirements. Control of food intake. Metabolic consequences of starvation. Factors affecting energy input in hunger, appetite.

UNIT VI INTERMEDIARY METABOLISM

Interrelationship between carbohydrates, proteins, and fats.

UNIT VII WATER

Functions. Water distribution in our body. Water balance. Requirements of water. Disturbances in fluid balance- dehydration and oedema.

REFERENCES

1. Mahan.L.K and Stump.S.E , Krause's Food, Nutrition and Diet Therapy, W.B Saunders Company, USA.
2. Nix.S, William's Basic Nutrition and Diet Therapy, Mosby, India.
3. Sreelakshmi.B, Nutrition Science.
4. Bamji, MS, Rao,MP; Reddy.V, "Textbook of human Nutrition", Oxford and IBH Publishing Co, New Delhi.
5. Berdenier, C.D, "Advanced Nutrition: Macronutrients", CRC press, USA.

SEMESTER I
HND1 C05 RESEARCH METHODS AND STATISTICS

Objectives

1. Understand the methodology of research and techniques
2. Develop skills in conducting research from planning a study to reportWriting
3. Apply statistical procedure to analyse numerical data draw inferences

Course outcome

CO1 Understanding of the basic framework of research process.
CO2 Developing an understanding of various research designs and techniques..
CO3 Have the versatility to work effectively in a broad range of analytic, scientific, government, financial, health, technical and other positions.
CO4 Have a broad background in Mathematics and Statistics, an appreciation of how its various sub-disciplines are related, the ability to use techniques from different areas, and an in-depth knowledge about topics chosen from those offered through the department.
CO5 Be mathematically, statistically and numerically literate
CO6 Understand the basic statistical procedures for analysis of research data.
CO7 Understand organization and summarization of data.
CO8 Understand the applications of statistical techniques for analysis and interpretation.
CO9 Use of selective soft wares for qualitative and quantitative data analysis.

PART A: RESEARCH METHODS

UNIT I FUNDAMENTAL CONCEPT OF RESEARCH

Meaning, definition, objectives and characteristics of Research –basic research (fundamentalresearch): applied research, action research, ex post facto research, evaluation research, historicalresearch, exploratory research, industrial research, developmental research.

UNIT II RESEARCH DESIGN / PROPOSAL

Meaning and purpose of a research design or proposal, research problem definition, identification,statement of research problem, criteria for selection, definition of concepts

(operational definition). Variables - types of variables, independent and dependent variables, control and intervening variables. Hypothesis - Meaning and importance, types. Finding related literature: Significance, source, role taking.

UNIT III RESEARCH METHODS AND TOOLS

Methods-surveys, observation, interview, experimentation, case study (clinical method), Tools –questionnaire, schedule (for interview and observation), rating scales, attitude scales. Development of tools – reliability, validity and item analysis. Other methods and tools of research in specialized areas.

UNIT IV SAMPLING

Census and sample method, theoretical basis for sampling, methods of sampling, size of sample merits and limitations of sampling, sampling and non sampling errors, reliability of sampling.

UNIT V REPRESENTATION OF DATA

Significance of diagrams, graphs, types of diagrams and graphs, limitation of diagrams and graphs.

UNIT VI RESEARCH REPORT WRITING

Principles of report writing, basic components, preliminaries, text of reports, bibliography, footnotes, spacing, margins, indentations, quotations, writing a scientific paper. Project proposal

RELATED EXPERIENCE

1. Prepare a project proposal for M.Sc dissertation.
2. Make a power point presentation of the project proposal.

PART B: STATISTICS

UNIT I MEANING AND ADVANTAGE OF STATISTICAL PRESENTATION OF DATA

UNIT II CLASSIFICATION AND ORGANISATION OF DATA

Classification, types, discrete and continuous variables, tabulation of data, parts of a table, types of table, general rules of tabulation.

UNIT III DESCRIPTIVE STATISTICS

1. Measures of central tendency-mean, median, mode

2. Measures of variability –range, quartile deviation, mean deviationStandard deviation
3. Correlation coefficients, rank order correlation, product moment correlation regressionand prediction
4. Normal probability curve –properties, practical applications

UNIT IV SAMPLING STATISTICS

1. Statistical inference and central limit theorem
2. Null hypothesis and tests of significance
3. The chi-square
4. Testing difference between mean, proportions, standard deviations and correlations.

UNIT V INTRODUCTION TO STATISTICAL PACKAGE FOR SOCIAL SCIRNCES (SPSS)RELATED EXPERIENCE

1. Construct a research tool.
2. Prepare a research tool.
3. Present abstract of a research report.
4. Preparation of diagrams/ graph

REFERENCES

1. Kothari.C.R, Research Methodology, Wiley Eastern Ltd, New Delhi, 2000.
2. Best W L & Khan V, Research in Education, 7th edition, prentice hall Private, New Delhi.
3. Roul L, Methodology of Educational Research, 2nd edition, Vikas Publishing House Ltd,New Delhi.
4. Gupta.SC &Kapur VK, Fundamentals of mathematical statistics, Sulthan Chand &Sons,New Delhi, 2001.

SEMESTER II

SEMESTER II

HND2C06-ONCOLOGY NUTRITION

Objectives

1. To gain knowledge about different types of cancer
2. Understanding about the nutritional management in cancer

Course outcome

CO1 Gain knowledge about different types of cancers
CO2 To understand how adequate nutrition is beneficial to cancer patients
CO3 To implement appropriate nutrition screening methods for cancer patients
CO4 To learn how side effects of cancer treatment can impair nutritional status
CO5 To apply nutrition management principles for different types of cancer

UNIT 1 Introduction to oncology

Cancer biology, Classification of cancer, Risk factors-environmental, hereditary & nutritional factors, Epidemiological data on cancer incidence, Standards for diagnosing malnutrition, Cancer Cachexia, Biochemical changes in cancer in general

UNIT 2 Nutrition Support for Oncology Patients

Medical nutrition therapy- Head and Neck Cancer, Breast and Reproductive Cancer, Prostate Cancer, Lung Cancer, Oral cancer, Esophageal cancer, Gastric cancer, Colon cancer, Pancreatic cancer, Hematologic Malignancies,

Enteral and parenteral nutrition in cancer, Nutrient supplementation in cancer. Role of nutrition and exercise in cancer survivorship, Roles of vitamins, minerals, phytochemicals, herbal and botanical supplements in cancer prevention and treatment ,Role of alcohol, sugar, salt and caffeine in cancer, Palliative Care- Role of nutrition in palliative and hospice care

UNIT 3 Nutritional Management of Cancer

Nutritional implications in chemotherapy and radiation therapy–Anorexia and Other Gastrointestinal Toxicities Associated with Cancer Treatments, Surgical Oncology-Pre and post operative nutrition in cancer, Immunotherapy, Bone marrow transplantation, Interactions between cancer therapies and nutrient, Cancer support groups- governmental and non-governmental organizations

UNIT 4 Role of Dietitian in Cancer Care

Cancer prevention approaches- Children, adults and elderly, Patient support and management during therapy ,Patient support and management during survivorship

PRACTICALS:

Case studies in Oncology Nutrition.

Visit to a major cancer research centre

Development of standardized recipes for cancer patients

REFERENCE:

1. Mary Mariyan, Susan Roberts, Clinical Nutrition for Oncology Patients, Jones and Bartlett Publishers, 2010
2. Vincent T De Vita Jr., Theodore S Lawrence, Steven A Rosenberg, Cancer, Principles and Practice of Oncology, Wolters Kluwer And Lippincott Williams & Wilkins Publications, 9th Edition, 2011
3. Laura Elliott, Laura L. Molseed, Paula Davis McCallum, The Clinical Guide to Oncology Nutrition, Oncology Nutrition Dietetic Practice Group, American Dietetic Association, Second Edition, 2006
4. Mohan, L.K. and Shump, S.E. Krause's Food Nutrition & Diet therapy, W.B.Sauders Company, XII edition, 2001
5. David L Katz, Rachel S C Friedman, Nutrition in Clinical Practice, Wolters Kluwer Publishers, Third Edition, 2015

SEMESTER II
HND2 C07 FOOD SERVICE MANAGEMENT

Objectives

1. Understand the objectives of different types of food service institutions.
2. Apply knowledge in space allocation of food plants
3. Gain knowledge in menu planning preparation of recipes in large scale and serving and in food costing.

Course outcome

CO1 Understand scientific principles and techniques of food service management
CO2 Become a successful entrepreneur, professional and pursue higher education
CO3 Formulate environment friendly innovative food products
CO4 Acquire skills to establish a food service outlet
CO5 Professionally competent to take up careers in academics, health care and service industry
CO6 To understand the objectives of different types of food service institution
CO7 Apply knowledge in space allocation of food plants
CO8 Gain knowledge in menu planning, preparation of recipes in large scale and serving and in food costing

UNIT I FOOD SERVICE INDUSTRY

Scope of food industry: food industry segmentation

UNIT II ORGANISATION & ADMINISTRATION OF FOOD SERVICE INDUSTRY

Organisation –types, organization structure and management

UNIT III PHYSICAL FACILITIES AND LAYOUT

Planning, functional area according to different capacities, flow of traffic, work heights & storage heights for different areas & equipment

UNIT IV FOOD SERVICE EQUIPMENT

Classification, selection, purchasing, care and maintenance

UNIT V QUANTITY FOOD PREPARATION

Types of menu, menu planning, purchasing, storage, production management, conventional and nonconventional sources of energy, Standardisation and portion control

UNIT VI STYLES OF SERVICE

Self service, tray service, waiter-waitress service, vending and mobile food service system

UNIT VII SANITATION AND HYGEINE

Environmental hygiene & sanitation, safe food handling practices, personal hygiene

UNIT VIII HUMAN RESOURCE MANAGEMENT

Recruitment & selection, induction, training, performance appraisal, leadership, communication, employee benefits, laws governing food service establishment

UNIT IX FINANCIAL MANAGEMENT

Budgets, records for control, factors affecting cost control, factors affecting cost control, concepts and behavior of cost. Break even analysis.

UNIT X MARKETING

Definition, marketing mix and promotion in food service.

RELATED EXPERIENCE

1. Standardization of 10 selected recipes.
2. Quantity preparation of any 2 food item.
3. Visit to any food service institution / flight kitchen.

REFERENCES

1. Marian C Spears; Food Service Organisation; III Edition, Prentice Hall Inc., USA. 1995
2. Lendal. H. Kotschever, Richard Donnelly, "Quantity Food Purchasing, Mac Millan Publishing Company, New York, IV Edition, 1993.
3. West and Woods, Introduction to Food Service, Macmillan Publishing Company, New York, 7 th edition, 1994.
4. Mohini Sethi and Surjeet, M Malhan, "Catering Management an Integrated approach", Wiley Eastern Limited, Mumbai, II edition

SEMESTER II
HND2 C08 CLINICAL AND THERAPEUTIC NUTRITION

Objectives

1. Understand the physiology, metabolism and special requirements of critically ill.
2. Know the effect of various diseases on nutritional status and nutritional and dietary requirement.

Course outcome

CO1 Understand the causative factors and metabolic changes in various diseases/disorders.

CO2 Understand the nutrition assessment, planning, implementation, monitoring and follow up in nutrition care process

CO3 Acquire knowledge on the principles of diet therapy.
--

CO4 Comprehend principles of dietary counselling
--

CO5 Understand the rationale of prevention of various diseases/disorders.

CO6 Understand dietary counseling for prevention / treatment of various diseases / disorders.

CO7 Acquire knowledge on special therapeutic / health foods.
--

UNIT I ROLE OF DIETITIAN IN THE HOSPITAL AND COMMUNITY

Education and personal qualifications, professional ethics and obligations. Educating the patient, diet clinics and follow up. Psychology of feeding the patient, problems of feeding children, assessment of patient's needs.

UNIT II ROUTINE HOSPITAL DIETS

Regular diet, light diet, soft diet, full liquid diet, clear liquid diet and tube feeding. Enteral and parenteral feeding –composition, monitoring and complications. Transitional feeding.

UNIT III MODIFICATIONS OF DIET IN FEBRILE CONDITIONS

Acute, chronic and recurrent fevers, typhoid, rheumatic fever, tuberculosis, malaria, H1N1, dengue fever and chikungunya

UNIT IV GASTROINTESTINAL DISORDERS

Esophagitis, cancer of oral cavity, ulcer, indigestion, gastritis, carcinoma of the stomach, gastricsurgery and dumping syndrome. Diarrhoea, constipation, flatulence, celiac disease, tropical sprue,steatorrhea. Irritable bowel disease (IBD) – crohn’s disease, ulcerative colitis, Irritable bowelsyndrome (IBS), diverticulitis, colitis and colon cancer.

UNIT V LIVER, GALL BLADDER AND PANCREAS DISORDERS

Ecological factors: Dietary regimen in cirrhosis, hepatitis, hepatic coma, cholecystitis, cholelithiasis and pancreatitis

UNIT VI METABOLIC DISORDERS

Hypothyroidism, hyperthyroidism, gout, phenylketonuria and lactose intolerance

UNIT VII RENAL DISORDERS

Contributory factors and dietary modification- acute and chronic glomerulonephritis, nephrosis,Acute and Chronic Renal Failure,Nephrosclerosis and nephrolithiasis. End stage Renal Diseaseand Dialysis

UNIT VIII FOOD ALLERGY

Definition, types, tests, dietary management and prevention

UNIT IX DIET DURING NEUROLOGICAL DISORDERS

Alzheimer’s disease, Parkinson’s disease and epilepsy.

UNIT X DIET DURING METABOLIC STRESS

Burns, sepsis and trauma. Surgical conditions- CV complications, stroke and surgery, respiratoryfailure, hepatic failure, multi organ failure, GI tract (surgery and complications) and neurosurgery.

REFERENCES

1. Antia FP, Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 4thedition, 1997.
2. Davidson, Pasmore P and Break LP, Human Nutrition and Dietetics, English languagebook society, Livingstone, 1986.
3. Robinson, normal and Therapeutic Nutrition, Oxford & LBM Publishing, Calcutta,Bombay, 17th edition, 1990.
4. Garrow.JS & James W.P.T, Human Nutrition and Dietetics, Church Hill Living Stone,1993.
5. Mahan.L.K and Stump SE, Krause’s Food, Nutrition and Diet Therapy, WB SaundersCompany, 10th edition, 2001.

SEMESTER II
HND2 C09 NUTRITIONAL MANAGEMENT IN LIFE STYLE DISEASES

Objectives

1. Gain knowledge about the principles of diet therapy and different therapeutic diets
2. Develop aptitude for taking up dietetics as a profession.

Course outcome

CO1 Conduct dietary counseling for prevention and treatment of various diseases / disorders

CO2 Apply new technologies in nutrition care
--

CO3 Understand the etiology, pathophysiological and metabolic anomalies of acute and chronic disorders / diseases.
--

UNIT I STRESS

Stress – definition, types, psychosomatic disorders due to stress and functional adjustment/thebiological effects of stress on various systems-brain, cardiovascular system, respiratory system,non-vital organs and immune system- in brief. Stress enhancing food, antistress foods andnutrients. Dietary guidelines for the management of stress.

UNIT II NUTRITION FOR WEIGHT MANAGEMENT.

Components of body weight, adipose tissue and regulation of body weight. Obesity- assesment,types, causes and complications. Theories of obesity. Weight reduction techniques-dietarymanagement, surgical management, lifestyle modification, Under weight-causes,complicationsand dietary management.

UNIT III DIABETES MELLITUS

Classification, symptoms, diagnosis, causes and complications. Management of diabetes-dietarymanagement, artificial sweetners, diet and insulin and lifestyle management. Gestational diabetes– causes, complications and dietary management. Dietary management of diabetes in emergency(fasting, feasting and illness).

UNIT IV CARDIOVASCULAR DISEASES.

Risk factors, Blood lipids-Classification, assessment, dyslipidemia and hypercholesterolemia,Atherosclerosis-disease progression, causes, symptoms and clinical findings. Management-dietaryand lifestyle. Dietary management in angina pectoris, myocardial infarction and cardiac failure.

Hypertension classification, causes, complications and dietary management

RELATED EXPERIENCE

- 1) Study the weight reduction techniques followed by various health centres.
- 2) Case study report of the patient with related disease.

REFERENCE

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

SEMESTER II
HND2 L01 PRACTICAL - CLINICAL AND THERAPEUTIC NUTRITION

Objectives

To enable students to obtain knowledge on different therapeutic diets and their preparation

Course outcomes

Plan and prepare basic menus and assist in supervising food service personnel in preparing menus and serving of meals
Develop skills to prepare special diets, special nutrition formulas for patients who are critically ill and require special feeding through oral, enteral or parenteral routes
To analyse accuracy of meal planned and calculate nutritional value of food
Develop and implement nutrition care plans, monitor, follow up and evaluate these plans and take corrective measures wherever required
Schedule work assignments in the dietary unit to facilitate the effective operation of the kitchen and other food preparation or dining areas

UNIT I PREPARATION OF HOSPITAL DIETS.

Visit to dietary kitchen, preparation of routine hospital diets-regular diet, soft diet, full fluid diet and preparation of tube feeding blends.

UNIT II DIET IN FEBRILE CONDITIONS.

Acute & chronic fevers – typhoid, tuberculosis.

UNIT IV DIET IN GASTRO INTESTINAL DISORDERS.

Peptic ulcer, gastritis, diarrhoea, constipation, malabsorption syndrome.

UNIT V DIET IN LIVER, GALL BLADDER AND PANCREAS DISORDERS

Cirrhosis, hepatitis, cholelithiasis and pancreatitis.

UNIT VI DIET IN METABOLIC DISORDERS.

Diabetes mellitus, hypothyroidism, hyperthyroidism, gout, phenyl ketonuria, Lactose intolerance.

UNIT VII DIET IN RENAL DISORDERS.

Glomerulonephritis, nephrosis, nephrolithiasis & diet in dialysis.

UNIT VIII DIET IN OBESITY AND UNDERWEIGHT.

UNIT IX DIET IN CARDIOVASCULAR DISORDERS.

Atherosclerosis, hypercholesterolemia, hypertension, myocardial infarction.

UNIT X DIET IN NUTRITIONAL DEFICIENCY DISEASES.

Anaemia, protein calorie malnutrition, vitamin A deficiency.

UNIT XI DIET IN CANCER.

UNIT X DIET FOR CRITICALLY ILL

Diet in Surgical conditions – stroke, multi organ disorders and burns.

SEMESTER III

SEMESTER III
HND3 C10 VITAMINS AND MINERALS

Objectives

- 1) To gain knowledge about different micro nutrient deficiencies.
- 2) Obtain depth on the study of major nutrients.

Course outcome

CO1 Understand the mechanisms of regulation of metabolic pathways in human body.
CO2 Gain insight into interrelationships between various metabolic pathways. Understand the methodology for derivation of requirements for specific micronutrients
CO3 To gain knowledge about different micro nutrient deficiencies
CO4 Obtain depth on the study of major nutrients

UNIT I CALCIUM AND PHOSPHORUS

Functions,distribution,absorption,transportation,utilisation,storage&excretion,sources,RD
A.Calcium – Phosphorus ratio, calcium balance, phosphates in blood, therapeutic uses, deficiency &toxicity.

UNIT II MAGNESIUM, SULPHUR, SODIUM, POTASSIUM

Functions,distribution,absorption,transportation,utilisation,storage&excretion,sources, requirements, deficiency and toxicity. Sodium – Potassium balance.

UNIT III IRON

Functions, distribution, absorption, transport, utilization, storage & excretion, sources and RDA. Bioavailability of iron, methods of assessing iron availability, effects of excess ironretention and deficiency.

UNIT IV IODINE & FLOURINE.

Functions ,distribution ,absorption ,transport ,utilization ,storage & excretion, sources and requirements, deficiency and toxic effects of iodine & fluorine. Iodine and thyroid, methodsof combating IDD & fluoride in the prevention of dental caries.

UNIT V ZINC AND OTHER TRACE ELEMENTS

Functions, distribution, absorption, transport, utilisation, storage & excretion, sources, requirements, deficiency & toxic effects of Zinc, Copper, Molybdenum, Selenium, Nickel, Chromium, Cadmium.

UNIT VI FAT SOLUBLE VITAMINS

Functions, absorption, transport, utilisation, storage and excretion. Dietary sources, RDA, conversion of beta carotene into vitamin A, hyper and hypo vitaminosis.

UNIT VII WATER SOLUBLE VITAMINS

Functions, absorption, transport, utilisation, storage and excretion. Dietary sources, RDA, hyper and hypo vitaminosis and antivitaminosis.

UNIT VIII XENOBIOTICS

Classification, effects, action, metabolism, detoxification reaction.

REFERENCES

1. Mohan, L.K. and Shump, S.E. Krause's Food Nutrition & Diet therapy, W.B. Saunders Company, XII edition, 2001.
2. Shills, E.M., Olson, S.J. and Shiks, M.C. Modern Nutrition in health and disease, Lea and Febringer, Philadelphia, 8th edition, 1994
3. Srilakshmi, B. Nutrition science, New Age International (P) Ltd, Chennai, 2006.
4. Bamji, M.S., Rao, P.R. and Vinodini, R. Text book of Human Nutrition, Oxford and IBH, Publishing Co. Pvt. Ltd, New Delhi, 1996.
5. Berdanier, C.D. Advanced Nutrition-Micronutrients, CRC Press, Washington, D.C. 1998.
6. Wardlaw, G.M. Contemporary nutrition – issues and insights, 2003, New York, McGraw Hill Companies.

SEMESTER III
HND3 C11 COMMUNITY NUTRITION

Objectives

To enable the students:

1. Gain insight in to the national nutritional problems and their implications and
2. Understand the international contribution towards nutritional improvements in india.
3. Develop skills in organizing and evaluating nutrition projects in the community.

Course outcome

CO1 Understand the concept of Nutrition Security
CO2 Gain an insight into various approaches and strategies for combating malnutrition
CO3 Understand the various Government programs and policies aimed at improving the health and nutritional status of the population.
CO4 Develop insight in planning, implementing, monitoring and evaluating nutrition programmes
CO5 Assess nutritional status using different techniques

UNIT I ASSESSMENT OF NUTRITIONAL STATUS

Assessing the food and nutritional problems in the community, methods available for the assessment of nutritional status of an individual and community, direct and indirect methods, clinical examination, nutritional anthropometry, biochemical methods, dietary survey.

UNIT II PREVALENCE OF MALNUTRITION IN INDIA

Common nutritional problems-prevalence, morbidity and mortality rate. Ecology of malnutrition. Nutrition and Infection. Nutritional disorders-anaemia, Vitamin A deficiency, Iodine Deficiency Disorder, PEM- Etiology, prevalence, symptoms and preventive measures. Measures to overcome malnutrition in India. Need for an integrated approach to solve the problems of malnutrition.

UNIT III NUTRITION INTERVENTION PROGRAMMES

Nutrition intervention programmes. Objectives and operation of nutrition intervention programmes, SLP, SNP, ANP and other programmes organized by

governmental and nongovernmental agencies for the vulnerable sections of the population.

UNIT IV ROLE OF NATIONAL AND INTERNATIONAL ORGANIZATIONS TO COMBAT MALNUTRITION.

International organizations concerned with food and nutrition, FAO, WHO, UNICEF, UNESCO, CARE, AFPRO, CWS, World Bank and others, National organizations concerned with food and nutrition- ICMR, ICAR, CHEB, CSWB, SSWB, ICAR, NIN, NNMB, CFTRI

UNIT V NUTRITION EDUCATION

Meaning, nature, importance and methods of nutrition education to the community, training workers in nutrition education with education and extension work - when to teach, whom to teach and how to teach. Principles of planning, executing and evaluating nutrition education programmes, problems of nutrition education programmes.

UNIT VI FOOD PRODUCTION

Objectives in agriculture planning in relation to nutrition, Green Revolution, Blue Revolution, White Revolution and Yellow Revolution, a brief review of losses of foods in the post harvest period and agents causing food spoilage. Food security, PDS, FCI, Save grain campaign. Role of food technology, environmental sanitation and health.

RELATED EXPERIENCES

1. One week community nutrition camp & report.
2. Assessment of nutritional status through anthropometry and dietary survey.
3. Planning, conducting and evaluating nutrition education programmes.
4. Evaluation of School Lunch programmes and nutrition awareness for the beneficiaries.

REFERENCES

1. Reddy.V; Rao.P.N; Sastry.G and Nath.K.K, Nutrition trends in India, NIN, Hyderabad.
2. Bamji, MS, Rao,MP; Reddy.V, "Textbook of human Nutrition", Oxford and IBH Publishing Co, New Delhi.
3. Jelliffe.D.B, "Assessment of Nutritional Status of the community", World Health Organisation, Geneva.
4. Swaminathan.M, "Principles of Nutrition and Dietetics", Bangalore publishing company Ltd, Bangalore.
5. Park.K, "Park's textbook of preventive and social medicine", 16th edition, M/S Banarsidas Bhanot publishers, Jabalpur.

SEMESTER III

HND3 C12 PAEDIATRIC NUTRITION

Objectives

1. Realize the importance of nutritional care and nourishment of children.
2. Understand the specific needs of children and the effects of various diseases on nutritional status and nutritional requirements.

Course outcome

CO1 Realize the importance of nutritional care and nourishment of children
CO2 Understand the specific needs of children and effects of various diseases on nutritional status and nutritional requirements
CO3 Normal growth, development and behavior and their assessment, as well as approaches to abnormalities from infancy
CO4 Health maintenance and preventive care for children, including age-related issues in nutrition, safety, vaccination and risk factor identification and modification

UNIT I INFANCY

Physiological development, assessment of nutritional status- anthropometric measurements, biochemical parameters, clinical & dietary data. Nutritional and food requirements for infants.

UNIT II IMMUNIZATION SCHEDULE.

Immunization schedule during pregnancy, infancy and childhood

UNIT III NUTRITIONAL MANAGEMENT OF PREMATURE, LBW BABIES AND CHILDREN WITH DEVELOPMENTAL DISABILITIES

Characteristics, causes and complications, feeding methods, growth and nutritional assessment.

UNIT IV IDENTIFICATION OF SICK NEWBORN

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

UNIT V NUTRITIONAL MANAGEMENT IN MALNUTRITION

PEM, anaemia, scurvy, rickets, vitamin A deficiency, childhood obesity. Underweight and underweight nutrition- short term and long term consequences in brief.

UNIT VI NUTRITIONAL MANAGEMENT OF INFECTIOUS DISEASES

Diarrhoea, typhoid, TB and hepatitis.

UNIT VII NUTRITIONAL MANAGEMENT IN GASTRO INTESTINAL DISORDERS

Lactose intolerance, celiac disease, inflammatory bowel disease, constipation and fat absorption test diet (calculation of fluids & electrolytes-both deficit and maintenance and management of calorie intake).

UNIT VIII NUTRITIONAL MANAGEMENT FOR CHILDREN WITH SPECIAL CONDITIONS

Autism and ADHD (Attention Deficit Hyperactivity disorder), epilepsy and AIDS.

RELATED EXPERIENCE

Measuring, recording and plotting growth of infants.

REFERENCES

1. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
2. Shils, M.E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
3. Escott-Stump, S. (1998): Nutrition and Diagnosis Related Care, 4th Edition, Williams and Wilkins.
4. Davis, J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co.
5. Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little, Brown & Co.
6. Guyton, A.C. and Hall, J.E. (1999): Textbook of Medical Physiology, 9th Edition, W.B. Saunders Co.
7. Ritchie, A.C. (1990): Boyd's Textbook of Pathology, 9th Edition, Lea and Febiger, Philadelphia.
8. Fauci, S.A. et al (1998): Harrison's Principles of Internal Medicine, 14th Edition, McGrawHill.
9. Textbook of pediatric nutrition- Book review, Stephen J Rose, Ach Dis Child, 1995.
10. Nutrition in pediatrics: Basic Sciences & clinical Applications, W. Allan Walker, John B Watkins & Christopher Duggan, 2003. BC Decker Inc, Hamilton, Ontario.

Journals

1. American Journal of Clinical Nutrition,
2. Archives of Diseases in Childhood,
3. Indian Journal of Pediatrics
4. Journal of Pediatric Gastroenterology and Nutrition

SEMESTER III
HND3 E01 (1)SPORTS NUTRITION

Objectives

1. To enable the students to understand nutritional requirements of sports person
2. To understand the energy expenditure for different sports events

Course Outcomes

CO1 Understanding sports nutrition
CO2 Understanding the energy requirements of athletes
CO3 Understanding the nutritional requirements of athletes
CO4 Identification of various sports supplements
CO5 Identification of common disorders of athletes
CO6 Understanding ergogenic aids and its importance in a sports person

Unit I Introduction to sports nutrition

1. Introduction to sports nutrition: History, goals and importance. Recommended Dietary Allowances for athletes, ICMR recommendations, Reference sports man and woman – requirement specifications for different sports activities. Pre and Post exercise Diet.
2. Energy requirements of athletes, components and conversion of energy. Energy metabolism in athletes– factors influencing energy requirements of athletes. Requirements for different age groups and athletes.

Unit II Nutritional requirements of athletes,

1. Carbohydrates – Role in different sports activities. CHO loading- metabolic changes – supplements.
2. Proteins – Importance in anaerobic activities, metabolic changes – requirements for sports activities – supplements and high protein diets.
3. Lipids - Role in different sports activities – special reference to swimming – metabolic changes and utilization during exercise – Fat loading – importance.

4. Vitamins and minerals – Role in sports person, fat and water soluble vitamins. Ca, Fe, Zn & Mg. Factors influencing requirements – influence of deficiencies – supplementation.

5. Fluid and electrolytes for athletes – Distribution- Fluid balance – Fluid requirements – Dehydration effects . Water intoxication – Practical indices of hydration status – Sports drinks.

UnitIII :-Diet related problems of athletes AND Ergogenic aids and sports supplements

1. Diet related problems of athletes – female athlete triad – Weight control – Weight maintenance – Diabetic athletes, disabled athletes, GI stress, cramps and stitches.

2. Ergogenic aids and sports supplements - classification, types - drugs, nutritional ergogenic aids - effects and safety concerns.

PRACTICALS:

1. Principles of diet planning for sports persons with special reference to nutrients and water needs

2. Concept of energy expenditure and calculation of EE

3. Planning a day's diet for the following sports activities for different age groups and sexes: Gymnastics, Athletics, Swimming, Cricket, Football, Diet considerations for female sports persons

4. Fitness assessment - height, weight and body composition. Body fat determinations by different methods

5. Determination of aerobic capacity - pulse rate, blood pressure, THR zone for exercise and VO₂max (demonstration)

6. Determination of muscle strength and endurance (demonstration)

7. Exercise Management: Importance of warming up / cool down / stretching, Work out - aerobic and strength training /cross training, Sports injury

References

1. B Srilakshmi, V Suganthi and C Kalavani Ashok (2017) Exercise physiology Fitness and Sports nutrition, New Age International New Delhi.

2. Brouns Fred and Caustan – Cargill (2002) Essentials of Sports Nutrition – 2nd edition John Wiley and Sons, England.
3. Burke Louse and Deakin Vicky (2006) Clinical Sports Nutrition, McGraw – Hill Pvt. Ltd. Australia.
4. Summerfield Lianne M (2001), Nutrition Exercise and Behavior An integrated approach to weight management, Belmont (USA). Wadsworth/Thompson Learning.

SEMESTER III
HND3 E01(2) ENTREPRENEURIAL DEVELOPMENT

Objectives

1. To promote entrepreneurship skills among students.
2. To enable students to understand the need and relevances of entrepreneurship.
3. To understand the process and procedure of setting up small enterprises / self employment schemes.

Course Outcomes

CO1 Understanding importance and characteristics of entrepreneurship
CO2 Analyse the qualities of successful entrepreneur and understanding the institutions and training programmes conducting Entrepreneurial development programme
CO3 Analyse the importance, problems and measures taken for the development for women entrepreneurship
CO4 Identification of agencies of training and marketing agencies.
CO5 Evaluating the problems faced by small-Scale industries and identify the measures.

UNIT I ENTREPRENEURSHIP

Definition, characteristics, meaning of entrepreneur, functions, types, importance of entrepreneurs in economic development factors affecting entrepreneurial growth.

UNIT II ENTREPRENEURIAL DEVELOPMENT PROGRAMME

Meaning and need, objectives, steps, qualities of successful entrepreneur, contents of training programmes, institutions conducting EDP.

Unit III WOMEN ENTREPRENEURS

Concept, need for women entrepreneurship, problems, measures taken for the development of women entrepreneurship in India.

UNIT IV AGENCIES FOR ENTREPRENEURSHIP

Agencies for training, infrastructure, financial help, marketing- DIC, SIDO, NSIC, TCO, SISI, STEP, STED, KITCO, CIDCO, KVIC.

UNIT V SMALL INDUSTRIES

Concept, definition, characteristics, objectives, problems, measures taken for the promotion of SSI, industrial estates.

UNIT VI PROJECT FORMULATION

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

UNIT VII PROJECT REPORT PREPARATION

Definition, objectives, importance, contents

RELATED EXPERIENCE

1. Visits to agencies involved in development of entrepreneurship.
2. Visit to one or two units related to trade.
3. Interaction with one or two entrepreneurs

REFERENCES

1. Gupta.C.B&Sreenivasan N.P, Entrepreneurship Development in India, New Delhi,Sultan Chand, 1987.
2. Desai.V, Dynamics of entrepreneurial development & management, Mumbai, Himalayapublishing house, 1997.
3. Khanka .S.S., entrepreneurial development, S Chand & Co Ltd., Ram Nagar, New Delhi,1999.
4. Jain, N.K &Varshney.R.L, Entrepreneurship Development-RBSA publications, Jaipur, 1999.

SEMESTER III
HND3 E01(3) NUTRITIONAL COUNSELLING AND EDUCATION

Objectives

1. To understand the principles and methods of counseling.
2. To apply counseling methods to patients with different diseases

Course outcome

CO1 To understand the principles and methods of counselling
CO2 To apply counselling methods to patients with different diseases
CO3 To promote body's potential towards health, wellness and disease prevention
CO4 To help individuals overcome their immediate problems and also to equip them to meet future problems

UNIT I COUNSELLING

Introduction, definition, meaning and importance. Goals of Counselling, Immediate and long term counselling.

UNIT II SPECIFIC TECHNIQUES OF COUNSELLING

Observation, listening, nonverbal behaviour, communication, questioning, silence, transference, interview techniques. Counselling strategies, skills and principles, referral services, professional ethics in counselling.

UNIT III COUNSELLING PSYCHOLOGY

Introduction, definition, meaning and importance.

UNIT IV PSYCHOLOGY

Introduction, definition., basic concepts - attention, perception, learning, memory, personality, cognition, motivation.

UNIT V COUNSELLING PROCESS

Various phases/ stages in counselling process. Types of Counselling: Crisis counselling, facilitative counselling, preventive counselling and development counselling. Counsellor-Counsee Relationship- Nature and characteristics, factors influencing the relationship.
Counselling and Psychotherapy, values in counseling.

UNIT VI CONTEMPORARY THEORIES OF THERAPY

Psychoanalysis, behaviour therapy, client centred Therapy, gestalt therapy, reality therapy

UNIT VII FAMILY COUNSELLING

Family planning counseling, abortion counseling, importance of counseling for children and adolescents. Geriatric counseling for patients with specific diseases like HIV/AIDS, cancer, and diabetes

RELATED EXPERIENCE

Give counseling for 5 patients of different age groups - Report.

REFERENCES

1. Currie, Joe, Barefoot counselling: A premier in building helping relationships. Asian Trading Cooperation, Bangalore. 1976.
2. Bhatia, K.K., Principles of guidance and counselling, Kalyani Publishers, Ludhiana. 2002.
3. Nelson – Jones, Richard, Practical counselling and helping skills, Better Yourself Books, Bombay. 1994.
4. Narayan Rao. S., Counselling, Tata McGrawHill Bartlet, Hariot.M, Social work practice in Health Field: National Association of Social Work, New Delhi.
5. Banarjee G.R.: Social Service Department in a Hospital, TISS, Bombay.
6. Bowel A.H. and Gardner L. : The Young Handicapped Child: Edinburgh, E and S Livingston Ltd Cooperation, Bangalore. 1976.
7. May, Rollo, Art of counselling: A practical guide with case studies and demonstrations. Abingdon Press, New York. 1967
8. Prashantham B.J., Indian case studies in therapeutic counselling, Christian Counselling Centre, Vellore. 1978
9. Bhatia, K.K., Principles of guidance and counselling, Kalyani Publishers, Ludhiana. 2002.
10. Narayan Rao. S., Counselling, Tata McGrawHill Publishing Company Ltd, New York 1981.

SEMESTER III
HND4I01 HOSPITAL INTERNSHIP AND COMMUNITY NUTRITION
EDUCATION PROGRAMME

Objectives

To enable students to:

1. Get an exposure to the working situation of the dietary department of a reputed hospital.
2. Develop capacity for taking dietetics as a profession.
3. Get an exposure for Planning, conducting and evaluating nutrition education programmes.

Course Outcomes

CO1 Develop skills in diet counseling and feeding of patients.
CO2 Experiential learning to understand the needs of industry
CO3 develop professional ethics

- 1. One month internship in a reputed hospital - Report**
- 2. Hospital training once in a week for a period of 8 months (30 days) - Report**
- 3. Diet counseling for the college students (10 students) – Report**
- 4. Community Nutrition education camp in the areas vulnerable to malnutrition/chemical disaster or disaster prone/tribal /coastal /slum areas etc.**

SEMESTER- IV

SEMESTER IV
HND4 C13 METABOLIC AND BIOCHEMICAL CHANGES IN DISEASES

Objectives

To enable the students to understand the biochemical and physiological changes in diseases.

Course outcome

CO1 To enable the students to understand the biochemical and physiological changes in diseases
CO2 Understand the use of colorimetry in biochemical estimations.
CO3 Develop skills in chromatography.
CO4 Apprehend principles of buffers and gain competence in their preparation.
CO5 Acquire skill in spectrophotometric method of quantitative estimations of biomolecules
CO6 Attain competence in electrophoresis.

UNIT I NORMAL CELLULAR PROCESS

Normal cellular process., cellular adaptations. – Cell injury-Causes. Necrosis and Apoptosis.

Body fluids; extracellular and intra cellular- CFC, Serous fluids-, peritoneal, pleural and pericardial – Transudates and exudates – Synovial fluids

UNIT II DRUG, FOOD AND NUTRIENT INTERACTION

Action of some common drugs, Effect of drugs on food intake, nutrient absorption, metabolism and requirements, effect of food and nutrients on absorption and metabolism of drugs. Effect of drug on the nutritional status.

UNIT III BIOCHEMICAL CHANGES IN DISEASES

Metabolic disorders, diseases of endocrine glands and inborn errors of metabolism

Disorders associated with hyperglycemia, hypoglycemia, Hyper and hypothyroidism. atherosclerosis, dyslipidemia, obesity & fatty liver.

Inborn errors of carbohydrate, lipid and protein metabolism.

Infectious Diseases

Fever, typhoid, TB, Chicken Gunea, and Dengue fever

Non infectious diseases

Hepatitis Renal calculi, Alzheimer's, PCOD

Musculo-skeletal problems

Arthritis, Osteoporosis

Organ function tests

Liver, kidney, thyroid, pancreatic and gastric function tests.

UNIT IV BODY ELECTROLYTES

Law of electron neutrality, maintenance of pH, buffer system in the body, regulation of acid base balance, respiratory control and renal control, role of sodium, potassium & chlorine, estimation of body electrolytes (principles).

UNIT V MODE OF ACTION OF ENZYMES AND HORMONES

Enzymes-Intracellular distribution, factors affecting enzyme activity, enzymes in clinical diagnosis. Hormones -Mode of action, regulation of metabolism, hormonal status in different stages of life, endocrinological abnormalities and clinical diagnosis.

UNIT VI BIOPHYSICS

Principles involved in estimating calorimetry, chromatography, flame photometry, electrophoresis, ion selective electrodes, radioimmunoassay, ELISA test.

REFERENCES

1. Mukerjee, K.L, Medical Laboratory technology, Tata McGraw Hill Publishing Company, Co-Ltd, New Delhi.
2. Chatterjee, M.N and Shinde R, Textbook of Medical Biochemistry, Jay Peerothers Medical Publishing Pvt Ltd, New Delhi.
3. Lehinger A L, Nelson DC and Cox MM, Principles of biochemistry, CBS Publishers and distributors, Jain Bhavan, Bhalanatu Nagar.

SEMESTER IV
HND4 L02 METABOLIC AND BIOCHEMICAL CHANGES IN DISEASES -
PRACTICAL

Objectives

To enable students to acquire skills to estimate selected body metabolites.

Course Outcomes

CO1 Develop skills to estimate selected body metabolites
CO2 Understand the clinical significance of selected body metabolites
CO3 Analyse the the reliability of different procedures to assess the blood parameters

1. Qualitative analysis of urine for
 - a. Albumin
 - b. Sugar
 - c. Acetone and acetoacetic acid.
 - d. Bile pigment.
2. Quantitative analysis of urine for protein.
3. Quantitative estimation of blood
 - a. Sugar
 - b. Blood urea
 - c. Serum Creatinine
 - d. Cholesterol
 - e. Calcium
 - f. Phosphorus
4. Demonstration experiment on serum bilirubin, SGOT, SGPT, Alkaline Phosphatase and Vitamin A.

SEMESTER- IV
HND 4 E02 (1) DIABETIC CARE AND MANAGEMENT

Objectives

1. Obtain in-depth knowledge about Diabetes Mellitus (DM)
2. To make the students aware of various complications during Diabetes Mellitus
3. To gain knowledge about the management of Diabetes Mellitus through diet, exercise and medication

Course outcome

CO1 Obtain in depth knowledge about diabetes mellitus
CO2 Awareness of various complications during diabetes mellitus
CO3 Knowledge about the management of diabetes mellitus through diet ,exercise and medication
CO4 Improve standards and outcomes of diabetes care, efforts in the following areas appear crucial: diagnostic procedures and therapeutic management
CO5 Evaluate the impact of a diabetes education program on the clinical outcomes in patients with diabetes mellitus

UNIT I BASICS OF DIABETES MANAGEMENT

Introduction, definition, and meaning, classification of D.M, and risk factors
Prevalence- International, national and state.

UNIT II ANATOMY AND PHYSIOLOGY OF PANCREAS

Secretion, functions and utilisation of insulin, glucagon and somatostatin.

UNIT III PATHOPHYSIOLOGICAL CHANGES IN PANCREAS, BETA CELLS AND ALPHA CELLS

Pathological changes in metabolism. Pathophysiology of Diabetes Mellitus.
Pathological changes in other systems- Eye, C.V system, Neuropathy, Nephropathy and Microvascular.

UNIT IV DIAGNOSIS AND ROUTINE INVESTIGATIONS

Monitoring the blood glucose level, Urine testing for the presence of sugar, random blood glucose, GTT and Glycosylated Hb. (Hb A1C).

UNIT V MANAGEMENT OF DIABETES MELLITUS

- 1) Dietary Management- Role of carbohydrate, protein, fat and fiber in Diabetes Mellitus. Glycemic indices. Alcohol and diabetic diet, fruits and diabetes, refined sugar and alternative sweeteners and dietary supplements.
- 2) Physical activity and exercise-Evaluation of diabetic patients before recommending an exercise programme. Frequency, intensity, duration and type of exercise. Exercise in the presence of specific long term complications.
- 3) Medication and Diabetes- Oral agent for diabetes. Main group of OHA'S, general aspects in OHA therapy, Insulin therapy in Diabetes Mellitus- types of Insulin and time activity characteristics. Practical aspects of insulin therapy- storage, sterilization, injection sites, timing. Commonly seen side effects.

UNIT VI COMPLICATION OF DIABETES MELLITUS AND THEIR MANAGEMENT

- 1) Hyperglycaemia- definition and clinical manifestation- treatment, prevention. Ketoacidosis- definition and causes- clinical manifestation and clinical levels of hyperglycaemia., prevention and hyperglycaemia awareness.
- 2) Microvascular complications – Diabetic kidney disease- definition, etiology Pathology clinical manifestation, treatment and prevention.
Eye care: Problems of eye and vision, types and clinical manifestation.
Foot care: definition and types of problems, prevention and treatment.
- 4) Macrovascular complications: Definition, clinical manifestation, prevention and Treatment

UNIT VII MANAGEMENT OF CO- MORBID CONDITION

Hypertension, dyslipidaemia, obesity, metabolic disorders.

UNIT VIII PREVENTION AND MANAGEMENT OF LONG TERM DIABETIC COMPLICATIONS

Diabetic retinopathy- symptoms, stages, common factors affecting progression of retinopathy and management.

Neuropathy- importance of early diagnosis, diagnosis, the feet and diabetes and principles of treatment in neuropathy

Diabetic nephropathy- stages, diagnosis, risk factors for the development of diabetic nephropathy, management- aggressive B.P control, protein restriction, maintain hydration, infections of urinary tract, smoking, avoid renal damage from drug use and renal replacement therapy.

RELATED EXPERIENCE

- 1) Analysis of urine blood sugar
- 2) Detection of blood glucose by using glucometer.

3) Case study of two diabetic patients (complicated cases)

REFERENCES

1. L. Kathleen Mahan, Sylvia Escott-Stump “Krause’s Food Nutrition and Diet Therapy” W.B. Saunders Company, London. 2000.
2. Maurice E. Shils, James A. Olson, Moshe Shike, A. Catharine Ross. Modern Nutrition in Health AND Disease”. Lippincott Williams and Wilkins, London, 1994.
3. B. Srilakshmi. “Dietetics” New Age International (P) Limited, New Delhi, 2005.
4. Ameri

can Diabetes Association -2010 guidelines

5. William and Pickup “Text book of Diabetes” .2005.

SEMESTER IV

HND 4 E02 (2)QUANTITY FOOD PREPARATION TECHNIQUES

Objectives

To enable students to

1. Understand the objectives of different types of Food Service Institutions.
2. Gain knowledge in menu planning, preparation of recipes in large scale and serving and in food costing.

Course Outcomes

CO1 Analyse the different categories of hotels
CO2 Identify the different types of menu and evaluate various menu pricing
CO3 Identify the purchasing processes and methods
CO4 Evaluate different types of receiving and storage methods
CO5 Evaluate standardization and portion control
CO6 Analyse methods of production and standards of product
CO7 Understanding the types of food service
CO8 Evaluate budget, food cost control and interpret financial data

Unit I Food Service Industry (6hrs)

Scope and objectives of hospitality industry, different categories of hotels.

Unit II Menu planning-The primary control of food service(7hrs)

Types of menu – A la carte, Table d’hote& cyclic, Static, single use, Factors affecting menu planning, menu presentation, cost concepts and menu pricing - Factor method, Prime cost method and Actual cost method.

Unit III Purchasing (6hrs)

Qualities of an institutional buyer, Purchasing activity, product selection, mode of purchasing, methods of purchasing and purchasing process, purchasing records.

Unit IV Receiving and storage (6hrs)

Receiving - delivery methods, delivery procedure and receiving procedure.

Storage –types (dry storage and cold storage)

Unit V Standardization of Recipes(7hrs)

Standardization and portion control

Unit VI Quantity Food production and quality control(6hrs)

Objectives of food production, methods of production, product standards and product control – HACCP

Unit VII Distribution and service of Food(7hrs)

Types of food service – waiter service, self service and vending.

Unit IX Budget(9hrs)

Steps in budget planning, break even analysis food budget, and food cost control.

Related Experience:

Standardization of 10 selected recipes used in food service Institutions and quantity food production of any two items.

REFERENCES:

1. MohiniSethi and Surjeet, M. Malhan, “Catering Management an Integrated approach”, Wiley Eastern Limited, Mumbai, II edition reprinted, 1996.
2. Marian C. Spears; Food Service Organization; III Edition, Prentice Hall Inc., usa.1995.

3. West and Woods, Introduction to Food Service, Macmillan Publishing Company, New York, 7th edition, 1994.
4. Odger Cesarani and David Fosket, Theory of Catering, Odger and Stoughton, London, 19th edition, 2003.
5. Odger Cesarani and David Fosket, Food and beverage service, Odger and Stoughton, London, 19th edition, 2003.

SEMESTER IV
HND4 E03 (1) FOOD SAFETY AND QUALITY CONTROL

Objectives

1. Understand the common organisms associated with food borne illness
2. Apply the principles & methods of storage and preservation of various foods.
3. To study about the food safety methods.

Course outcome

CO1 Explain the application of food quality and food safety system
CO2 Identify the hazard of the food chain to ensure food safety
CO3 Examine the chemical and microbiological quality of food samples
CO4 Detect the adulteration in food samples
CO5 Explain the importance of quality ass

UNIT I FOOD SAFETY-BASIC CONCEPTS

Food safety and importance of safe food. Factors affecting food safety- physical hazards, biological hazards, chemical hazards. Role of microorganisms in food- bacteria, fungi, yeasts, moulds, viruses, parasites. Denaturation of bacteria.

UNIT II MICROBIOLOGY OF NATURAL PRODUCTS

Water: sources, bacteriology of water supplies, bacteriological examination and purification of water.

UNIT III FOOD SPOILAGE

Causes, Factors affecting spoilage, Spoilage of perishable and non perishable foods.

UNIT IV FOOD BORNE DISEASES AND THEIR OUT BREAK.

UNIT V FOOD PRESERVATION

Objectives, principles and methods of food preservation.

UNIT VI FOOD ADDITIVES AND FOOD ADULTERATION

Food additives – classification & Food adulteration – definition, types, common adulterants and prevention.

UNIT VII FOOD PACKAGING

Packaging :concepts ,significance and functions. Classification of packaging materials- flexible packages, rigid packages, retail or shipping containers. Packaging methods. Moisture sorption properties of foods and selection of packaging materials. Interactions between packaging and food toxicity hazards. Biodegradable material and environmental issues. Labelling requirements and bar coding- Nutrition labeling and nutrition claims, coding of food products. Packaging laws and regulations

UNIT VIII FOOD LAWS AND STANDARDS

Mandatory measures-PFA, Essential commodities act, 1955. Voluntary standards and certification system- Bureau of Indian standards, AGMARK. Consumer protection act, 1986. Food standardization and regulation agencies in India-CCFS, CFL. International standards- Codex alimentarius, ISO, WHO, FAO, WTO, HACCP.

RELATED EXPERIENCE

1. Visit and study the various food preservation techniques applied in the industries/units.
2. Demonstration of food adulteration
3. Preparation of preserved foods by using different preservation methods.

REFERENCES

1. Roday, S 1999. Hygiene and Sanitation in Food Industry. Tata McGraw Hill Publishing Company Ltd., New Delhi
2. Frazier, W.C & Westhoff, D.C. Food Microbiology. Tata MC Graw –Hill Publishing Company Ltd., New Delhi, 5th Edition, 1997
3. Adams, M.R and Moss, M.O. Food Microbiology. New Age International (P) Ltd., Publishers. 1996
4. Anna K. Joshua, Microbiology. Popular Book Depot. Publishers. 1994 New Delhi, 1996
5. Potter, N. Hotchkiss, H.J. Food Science (5th edition) CBS Publishers and Distributors, New Delhi, 1996
6. Srilakshmi B. Food Science. 4th Edition. New Age International Private Limited, New Delhi, 2008
7. Shakuntala M.N., Shadaksharaswamy M. Foods –Facts and Principles. New Age International Publishers, New Delhi, 2002

SEMESTER IV
HND4 E03 (2) PUBLIC NUTRITION AND HEALTH

Objectives

It will enable the students to:

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

Course Outcomes

CO1 Develop an in depth understanding about role of nutrition in health care delivery
CO2 Identify the determinants of health status and the implications of food security in nutrition and health
CO3 Apply therapeutic measures to prevent/overcome nutritional disorders
CO4 Formulate nutritional interventions and become aware about the national health policies/strategies to improve health status of the community
CO5 Plan and conduct programs to reduce the prevalence of malnutrition and its impact on productivity

UNIT I CONCEPT OF PUBLIC NUTRITION

Relationship between health and nutrition, role of public nutritionists in the health care delivery

UNIT II SECTORS AND PUBLIC POLICIES RELEVANT TO NUTRITION AND HEALTH.

UNIT III PRIMARY HEALTH CARE OF THE COMMUNITY

National Health Care Delivery System, determinants of Health Status, indicators of Health

UNIT IV POPULATION DYNAMICS

Demographic transition, population structure, fertility behavior, population policy, fertility, interrelationship between Nutrition and quality of Life.

UNIT V FOOD AND NUTRITION SECURITY

Food production – access, distribution, availability, losses, consumption. Food Security. Sociocultural aspects and Dietary Patterns - their implications for Nutrition and Health

UNIT VI NUTRITIONAL STATUS

Determinants of nutritional status of individual and populations. Nutrition and Non-nutritional indicators - socio-cultural, biologic, environmental, economic. Assessment of nutritional status of individuals of different ages- MUAC, Wt for age, Ht for age, Wt for ht, Ponderal index, BMI. Applications and limitations in different field situations - choice of an indicator

UNIT VII MAJOR NUTRITIONAL PROBLEMS

Etiology, prevalence, clinical manifestations, preventive and therapeutic measures for: Macro and micro nutrient deficiencies. Other nutritional problems like lathyrism, dropsy, aflatoxicosis, alcoholism and fluorosis. Overweight, obesity and chronic degenerative diseases

UNIT VIII NATIONAL FOOD, NUTRITION AND HEALTH POLICIES

Plan of action and programmes

UNIT IX APPROACHES AND STRATEGIES FOR IMPROVING NUTRITIONAL STATUS AND HEALTH

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

UNIT X HEALTH ECONOMICS AND ECONOMICS OF MALNUTRITION

Its impact on productivity and national development. Cost-Benefit, cost effectiveness, cost efficiency

REFERENCES

1. Owen, A.Y. and Frankle, R.T. (1986): Nutrition in the Community, The Art of Delivering Services, 2nd Edition Times Mirror/Mosby.
2. Park, K. (2000): Park's textbook of preventive and social medicine, 18th Edition, M/s. Banarasisidas Bhanot, Jabalpur.

3. SCN News, UN ACC/SCN Subcommittee on Nutrition.
4. State of the World's Children, UNICEF.
5. Census Reports.
6. Berg, A. (1973): The Nutrition Factor, the Brookings Institution, Washington.
7. Beaton, G.H. and Bengoa, J.M. (Eds) (1996): Nutrition in Preventive Medicine, WHO.
8. Bamji, M.S., Rao, P.N., Reddy, V. (Eds) (1996): Textbook of Human Nutrition, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
9. Gopalan, C. and Kaur, S. (Eds) (1989): Women and Nutrition in India, Nutrition Foundation of India.
10. Gopalan, C. and Kaur, S. (Eds) (1993): Towards Better Nutrition, Problems and Policies, Nutrition Foundation of India.
11. Gopalan, C. (Ed) (1987): Combating Undernutrition – Basic Issues and Practical Approaches, Nutrition Foundation of India.
12. Achaya, K.T. (Ed) (1984): Interfaces between agriculture nutrition and food science, The United Nations University.
13. National Family Health Survey I & II (1993, 2000): International Institute for Population Studies, Mumbai.
14. National Plan of Action on Nutrition (1995): Food & Nutrition Board, Dept. Of WCD, Govt. of India.
15. National Nutrition Policy (1993): Dept. of WCD, Govt. of India.
16. Nutrition Education for the Public (1997): FAO Food and Nutrition Paper, 62, FAO.
17. Allen, L. and Ahluwalia, N. (1997) Improving Iron Status Through Diet: The Application of Knowledge Correcting Dietary Iron Bioavailability in Human Populations. OMNI/USAID, Arlington, VA, USA
18. Nestel, P. (ed) (1995). Proceedings: Interventions for Child Survival. OMNI/USAID Arlington, VA, USA
19. Documents and Reports published by the International Vitamin A Consultative Group
20. Documents and Reports of the International Nutritional Anemia Consultative Group
21. Howson, C.; Kennedy, E. and Horwitz, A. (eds) (1998). Prevention of Micronutrient Deficiencies: Tools for Policymakers and Public Health Workers. Committee on Micronutrient Deficiencies, Board on International Health, Food and Nutrition Board, National Academy Press, Washington D.C. USA.
22. Micronutrient Initiative (1998) Food Fortification: to end Micronutrient Malnutrition. The Micronutrient Initiative, Ottawa, Canada.
23. Murray, C.; Lopez, A. (eds) (1994) Global Comparative Assessments in the Health Sector Disease Burden, Expenditures and Intervention Packages. Collected articles from the Bulletin of the World Health Organization, Geneva, Switzerland.
24. Murray, C. and Lopez, A. (eds) (1996) Global Burden of Disease and Injury Harvard University Press, Cambridge, MA, USA.
25. Ross, J.; Horton, S. (1998) Economic Consequences of Iron Deficiency. The Micronutrient Initiative, Ottawa, Canada.

26. World Health Organization (1998) World Health Report: Life in the 21st century. Report of the Director General. WHO, Geneva, Switzerland
27. Ramakrishnan, U. (eds) (2001). Nutritional Anemias. CRC Press in Modern Nutrition, CRC Press, Boca Raton, FL.

SEMESTER IV
HND4P01 PROJECT

1. Development of research Programme
2. Collection of Review
3. Conduct Pilot Study in the field
4. Conduct of work in the lab/ hospital/ community
5. Analysis of Data
6. Writing for the thesis and submission

SEMESTER IV
HND4V01 COMPREHENSIVE VIVA VOCE

Based on

1. Course Programme

HND2 A02 AUDIT COURSE II PCC- SPSS

Objectives:

- SPSS software was designed to perform statistical analysis on quantitative data. In plain English, SPSS software is used for complex calculations to analyze numerical data.
- SPSS software is used in nonprofit agencies, educational institutions and even in business to analyze numerical data. It performs several statistical and econometric analyses.
- It has wide applications in the field of Social Sciences, Life Sciences, finance, Marketing, Education and other fields where statistical analysis is required.

- The use of SPSS is very much essential for research work. Academic institutions, Research Institutes, NGO and other such organization are also required to make use of this statistical package.

UNIT 1: Entering and Editing Data

- Importing from Excel
- Characteristics of Variables
- Adding Value Labels
- Grouping Data
- Transforming Variables
- Selecting a Subset

UNIT 2: Producing summary statistics

- Frequencies
- Percentages
- Averages
- Measures of spread

UNIT 3: Charts

- Bar Charts
- Histograms
- Pie Charts
- Boxplots
- Cluster Bar Charts
- Scatter Diagrams

UNIT4: Tables

- Presentation
- Two Way Tables

UNIT 5: Analysis

- Interpreting Output
- Drawing Conclusions
- Exporting to Word and PDF

Model Question Paper
FIRST SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND1 C01- HUMAN PHYSIOLOGY

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Functions of uterus
2. Thalamus
3. Abnormalities in heart rate
4. Ovarian Hormones
5. Erythroblastosisfetalis
6. Parts of stomach
7. Heart valves

(4x2=8 weightage)

Part B

Answer any four Questions, each within one page

Each question carries a weightage of 3.

8. Give a note on external female reproductive organs
9. Explain the mechanism of swallowing
10. What is synapse? Explain the structure and function
11. Discuss the chemical mechanism in the regulation of respiration
12. Give a note on ECG and its significant
13. Explain the role of hormones in calcium homeostasis
14. Explain urine formation

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Elaborate the component and its function of blood
16. Explain Properties of cardiac muscles and events of cardiac cycle
17. Elaborate Mentrual cycle
18. Pituitaryis called master gland, Expalin (2x5=10 weightage)

Model Question Paper
FIRST SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)
Home Science (Nutrition and Dietetics)
HND1C02 NUTRITION THROUGH LIFE CYCLE

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Hormones in lactation
2. Gerontology
3. Under 5 MR
4. Bulimia Nervosa
5. Amniocentesis
6. Lactogogues
7. LBW babies

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. What are the nutritional factors that affect academic performance in school children
9. What are the different types of food used for the space travelers's
10. What are the advantageous of breast feeding?
11. A pregnant woman should eat for too. Comment
12. Discuss how food groups can serve as a guide meal planning
13. What are the hormonal changes that takes place during pregnancy?
14. What is the importance of growth monitoring in children?

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

21. Explain physiology of lactation
22. Explain the importance of breast milk.
23. Explain the complications of pregnancy
24. Describe the contributory risk factors of infertility, prevention and methods of detection
(2x5=10 weightage)

Model Question Paper
FIRST SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)
HND1 C03 ADVANCED FOOD SCIENCE

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Parboiling
2. ARF
3. SCP
4. Colloids
5. Gelatinisation
6. Scorching of Milk
7. Allostearic enzymes

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Describe Different methods and Objectives of Cooking
9. Write a note on Nanotechnology in Food Science
10. Bring out the importance of fish and omega 3 Fatty acid
11. Explain the principle of food Packaging
12. Write in detail about FSSAI
13. Explain sensory method of food evaluation
14. Explain food adulteration with examples and test for determination

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Explain cereals under the following headings. Structure and Nutritive Composition
16. Describe the Types and Mechanism of rancidity
17. Classification of beverages in detail.
18. Explain the importance of nutraceuticals and its classification.

(2x5=10weightage)

Model Question Paper
FIRST SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND1 C04- MACRO NUTRIENTS

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Basic four concepts of nutrition
2. Glycemic Index
3. Classification of amino acids
4. Principles of indirect calorimetry
5. Functions of water
6. Properties of fat
7. Reference man

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Write a note on digestion and absorption of Carbohydrate
9. Explain β oxidation of fatty acid
10. Write a note on Ketone body formation
11. Write the principles and procedures of Bomb calorimeter
12. Give a note on control of food intake and body weight
13. Write the general principles for deriving nutrient requirement
14. Define water balance and explain its regulatory mechanisms in the body

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Define RDA and elaborate the methods for studying the nutrient requirement
16. Elaborate the components of energy expenditure and its estimation methods
17. Describe protein under the following terms
 - a) Classification
 - b) sources
 - c) Digestion
 - d) metabolism
18. Elaborate the energetic of TCA cycle (2x5=10 weightage)

Model Question Paper
FIRST SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)
Home Science (Nutrition and Dietetics)
HND1 C05 RESEARCH METHODS AND STATISTICS

Time :3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Industrial research
2. Primary data
3. Mean deviation
4. Operational definition
5. Validity of a tool
6. Pilot study
7. Range

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Write a brief account of basic research
9. Discuss different types of variables
10. Distinguish between surveys and experiments
11. What are the characteristics of a good questionnaire?
12. Give the different applications of t-test
13. What are the criteria for selection of a research problem
14. Explain graphs used for presentation of data

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

21. Explain normal distribution and its uses in testing of hypothesis
22. Explain the principles of research report writing. Explain the components of report writing
23. Explain the role of tests of significance in research
24. Explain how you will write a research proposal (2x5=10 weightage)

Model Question Paper
SECOND SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

**HND2 C06 ONCOLOGY NUTRITION
MODEL QUESTION PAPER**

Time: 3 Hours

Maximum: 30 weightage

Part A

Answer any 4 questions, each in one paragraph. Each question carries a weightage of 2

1. Discuss on the methods for the diagnosis of cancer
2. Relation between caffeine & cancer
3. List out the nutritional risk factors of cancer
4. Explain the pathophysiology of cancer
5. Nutritional supplementation in cancer
6. Physical activity and cancer
7. Classification of cancer

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page. Each question carries a weightage of 3

13. Give a note on cancer cachexia
14. Explain on enteral nutrition support in cancer
15. Discuss the role of antioxidants in cancer prevention
16. Brief on leukemia and its management
17. Discuss on the cancer prevention approaches in elderly
18. Write a note on bone marrow transplantation
19. Define immunotherapy treatment in cancer

(3x4=12 weightage)

Part C

Answer any two questions. Each question carries a weightage of 5.

21. Describe about the role of nutrition in pre and post operative care in cancer.
22. Discuss the various risk factors of cancer.
23. Elaborate on the MNT for gastric cancer. Give details on nutritional screening and assessment in cancer.
24. Enumerate the details of biochemical changes during cancer.

(2x5=10weightage)

Model Question Paper
SECOND SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND2 C07- FOOD SERVICE MANAGEMENT

Time : Three Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Classify caters
2. Define management
3. How we develop Kitchen plan
4. Non conventional sources of energy
5. Radiation
6. HACCP
7. Vending

(4x2=8weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. What are the important food handling practices to be followed in a Food Industry?
9. What is BEA? and Explain the steps in budgeting
10. Write the important basic factors for the selection of equipments
11. Explain different methods of food purchasing
12. Write about work simplification in Kitchen plan
13. Write about scopes and classification of Hotels
14. What are the methods and channel of communication in Food Industry

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Elaborate standardization and portion control
16. Explain the role of Marketing Mix in Food Industry
17. Elaborate the types and style of food service
18. Explain the various aspects of Hygiene and sanitation in catering establishment
(2x5=10 weightage)

Model Question Paper
SECOND SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND2 C08 CLINICAL AND THERAPEUTIC NUTRITION

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. What is Wilson's disease?
2. List any five foods to be avoided in a soft diet
3. What is PEG
4. What is ketogenic diet?
5. What is gluten free diet?
6. What is hepatic coma?
7. Write down the importance of milk in tuberculosis

(4x2=8)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Explain the consequences of diarrhoea
9. Role of dietitian in health care
10. What is enteral nutrition? Give the advantages of enteral nutrition.
11. What are the causes of nephritic syndrome? Explain its dietary management.
12. Discuss the dietary management of a patient suffering from acute pancreatitis
13. What is the significance of diet in hyperthyroidism
14. Differentiate between diverticulosis and diverticulitis

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Enumerate the etiology symptoms and dietary management of hepatitis
16. Explain burns under the following headings
 - a) Classification
 - b) complications
 - c) dietary management
17. Write on the dietary management of peptic ulcer
18. Explain the different enteral feeding methods (2x5=10 weightage)

Model Question Paper
SECOND SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)
HOME SCIENCE (NUTRITION AND DIETETICS)
HND2C09 – NUTRITIONAL MANAGEMENT IN LIFE STYLE DISEASES

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. GTT
2. BMI
3. What is dash diet
4. Familial Hypercholesterolemea
5. Carcinogens
6. Fat cell theory
7. Kempners Diet

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Explain the development of cancer
9. Discuss the etiological factors of AIDS
10. Brief on stress enhancing and anti-stress foods.
11. Explain the parameters used in the diagnosis of obesity.
12. Describe the role of fat in the treatment of atherosclerosis
13. What is cancer? List the different types of cancers with tissue/cell of origin.
14. How do chylomicrons and very low density lipoproteins differ?

(4x3=18 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Discuss different types of cancers and its dietary management
16. Explain AIDS under the following headings:
 - a) Classifications
 - b) Pathophysiology
 - c) Nutritional therapy
17. Explain the psychosomatic disorders due to stress. Comment on the dietary guidelines for the management.
18. Define hypertension. Explain in detail the life style modifications to manage hypertension.
(2x5=8 weightage)

Model Question Paper
THIRD SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND3C10 VITAMINS AND MINERALS

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Hypothyroidism
2. Night blindness
3. Hemolytic anaemia
4. Siderosis
5. Hypernatremia
6. Fluorosis
7. Goitrogens

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Explain any three factors influencing calcium absorption
9. What is the role played by vitamin E in the body?
10. Write a brief account on Vitamin A deficiency
11. What are the functions and sources of thiamin ?
12. Differentiate between osteoporosis and osteomalacia
13. What are the factors that reduce iron absorption
14. Explain the significance of Folic acid during pregnancy

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

22. What is IDD? Explain the national efforts in combating IDD.

23. Define detoxification. Briefly explain the various detoxification mechanisms in the body.

24. Explain Iron under the following heads:

a) Functions b) Methods of assessing iron availability

c) Iron over load d) Sources

25. Discuss the inter relationship of vitamins and minerals

(2x5=10 weightage)

Model Question Paper
THIRD SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)
Home Science (Nutrition and Dietetics)
HND3C11COMMUNITY NUTRITION

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. What is Koilonychias
2. What is Cretinism
3. Yellow revolution
4. PDS
5. What is Keratomalacia
6. Food fortification
7. What are the components of food security

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. What is food security? What are the components of food security?
9. What are the objectives of NIN?
10. Write a note on Blue revolution
11. Differentiate Kwashiorkor and Marasmus
12. What are the factors affecting nutritional status of a community?
13. Give an brief account of school lunch programme
14. Discuss any 4 visual aids that can be used in nutrition education

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

22. Explain the objectives and guidelines of food fortification and enrichment and give suitable examples to substantiate its role in nutritional programmes.
23. How will you plan and implement a nutrition education programmes for a rural community.
24. What is meant by Dietary survey? Explain the types in detail.
25. Explain the role of International organizations to combat malnutrition

(2x5=10weightage)

Model Question Paper
THIRD SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND3C12 PAEDIATRIC NUTRITION

Time : 3 Hours

Maximum : 30 Weightage

Part A

Answer any 4 questions in one or two sentences.

Each question carries a weightage of 2.

1. Cyanosis
2. Immunization schedule during infancy
3. Ketogenic diet
4. What is ADHD?
5. MUAC
6. ORS
7. IBD

(4x2=8 Weightage)

Part B

Answer any 4 questions in a paragraph.

Each question carries a weightage of 3.

13. Explain food based approaches to treat PEM.
14. Explain the word Glycemic index.
15. Give an account of feeding methods to be adopted while feeding LBW babies
16. What is childhood obesity? Explain its short term and long term consequences.
17. Discuss the deficiency symptoms of vitamin A.
18. Discuss the etiology of anemia.
19. Explain the nutritional management in Hepatitis.

(4x3=12 Weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

21. Describe the techniques for assessing the nutritional status of an infant.
22. Outline the signs of identifying a sick new born
23. Enumerate the etiology of childhood obesity. Discuss the consequences and preventive Strategies.
24. Explain Protein Energy Malnutrition under the following heads:-
 - a) Etiology
 - b)Types
 - c) Consequences.(2x5=10 Weightage)

MODEL EXAMINATION

THIRD SEMESTER M Sc DEGREE EXAMINATION

(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND3E01 (1) SPORTS NUTRITION

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph. Each question carries a weightage of 2

1. List out SAI and NIN seven groups of diet for Indian Sports persons
2. PAR
3. Fat Loading
4. Effects of nutritional ergogenic aids
5. List out RDA for any four sports activities
6. Sports Aneamia
7. List out the factors affecting protein requirement in young Athletes

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page. Each question carries a weightage of 3

8. Explain History and importance of sports Nutrition
9. Detail on carbohydrate loading, ingestion and the inflammatory response
10. Describe fluid requirement of power Athletes
11. Explain supplements and high protein diet for Athletes
12. Elaborate energy requirement of children and Adults
13. Illustrate, role of fat in different sports activities
14. Describe any eight sports supplements

(4x3=12 weightage)

Part C

Answer any Two questions. Each question carries a weightage of 5.

15. Describe pre and post exercise Diet
16. Elaborate energy metabolism and explain factors affecting energy requirement of Athletes

17. Briefly explain diet related problems of Athletes

18. Explain protein requirement under the following headings

a) factors affecting protein requirement b) Endurance Athletes

c) Strength Athletes

(2x5=10 weightage)

MODEL QUESTION PAPER
THIRD SEMESTER M.Sc. DEGREE EXAMINATION
CBCSS PG(HOME SCIENCE NUTRITION AND DIETETICS)
HND3E01(2): ENTREPRENEURIAL DEVELOPMENT

Time: 3 Hours

Maximum Weightage: 30

Section A

Answer **any four** questions, each in one paragraph. Each question carries **two weightage**

1. Define entrepreneurship.
2. Explain on DIC.
3. Summarize on industrial estates.
4. Brief on the need for entrepreneurial development.
5. Functions of an entrepreneur.
6. List out the objectives of project report presentation.
7. Explain on KITCO.

(4x2= 8 Weightage)

Section B

Answer **any four** questions, each in a page. Each question carries **three weightage**

8. Explain the characteristics of an entrepreneur.
9. List out the factors affecting entrepreneurial growth.
10. Elaborate on the problems of women entrepreneurship.
11. Brief of the functions of SIDCO.
12. Brief on EDP and its contents.
13. Detail on the problems faced by small industries.
14. List out the qualities of a successful entrepreneur.

(4x3= 12 Weightage)

Section C

Answer **any two** questions. Each question carries **five weightage**

15. Discuss on the importance of entrepreneurs in economic development.
16. Detail on the concept of Women entrepreneurship and the measures taken by the Government for its promotion and development.
17. Elaborate on project identification, screening and steps in formulation.
18. Brief on the characteristics and functions of any three agencies involved in entrepreneurial development.

(2x5= 10 Weightage)

Model Question Paper
THIRD SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)
Home Science (Nutrition and Dietetics)

HND3E01(3) NUTRITIONAL COUNSELING AND EDUCATION

Time : 3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Counselling
2. Nutrition Counselling
3. Eclectic Counselling
4. Crisis Counselling
5. Gestalt theory
6. Transference
7. Empathy

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Write a note on different skills needed for a counsellor
9. Bring out the importance of Nutrition counseling for an adolescent girl
10. Explain developmental Counselling
11. Write the steps needed for counseling a cancer patient
12. Explain the importance of Geriatric Counselling
13. Discuss the role of nutrition counselor for diabetic patient
14. Different Skills of a Counsellor

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

15. Explain in detail about important points we consider while counseling an AIDS patient
16. Different theories of Counselling.
17. Describe the process and stages of Nutrition Counselling
18. Describe the different Types of Counselling

(2x5=10 weightage)

Model Question Paper

FOURTH SEMESTER M Sc DEGREE EXAMINATION

(CBCSS-PG)

Home Science (Nutrition and Dietetics)

HND4C13 METABOLIC AND BIOCHEMICAL CHANGES IN DISEASES

Time :3 Hours

Maximum : 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Chromatogram
2. R_f value
3. Lecithin
4. Lactose intolerance
5. Ketosis
6. Glycosylated haemoglobin
7. ELISA test

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3

8. Describe the clinical changes that occur during galactosemia
9. Write a note on disorders of tyrosine metabolism
10. Bring out the importance of liver function test
11. Explain the principle behind electrophoresis
12. Write the principle of estimation of serum urea
13. Explain any one method for determination of blood glucose
14. Discuss the role of nitrogen balance in human body

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5

15. Diabetes mellitus is considered as an alteration of metabolism. Discuss
16. Describe the process of synthesis and breakdown of haemoglobin
17. Describe the various methods of maintaining acid- base balance in our body
18. Explain inborn errors of protein metabolism (2x5=10 weightage)

Model Question Paper
FOURTH SEMESTER M Sc DEGREE EXAMINATION
(CBCSS-PG)
Home Science (Nutrition and Dietetics)
HND4E02(1)- DIABETIC CARE AND MANAGEMENT

Time: Three Hours

Maximum: 30 weightage

Part A

Answer 4 questions, each in one paragraph.

Each question carries a weightage of 2

1. Glycemic Index
2. GTT
3. Define Diabetes Mellitus
4. Somatostatin
5. Non- Ketotic Hyper osmolar coma
6. Risk factorsDiabetic retinopathy
7. Types of Insulin

(4x2=8 weightage)

Part B

Answer any 4 Questions, each within one page

Each question carries a weightage of 3.

8. Explain management of metabolic disorders in Diabetes
9. Write Definition and classification of Neuropathy
10. Give a not on Ketoacidosis.
11. Discuss the complications and side effects of Insulin therapy
12. Briefly explain the classification of Diabetes Mellitus
13. State the importance of exercise for a diabetic patient
14. What are the pathological changes associated with cardiovascular system in a diabetic patient

15. Write a note on Regulation of Blood Glucose Level

(4x3=12 weightage)

Part C

Answer any two questions.

Each question carries a weightage of 5.

16. Discuss Diabetic nephropathy under the following heads

a) Etiology b) stages c) Treatment d) prevention

17. Explain the anatomy and physiology of pancreas

18. Explain the medication and Diabetes

19. Discuss the prevention and management of long – term Diabetes under condition

a) dyslipidemia

b)obesity

(2x5=10 weightage)

MODEL QUESTION PAPER

FOURTH SEMESTER M.SC DEGREE EXAMINATION CBCSS PG (HOME SCIENCE-NUTRITION AND DIETETICS) HND4E02 (2) QUANTITY FOOD PREPARATION TECHNIQUES

Time: 3 Hours

Maximum Weightage:30

Section A

Answer **any four** questions, each in one paragraph. Each question carries **two weightage**.

1. Explain on types of menu.
2. Discuss on qualities of an institutional buyer.
3. Explain on standardization.
4. Summarize on HACCP
5. Explain on budget.
6. Explain on types of dry storage.
7. Describe on objectives of food production.

(2x4= 8 Weightage)

Section B

Answer **any four** questions, each in one paragraph. Each question carries **two weightage**

8. Describe on purchasing activity in a food service organization.
9. Explain on methods of production.
10. Explain of French and English service.
11. What are the types of food services.
12. Explain on waiter services.
13. Summarize on the methods of portion control.
14. Explain on break even analysis of food budget.

(2x3= 12 Weightage)

Section C

Answer **any two** questions. Each question carries **five weightage**

15. Elaborate on the types of hotels.
16. Explain on types of food services.
17. Explain on objectives of food production and methods of production.
18. Elaborate on factors affecting menu planning, menu presentation, cost concepts and methods of menu pricing.

(2x5= 10 Weightage)

MODEL QUESTION PAPER

FOURTH SEMESTER M.SC DEGREE EXAMINATION CBCSS PG (HOME SCIENCE -M.ScNUTRITION AND DIETETICS) HND4E03 (1) - FOOD SAFETY AND QUALITY CONTROL

Time: 3 Hours

Maximum Weightage:30

Section A

*Answer **any four** questions, each in one paragraph. Each question carries **two weightage**.*

1. Explain on food safety and importance of safe food.
2. Discuss on the causes and factors affecting spoilage.
3. Classify types of food preservation.
4. Distinguish between food additives and food preservation.
5. Explain on principles of HACCP.
6. Explain on nutritional labeling.
7. Explain on interactions between packaging and food toxicity hazards.

(2x4= 8 Weightage)

Section B

*Answer **any four** questions, each in a page. Each question carries **three weightage**.*

8. Elaborate on different types of packaging materials.
9. Explain on ISO and AGMARK.
10. Classify on packaging materials.
11. Analyze the factors affecting the packaging of a product.
12. Summarize on Nutritional labelling.
13. Elaborate on food preservation on high temperature.
14. Explain on any two types of food poisoning. (4x3= 12 Weightage)

Section C

*Answer **any four** questions, each in one paragraph. Each question carries **three weightage**.*

14. Explain on the physical and chemical agents of food preservation.
15. Elaborate on food spoilage-Causes, Factors affecting spoilage, Spoilage of perishable and non-perishable foods.
16. Discuss on food safety - importance of safe food and factors affecting food safety.
17. Elaborate on bacteriological examination and purification of water.

(2x5= 10 Weightage)

MODEL QUESTION PAPER

FOURTH SEMESTER M.S.c. DEGREE EXAMINATION
CBCSS PG(HOME SCIENCENUTRITION AND DIETETICS)
HND4E03 (2): PUBLIC HEALTH NUTRITION

Time: 3 Hours

Maximum Weightage: 30

Section A

*Answer **any four** questions, each in one paragraph. Each question carries **two weightage***

1. Relation between health and nutrition.
2. List out the indicators of health.
3. Explain on food security.
4. Differentiate between the various methods of anthropometric assessment.
5. List out any two National nutrition health policies.
6. Brief on the impact of malnutrition in productivity.
7. List out the non-nutritional indicators of nutritional status.

(4x2= 8 Weightage)

Section B

*Answer **any four** questions, each in a page. Each question carries **three weightage***

8. Explain the determinants of health status.
9. Brief the relation between nutrition and quality of life.
10. Discuss on National health care delivery system.
11. List out the factors affecting food production and distribution.
12. Elaborate on lathyrism.
13. Brief on the effect of over nutrition in health.
14. Detail on the relevance of environmental and biological factors in maintaining the health status of individuals.

(4x3= 12 Weightage)

Section C

*Answer **any two** questions. Each question carries **five weightage***

15. Discuss the relevance of public health nutrition and the role of Public Health nutritionists.
16. Elaborate on the determinants of nutritional status.
17. Detail on the major macronutrient deficiencies.
18. Brief on the strategies to be taken to improve the nutritional status and health of the community.

(2x5= 10 Weightage)