

S.D.N.B. VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)

DEPARTMENT OF CLINICAL NUTRITION & DIETETICS

Regulations, Curriculum and Syllabus (Autonomous)

Bachelor of Science in Home Science- clinical nutrition & dietetics

1. ELIGIBILITY FOR ADMISSION TO THE COURSE

- A pass in the higher secondary examination of the Government of Tamil nadu or any other qualification equivalent to this as approved by the University of Madras.
- Subject Requirement: Any science group in the qualifying exam

2. EXAMINATIONS

All odd semester examinations will be held in November and all even Semesters in April

3. EVALUATION

3.1 CORE MAJOR, ALLIED PAPER & ELECTIVE-THEORY-

INTERNAL	-	25
<u>BREAK UP INTERNAL - THEORY</u>		
Test Mark	-	15
Seminar	-	5
Assignment	-	5
EXTERNAL	-	75

3.2 PRACTICAL CORE

INTERNAL	-	40
EXTERNAL	-	60

4. WORKING DAYS: 114 per semester. (total hours per semester-456)

DEPARTMENT OF CLINICAL NUTRITION & DIETETICS

SEMESTER VICE - SUBJECT BREAKUP

Semester	Subject	Credits
Semester I	Core Major-Paper I - Food Science	4
	Core Major-Paper II - Microbiology	4
	Allied I- Paper I - Chemistry I	4
	Allied I- Practical - Chemistry I	-
Semester II	Core Major-Paper III - Human Physiology	4
	Core Major-Paper IV - Microbiology & Physiology Practical	3
	Allied I- Paper II - Chemistry II	4
	Allied I- Practical - Chemistry II	2
Semester III	Core Major-Paper V -Family Meal Management	4
	Core Major-Paper VI - Nutrition I	4
	Practical Core -Family Meal Management	-
	Allied II- Paper III – Biochemistry	5
	Allied II- Paper III - Biochemistry Practical	-
Semester IV	Core Major-Paper VII - Advanced Dietetics	4
	Core Major-Paper VIII - Nut. & Advanced Dietetics Practical	3
	Allied III- Paper IV - Community Nutrition	5
	Allied III- Paper IV- Community Nutrition Practical	-
	Internship (one month)	2
Semester V	Core Major-Paper IX - Human Development I	4
	Core Major-Paper X -Food Service Management I	4
	Core Major-Paper XI - Nutrition II	4
	Core Major-Paper XII - Sports Nutrition	4
	Practical Core - Sports Nutrition	-
	Elective I- Entrepreneurial Development	5
Semester VI	Core Major-Paper XIII - Clinical Nutrition	4
	Core Major-Paper XIV - Food Service Management II	4
	Core Major-Paper XV - Clinical Nutrition Practical	4
	Elective II-Health Psychology	5
	Elective III- Human Development II	5

Course Framework- BSc. Clinical Nutrition & Dietetics

(For candidates admitted during the academic year 2013 onwards)

S.No	Year / Semester	Part	Subject	Teaching Hours		Credits	CIA	ESE	Total
				Theory	Practical				
1	I Year Semester	I	Language (Tamil/Hindi/Sanskrit)	6	-	3	25	75	100
2		II	English	6	-	3	25	75	100
3		III	Core Major-Paper I - Food Science	6	-	4	25	75	100
4		III	Core Major-Paper II - Microbiology	6	-	4	25	75	100
6		III	Allied I- Paper I - Chemistry I	4	-	4	15	60	75
7		III	Allied I- Practical - Chemistry I	-	2	-	-	-	-
8		IV	NME	-	-	2	40	60	100
9		IV	Soft Skills	-	-	3	-	-	100
10	I Year Semester	I	Language (Tamil/Hindi/Sanskrit)	6	-	3	25	75	100
11		II	English	6	-	3	25	75	100
12		III	Core Major-Paper III - Human Physiology	6	-	4	25	75	100
13		III	Core Major-Paper IV - Microbiology & Physiology Practical	-	6	4	25	75	100
15		III	Allied I- Paper II - Chemistry II	4	-	4	15	60	75
16		III	Allied I- Practical - Chemistry II	-	2	2	20	30	50
17		IV	NME	-	-	2	40	60	100
18		IV	Soft Skills	-	-	3	-	-	-
19	II Year Semester	I	Language (Tamil/Hindi/Sanskrit)	6	-	3	25	75	100
20		II	English	6	-	3	25	75	100
21		III	Core Major-Paper V - Family Meal Management	4	-	4	25	75	100
22		III	Core Major-Paper VI - Nutrition I	4	-	4	25	75	100
23		III	Practical Core -Family Meal Management	-	2	-	-	-	-
		III	Allied II- Paper III - Biochemistry	4	-	5	25	75	100
		III	Allied II- Paper III - Biochemistry Practical	-	2	-	-	-	-
24		III	Allied II- Paper III - Biochemistry Practical	-	2	-	-	-	-

26		IV	Soft Skills	-	-	2	40	60	100
27		IV	EVS	2	-	-	Exam In IV Sem.		
28	II Year IV Semester	I	Language (Tamil/Hindi/Sanskrit)	6	-	3	25	75	100
29		II	English	6	-	3	25	75	100
30		III	Core Major-Paper VII - Advanced Dietetics	6	-	3	25	75	100
31		III	Core Major-Paper VIII - Nut. & Advanced Dietetics Practical	-	6	3	40	60	100
33		III	Allied III- Paper IV - Community Nutrition	6	-	5	25	75	100
33		III	Allied III- Paper IV- Community Nutrition Practical	-	2	-	-	-	-
34		IV	Soft Skills	-	-	3	40	60	100
35		IV	EVS		-	2	25	75	100
			Internship (one month)	-	-	2	-	-	-
36	III Year V Semester	III	Core Major-Paper IX - Human Development I	6	-	4	25	75	100
37		III	Core Major-Paper X - Food Service Management I	6	-	4	25	75	100
38		III	Core Major-Paper XI - Nutrition II	6	-	4	25	75	100
39		III	Core Major-Paper XII - Sports Nutrition	6	-	4	25	75	100
40		III	Practical Core - Sports Nutrition	-	2	-	-	-	-
43		III	Elective I- Entrepreneurial Development	6	-	5	25	75	100
44		IV	Value Education	2	-	2	-	-	-
45		III	Core Major-Paper XIII - Clinical Nutrition	6	-	4	25	75	100
46	III Year VI Semester	III	Core Major-Paper XIV - Food Service Management II	6	-	4	25	75	100
47		III	Core Major-Paper XV - Clinical Nutrition Practical	-	6	4	40	60	100
50		III	Elective II-Health Psychology	6	-	5	25	75	100
51		III	Elective III- Human	6	-	5	25	75	100

			Development II						
52		V	Extensio Activities	-	-	1	-	-	-

	Credits	Marks
Language	12	400
English	12	400
Major / Elective	73	1800
Allied	20	400
Soft Skills / NME / Value Education	20	800
internship	02	-
Total	139	3800

	Count
Total Theory Paper	19
Total Practical	8

CHOICE BASED CREDIT SYSTEM

BSc. Clinical Nutrition & Dietetics

Study Components	No. of Papers	Credit Per Paper	Total Credit
Part I (Tamil/Hindi/Sanskrit)	4	3	12
Part II (English)	4	3	12
Part III :			
Core Major :	15	4	60
Core Elective:	3	5	15
Allied - Paper I:	2	5	10
Allied - Paper II:	2	5	10
Sub Total for Part III			95
Part IV :			
1. Basic Tamil/Advanced Tamil/Non-Major (I and II Semester)	2	2	4
2. Soft Skills	4	3	12
3. EVS (III Semester)	1	2	2
4. Value Education (VI Semester)	1	2	2
Sub Total for Part IV			20
Part V :			
1. Sports	—	—	1 to 5
2. N.C.C.	—	—	
3. N.S.S.	—	—	
4. Rotract	—	—	
5. E.D.P.	—	—	
6. Fine Arts	—	—	
Subtotal for Part V			5
Total			144

SEMESTER EXAMS
Question Paper Pattern-Theory

For 75 Marks-

Section A (10x2=20) (Q. No. 1-12)

Answer any 10 questions out of 12. Each Question carries 2 marks

Section B (5x5=25) (Q. No. 13-17)

Answer all questions. Each Question carries 5 marks

Section C (3x10=30) (Q. No. 18-22)

Answer any 3 questions out of 5. Each Question carries 10 marks

For 60 Marks-

Section A (10x1=10) (Q. No. 1-12)

Answer any 10 questions out of 12. Each Question carries 1 mark

Section B (4x5=20) (Q. No. 13-18)

Answer any 4 questions out of 6. Each Question carries 5 marks

Section C (3x10=30) (Q. No. 19-23)

Answer any 3 questions out of 5. Each Question carries 10 marks

SEMESTER - I

CORE PAPER I - FOOD SCIENCE

OBJECTIVES:

- a) To enable students to obtain knowledge of different food groups and their contribution to nutrition.
- b) To help them study the different methods of cooking and their advantages and disadvantages.
- c) To enable them gain them to experience in the preparation of foods with attention to the preservation of their nutritive value - oriented to Indian cooking.
- d) To help them understand the scientific principles governing the acceptability of food preparations.

UNIT -1

NUTRIENT CONTENT OF FOODS - Classification of foods according to nutrient content. Food groups for balance diets - Food in relation to health. **COOKING METHODS** -Study of the different cooking methods, merits and demerits - solar cooking – Microwave cooking. **CEREALS AND MILLETS** -Source of manufacture, structure, composition, storage, processing, milling, parboiling, scientific methods of preparation and cooking, acceptability and palatability of rice, wheat, maize and millets, factors affecting gelatinization.

UNIT-2

PULSES- Source of manufacture, nutritive value, judicious combination of cereals and pulses, storage high-lighting soya beans, lathyrism - removal of toxins. **VEGETABLES**- Classification, colour, nutritive value, effect of cooking on colour, texture, flavour, appearance and nutritive value, Purchase - storage and preservation. **FRUITS** -Classification, nutritive value, uses, preservation.

UNIT-3

FLESH FOODS-Meats - nutritive value, methods of cooking, purchase, storage. Fish - classification, nutritive value, purchase, storage, cooking and preservation. **EGGS**- Structure and composition, nutritive value, palatability, methods of storage, preservation and uses in cookery. **MILK AND MILK PRODUCTS**-Nutritive value, cow's milk as compared with human milk, coagulation of milk, digestion of milk, milk products - whole and skimmed milk, milk powders and yogurt, ghee, butter, cheese. Storage and preservation.

UNIT-4

BEVERAGES-Classification, nutritive value and uses, coffee, tea and cocoa, malted beverages. Sources, manufacture, processing, methods of preparation, serving. **a) NUTS AND OIL SEEDS** : Nutritive value, toxins.**b) Fats and Oils**: Source and manufacture, usage, hydrogenation, rancidity, smoking point, emulsification. **SUGAR COOKERY**-Stages in sugar cookery, types of sugars available, crystallisation in sugar cookery, jaggery.

UNIT-5

SPICES AND CONDIMENTS-Origin, use in food preparation, excess consumption.**FOOD ADDITIVES** -Leavening agents, shortenings, stabilizers, flavouring agents and food substitutes. **Food adulteration** - types of adulteration - methods of detection, food laws and standards.

REFERENCES

1. Hughes, O and Bennion, M. 1970 **Introductory Foods**, 5th ed., The macmillan Co., New York.
2. Griswold, R.M. 1962. **Experimental Study of Foods**, Houghton mifflin company, Boston.
3. Ghose, R.L.M., Ghate, M.B. and Subramaniam, V. 1960. Rice in India. ICMR, New Delhi.
4. Eckles, G.H., Combs, W.S. and Macy, H. 1951. **Milk and Milk Products**, RMB Publishing Co., Ltd., New Delhi.

5. Fisher, P. and Bender, A. 1971. **The Value of Foods**. Oxford University Press, London.
6. Birch, G.C. and Cameron, A.G, and Spencer, M. **Food Science**, 3rd ed., Pergamon Press, Oxford.
7. Sweetnam, M.D. and MacKellar, I, 1954. **Food Science and Preparation**. 4th ed., John Wiley & Sons Inc., New York.
8. Fitch, J.J. and Francis, C.A. 1953. **Foods and Principles of Cookery**, 1st ed., Prentice-Hall Inc., New York.
9. Pechkham, G.C. 1969. **Foundations of Food Preparation**, The Macmillan Company, London.

CORE PAPER II - MICROBIOLOGY

OBJECTIVES:

To enable the students to

1. Gain knowledge of the role of micro-organisms in health and disease
2. To understand the role of micro-organisms in spoilage of various foods.
3. To gain knowledge of micro-organisms in relation to food and food preservation

UNIT -1

Introduction to microbiology and its relevance to everyday life-general characteristics of microorganisms-bacteria, virus, yeasts, moulds, algae, protozoa. Morphology, classification, motility, nutrition, respiration and reproduction. **PROTOZOA**-Morphology, reproduction, motility and classification. Entamoeba histolitica - Plasmodium Vivax - Balantidium Coli. **DISTRIBUTION AND ROLE OF MICRO ORGANISM IN** a) Soil

- i) Micro-organisms in the soil.
- ii) Nitrogen Cycle.

b. Water

- i) Micro-organisms in water
- ii) Total bacterial count in water.
- iii) Sanitary tests done on water.
- iv) Listing of water borne infections.

c) Air

- i) Micro-organisms present in air.
- ii) Total bacterial count of air.
- iii) Listing of air borne infections

d) Sewage

- i) Composition of sewage
- ii) Effect of treatment of sewage by micro-organisms, septic tanks. Activated sludge process.

UNIT -2

DESTRUCTION OF BACTERIA

a) Sterilization

- i) Application of dry heat, burning, flaming and hot air oven.
- ii) Application of moist heat, boiling, pasteurization, steam steriliser and autoclave.
- iii) Sterilization with the use of filters

b) Pasteurization

Advantages involved in pasteurization / methods - holder, flash.

c) Disinfection

Methods of disinfection, natural, physical and chemical.

PURIFICATION OF WATER INDUSTRIAL AND DOMESTIC METHODS

i) Industrial method of purification of water, sedimentation, filtration - slow sand filters, rapid sand filters. Differences between slow and rapid sand filters - disinfection of water with the use of chemicals. ii) Domestic method of water purification - involving simple techniques like straining water through a muslin cloth, filtration of water by 'Three pitchers system and use of domestic filters like Pasteurs, Chamberland filters and Berkfield filters. Use of Certain Common Chemicals like alum, quick lime and potassium permanganate in filtration.

UNIT -3

MICRO-ORGANISM IN INFECTION, RESISTANCE AND IMMUNITY

- i) Different modes of spread of infection.
- ii) Reaction of the body to infection cellular and chemical defenses - phagocytoses -antigens - antibody. 2 examples of antigen antibody reactions.
- iii) Immunity - active and passive - artificial and natural

ALLERGY AND HYPER SENSITIVITY

- i) Different types of allergies like idiosyncrasies, allergy of infection, contact dermatitis and drug allergy.
- ii) Hypersensitivity - definition - anaphylaxis and serum sickness.

CHEMOTHERAPY AND ANTIBIOTICS

- i) Chemotherapy - use of sulphonamides, sulphones and PAS. Antibiotics - use of antibiotics, spectrum of activity, mode of administration, complication arising due to constant use of antibiotics, sensitivity tests done on antibiotics. Brief knowledge of any four common antibiotics

UNIT -4

GENERAL PRINCIPLES UNDERLYING SPOILAGE

Chemical changes caused by Micro-organisms, fit or unfit food for consumption -causes of spoilage - classification of food by the cause of spoilage - factors affecting -kinds and numbers of micro-organisms in food - growth and chemical changes - caused by microorganisms.

PRINCIPLES OF FOOD PRESERVATION

Use of high and low temperatures. Canning of fruits and vegetables.

Preservation by drying, use of chemicals in food preservation. Part played by antibiotics in the preservation of fleshy food.

FOOD MICRO-BIOLOGY CONTAMINATION AND SPOILAGE OF FOODS

Principles of food spoilage by micro-biological, physical and biological factors.

- a) Cereal and Cereal products and baked products.
 - i) Contamination, preservation and spoilage of cereals.
 - ii) Spoilage of bread, ropiness in bread, Red bread and chalky bread.
- b) Fruits and vegetables and their products: Contamination. Preservation and spoilage of fruits and vegetables.
- c) Fleshy food 1. Meat, 2. Poultry 3. Fish
 - i) Contamination of Meat, fish and poultry.
 - ii) Preservation of Meat, fish and poultry.

- iii) General principles underlying the spoilage of meat, fish and poultry.
- d) Eggs : Contamination, preservation and spoilage occurring in eggs.
- e) Milk and Milk Products:
 - i) Contamination, preservation and spoilage of milk.
 - ii) Brief knowledge of butter, cheese and fermented milk.
- f) Fats and Oils : Contamination, preservation, storage and spoilage of fats and oils.

UNIT -5

FERMENTATION, PUTREFACTION AND DECAY:

- i) Fermentation - aerobic respiration, anaerobic respiration, products of fermentation.
- ii) Part played by micro-organisms in putrefaction and decay.

MICRO-BIOLOGY OF FOOD POISONING, FOOD INFECTIONS AND FOOD BORNE DISEASES, PRINCIPLES OF FOOD PRESERVATION

- i) Microbial food poisoning by Staphylococci, Salmonella food poisoning group and clostridium botulinum (Botulism). Measures to prevent microbial food poisoning.
- ii) Food infections -food borne diseases - Dysentries, diarrhoea, Typhoid, Cholera.

REFERENCES

- 1 Joshua A.K. : Micro-biology - India Printing works, Madras - 1971
- 2 Carpenter : Micro-biology - W.B. Saunders Co., London
- 3 Salie, A.J. : Fundamental principles of Bacteriology - McGraw Hill Book Co
- 4 R.C. Rubey & D.K.Maheshwari : A Textbook of Micro - biology
- 5 Pelczar J.Michael : Micro-biology concepts and Application
- 6 Ananthanarayan.R & Paniker C.K.J. : Textbook of Microbiology
- 7 Frazier.W.C. : Food Micro-biology - McGraw HillBook and Co; New York
- 8 Smith and Water : Introductory food services - McGraw Hill Book and Co. New York 1975

ALLIED CHEMISTRY – I (60 Hours) - 4 Credits

(Other Branches except Maths & Physics Major)

Unit1: NUCLEAR CHEMISTRY

Fundamental particles Of Nuclear Isotopes, Isobars, Isotones and Isomers -Differences between chemical reactions and nuclear reactions: Fusion and fission - Radio active series, group displacement law - Mass defect - Applications of radio isotopes carbon dating, rock dating and medicinal applications.

UNIT2: INDUSTRIAL CHEMISTRY

Fuels- Classification-gaseous fuels like water gas, producer gas, liquefied petroleum gas, gobar gas, Compressed natural gas - Fertilizers- Classification - urea, Ammonium sulphate, superphosphate, Triple super phosphate, potassium nitrate- manufacture and uses - Silicones - Preparation, properties and applications . Hardness of water: temporary and permanent hardness, disadvantages of hard water - Softening of hard water - Zeolite process, demineralization process and reverse osmosis - Purification of water for domestic use: use of chlorine, Ozone and UV light - Definition and determinations of BOD and COD.

UNIT 3 : FUNDAMENTALS OF ORGANIC CHEMISTRY

Classification of organic compounds - Hybridization in methane, ethane, acetylene, benzene -Classification of reagents - electrophiles, nucleophiles and free radicals - Classification of reactions - addition, substitution, elimination, condensation and polymerisation - Polar Effects-Inductive effect, resonance, hyper-conjugation, steric effect - Keto-enol tautomerism - electrophilic substitution mechanism in benzene (Nitration and Sulphonation)

UNIT 4: CHEMISTRY OF SOME USEFUL ORGANIC COMPOUNDS

Preparation and uses of CH_2Cl_2 , CHCl_3 , CCl_4 , CF_2Cl_2 . BHC, DDT and Teflon - Heterocyclic compounds) - Introduction to hetero cyclics - Chemistry of furan, thiophene, pyrrole, pyridine and their uses.

Unit 5 : PHOTOCHEMISTRY

Introduction to Photochemistry - statement of Grothus - Draper Law, Stark- Einstein's Law, Quantum yield. 'Hydrogen-Chlorine reaction (Elementary idea only) Photosynthesis, photosensitization, phosphorescence, Fluoresence, Chemilu- miniscence - Definition with examples.

BOOKS FOR REFERENCE

- 01 Dr .Veeraiyan V., Text book of Ancillary Chemistry, Highmount Publishing house, Chennai-14. Edition-2006. (Both in Tamil and English)
- 02 Vaithyanathan S. and Others, Textbook of Ancillary Chemistry, Priya Publications, Karur-2. Edition-2006.
- 03 Soni P.L. and Others, Textbook of Organic chemistry, Sultan Chand and Company, New Delhi, Edition-2006.
- 04 Soni P.L. and Others, Text book of Inorganic Chemistry, Sultan Chand and Company, New Delhi, Edition-2006.
- 05 Puri B.R., Sharma and Pathania, Text book of Physical Chemistry, Vishal Publishing Co., New Delhi. Edition-2006.
- 06 Dara S.S., Text book of Environmental chemistry and Pollution Control.- S.Chand and Co., NewDelhi, Edition 2006.

SEMESTER - II

CORE PAPER III - HUMAN PHYSIOLOGY

OBJECTIVES:

- a. To enable students to understand the structure and physiology of various organs in the body.
- b. To help students to obtain a better understanding of the principles of nutrition and dietetics through the study of physiology.

UNIT -1

CELL

Introduction - cell under e/m. Recent concepts.

TISSUES

Classification, structure and function.

UNIT -2

PHYSIOLOGY OF NERVE AND MUSCLE

Conduction of nerve impulses - Physiology of muscle contraction.

NERVOUS SYSTEM

General anatomy of nervous system, functions of the different parts, reflexes, autonomic nervous system.

SENSE ORGANS

Physiology of vision, hearing, taste', smell and cutaneous sensations.

UNIT -3

BLOOD

Composition, constituents, functions, wounds, hemorrhage, reticulo- endothelial system, body defence against diseases.

HEART AND CIRCULATION

Anatomy of the heart-structure of the heart and blood vessels, properties of cardiac muscle, origin and conduction of heart beat, cardiac cycle, cardiac output, heart sounds, blood pressure - definition and factors affecting blood pressure and ECG.

UNIT -4

RESPIRATORY SYSTEM

Anatomy and physiology of respiratory organs. Gaseous exchange in the lungs, mechanism of respiration.

DIGESTIVE SYSTEM

Anatomy of gastro-intestinal tract. Digestion and absorption of carbohydrates, proteins and fats.

UNIT -5

EXCRETORY SYSTEM

Structure of kidney, formation of urine, acid-base balance, skin-temperature regulation, water balance.

ENDOCRINOLOGY

Pituitary, thyroid, parathyroid, adrenal and pancreas - functions of the hormones and their relationships.

REPRODUCTIVE SYSTEM

Anatomy of male and female reproductive organs, hormonal regulation of female reproductive function, menstruation, fertilization, pregnancy, lactation - hormone influence.

REFERENCES

1. Guyton, A.C. Functions of the Human Body, W.B. Saunders Co., Philadelphia.
2. Vander, A.J , Sherman, J.H. and Luciano, D.S. Human Physiology - the Mechanisms of Body Functions, 2nd ed., TMH Publishing Co., Ltd.,
3. Subramaniam, S. and Madhavan Kutty, K. 1971. The Text Book of Physiology, 1st ed., Orient Longman Ltd.
4. Best, CH and NB Taylor, The living body, latest edition, Asia publishing house, Bombay.
5. Ham, A.W., Histology, Latest edition. Pitman Medical Publishing Ltd., London,

CORE PAPER IV - MICROBIOLOGY AND PHYSIOLOGY PRACTICAL

OBJECTIVES:

- a. To enable students to estimate the various blood constituents
 - b. Gain knowledge of the role of micro-organisms in health and disease
 - c. To understand the role of micro-organisms in spoilage of various foods
1. Identification of prepared slides - mould - mucor, rhizopus, aspergillus, penicillium, yeast and bacteria – bacilli.

2. Simple staining, identification of organism in contaminated water and food.
3. Examination of the motility of micro-organisms-hanging drop preparation.
4. Demonstration of sterilization methods - Hot air oven and autoclave
5. Field trip to dairy and food industries.
6. Microscopic studies of different tissues. Epithelial, connective, muscular and nervous tissues.
7. Microscopic study of blood, WBC, RBC estimation, Hemoglobin estimation.
8. Blood of different groups of people. Blood pressure.
9. Respiratory rate and pulse rate.

REFERENCES

- 1 Joshua A.K. : Micro-biology - India Printing works, Madras - 1971
- 2 Carpenter : Micro-biology - W.B. Saunders Co., London
- 3 Salie, A.J. : Fundamental principles of Bacteriology - McGraw Hill Book Co
- 4 R.C. Rubey & D.K. Maheshwari : A Textbook of Micro - biology
- 5 Pelczar J. Michael : Micro-biology concepts and Application
- 6 Ananthanarayan. R & Paniker C.K.J. : Textbook of Microbiology
- 7 Frazier. W.C. : Food Micro-biology - McGraw Hill Book and Co; New York
- 8 Smith and Water : Introductory food services - McGraw Hill Book and Co. New York 1975
9. Guyton, A.C. Functions of the Human Body, W.B. Saunders Co., Philadelphia.
10. Vander, A.J , Sherman, J.H. and Luciano, D.S. Human Physiology - the Mechanisms of Body Functions, 2nd ed., TMH Publishing Co., Ltd.,
11. Subramaniam, S. and Madhavan Kuty, K. 1971. The Text Book of Physiology, 1st ed., Orient Longman Ltd.
12. Best, CH and NB Taylor, The living body, latest edition, Asia publishing house, Bombay.
13. Ham, A.W., Histology, Latest edition. Pitman Medical Publishing Ltd., London

ALLIED CHEMISTRY – II

(60 Hours) 4 Credits

(Other Branches except Maths & Physics Major)

Unit 1: CO-ORDINATION CHEMISTRY

Definition of terms-classification of ligands-Nomenclature-chelation-EDTA and its Applications –Werner's Theory-Effective Atomic Number-Pauling's Theory-Postulates-Applications to $(\text{Ni}(\text{CO})_4)$, $(\text{Ni}(\text{CN})_4)^{2-}$, $(\text{Co}(\text{CN})_6)^{3-}$ Merits and demerits of Werner and Pauling's Theory-Biological role of haemoglobin and chlorophyll, (Elementary idea only)-Applications of coordination compounds in qualitative and quantitative analysis like separation of copper and cadmium ions; Nickel and cobalt ions; identification of metal ions like Cu, Fe and Ni-Estimation of Nickel using DMG and estimation of Aluminium using Oxine.

Unit 2: CARBOHYDRATES

Classification, preparation and reactions of glucose and fructose Discussion of open and ring structure of glucose, mutarotation. Inter conversion of glucose to fructose and vice versa - Preparation and properties of sucrose. Properties of starch. Cellulose and derivatives of cellulose -Diabetes - Causes and control measures.

Unit 3: PROTEINS

Amino acids-Classifications, Preparation and properties of alanine - Preparation of dipeptide using Bergman method - Proteins -Classification according to composition, biological functions and shape - Denaturation and colour reactions of Proteins - Primary and secondary structure of Proteins - Nucleic acids: DNA and RNA-Their components and biological functions.

Unit 4: ELECTROCHEMISTRY

Galvanic Cells - emf - standard electrode potential - reference electrodes electrochemical series and its applications-Determination of pH using electromeric method -Electroplating process -Nickel and Chrome plating - Different type of cells - primary cell, Secondary cell and fuel cells -Corrosion and methods of prevention. Conductometric titrations hydrolysis of salts. Derivation of K_h - Definition of pH and it's determinations by colorimetric method. Buffer solution – Henderson's equation. Applications of pH and buffer in biological processors and industries –Corrosion and its prevention.

Unit 5 : ANALYTICAL CHEMISTRY

Introduction to Qualitative and Quantitative Analysis - Principle of volumetric analysis - Separation techniques - extraction - distillation - crystallization - Chromatographic separations - Principles and application of column, paper, thin layer, gas-liquid and ion-exchange.

BOOKS FOR REFERENCE

- 1 Dr. Veeraiyan V., Text book of Ancillary Chemistry, Highmount Publishing house, Chennai-14. Edition - 2006. (Both in Tamil and English)
- 2 Vaithyanathan S. and Others, Textbook of Ancillary Chemistry, Priya Publications, Karur-2. Edition - 2006.
- 3 Soni P.L. and Others, Text book of Organic chemistry, Sultan Chand and Company, New Delhi, Edition-2006.

- 4 Soni P.L. and Others, Text book of Inorganic Chemistry, Sultan Chand and Company, New Delhi, Edition-2006.
- 5 Puri B.R., Sharma and Pathariia, Text book of Physical Chemistry, Vishal Publishing Co., New Delhi. Edition - 2006.
- 6 Dara S.S., Text book of Environmental chemistry and Pollution Control- S.Chand and Co., New Delhi, Edition - 2006.

ALLIED CHEMISTRY PRACTICALS

COMMON FOR MATHEMATICS AND NON MATHEMATICS STUDENTS

VOLUMETRIC ANALYSIS

- Estimation of Sodium hydroxide using standard Sodium Carbonate.
- Estimation of Hydrochloric acid using standard Oxalic acid.
- Estimation of Ferrous sulphate using standard Mohr's salt
- Estimation oxalic acid using standard Ferrous Sulphate.
- Estimation of Potassium permanganate using standard Sodium hydroxide.
- Estimation of Magesium using EDTA.
- Estimation of Ferrous ion using diphenylamine as intemal indicator.

ORGANIC ANALYSIS

Dectection of Elements (N,S, Halogens)

To distinguish between aliphatic and aromatic Saturated and unsaturated compounds. Functional group tests for phenol, acids (mono, di) aromatic primary amine, amide, aldehyde & Carbohydrate Glucose. Systematic analysis of organic compounds containing one functional group and characterization by confirmatory test.(Phenol/cresol, cinnamic acid, benzoic acid, phthalic acid, Succinic acid, benzamide, urea, glucose, benzaldehyde & aniline).

REFERENCE

Basic Principles of practical Chemistry: Venkateswaran,Veerasamy &
Kulandaivel, S.Chand &Co.

SEMESTER III

CORE PAPER V- FAMILY MEAL MANAGEMENT

UNIT -1

Introduction to meal management. Balanced diet - food guide, food pyramid. Basic principles of meal planning - objectives - steps in meal planning - food cost

UNIT -2

Nutrition in pregnancy - physiological stages, food selection - complications of pregnancy. Nutrition during lactation - Physiology of lactation – nutrition requirements, special foods given during lactations.

UNIT -3

Nutrition during infancy - Growth and development – nutrition requirements - Breast feeding - Infant formula – Introduction of supplementary foods. Nutrition during early childhood (Toddler/ Pre school) Growth and Nutritional needs - nutrition related problems. Feeding patterns - acceptance

UNIT -4

Nutrition of school children - Nutritional requirement - Importance of snacks - school lunch. Nutrition during Adolescence Growth development and nutrient needs - food choices, eating habits – factors influencing them.

UNIT -5

Nutrition during adulthood , Geriatric nutrition - Factors affecting food intake and nutrient use - nutrient needs -nutrition related problems

PRACTICAL

Objectives: To enable the students to:

1. Learn the principles of meal planning.
2. Plan & prepare meals for the family members at different income levels.
3. Plan meals for special groups - infants, preschoolers, adolescents, pregnant & nursing mothers and the aged.

Course Content No. of Lectures

1. Basic principles of meal and menu planning
2. Daily food guide - The 5 food groups, the use of the food groups. Food Costing.
3. Planning for adult man and woman during different physical activities - sedentary, moderate, heavy worker. Preparation of above diet.
4. Planning and Preparation of a balanced diet for a pregnant woman - Nutrient requirements, modifications of dietary pattern.
5. Planning and preparation of a balanced diet for a nursing mother - modification of normal meal pattern – nutritional requirements.
6. Nutrition during infancy - nutritional requirements during infancy-advantages of breast feeding - disadvantages of bottle feeding
7. Supplementary feeding-preparation of weaning foods
8. Planning and preparation of diet for a toddler, pre-school child-nutritional requirements - food pattern.
9. Nutrition during school age - nutritional considerations - planning and preparation of meals / packed lunch.
10. Nutrition during adolescence - nutritional requirements. Factors influencing food habits - preparation of meal.

11. Planning a diet for a senior citizen - factors affecting food intake and nutrient use - special needs – nutritional requirements - Preparation of meals.

REFERENCES

1. Guthrie H.A. & Others, "Introductory Nutrition", 1986, 6th ed. Times Mirror/Mosby College Pub. Louis.
2. Anderson L. et al, "Nutrition in Health and Disease", 1982, 17th ed, J.B Lippincott Co Philadelphia.
3. Whitney E.N., Hamilton E.N. & Raffles S.R., "Understanding Nutrition", 5th ed. West Pub. Co. New York.
4. Recommended Dietary Intakes for Indians, I.C.M.R. 1989.
5. Mudambi, S.R. & M.N. Rajagopal - "Fundamentals of Food and Nutrition", 3rd ed. Wiley Eastern Ltd New Delhi-19.
6. Guthrie, H.A., "Introductory Nutrition", 6th ed., Times Mirror/Mosby College Publ. - St Louis 1989.
7. Worthington Roberts, Bonnie S & others - "Nutrition in Pregnancy & Lactation", 3rd ed. Times Mirror Mosby College, St. Louis, 1985.

CORE PAPER VI – NUTRITION- I

OBJECTIVES

1. To introduce the students to the principle of Human Nutrition.
2. Understand the importance of various macronutrients in relation to health.

THEORY

UNIT 1.

History of Nutrition – Development of Nutrition as a Science – Definition of Nutrition – Under nutrition, over nutrition and malnutrition.

Introduction to nutrition – food as a source of nutrients, function of foods, definition of nutrients, adequate, optimum and good nutrition, malnutrition. Inter relationship between nutrition and health, visible symptoms of good health. Uses of food in the body, digestion, absorption, transport and utilization of the nutrients in the body.

UNIT 2.

ENERGY-Energy units – Kilocalories, Megajoules, determination of energy value of foods, using Bomb calorimeter, diagram of Bomb Calorimeter – gross calorific values. Physiological energy, value of foods, relation between oxygen used and calorific value.

Determination of energy requirements, direct calorimetry. Relation between Respiratory quotient and energy output – Specific dynamic action of food (Thermogenic food in REE) indirect calorimetry – Basal metabolism – definition, determination – Benedict Roth basal Metabolism Apparatus – factors affecting BMR – determination of energy metabolism, during work – energy requirements for various types of activities, factorial methods for calculation of the daily energy requirements of an adult for varying degrees of physical activity – recommended allowances for calories, energy requirements of adults expressed in terms of Reference man and Reference woman – FAO committee and ICMR committee percent calories supplied by carbohydrates, fats and proteins in average Indian diets – Energy requirements for different age groups.

UNIT 3.

CARBOHYDRATES-Definition and composition, classification, Review of digestion, absorption and metabolism – word diagram – Regulation of blood sugar, Hormonal controls, functions of carbohydrates in the body. Dietary fibre – Definition, soluble and insoluble fibres, sources of fibre, components, physiological effects of dietary fibre; Role of fibre in

human nutrition, sources and requirements.

UNIT 4.

LIPIDS-Classification, Composition function – essential fatty acids, deficiency, food sources of EFA, Function of TGL, Characteristics of animal and vegetable fats, sterols – cholesterol – function, food sources, phospholipids – function, ketone bodies – fat requirements – food sources, dietary lipids and their relation to the causation of Atherosclerosis and Ischaemic heart disease.

UNIT-5.

PROTEINS-Composition – structure and classification, function of protein, Amino acids – Indispensable and dispensable amino acids – special function of amino acids – protein deficiency – Protein Energy Malnutrition – KWASHIORKOR and MARASUMS – etiology, clinical features, treatment and prevention – Evaluation of protein quality – PER, BV, NPU and NPR, chemical score, mutual and amino acid supplementation of proteins.

REFERENCES

1. Guthrie H.A. – Introductory Nutrition C.V. Mosby Co. St. Louis.
2. Bogert, J.G.V. Briggs, D.H. Calloway Nutrition and physical fitness (1985), 11th edition – W.B. Saunders Co., Philadelphia, London, Toronto.
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5. M. Swaminathan “Principles of Nutrition and Dietetics”, 1993, Bappco 88, Mysore Road, Bangalore-560 018.
6. Maurice E. Shils, James A. Olson, Moshe Shike “Modern Nutrition in health and disease” (1994) eighth edition, Vol. I & II Lea & Febiger Philadelphia, A Waverly Company.

ALLIED PAPER III- BIO-CHEMISTRY

OBJECTIVES

To introduce the students to

1. The principles of Biochemistry
2. A basic understanding of the functions of biological systems in relation to Nutritional biochemistry
3. The skills in qualitative tests and quantitative estimation of nutrients.

UNIT I

INTRODUCTION TO BIOCHEMISTRY Definition

and relation to nutrition, Enzyme classification, Nomenclature, Factors affecting enzymatic activity, Mechanism of action. Co-enzyme and prosthetic group of B vitamins.

UNIT II

CARBOHYDRATE – structure, general reaction of mono, di, tri and oligo saccharides, interconversion of sugars – metabolism of carbohydrate – glucose oxidation through glycolysis – Krebs – TCA cycle, pentose phosphate cycle – gluconeogenesis.

UNIT III

AMINO ACIDS – classification, chemical properties due to amino and carboxyl groups. Chromatographic separation. Proteins – primary, secondary, tertiary structure of proteins – Hydrolysis of proteins – Denaturation, precipitation, coagulation, metabolism of proteins, general pathways of metabolism of amino acids. Deamination, transamination,

decarboxylation – urea cycle fate of carbon skeleton of amino acids. Peptides – structure and nomenclature, determination of amino acids sequence.

UNIT 1V

LIPIDS AND LIPID METABOLISM – chemical composition of fats, β oxidation of fatty acids, metabolism of unsaturated fatty acids. Bio synthesis of fatty acids – formation of aceto acetate, ketogenesis. Cholesterol – Biosynthesis and metabolism.

UNIT V

Nucleic acids and protein biosynthesis bases, nucleotides, purines and pyrimidines structure and function. Inter relationship between carbohydrate, fat and protein metabolism – Hormonal regulation of metabolism. Inborn errors of metabolism with reference to carbohydrate – Fructosuria and galactosemia. Protein – Phenyl ketonuria, Alcaptonuria, amino aciduria.

PRACTICALS

1. Qualitative tests for sugars – glucose, fructose, lactose, maltose and glucose.
2. Quantitative estimation of reducing sugar.
3. Qualitative tests for proteins
4. Demonstration Experiments.
 - a. Estimation of total nitrogen in foods (Micro or Macro kjeldahl methods)
 - b. Lipid extraction
 - c. Determination of Iodine value

REFERENCES

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14. Rama Rao A.V.S.S. 1990 – Text book of biochemistry. 5th edition, L K and Publishers,

Visakhapatnam.

SEMESTER – IV

CORE PAPER VII – ADVANCED DIETETICS

OBJECTIVES:

To enable the students to

1. Understand the modifications in nutrient requirements for various diseases.
2. Develop skills in planning and preparation of therapeutic diets for various diseases.

Unit I Gastrointestinal Diseases

Etiology, clinical findings and dietary modifications for peptic ulcer, ulcerative colitis, sprue, celiac disease, hepatitis, cirrhosis of liver, cholecystitis, cholelithiasis and pancreatitis

Unit II Metabolic Disorders

Diabetes mellitus - Predisposing factors, clinical findings, types, metabolic changes, complications and dietary management, Gout -Nature and occurrence of uric acid crystals, causes, symptoms and dietary management.

Unit III Renal diseases

Predisposing factors, symptoms and dietary management of acute glomerulonephritis, nephrosis, renal failure and urinary calculi; Types of dialysis and modification of diet in dialysis.

Unit IV Cardiovascular diseases

Predisposing factors, clinical findings and dietary management of acute and chronic diseases of the heart - Hyperlipidemia, hypertension, atherosclerosis and congestive cardiac failure

Unit V Diet in Cancer

Causes, types, clinical symptoms and dietary modification.

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1. Antia. F.P.. 1989. Clinical Dietetics and Nutrition. Bombay, Oxford University Press.
2. Passmore. P.and Eastwood. M.A. 1986. Human Nutrition and dietetics. London,ELBS.
3. Robinson. C.H. et al. 1994. Normal and Therapeutic Nutrition. New York, Macmillan and Co.
4. Williams. S.R. 1994. Nutrition and Diet Therapy. New York., Mosby Mirror Publishing Co.
5. Sri Lakshmi. B. 2002. Dietetics. New Delhi ,New Age International Pub. Ltd.
6. Malhan,K.N.and Arlim(2002) Krauses Food Nutrition and Diet Therapy. W.B Saunders Company, Philadelphia.
7. Whitney, E.N. and Rolfes, S.R., 1999, Understanding Nutrition, West Wadsworth - An International Thomson Publishing Company, New York.

CORE PAPER VIII – NUTRITION AND ADVANCED DIETETICS PRACTICAL

OBJECTIVES:

To enable the students to

1. To gain skill in qualitative tests and quantitative estimation of nutrients.
2. Plan therapeutic diets.
3. Learn skills in the preparation of therapeutic diets.
 1. Qualitative tests for minerals
 2. Quantitative estimation of calcium
 3. Quantitative estimation of phosphorus
 4. Quantitative estimation of vitamin C
5. Demonstration Experiments.
 - a) Estimation of Iron
 - b) Qualitative tests for vitamin A
 - c) Quantitative estimation of carotene

PLANNING AND PREPARATION OF DIETS FOR

1. Peptic Ulcer
2. Ulcerative Colitis
3. Hepatitis
4. Cirrhosis of Liver
5. Diabetes Mellitus
6. Gout
7. Nephritis
8. Nephrosis
9. Atherosclerosis & Hypertension

REFERENCES

1. Antia. F.P.. 1989. Clinical Dietetics and Nutrition. Bombay, Oxford University Press.
2. Passmore. P. and Eastwood. M.A. 1986. Human Nutrition and dietetics. London, ELBS.
3. Robinson. C.H. et al. 1994. Normal and Therapeutic Nutrition. New York, Macmillan and Co.
4. Williams. S.R. 1994. Nutrition and Diet Therapy. New York., Mosby Mirror Publishing Co.
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ALLIED PAPER IV - COMMUNITY NUTRITION

OBJECTIVES:

1. To enable students to understand the importance of nutrition in national progress and the significance of assessment of nutritional statuses.
2. To recognize the solutions to overcome problems of malnutrition in the country and the role of national and international agencies in this area.

Course Content

UNIT 1. (a) Nutrition and health in National development

(b) Nutritional problems confronting our country – The causes of malnutrition in India- Balances food production and population growth.

UNIT 2. Methods of assessment of nutritional status

- Sampling techniques.
- Identification of risks groups.
- Direct assessment – Diet surveys, Anthropometry, Clinical and Biochemical

estimations.

- Indirect assessment – food balance sheets and Agricultural data, Ecological parameters and vital statistics.

- Use of growth charts.

UNIT 3. a- Nutrition intervention schemes in the community lecture and demonstration, nutrition exhibitions and visual aids.

b- Recent advances in community nutrition research-Fortification & enrichment of foods.

National and International agencies in community nutrition

ICDS, SNP, ANP, Midday meal programme, FAO, WHO, UNICEF, CARE, AID, ICMR, CSIR, NIN, CFTRI

UNIT 4 Breast feeding and its implications, Hazards of bottle feeding – Review.

Weaning foods-planning, formulating and preparing importance of correct and timely weaning – Review

UNIT 5 Nutrition and infection-relationship, immunization and its importance.

REFERENCES

1. McLaren.D.S., ED-1983. Nutrition in the Community. John Wiley and sons.
2. Jelliffe. D.B.-1996. The Assessment of Nutritional status on the community-WHO Monograph series No. 53-geneva.
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5. Shanti ghosh-1977. The feeding and care of infants and young children, voluntary Health Association of India-New Delhi.
6. Ibrahim. G.J-1983. Nutrition in mother and children Health. London, Macmillan.
7. Ritchey, S.J. and J. Taper-1983. Maternal and child Nutrition. Harper and Row publishers, New Delhi.

PRACTICALS

The objectives of this practical course are to enable the students to learn and prepare different types of visual aid for the community, to gain practical experience in giving demonstration and conducting survey and other methods of assessments.

Course outline:

1. Diet and Nutrition surveys

- a) Identifying vulnerable and at-risk groups.
- b) Diet survey and breast feeding and weaning practices of specific groups.
- d) Use of anthropometric measurements in children.

2. Methods of Extension used in community

Preparation of visual aids-charts, posters models, etc. for exhibition.

b) Lecture and Method Demonstrations to target groups.

3. Field visits to –

- a) Observe the working of nutrition programmes.
- b) Hospitals to observe nutritional deficiencies.

SEMESTER V

CORE PAPER IX - HUMAN DEVELOPMENT - I

(Development from infancy to adolescence)

OBJECTIVES:

To enable the students to

1. Know the development of an individual from infancy to adolescence.
2. Develop an awareness of the problems of children, adolescent and exceptional children.

UNIT I Growth and development

- Meaning and importance of growth and development, principles of governing growth and development – developmental task of different stages.
- Methods of study of human development.

UNIT II Infancy and Babyhood (0-2 years)

- Characteristics, physical, social and emotional development, cognitive and language development
- Effect of stimulation – care of the infant, feeding, toilet training, bathing, clothing, sleeping and immunization, importance of mothering, importance of psychological needs.
- Common ailments and safety measures.

UNIT III Early childhood period (2-6 years)

- a. Characteristics, physical, social, emotional, intellectual, language development.

UNIT IV Late childhood period (6-12 years)

- a. Characteristics, physical, social, emotional, intellectual, language and moral development.
- b. Nursery School – Aims and objective, building equipments curriculum program and personnel.

UNIT V Adolescence

- a. Adolescence –physical and psychological changes, emotional, moral and social, development, Problems of adolescence.
- b. Delinquency – causes, prevention and rehabilitation.

- c. Educational and vocational guidance, role of family and schools and colleges in guiding adolescence.

REFERENCES

1. Hurlock, E.B., (1986). Child Development. Prentice Hall – Inc.
2. Craig, J., (2009). Human Development, Prentice hall penn state university.
3. Rajammal .P. Devadas. (1980). Introduction to child Development printed in India.
4. Suriakanthi, A., (2009). Child Development. Kavitha publications, Tamil

CORE PAPER X FOOD SERVICE MANAGEMENT – I

OBJECTIVES:

- a) To enable the students to develop skills in organizing and managing Food Service institution and to gain knowledge about the food service and responsibilities of each.

UNIT I

Definition and scope of Food Industries – classification of Commercial and Non- commercial food service and welfare food service institutions.

UNIT II

Management Definition, principles and functions of management Organization – Types and theories of organisation. Tools of management

UNIT III

Staffing Manpower Planning Labour sources, Selection, Recruitment and training wages, salaries, incentives, promotion demotion, transfer, dismissal. Managerial Problems of Food Service Unit. Directing and direction, leadership, delegation and controlling decentralization, centralization, supervision, human relation industry, authority and responsibility, motivation, communication evaluation techniques. Leadership styles and qualities.

UNIT IV

Food cost and review of maintenance of accounts Accountability Daily, Weekly, Monthly accounts for food, labour equipment and furnishing, rent, water, fuel, light, licences, cleaning supplies, maintenance, miscellaneous. Double entry book keeping, ledger accounts journal and balance sheet, budgetary control. Cost control, fixed, variable, average marginal and unit cost, break even analysis – production planning control.

UNIT V

Application of Computers in catering.

REFERENCES:

1. West. B.B. Wood L., Harger, V.F. (1977) Food Service Institutions, JohnWiley and sons, Inc., NewYork, V Ed.
2. Shukla. M.C. (1982) Business Organization and Management S. Chand and Co., Ltd., Ramnagar, New Delhi.
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JOURNAL

1. Journal of vacation marketing. Henry Steward Publications 28/30 Little Russel Street, London, W.C.1A.2HN
2. Indian Management-Journal of All India Management Association. All India Management Association Pub. Management House, New Delhi – 3
3. Journal of the American Dietetic Association 'The American Dietetic Association, 430 North Michigan Avenue, Chicago, Illincise.

CORE PAPER XI- NUTRITION II

OBJECTIVES

- ❖ To learn the role of various micronutrients in body functions.
- ❖ To gain skill in qualitative tests and quantitative estimation of nutrients.

UNIT I

FAT SOLUBLE VITAMINS

Metabolism, Functions, effects of deficiency, food sources, requirements, unit of measurements and hypervitaminosis of vitamins A, D, E and K.

UNIT II

WATER SOLUBLE VITAMINS

Ascorbic acid and B Complex vitamins- Thiamine, Riboflavin and Niacin- Functions, effects of deficiency, food sources and requirements for different age groups.
Importance of folic acid, Pyridoxine, Vitamin B12, Biotin and Pantothenic acid to the body.

UNIT III

MACRO MINERALS- Calcium, Phosphorous, Magnesium, Potassium, Sodium and Chloride-

Distribution in the body; functions, effects of deficiency, food sources and RDA.

MICRO / TRACE MINERALS in human nutrition - Iron, Zinc, Fluoride and Copper

Distribution in the body; functions, effects of deficiency, food sources and requirements for different age groups.

UNIT IV

ULTRATRACE MINERALS- Iodine, Selenium, Manganese, Chromium, Molybdenum and Cobalt.

Distribution in the body; functions, effects of deficiency, food sources and requirements.

Selenium and Vitamin E relationship.

Chromium and glucose tolerance factor.

UNIT V

WATER – as a nutrient, functions, sources, requirements. Distribution of water in the body, exchange of water in the body, composition of body fluids, water exchange between plasma and interstitial fluid. Water imbalance – dehydration- water intoxication, water and electrolyte mechanism - ADH , vasopressin.

REFERENCES

1. Guthrie H.A. – Introductory Nutrition C.V. Mosby Co. St. Louis.
2. Bogert, J.G.V. Briggs, D.H. Calloway Nutrition and physical fitness (1985), 11th edition – W.B. Saunders Co., Philadelphia, London, Toronto.
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CORE PAPER XII - SPORTS NUTRITION

OBJECTIVES:

- 1.To learn about the importance of Nutrition in sports personnel
- 2.To find out the sources of generation of energy for muscle and force generation
- 3.To know about the ergogenic aids and supplements available in the market.

UNIT I – Fuel Sources for Muscle and Exercise Metabolism

Sources of energy for muscle force generation – fuel stores on skeletal muscle – energy pathways – regulation of energy metabolism – metabolic response to exercise – metabolic adaptation to exercise training – factors influencing choice of fuels – Components of energy expenditure – energy balance

UNIT II – Macro and Micro Nutrients in Sports Nutrition

Role of carbohydrates before, during and after exercise – carbohydrates loading – protein requirements for exercise – techniques to study protein and amino acid metabolism – effect of protein intake on protein synthesis – amino acids as ergogenic aids – health risks with excessive protein intake – Fat as a fuel during exercise – fat supplementation and exercise supplements that increase fat oxidation.

Micronutrients – role of antioxidants – essential function of vitamins and minerals for athletes, ergogenic effect

Water – thermoregulation and exercise in the heat – effect of dehydration on exercise performance – heat illness – fluid guidelines before, during and after exercise.

UNIT III – Weight Management and Body Composition

Weight management- Ideal body weight and composition – weight loss – making weight and rapid weight loss strategies

Eating disorders – types, prevalence, risk factors, effect on sports performance, treatment and prevention

Body composition analysis-importance of body composition, different techniques-normative values for comparison.

UNIT IV-Practical Sports Nutrition

Pre event and post event meal- preparing for competition, dealing with cramps, stitch GI distress-electrolyte balance-sports drinks

Eating for anaerobic power-aerobic power timing of meals and snacks-guidelines for the travelling athlete-recovery food

Food for power sports, endurance sports, combined power

Nutrition for special population: child athlete, ageing athlete, athletic diabetes, vegetarian and disabled athlete.

UNIT V – Ergogenic aids and supplements

Overview of supplements and sports foods – use of performance enhancing substances among athletes – finding proof of efficacy of supplements and sports foods-anabolic steroids-sports foods (cereal bar, sports drinks, carbohydrate gels, liquid meal replacements, vitamins)-different types of protein supplements, creatine, glutamine, BCAA, HMB, caffeine, glycerol, bicarbonate, citrate – WADA-Anti doping rules and regulations.

PRACTICALS

1. Body fat analysis-learn to use skin fold calipers, bio electrical impedance analysis technique. Observe DEXA analysis.
2. Measurement of Blood pressure, heart rate, calculate METs, VO2 max
3. Learn to take whole body measurements from a certified fitness trainer using a measuring tape
4. Observe fitness testing methods by a sports physiotherapist or certified fitness trainer- to measure cardio vascular fitness, core strength, muscular endurance, explosive power, flexibility, agility, stability, strength, speed
5. Planning diets for strength sports, endurance sports, racquet sports, team games
6. Planning diets for competition, recovery (case studies)
7. Assignment on sports foods and supplements available in the market
8. Guest lecture by a sports nutritionist, fitness trainer, sports physician or physiotherapist on career opportunities
9. Attend a sports tournament-swimming or tennis or hockey or cricket or track and field sports etc.

REFERENCES:

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2. Bean, Anita (2006), 5th Ed, Sports Nutrition
3. Bourns, Fred (2002), Essentials of Sports Nutrition, 2nd Ed. John and Wiley.
4. Suzanne Girard Eberle (2000), Endurance Sports Nutrition, Human Kinetics.
5. Benardot, Dan (2000), Advanced Sports Nutrition, Human Kinetics
6. Burke, Louise (2007), Practical Sports Nutrition, Human Kinetics
7. Gleeson, Jeukendrup (2004), Sports Nutrition: An Introduction to Energy Production and Performance, Human Kinetics

ELECTIVE I - ENTREPRENEURIAL DEVELOPMENT

OBJECTIVES:

- a) Creating an awareness about entrepreneurship as an effective to a “White collar job”.
- b) Students can be taken to trade fairs to collect information on industrial products of their interest.
- c) Students visits to financial institutions industrial associationa, research institutions and banks would help them in collecting information on availability of finance, technology, raw material and export potential.

Alumini Association-Ex-students of the institution who has set up their own enterprises can be invited to talk to the students to take up an entrepreneurial career.

UNIT I

Importance of entrepreneurship and its relevance in career growth.

Entrepreneur, entrepreneurship and enterprice.

Concept and development

Characteristics of entrepreneurs

Developing entrepreneurial competencies

UNIT II

Types of Enterprises and Ownership

Manufacturing, Service and Franchise.

Large, medium, SSIM tiny and cottage industries.

Limited, public limited, Private limited.

Partnership, Sole Proprietoeship.

Advantages and disadvantages of types of ownership.

Employment, Self employment and Entrepreneurship.

UNIT III

Financial management – Importance and Techniques

Management of working capital, reinforcement of the concept of working capital.

Factors to be controlled in managing working capital-Tools ad Techniques.

Books of Account- Importance of accounting assessment. Different books and its relevance. Support. Stationery and its use. Operating mechanism

UNIT IV

Marketing management –Marketing for small business

Strategies for sales promotion-tools and techniques for sale promotion, pricing policy and its implications on sales.

Export marketing- Understand the International Business Environment-Procedures and formalities-Do's and Dont's for export

Inventory Control and Quality Management-Defining quality and its concept-Aspects of quality management-ISO 9000 certification-Total Quality Management (TQM)

Financial support from financial institutions

UNIT V

Legal complications

Income tax

Sales tax

Excise

Labour laws, factory act, pollution control etc.

REFERENCES

- 1) Jain P.C, (1998). Handbook of New Entrepreneurs, Oxford University Press.
- 2) Jan Narayan Vyas, (1947). Small Scale Industry Handbook, Grantjistran.
- 3) Shiv Khera, (1998). You Can Win, MacMillan, India.
- 4) Charles Hozgrew, (1997). Cost Accountancy, A Managerial Emphasis, PHI.
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PRACTICALS

- 1) Visit to the Trade fair
- 2) Ex. Students enterprise-Visit
- 3) Visit to a Small Scale Industry, Financial Institution Association, Research Institution and bank

SEMESTER VI

CORE PAPER XIII - CLINICAL NUTRITION

OBJECTIVES

To enable the students to

1. Learn the basic principles of clinical nutrition.
2. Understand the clinical significance of biochemical findings.

THEORY

Unit I Metabolism

Review of digestion and absorption of proximate principles

Carbohydrate - Glucose transport. glycolysis. metabolism of lactate and pyruvate. citric acid cycle. gluconeogenesis. pentose phosphate pathway.

Amino acid - Intermediary metabolism and urea cycle

Lipid - Intestinal resynthesis of TG, transport, oxidation of fatty acids, biosynthesis of cholesterol.

Unit II Genetic control of metabolism

Nucleic acids, DNA replication, RNA – Synthesis, types and functions, Genetic code, protein biosynthesis, Recombinant DNA Technology

Unit III Biochemical changes due to disorders of metabolism

Diabetes mellitus, Inborn errors of metabolism with respect to lactose, galactose, phenyl alanine and uric acid (Gout)

Unit IV Digestive System

- a. Diarrhoea, constipation. Gastritis, ulcers, colitis, malabsorption syndrome -Nutritional implications.
- b. Metabolic and nutritional implications of Hepatitis. Cirrhosis of liver. Hepatic coma. Pancreatitis. Cholecystitis and Cholelithiasis.

Unit V Renal System

- a. Metabolic and nutritional implications of Nephritis. Nephrotic syndrome. Renal failure. Renal calculi and Dialysis.
- b. Water and electrolyte losses and replenishment. effect of dehydration and water intoxication.

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CORE PAPER- XIV FOOD SERVICE MANAGEMENT – II

OBJECTIVES:

1. To understand the applications of basic principles to bulk production of the food
2. To gain knowledge regarding selection and purchase of food
3. To develop skills in menu planning for quality preparation
4. To understand the different styles of food service in volume feeding
5. To gain knowledge of food service layout
6. To gain knowledge to develop skills in handling equipment and maintenance

UNIT I Equipment in food service

Classification of equipment, factors affecting selection of equipments-electrical and nonelectrical equipment for food storage, preparation, service and dishwashing

Base materials and insulating materials

UNIT II

Planning of Food Service unit

Layout of food plants, different work area, planning of storage, production and service areas. Lighting and ventilation.

UNIT III

Menu planning – Definition, types, menu planning for various sectors and institutions, health safety in menu planning, standardization of recipes, portion control.

Types of food and beverage services.

UNIT IV

Sanitation and safety in food service institutions, garbage disposal, pest control.

UNIT V

FSSAI (Food safety standard authority of India), HACCP , Entrepreneurial ship in catering.

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PRACTICALS

OBJECTIVES:

1. Develop skills in food production and service

Course content

1. Standardization of four selected recipes from each of the following cuisines-South Indian North Indian, East Indian and West Indian.
2. Organizing, preparing and serving food for three different meals for 50 members or more (list attached)
3. Setting up the restaurant-laying of table cloth changing, setting up the silver and other table arrangements.
Folding of serviettes correct use of waiter's cloth.
Preparation for customers.

4. Serving and clearing practice, French and English Service.
5. Service of beverage tea, coffee, juices and alcoholic beverages.
6. Laying for breakfast.
7. Tray service.
8. Order taking, making out checks bills presentation of bills.
9. Up keep and cleaning of cutlery, crockery, other equipments.

CORE PAPER XV- CLINICAL NUTRITION PRACTICAL

OBJECTIVES:

To enable the students to

1. Develop skills in analysis of urine and estimation in serum.

PRACTICAL

1. Analysis of urine
2. Collection of blood and separation of plasma and serum
3. Estimation of blood glucose
4. Estimation of total protein
5. Determination of A/G ratio
6. Estimation of serum urea
7. Estimation of serum creatinine
8. Estimation of cholesterol
9. Estimation of Bilirubin

REFERENCES

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ELECTIVE - PAPER II - HEALTH PSYCHOLOGY

OBJECTIVES:

- 1) To understand the basic concepts of Human behavior and Health Psychology
- 2) To study the psychological and other psycho social factors that affect health
- 3) Understand the interrelationship between Nutrition and Psycho social disorders.
- 4) To understand the special needs and health challenges of the human life cycle.
- 5) To familiarize with the health promoting treatment and inventions in health psychology.

UNIT I Foundation of Health Psychology

Health and health psychology-health and illness-trends that shape health psychology-perspectives in health psychology

UNIT II Stress and Health

Stress-measurement-physiology of stress-sources-psychological factors in stress-stress response-factors affecting the ability to cope stress management.

UNIT III Health psychology through life span

Childhood and adolescence-childhood nutrition, childhood obesity, adolescents and risk taking interventions, adulthood and ageing theories of ageing life style and aging.

UNIT IV Nutrition and Illness

Nutrition-obesity-treatment-eating disorders-substance abuse-alcoholism and tobacco abuse, chronic and life threatening illness-Psychological factors in cardio vascular disease, managing stress following CVD, Health psychology and diabetes, coping with cancer, Intervention strategy for AIDS, Coping with AIDS or HIV

UNIT V Intervention Strategies

Applications of principle of counseling and psychotherapy in disease management and health care. Relaxation technique, somatic oriented cognitive and behavioral skills in the management of diseases. Support group-family counseling, alternative healing systems.

REFERENCES

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- 2) Richard. O. Straub (2002) "Health Psychology", Worth Publishers, New York.
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- 4) Tones. K and Tillofrd. S (2001), "Health Promotopn Effectiveness-Efficiency and Equity", 3rd Ed., Nelson theories Ltd., U.K.

ELECTIVE PAPER III - HUMAN DEVELOPMENT-II (Development from Adulthood through Old age)

OBJECTIVES:

To enable the students to:

1. Understand the developmental tasks during adulthood till old age.
2. Impart knowledge on pregnancy and prenatal Development
3. Create an awareness on special children.

UNIT I Adulthood

Characteristics and developmental tasks, all aspects of development and vocational adjustments.

UNIT II Marriage and family

- a) Characteristics and developmental tasks-types of family-Indian, traditional and modern.

- b) Functions of family and marriage, motives of marriage, marriage and family as a basic social institution.
- c) Adjustment in marriage-adjustment towards mate, sex, finance, society and in-laws
- d) Family life cycle-stages-beginning family, expanding family, contracting family, adjustment in different stages.
- e) Crisis in the family-critical family situation and impact on children.
- f) Maternal and Paternal deprivation and their effect on child growth and development
- g) Paternal attitudes and their influence on their children, styles of parenting.
- h) Small family norms-concepts, advantages and limitations.

UNIT III Pregnancy and Prenatal Development

- a) Conception-test tube baby, periods of prenatal development, factors affecting prenatal development, prenatal care.
- b) Management of normal pregnancy, hygiene, diet and medical supervision. Common discomfort and hazards during pregnancy, birth process-signs of labour, stages of labour, types of birth, birth injuries.
- c) Post natal care, normal puerperium, prevention of gynecological complications, adjustment of new born, temperature, breathing, feeding and elimination.

UNIT IV Introduction to Children with Special Needs

- | | |
|-------------------------|------------------------------|
| a) Gifted children | d) Orthopedically challenged |
| b) Mentally retarded | e) Hearing impaired |
| c) Visually handicapped | f) Learning disability |

UNIT V Old age

Characteristics of old age, physical changes, Psychological changes. Place of the aged in Indian Society.

PRACTICALS

1. Preparation of case study, observing various development-physical and motor, social emotional and intellectual-of a particular child.
2. Socio-metric study of adolescents.
3. A survey on preferences of adolescents in choosing a life partner.
4. Visit to an institution for exceptional children.
5. Survey on problems of old age.

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INTERNSHIP

CATERING/DIETETICS/FOOD PROCESSING/MICROBIOLOGY

ONE MONTH INTERNSHIP IN THE SUMMER HOLIDAYS WHEN STUDENTS PASSES HER
SECOND B.Sc COURSE AND GOES TO THE THIRD YEAR.
