MOTHER TERESA WOMEN'S UNIVERSITY
KODAIKANAL – 624102

SYLLABUS (2018-2019)

M.SC FOOD SERVICE MANAGEMENT & DIETETICS

(CHOICE BASED CREDIT SYSTEM)

(Full Time)

SYLLABUS, REGULATION AND SCHEME OF EVALUATION

M.SC –FOOD SERVICE MANAGEMENT AND DIETETICS

MODE : Regular

DURATION : 2 Years spread over four semesters

ELIGIBILITY FOR ADMISSION : B.Sc Nutrition Food service Management and Dietetics, B.Sc Home Science, B.Sc Clinical Nutrition and Dietetics and B.Sc-Home Science

MEDIUM OF INSTRUCTION : English

OBJECTIVES OF THE COURSE

M.Sc. in Food Service Management and Dietetics is a 2-year full-time post graduate divided across 4 semesters. It has been designed to impart to eligible candidates requisite skills in:

- Critical evaluation through an integration of foods, nutrition, dietetics, and research.
- Interaction with patients and students.
- Hands-on training in food industries, hospitals, in association with dieticians and clinicians.
- Advanced diet therapy.
- Participating in symposiums, research projects, and conferences in food science, nutrition and dietetics.
- Forging a connection between medicine, chemistry, and food, focusing on the good and bad effects of alimentation on the human body.

A balanced diet is about prevention of bodily diseases, since a poor diet leads to imbalances in the human body.

Obesity and chronic illnesses, hence, are the most popular specializations in the field of Nutrition and Dietetics. The science of nutrition is:

- The study of food elements and nutrients and their impact on the human body.
- Analyses of the substances from food and the drinks that people ingest.
- Determination of such food/ drinks' impact on the human body.
- Provision of a balanced food diet to the body.

The course prepares students for:

- Practice in medical and dental schools.
- Understanding composition, quality, and safety of foods and properties of food ingredients.
- Proficiency with relationships of metabolism and utilization of nutrients in food by the human body to health and disease status
- Advanced understanding of the influences of exercise and fitness. Such postgraduates are hired in areas such as:

- Nutrition-based communities and organizations
- Management and operation of food service facilities.
- Dietetics
- Service management and industries.

Major components of study within the discipline include:

- Integrative and preventive educational approach to nutrition, health, and disease. Nutrition and Dietetics such as fundamentals of nutrition

- Food microbiology

- Sports nutrition

- Weight management

- Measuring nutrition

- Nutrition support

- Nutrition during special situations etc.

- Evidence-based approach to health and wellbeing.

Course summary

Study components	No. of course	Credits	Total credits
Core course	14	5	70
Elective course	3	5	15
Project	1	5	5
Total			90

GRADES

Grades will be awarded for the candidate accordingly.

Range of marks	Grade points	Letter grade	Description
90-100	9.0-10.0	O	Outstanding
80-89	8.0-8.9	D+	Excellent
75-79	7.5-7.9	D	Distinction
70-74	7.0-7.4	A+	Very good
60-69	6.0-6.9	A	Good
50-59	5.0-5.9	B	Average
40-49	4.0-4.9	C	Satisfactory
00-39	0.0	C	Re appear
ABSENT	0.0	AAA	ABSENT

SEMESTER I

S.No	Subject code	Course title	Type of paper	Total credits	Hours/week	CIA Marks	ESE Marks	Total
1	MFNSCP1	Research methods and statistics	C	5	5	25	75	100
2	MFNSCP2	Human physiology	C	5	5	25	75	100
3	MFNSCP3	Advanced Food Science	C	5	5	25	75	100
4	MFNSEP1	Fundamentals of food technology	E	5	5	25	75	100
5	MFNSPP1	Practical I Advanced food science	P	5	5	40	60	100
		Total		25	25			

SEMESTER II

S.No	Subject code	Course title	Type of paper	Total credits	Hours/week	CIA Marks	ESE Marks	Total
6	MFN SCP4	Food microbiology	C	5	5	25	75	100
7	MFN SCP5	Community Nutrition	C	5	5	25	75	100
8	MFN SCP6	Advanced Nutritional Biochemistry	C	5	5	25	75	100
9	MFN SEP2	Home science composite	E	5	5	25	75	100
10	MFN SPP2	Practical II- Public Health nutrition	P	5	5	40	60	100
		Total		25	25			

SEMESTER-III

S.No	Subject code	Course title	Type of paper	Total credits	Hours/ week	CIA Marks	ESE Marks	Total
11	MFN SCP7	Nutrition through life cycle	C	5	5	25	75	100
12	MFN SCP8	Advanced Nutrition I	C	5	5	25	75	100
13	MFN SCP9	Advanced Dietetics	C	5	5	25	75	100
14	MFN SEP3	Food processing	E	5	5	25	75	100
15	MFN SPP3	Practical III Therapeutic Nutrition	P	5	5	40	60	100
		TOTAL		25	25			

SEMESTER-IV

S.No	Subject code	Course title	Type of paper	Total credits	Hours/ week	CIA Marks	ESE Marks	Total
16	MFN SCP10	Advanced nutrition-II	C	5	5	25	75	100
17	MFN SCP11	Nutraceuticals and functional foods	C	5	5	25	75	100
18	MFN SCP12	Dissertation	C	5	5	160	40	200
		TOTAL		15	15			

SEMESTER I

RESEARCH METHODS AND STATISTICS

Objectives

To enable the students to

1. Gain knowledge on research methodology
2. Create knowledge on different statistical methods and its applications.

UNIT I

Meaning of research - process of research, objectives of research. Developing a research proposal, presentation of a problem, identifying the problem- defining and delimiting the problem, types of research, different types of experimental designs, tools of research.

UNIT II

Measure of Central tendency: Mean, Median, Mode and their uses with applications

Measure of Dispersion: significance and methods used in studying dispersion and their uses with applications.

UNIT III

Methods of sampling- probability and non- probability, Hypothesis- meaning and types of hypothesis.

UNIT IV

Co-efficient of correlation, basic concepts in regression,Student- "t" test, analysis of variance- one way and two way classification- characteristics of ANOVA, Chi-square, Application of Duncan's table in research.

UNIT V

Research reports- basic concepts of research report

a. Preliminaries- title page, acknowledgement, list of tables, list of figures, index.
b. Main text.

c. Data analysis- quantitative, qualitative, presentation of data- tables, graphs, illustrations using computer.

d. Bibliography, glossary, appendices.

REFERENCES

1. S.P.Gupta (1993), Statistical methods, Sultan chand and sons, Daryagang, New Delhi.

2. Kothari.C.R. (1991) Research methodology, methods and techniques, Wiley Eastern Ltd, New Delhi.

3. Wilkinson and Bhandarkar.P.L.C. Methodology and techniques of social research, Himalaya publishing house, Bombay.

HUMAN PHYSIOLOGY

Objectives

This course will enable students to

1. Advance their understanding of some of the relevant issues and topics of human physiology.

2. Enable the students to understand the integrated function of all systems and the grounding of nutritional science in physiology.

3. Understand alterations of structure and function in various organs and systems in disease conditions.

UNIT I

Cellular basis of Physiology - Body fluid compartment, membrane potential, cell structure and functions - Regulation of cell multiplication.

Blood: functions, composition, blood cells, plasma and serum. Functions of hemoglobin, erythropoesis, factors affecting haemotopoesis, destruction of erythrocytes and Anemia. Leucocytes- genesis and functions. Regulation of pH,Blood coagulation-mechanism, conditions causing excessive bleeding, anticoagulants, functions of platelets.

UNIT II

Immune System: Immunity - Properties, natural and acquired Immunity, features of immune responses, antigen - antibodies - types, properties, and antigen - antibody interaction, Auto immune disorder and allergy.

Circulatory System: Structure and function of the heart and blood vessels. Regulation of cardiac output, cardiac cycle, blood pressure.

UNIT III

Digestive System: Review of structure and function of various parts in gastrointestinal

tract in brief. Role of liver, pancreas, gall bladder and their dysfunction. Role of specific hormones associated in GI tract.

UNIT IV

Excretory System: Anatomy and physiology of kidneys and nephron. Formation of urine, acid-base balance, regulation of body temperature- thermo genesis, thermolysis, BMR.

UNIT V

Endocrine system: Anatomy and physiological functions of endocrine glands: Hormones - Mode of action - Pituitary, Adrenal, Thyroid, Parathyroid, Sex glands and Pancreas. Hypo and Hyper activities of the glands.

Reproduction System: structure, physiological functions of male and female reproductive organs, menstrual and ovarian cycle, spermatogenesis, contraceptives, infertility and its recent developments, Rh factor.

REFERENCES

1. Ganong W.F.(1985): Review of Medical Physiology 12th edition Lange Medical Publication

2. Moran Campell E.J, Dickinson C.J, Slater J.D, Edwards C.R.W and Sikora (1984): Clinical Physiology 5th edition ELBS Blackwell Scientific Publications.

3. Guyton A.C (1985): Functions of the Human Body 4th edition W.B. Saunders Company Philadelphia.

4. Guyton A.C and Hall J.B(1996): Textbook of Medical Physiologt 9th edition W.B. Saunders Company, Prime Books(Pvt) Ltd. Bangalore.

5. Wilson K.J.W and Waugh .A(1996): Ross and Wilson Anatomy and Physiology in Health and Illness 8th edition Churchill Livingstone.

6. Chattergee C.C.(1992): Human Physiology Vol I and II 11th edition Medical Allied Agency, Calcutta.

7. Kale C.A. and Neil F Samean (1974): Wright's Applied Physiology.

8. Griffith's M (1974): Introduction to Human Physiology MacMillan and Co.

9. Green J.N(1972): An Introduction to Human Physiology.

10. McArdle W.D, Katch F.I and Katch V.L(1996): Exercise Physiology, Energy Nutrition and Human Performance 4th edition Williams and Wilkins, Bailimore.

ADVANCED FOOD SCIENCE

Objectives

1. To understand the importance of food groups based on the nutrient value to enable meal planning.

2. To learn the scientific basis of preliminary of food, and cooking methods to enhance conservation of nutrients and acceptability of food preparation.

UNIT I

Food classification by ICMR, FSSI

Cereals - Rice & wheat and other Millets - Composition, Nutritive Value and Processing.

Role of starch and gluten in cookery

UNIT II

Pulses and legumes–Nutritive value, types, Processing and specific toxic constituents

Vegetables-Classification, Nutritive value, Changes on Cooking – pigments.

Fruits - Classification, Nutritive value, ripening of fruits, changes on ripening and pectic substances

UNIT III

Egg - Structure, Composition, Nutritive value and Role of egg in cookery.

Meat - Structure, Composition, Nutritive value, Changes on cooking and Rigor mortis.

Poultry - Composition, Nutritive value, changes on cooking.

Fish - Composition, Nutritive value, Selection, Spoilage, Changes on Cooking.

UNIT-IV

Milk - Classification, Nutritive value, Putrefaction.

Fats & Oils – Types, properties of fat relating to cooking, Rancidity, Tests for rancidity, Hydrogenation, role of fats in cookery.

UNIT-V

a. Sugar cookery - Types of sugar, Properties, Crystallization, Stages in Sugar cookery, Application in Indian recipes.

b. Beverages –Basic Classification, Nutritive value, Preparation of milk based beverages.

c. Spices and Condiments

References

1. Food Science and experimental foods, Swaminathan, N. (1987) Ganesh Publications, Madras.
2. Food chemistry, Meyer L.M.(1969) Van Noustrand Reinhold co., New York.
3. Foundations of Food Preparation, Peckham, C.G. (1979), the Macmillan co., London.
5. The experimental study of foods, Griswald R.M. (1962), Houghton, Muffin Co., New York.
6. Introductory foods, Bennion M. and Hughes, D. (1975), Macmillan publishing Co., New York.
7. Food facts and principles, SakuntalaManay and shadaksaraswamy, M (1987) allied Publishers, New Delhi.
8. Food science, Potter N.N. (1996) CBS publishers & distributors, Delhi
9. Srilakshmi, B. (1996) Food Science, New Age International (P) Ltd. New Delhi.

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FUNDAMENTALS OF FOOD TECHNOLOGY

Objectives

To enable the students to

1. Understand the food technology principles

2. Know about the food preservation, food spoilage and role of micro organisms

UNIT I

Food technology- definition, introduction to terminology, principles involved in food technology.

UNIT II

Recent trends in food processing technology in brief

UNITIII

Fermentation Technology - Definition, types of aerobic and anaerobic fermentation Steps in fermentation, Fermented Food Products from various food groups, Dairy products, Beverages and related products of baking.

UNIT IV

Enzyme Technology - Production of enzymes - Amylase, Protease, Lipase, Lactase and pectinase, Use of enzymes in food & beverage industry (eg Cheese, fruit, juice, Wine, Meat tenderizing & dairy).

UNIT V

Food packaging technology and labeling: types of packages-traditional and modern Design and testing of package materials, package performance. Principles in the development of safe and protective packing, safety assessment of food packaging materials. Recent packaging methods-principles-hazards related to packaging (PCB,PCPs etc.,).

REFERENCES

1. George J.B., Basic Food Microbiology, CBS Publishers Distributors, 1987.

2. James M .J. Modern Food Microbiology, CBS Publishers & Distributors, 1987.

3. Lindsay, Willis Biotechnology, Challenges for the flavor and food Industries, Elsevier Applied Science, 1988.

PRACTICAL I

ADVANCED FOOD SCIENCE PRACTICALS

1. Food Evaluation:-Visual examination of foods & sensory evaluation.

2. Cereal cookery–Dextrinisation, caramelisation and gelatinization.Study the development of gluten.

2. Pulse cookery - Effects of soaking, acid, alkali and sprouting and different methods of cooking on cooking time and quality of pulses.

3. Vegetable cookery - Effect of acid, alkali and methods of cooking on pigments.

4. Egg, meat, fish, poultry –Study of cooking time on different types of meat.

5. Fats and oils - Smoking point of different fats and oils

6. Sugar cookery - Stages of sugar cookery, uses of sugar in Indian recipes. Crystallization and factors affecting crystallization.

7. Milk cookery- effect of acid, salt, heat on milk proteins.

SEMESTER II

FOOD MICROBIOLOGY

Objectives

To enable the students to learn

1. To gain knowledge of general characteristics of micro- organisms and their role in food spoilage.

2. To gain knowledge of microorganisms in health and diseases.

UNIT-I

Food microbiology in Review- Morphology and Taxonomy of microorganisms. Methods of Isolation and identification of Microorganisms or their products in food

-ELISA

-PCR (Polymer chain reactions) - only principles in brief.

UNIT-II

Spoilage and contamination of common foods: causes and types of microorganisms responsible for spoilage and the contamination of common foods. Cereal and cereal products. Fruits and vegetables. Egg, meat, poultry, sea foods, milk and milk products.

Role of microorganisms in putrefaction and decay and fermentation-part played by microorganisms in putrefaction and decay. Fermentation, types- aerobic respiration and anaerobic respiration. Products of fermentation: yeast, yogurt, cheese, meat, beer, vinegar, fruits and vegetables.

UNIT-III

Destruction of bacteria, food poisoning and food borne diseases- salmonella food poisoning, staphylococcus food poisoning, botulism, clostridium welchi, shigellosis. Food borne diseases- bacterial- staphylococcus, streptococcus. Diphtheria, scarlet fever, tuberculosis, hepatitis. Measures to prevent food poisoning and food borne

disease: sterilization- application of dry and moist heat, use of filters. Disinfection- methods of disinfection- natural, physical and chemical.

UNIT-IV

Food Sanitation- microbiology in food plant sanitation, bacteriology of water, sewage and waste treatment and disposal. Microbiology of the food product. Indicators of food safety and quality- microbiological criteria of foods and their significance.

UNIT-V

HACCP system and food safety- Introduction, need, benefits,& principles of HACCP.

- Guidelines for application of HACCP principles.

-The HACCP system in India Food control and enforcement agencies-Food standards and regulation in India.

Codex principles of food hygiene and HACCP.

Nutrition labeling, regulation on fortified foods.

Safety issues: FSMS-Certification, residues in foods, mycotoxins, storage principles and transportation of RTE foods.

Food additives - Definitions, Types, Action. Leavening agents - Definitions, Classifications. Colour of foods - Natural colors, certified artificial colors, Non-certified colors, Use and Optimum levels.

REFERENCES

1. Relezar, M.I and Reid, R.D.(1993): Microbiology, McGraw Hill Book Company NewYork 5th edition.

2. Atlas, M .Ronald (1995): Principles of microbiolody 1st edition, Mosby Year Book, Inc, Missourin, USA.

3. Topley and Wislson's(1983): Principals of Bacteriology, Virology and ImmUNIT y Edited by S.G. Wilson, A. Miles and M.T. Parkar vol1; General Microbiology and ImmUNIT y II: Systematic Bacteriology 7th edition Edward Armold Publisher.

4. Block, J.G. (1999) Microbiology Principles and Explanations 4th Edition, John Wiley and sons Inc.

5. Frazier, W.C. (1988) Food Microbiology McGraw Hill Inc 4th Edition.

6. Jay James, M(2000): Modern Food Microbiology 6th Edition Aspen Publishers Inc, Maryland.

7. Banwart, G(1989) Basic Food Microbiology 2nd Edition CBS Publisher.

8. Garbutt, J(1997): essentials of Food Microbiology, 1st Edition Armold International Students Edition

9. Doyle, P, Bemehat, L.R. and Mantiville, T.J(1997): Food Microbiology- Fundamentals and Frontiers, ASM Press, Washington, D.C.

10. Adams, M.R and M.G. Moss(1995): Food Microbiology 1st Edition New Age International(P) Ltd.

11. Benason, H.J.(1990) Microbiological applications C. Brown Publishers USA

12. Roday, S(1999) Food hygiene and sanitation 1st Edition Tata McGraw Hill, New Delhi.

13. Venderzant, C and D,F. SplitlsToesser(1992); Compendium of Methods For Microbiological Examinations of Foods 3rd Edition American Public Health Association, Washington, D.C

COMMUNITY NUTRITION

Objectives

This course will enable the students to

1. Develop a holistic knowledge base and understanding of the nature of important nutrition problems and their prevention and control for the disadvantaged and upper socio-economic strata in society.

2. Understand the causes/determinants and consequences of nutrition problems in society.

3. be familiar with various approaches to nutrition and health interventions, programmes and policies.

Unit I

Definition and key concepts – Community, nutritional anthropology (community health), health situation in India, concept of disease, causation (agent, host, environmental factors), concept, control and prevention, modes of intervention.

UNIT II

Nutritional epidemiology: classification

Indirect methods - Demography, population dynamics and vital events and their health implications, indicators of health and nutrition (IMR, TMR, MMR).

Direct methods - Anthropometry, Biochemical, Clinical, Dietary and Functional indices of assessments.

UNIT-III

Elements & principles of health care, Millennium Development Goal (1,4,5,6), five year plan, health care delivery system (primary health care), pyramidal structure of health care service, agencies (Govt. and Private) in delivery health care services, health programmes in India. International agencies.

UNIT-IV

Communicable and non-communicable diseases

Epidemiology

-Prevalence

-Source of infection

-Vaccination schedule

- Preventive measures

UNIT-V

Health Education: adoption of new ideas & practices, content & principles of health education, audio-visual aids in health education. Small group and mass communication.

REFERENCES

1. Owen, A.Y. and Franke, 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. BanarasidasBhanot, Jabalpur.

3. SCN News, UN ACC/SCN Subcommittee on Nutrition.

4. State of the World's Children, UNICEF.

5. Berg, A. (1973): The Nutrition Factor, the Brookings Institution, Washington.

6. Beaton, G.H. and Bengoa, J.M. (Eds) (1996): Nutrtion in Preventive Medicine.

7. Bamji, M.S., Rao, P.N., Reddy, V. (Eds) (2003): Textbook of Human Nutrition,2nd Edition. Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.

8. Gopalan, C. and Kaur, S. (Eds) (1989): Women and Nutrition in India, Nutrition Foundation of India.

9. Gopalan, C. and Kaur, S.(Eds) (1993): Towards Better Nutrition, Problems and Policies, Nutrition Foundation of India.

10. Gopalan, C. (Ed) (1987): Combating Undernutrition – Basic Issues and Practical Approaches, Nutrition Foundation of India.

11. Achaya, K.T. (Ed) (1984): Interfaces between agriculture Nutrition and Food

Science, The UNIT ed Nations University.

12. National Family Health Survey I & II (1993, 2000): International Institute for Population Studies, Mumbai.

13. National Policy of Action on Nutrition (1995): Food & Nutrition Board, Dept. of WCD, Govt. of india.

14. National Nutrition Policy (1993): Dept. of WCD, Govt. of India.

15. Nutrition Education for the Public (1997): FAO Food and Nutrition Ppare, 62, FAO.

16. NIN (1998): Dietary Guidelines for Indian as Manual National Institue of Nutrition, Hyderabad.

17. Mason, J.B., Habicht, J., Tabatabai, hand Valverde, (19840: Nutrtional Surveillance World Health Organisation Geneva.

18. Gopalan, T. and Sheshadri, S. (1987): Nutrition – Monitoring and Assessment Oxford University Press. N. Delhi.

19. Who (1998): Education for Health – A Manual on Health education in Primary Health care, WHO.

20. Toreis, K. and Tilford, S. (1994): Health Education Effectiveness, Efficiency and Equity (2nd edition) Chapman & Hall London.

21. Wadhwa,A;Sharma,S(2003):Nutrition in the community, A Textbook,Elite publishing Houuse Pvt. Ltd. .New Delhi.

22. Seghal,S; Raghuvanshi;R(2007):Textbook of community nutrition, Indian council of agricultural research, New Delhi

ADVANCED NUTRITIONAL BIOCHEMISTRY

Objective

To enable the students to

1. Understand the biochemical basis for nutrition and health
2. Understand the mechanisms adopted by the human body for regulation of metabolic pathways.
3. Get an insight into interrelationships between various metabolic pathways.
4. Become proficient for specialization in nutrition.
5. Understand integration of cellular level metabolic events to nutritional disorders and imbalances.

UNIT I BIOLOGICAL OXIDATION

Enzymes and co-enzymes involved in oxidation and reduction, respiratory chain, phosphates in biologic oxidation and energy capture, role of respiratory chain and mechanism of phosphorylation.

UNIT-II: METABOLISM OF CARBOHYDRATE

Glycolysis, Gluconeogenesis, TCA cycle, HMP shunt, bioenergetics, disorders of carbohydrate metabolism - galactosemia, glycogen storage disease, pentosuria, abnormal level in blood glucose.

UNIT-III: METABOLISM OF LIPIDS

Biosynthesis and oxidation of saturated and unsaturated fatty acids, glycerides, phospholipids and cholesterol, bioenergetics, disorders of lipid metabolism (fatty liver, atherosclerosis), lipoproteins and their significance.

UNIT-IV: PROTEIN AND AMINOACID METABOLISM

Biosynthesis of protein, general catabolism of amino acids, deamination, transamination, urea cycle, disorders of aminoacid metabolism - phenyl ketonuria, cystinuria, albinism, alkaptonuria, maple syrup disease.

UNIT-V: METABOLISM OF NUCLEIC ACIDS

a. Structure of DNA

b. Structure of RNA

c. Replication

d. Biosynthesis of purine and pyramidine nucleotides,

e. Disorders of purine and pyrimidine metabolism

References

1. Review of Physiological Chemistry, Harper H.A. (1997), Lange Medical Publications, Los angeles.

2. Text book of Clinical Biochemistry, T.A. Ramakrishnan (1994), Publications, Chennai.

3. Text book of Biochemistry and Human Biology, Talwar G.P.,Srivatsava LN. and Mondgil K.D., New Delhi, Prentice Hall.

4. Clinical Chemistry in Dignosis and Treatment, Jean E Zilwa, Peter A. Pannale, Philip R. (1988), New York.

5. Text book of Biochemistry with Clinical Correlations, Devlin D.T. (1997), New York, John wiley and Sons.

6. An Introduction to Practical Biochemistry, Plummer D.T. (1997) New Delhi, Tata McGraw Hill Publishing Company.

7. Biomedical Instrumentation and Measurements, Cromwell L.Weibel F.J. and Pfeiffer E.A. (1996), New Delhi, Prentice Hall.

8. Electrolytes , Body fluids and Acid Base balance, Eccles R. (1993), London, Edward Arnold - A division of Hodder and stoughton.

9. DNA Protein interactions, Andrew Travens, (1993), Chapman and Hall Pub. London.

HOME SCIENCE COMPOSITE

Objectives

To enable the students

1. To enhance the knowledge in field of home science.
2. To improve their participation in various competitive exams in field of nutrition and home science.

UNIT-I

Food science and nutrition:

-Basic concepts of food groups and nutrients.

- Role of microorganisms in food spoilage and its prevention

- Recent advances in food processing and preservation.

-Recent techniques in food technology.

Institutional management:

-Management of hospitality institutes- hospitals/hotels/restaurant/cafeteria and outdoor catering.

UNIT-II

Extension education:

- History and development of home science
- Formal/ non-formal and extension education
- Vocationalisation of home science in India
- Concept and classification of communication
- Trends in home science research

UNIT-III

Resource management

- Concept of home management and steps
- Management of human resources
- Classification of resources
- Basic characteristics of resources

- Work simplification
- Interior decoration
- House hold equipment, decision making

UNIT-IV

Human development

- Child development-principles and stages
- Life span development
- Theories of human development
- Early childhood care and education
- Family welfare programmes

UNIT-V

Textiles and clothing

- General properties of textile fibers
- Processing and manufacture of all natural and manmade fibers
- Classification of yarn: identification
- Fabric construction
- Woven, non-wove, knitted and other fabrics

REFERENCES

1. West, B Bessie & Wood, Levelle (1988): Food service in institutions 6th Edition. Revised by F.V., Shuggart S.G. &Palgne-Palacio June Macmillian Publication company New York.
2. Desseler, Garry (1987): Personnel Management Modern ,Concepts and Techniques, Prentice Hall New Jersey
3. Kumar, H.L. (1986): Personnel Management in Hotel and Catering Industries, Metropolitan Book Company N. Delhi.
4. Park, K. (2000): Park's Textbook of Preventive and Social Medicine, 18th Edition, M/s. BanarasidasBhanot, Jabalpur.

5. Textiles - Fiber to fabric, Bernard P Corbman, 6th edition, McGraw Hill Book Co, SingaporeFabric forming systems, Peter Schwartz, Trevor Rhodes, Mansour Mohammed, Noyes.

6. Jeliffe, D.B.-Assessment of the nutritional status for the community W.H.O., Geneva

7. Williams W.V.- nutrition in pregnancy and lactation C.V. Hosty and Co.

PUBLIC HEALTH NUTRITION PRACTICALS

OBJECTIVES

To plan and prepare low cost nutritious dishes / menus for vulnerable groups.

To develop skills in preparation of communication aids and planning nutrition education programme for the community.

To be familiar with the ongoing national nutrition programmes.

UNIT-I

Assessment of Nutritional Status, Dietary surveys, anthropometry and body composition, biochemical and clinical methods

Stress scale (Standard), personality test (MMPI), cognition tests. Standardization of tools and techniques

UNIT-II

Development of a plan for nutrition education programmes in community. Preparation of communication aids for different groups.

UNIT-III

Development of low cost recipes for infants, preschoolers, elementary school children, adolescents, pregnant and lactating mothers

UNIT-IV

Planning and preparation of diet/ dishes for PEM, VAD and IDA Field visits to ongoing national nutrition programmes

UNIT-V

Specific regulating conditions applicable for baby foods and foods for immunocompetence. Special diets and its regulations.

RECOMMENDED READINGS

1. Achaya, K.T. (Ed) (1984) Interface between Agriculture, Nutrition and Food Science, The United National University.

2. Beaton, G. H and Bengoa, J. M. (Eds) (1996) Nutrition in Preventive Medicine, WHO.

3. Gibney M. J., Margetts, B.M., Kearney, J. M. Arab, I., (Eds) (2004) Public Health Nutrition, NS Blackwell Publishing.

4. Gopalan, C. (Ed) (1987) Combating Under nutrition- Basic Issues and Practical Approaches, Nutrition Foundation of India.

5. Kaufman M. (2007) Nutrition in promoting the public health strategies, principles and practices. Jones and Barlett Publishers.

6. Park, K. (2009) Park's Textbook of Preventive and Social Medicine, 20th ed. Jabalpur M/s. Banarsidas Bhanot

7. Gibson R S. (2005). Principles of Nutritional Assessment. 2nd ed. Oxford University Press.

8. Cameron N. (1984). The measurement of Human Growth. Croom Helm Ltd. London and Sydney.

9. WHO (2006).WHO Child growth standards: Length/height for age, weight for age, weight for length, weight for height and body mass index (2006). Available at http:// www.who.int.

10.WHO (2009). WHO Child growth standards: Growth velocity based on weight, length and head circumference Available at http://www. who.int

11.WHO (2007).WHO Reference Data for Children and Adolescents (5-19 years). WHO reference. Available at http://www.who.int/growthref/en/

SEMESTER III

NUTRITION THROUGH LIFECYCLE

Objectives

1. Understand physiological changes in pregnancy and lactation.
2. Get acquainted with growth and development changes from conception till adolescence.
3. Understand the inter-relationship between nutrition and growth and development during life cycle.
4. Familiarize the students with the multifaceted aspects of ageing.
5. Make the students competent for nutritional and health care of the elderly.
6. To enable the students the role of nutrition in vulnerable groups and special group of society.

UNIT I

1. The Vulnerable sections of society - who are vulnerable, why they are vulnerable, effects of malnutrition on the vulnerable sections of society: during growth phase, malnutrition in expectant & nursing women, other vulnerable sections of society.

UNIT II

2. Nutrition in Pregnancy

Stages of gestation, maternal weight gain, complications of pregnancy, nutritional problems and dietary management, importance of nutrition during and prior to pregnancy, teenage pregnancy - nutritional problems and dietary management.

3. Nutrition in Lactation

Physiology of lactation, hormonal control and reflex action, efficiency of milk production, problems of breast feeding, nutritional composition of breast milk, nutritional concerns during lactation, special foods during lactation, dietary modification.

UNIT III

4. Nutrition in Infancy

Infant feeding, nutritional needs, premature infant and their feeding, weaning foods. Feeding problems, infant formulae lactose intolerance.

5. Nutrition in Pre-school - Physiological development related to nutrition, feeding problems, behavioural characteristics, nutritional requirement.

6.Nutrition in school children - feeding school children and factors to be considered. Nutritional requirements, feeding problems, packed lunch.

UNIT IV

7. Nutrition in Adolescents and Adults

- Physical changes
-Nutritional Requirements
- Food behaviour - food habits and dietary practices.
- Nutritional problems.

UNIT V

8. Geriatric Nutrition

- The ageing process - Physiological, biochemical and body composition changes.
- Socio-psychological aspects of ageing - Special problems of elderly.
- Nutritional requirements of the elderly & dietary management to meet nutritional needs.

REFERENCES

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13. Koletzo, B.; Hernell, O.; Michaelson, K. (2000) Short and Long Term Effects of Breastfeeding on Infant Health. Plemum Press, New York.

ADVANCED NUTRITION- I

Objectives

To enable the students to:

1. Understand the methods to determine body composition

2. Be aware of the current trends in the area of human nutrition requirements the methods of determining nutrient requirements and current figures of nutritional requirements.

3. Know advances in the field of energy, carbohydrate, lipid and protein nutrition.

4. Understand the importance of vegetarian diet.

UNIT I

Human energy requirements:

Total energy expenditure-Basal Metabolic Rate, Physical activity, SDA

a. Components of energy requirements.

b. Factors affecting energy expenditure and requirements.

c. Factors affecting the thermal effect of food.

d. Factors affecting the energy expended in physical activity.

- Methods of estimation of energy expenditure and requirements.

Harris Benedict equation

- Energy excess and energy deficient in brief.

Carbohydrates

- Classification (available and unavailable), sources, digestion, absorption, metabolic utilization functions, and regulation of blood glucose concentration.

Dietary fiber:

- Classification of dietary fiber, physiological effects, potential health benefits, recommended intake and sources

UNIT II

Protein

a. Functions, classification, sources, RDA, Digestion, absorption, utilization and storage,

b. Evaluation of protein quality.

c. Essential and non-essential amino acids, Amino acid balance, imbalance and toxicity,

UNIT III

Lipids

- Functions, classification, sources, RDA

-Digestion, absorption, utilization and storage.

- Transport and storage of fats in the body.

- Lipoproteins.

UNIT IV

Nutraceuticals and phytochemicals Natural occurrence of certain phytochemicals in foods, Antioxidants and flavonoids, omega-3 fatty acids, carotenoids, dietary fiber, phytoestrogens ; glucosinates; organo sulphur compounds.

Prebiotics and probiotics: Usefulness of probiotics and Prebiotics in gastro intestinal health and other benefits.

UNIT V

Definition, development of functional foods, use of bioactive compound in appropriate form with protective substances and activators, Development of biomarkers to indicate efficacy of functional ingredients; Research frontiers in functional foods.

REFERENCES

1. Shills, Me; Oslan, JA. Shike, M. and Ross, A.C. (editors) (1999) Modern Nutrition in Health and Disease (ninth edition), Williams and Williams. A Waverly Co.

2. Bamji, M.S. Rao, N.P. Reddy. V (editors) (2003) Textbook of Human Nutrition.2 nd Edition Oxford & IBH Publishing co. Pvt. Ltd. New Delhi.

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5. Passmore, R. and Eastwood M.A. Human Nutrition and Dietetics EIBS/ Churchill Livingstone.

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8. Gopal Das T. and Seshadri, S. Nutrition- Monitoring and Assessment- Oxford University Press, New Delhi.

9. Gopalan (Ed.) Recent Trends in Nutrition. Oxford University Press, New Delhi.

Periodicals

1. Nutrition Abstract & Rev.

2. Wld. Rev. Nutrition Diet.

3. Journal of Nutrition Education.

4. American Journal of Clinical Nutrition.

5. Journal of Biological Chemistry.

6. JAMA.

7. Journal of Chronical Diseases.

8. American Journal of Physiology.

ADVANCED DIETETICS

Objectives

This course will enable the students to

1. Understand the etiology, physiology and metabolic anomalies of acute and chronic diseases and patient needs.
2. Know the effect of the various diseases on nutritional and dietary requirements.
3. Be able to recommend and provide appropriate nutritional care for prevention and treatment of various diseases.

UNIT I

Techniques of feeding: Principle of Nutritional care, recent advances and techniques in feeding substrates. Types of hospital diets. Nutrition Support Techniques, Eneteral feeding - indications, Types - Nasogastric, Gastrostomy andJejumostomy - requirements and advantages. Parenteral feeding - Nutritional Support, Formula feeds and Complications in TPN.

Diet in Trauma and surgical conditions- Stress response, physiological response to surgery, pre and post operative nutritional care, Burns-complications, nutritional requirement and dietary management.

UNIT II

Diet in Energy Imbalance - Underweight and obesity, Etiology and dietary management.

Nutritional management of Diabetes mellitus : etiology, classification, metabolism, factors affecting normal blood sugar levels, diagnosis, signs and symptoms, types of insulin, glycemic index, oral hypoglycemic drugs, complications and prevention of diabetes.

UNIT III

Nutritional Management of GI Tract Diseases and Disorders: Disorders, Etiology, Symptoms and dietary management of Acute gastritis, Chronic gastritis, Peptic ulcer - duodenal & gastric Intestinal disease - Flatulence, Diarrhoea and Dysentery, Constipation, Celiac disease, Tropical sprue, Irritable bowel syndrome, Diverticular disease, colon cancer, Ulcerative colitis.

Nutritional management of Liver, gall-bladder and pancreatic disorders: Liver disease - Hepatitis, cirrhosis, Jaundice, fatty liver, cholecystits, cholelithiasis, Hepatic coma gall stones and Pancreatitis

UNIT IV

Nutritional management in Cardiovascular diseases and hypertension - prevalence, etiology- Dyslipidemia, atherosclerosis, angina pectoris, myocardial infarction, Ischemic heart disease, Prevention of CVD.

Hypertension - Classification, prevalence, Diet related factors influencing hypertension, Management of hypertension.

Nutritional Management of Cancer and AIDS - role of diet, metabolic effects and nutritional effects.

UNIT V

Diseases of the Kidney - Etiology, Symptoms and Dietary modification, Nephritis, Nephrosis, Acute and chronic renal failure, End Stage Renal Disease (ESRD), Renal calculi.

Transplantation and dialysis, Dietary Modification.

Diet and Drug Interaction: effects of drugs on food and nutrient intake – ingestion, digestion, absorption, metabolism and requirements.

REFERENCES

1. Mahan, L.K. and Escott-Stump, S.(2000): Krauses Food Nutrition and Diet Therapy,11th 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.

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Journals

1. Indian Journal of Nutrition and Dietetics.

2. Journal of Dietetic American Association.

3. Nutrition Update Series.

4. American Journal of Clinical Nutrition

5. European Journal of Clinical Nutrition

6. Nutritional Reviews

7. World Review of Nutrition and Dietetics

8. Journal of Applied Nutrition

9. WHO Expert Committee.

FOOD PROCESSING

Objectives

To enable students to

1. Understand the importance and methods of post-harvest conservation of foods.
2. Gain knowledge in food processing.

UNIT I

Food processing - Basic requirements for a food processing unit

Principle underlying food processing operations, Physical means in food processing operation (including thermal, radiation, refrigeration, freezing, & dehydration) Chemical means in food processing by sugar , salt, curing, smoke, acids,& Chemicals (Use of class II preservatives in various food products).

Effect of processing on physicochemical characteristics.

UNIT II

Processing Technology for preservation and production of variety food products.

Processing of cereals, legumes, oilseeds, fruits and vegetables.

UNIT-III

Processing Technology for milk and milk products.

Indigenous milk products pannier and yoghurt.

UNIT-IV

Brief manufacturing process of coffee, tea, cocoa, ready to serve beverages.

UNIT -V

Technologies underlying in enrichment, fortification, fermentation, malting, germination.

REFERENCES

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PRACTICAL III -THERAPEUTIC NUTRITION

UNIT-I

Types of diet - Full liquid, clear liquid, soft, light, bland and regular diet. Diet for - obesity, underweight.

UNIT-II

Diet in gastro intestinal disorders - peptic ulcer, pancreatitis diarrhea, constipation. Diet in liver disorders - jaundice, cirrhosis, hepatic coma, fatty liver and gall stones.

UNIT-III

Diet in kidney disorders - Glomerulo nephritis, nephrotic syndrome, renal failure,

Diet in Diabetes mellitus –type 1, type 2, GDM.

UNIT-IV

Diet in Cardio vascular disease - Hypertension, atherosclerosis, congestive heart failure.

UNIT-V

Preparation of Diet Counseling aids for common disorders. Dietary counseling of the patients. Nutritional assessment of pediatrics and adults by IAP, SGA.

REFERENCES

1. Mahan, L.K. and Escott-Stump, S.(2000): Krauses Food Nutrition and Diet Therapy,11th 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.

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SEMESTER-IV
ADVANCED NUTRITION II

Objectives

To enable the students to

1. Know recent developments in the field of vitamins and minerals.
2. To know the importance of vitamins and minerals in relation to other nutrients.
3. Understand Food components other than essential nutrients
4. To understand the potential health implication and mechanisms of action of functional foods.

UNIT I

Vitamins: Fat soluble vitamins-A, D, E, K- Chemistry, Functions, Physiological action, Digestion, Absorption, Utilization, Transport, Storage, Excretion, Source, RDA, Deficiency, Diagnosis of deficiency, Toxicity, Interaction of fat soluble vitamins with other nutrients. Hypo and hyper vitaminosis.

UNIT II

Vitamins: Water soluble vitamins: Vitamin C, Thiamine, Riboflavin, Niacin, Pyridoxine (B6), Folic acid, Cynocobalamin (B12), Biotin: Chemistry, Functions, Physiological action, Digestion, Absorption, Utilization, Transport, Storage, Excretion, Source, RDA, Deficiency, Diagnosis of deficiency, Toxicity, Interaction of fat soluble vitamins with other nutrients.

UNIT III

Minerals (macro minerals): Calcium, Phosphorous, Magnesium, Sodium, Potassium, Chloride: Distribution in the body, digestion, absorption, Utilization, transport, excretion, deficiency, toxicity, sources, RDA, Regulation of calcium concentration.

UNIT IV

Minerals (Micro minerals): Iron, Zinc, Copper, Selenium, Chromium, Manganese, Iodine, Fluorine. Distribution in the body, digestion, absorption, Utilization, transport, excretion, deficiency, toxicity, sources, RDA.

UNIT V

Antioxidants and Free Radicals:

Role of vitamins and minerals as antioxidants

Role of oxygen free radicals.

REFERENCES

1. Shills, Me; Oslan, JA. Shike, M. and Ross, A.C. (editors) (1999) Modern Nutrition in Health and Disease (ninth edition), Williams and Williams. A Waverly Co.

2. Bamji, M.S. Rao, N.P. Reddy. V (editors) (2003) Textbook of Human Nutrition. 2 nd Edition Oxford & IBH Publishing co. Pvt. Ltd. New Delhi.

3. WHO (1985) Energy & Protein requirements-report of joint FAO/WHO. UNO-expert consultation Technical report series 724 WHO, Geneva.

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9. Gopalan (Ed.) Recent Trends in Nutrition. Oxford University Press, New Delhi

NUTRACEUTICALS AND FUNCTIONAL FOODS

OBJECTIVES

To be aware of the growing the important of nutraceuticals and functional foods

Unit I

Functional foods and nutraceutical – Introduction – Defining, the concept – Review of the history of functional foods – teleology of nutraceuticals – primary and secondary metabolites in plants general teleology – a) Carotenoids b) Conjugated linolenic acid c) Flavonoids d) Nitrogen and Sulphur containing Amino acid derivatives e) Oroteinase and alpha amylase inhibitors f) Omega – 3 PUFA g) Terpenoids.

Unit II

Classifying nutraceuticals Organisational models for nutraceuticals

a) Food source – Plant: Soya, olive oil, plant steroid, tea, grape vine, garlic, capsicum, dietary fibre and other fruits.

b) Animal: Milk and products, meat, fish. Microbial probiotics.

c) Mechanism of action – Anticancer, positive influence on blood lipid profile, anti oxidation, anti inflammatory, osteogenetic

d) Chemical nature – Isoprenoid derivatives, phenolic substances, fatty acids and structural lipids, carbohydrates and derivatives, amino acid base substances, microbes, minerals.

Unit III

Regulation of dietary supplements – Types – in born errors of metabolism, - obesity, neurological disorder, diabetes mellitus, hypertension vitamin A deficiency, PEM Instant foods and formulas supplement soups, Herbal and functional food beverages and sports.

Unit IV

Measurement of functional component and their bioavailability. Need for measurement, safety quality assurance and cost — bioavailability: definition, factor affecting, chemical measurement and physical testing and microbiological testing-functional foods and vitro studies.

Unit V

Pharmacology and Nutraceuticals — pharmacology of chemical components .derived form plant source and the therapeutic derived from plant source and the therapeutic efficiency of functional food ingredients — nutragenomics— Relationship between nutritional supplementation and gene expression and disease prevention. Dietary Supplements

References

1. Mary, K. Schmidl and Theodre, P. Labuza (2000), Essentials of Functional Foods, Culinary and hospitality industry publication services

2. Israel Goldberg (2001), Functional foods, pharma foods, Nutraceuticals, Culinary and hospitality industry publication services.

3. Robert easy Wildman (2001), Handbook of Nutracenticals and functional foods, Culinary and hospitality industry publication services.

4. Paresh, C. Dutta (2004), Phytosterols as Functional Food Components and

Nutraceticals, Marcel Dekker Inc, New York.

5. Chatwick, R etal (2003), Functional Foods., Springer. 7. Jeffery Horst (2002),

Methods of Analysis for Functional Foods and Nuutraceuticals, CRS press.

DISSERTATION

The dissertation should be based on individual studies and carry the following format:
Preliminary

1. Title page- title, authors name
2. Certificate of originality by the guide
3. Declaration by the author
4. Table of contents
5. List of tables
6. List of figures
7. Acknowledgement
8. Abstract

I. Introduction: Statement of the problem, significance, need for the study, objectives, and definitions.

II. Review of literature

III. Methodology: tools used, procedures, hypothesis.

IV. Results and discussion: tables and figures, statistical presentations, hypothesis testing.

V. Summary and conclusion

VI. Suggestion for the future study

VII. References