

THIRUVALLUVAR UNIVERSITY

BACHELOR OF SCIENCE

DEGREE COURSE

B.Sc. NUTRITION, FOOD SERVICE MANAGEMENT AND DIETETICS

UNDER CBCS

[with effect from 2008-2009]

The Course of Study and the Scheme of Examinations

Year / Semester	Part	Subject	Paper	Title of the Paper	Ins hrs/ Week	Credit	Exa m hrs	Max. Mark		
								IA	Uni. Exam.	Total
I Year I Semester	I	Language	Paper I		6	3	3	25	75	100
	II	English	Paper I		6	3	3	25	75	100
	III	Core	Paper I	Microbiology	6	5	3	25	75	100
	III	Core Practical	-	Microbiology	3	-	-	-	-	-
	III	Allied I	Paper I	Chemistry I	4	4	3	25	75	100
	III	Allied Practical	-	Chemistry	3	-	-	-	-	-
	IV			Environmental Studies	2	2	3	25	75	100
I Year II Semester	I	Language	Paper II		6	3	3	25	75	100
	II	English	Paper II		6	3	3	25	75	100
	III	Core	Paper II	Human Physiology	6	4	3	25	75	100
	III	Core Practical	Practical I	a. Microbiology b. Human Physiology	3	3		40	60	100
	III	Allied I	Paper II	Chemistry II	4	4	3	25	75	100
	III	Allied Practical	Practical I	Chemistry Practical	3	2	3	20	30	50
	IV			Value Education General Awareness	2	2	2		50	50
II Year III Semester	I	Language	Paper III		6	3	3	25	75	100
	II	English	Paper III		6	3	3	25	75	100
	III	Core	Paper III	Food Science	4	4	3	25	75	100
	III	Core Practical	-	Food Science	2	-	-	-	-	-
	III	Allied II	Paper III	Biochemistry	4	4	3	25	75	100
	III	Allied Practical	-	Biochemistry	3	-	-	-	-	-
	IV	Skill Based Subject I	Paper I	Bakery	3	3	3	25	75	100
	Non-Major Elective I	Paper I	Health and fitness	2	2	3	25	75	100	

B.Sc. Nutrition, Food Service Management and Dietetics : Syllabus (CBCS)

Year / Semester	Part	Subject	Paper	Title of the Paper	Ins hrs/ Week	Credit	Exam hrs	Max. Mark		
								IA	Uni. Exam.	Total
II Year IV Semester	I	Language	Paper IV		6	3	3	25	75	100
	II	English	Paper IV		6	3	3	25	75	100
	III	Core	Paper IV	Human Nutrition	6	4	3	25	75	100
	III	Core Practical	Practical II	a. Food Science b. Human Nutrition	2	3		20	30	50
	III	Allied II	Paper IV	Food Preservation	3	4	3	25	75	100
	III	Allied Practical	Practical II	a. Biochemistry b. Food Preservation	2	2		20	30	50
	IV	Skill Based Subject II	Paper II	Food Product Development and Marketing Strategy	3	3	3	25	75	100
		Non-Major Elective II		Interior Design	2	2	3	25	75	100
III Year V Semester	III	Core	Paper V	Human Development	5	5	3	25	75	100
	III	Core	Paper VI	Nutrition Through Life Cycle	6	5	3	25	75	100
	III	Core	Paper VII	Community Nutrition	5	5	3	25	75	100
	III	Core Practical	-	Nutrition Through Life Cycle	3	-	-	-	-	-
	III	Core Practical	-	Community Nutrition	3	-	-	-	-	-
		Elective I	Paper I	Entrepreneurship Development	5	5	3	25	75	100
	IV	Skill Based Subject III	Paper III	Pre School Management	3	3	3	25	75	100
III Year VI Semester	III	Core	Paper VIII	Food Service Management	5	5	3	25	75	100
	III	Core	Paper IX	Dietetics	5	5	3	25	75	100
	III	Core Practical	Practical III	a. Nutrition Through Life Cycle b. Community Nutrition	-	6	3	40	60	100
	III	Core Practical	Practical IV	a. Food Service Management b. Dietetics	6	6	3	40	60	100
		Elective II	Paper II	Food Quality Control	5	5	3	25	75	100
		Elective III	Paper III	Food Packaging	5	5	3	25	75	100
	IV	Skill Based Subject IV	Paper IV	Child Guidance and Counseling	3	3	3	25	75	100
	V	Extension Activities			1	1				50
				Total	180	140				3650

THIRUVALLUVAR UNIVERSITY
*B.Sc. NUTRITION, FOOD SERVICE
MANAGEMENT AND DIETETICS*

SYLLABUS

UNDER CBCS

[with effect from 2008-2009]

I SEMESTER

PAPER I

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-I

1. History of Microbiology - Proof of Biogenesis Germ theory and of fermentation - development of laboratory - Technique to study micro -organisms - pure Culture - isolation - Cultivation, preservation, Technique - Kochs postulates.
2. General Characteristics of Bacteria, Viruses, Yeast, Moulds, protozoa, Algae.
 - a. Bacteria: Bacterial cell, Morphology, Reproduction and function
 - b. Viruses: Morphology, Classification, Phages - Life cycle, functions.
 - c. Yeast: Morphology - Cell structure multiplication (Budding), functions.
 - d. Moulds: Morphology, classification, reproduction of moulds.
 - e. Algae: Morphology - Structure and reproduction.
 - f. Protozoa: Morphology, reproduction, motility and classification. Destruction of Microorganism - Sterilization, pasteurization, and disinfection.

UNIT-II

1. FOOD AS A SUBSTRATE FOR MICRO-ORGANISM

- a. Hydrogen ion concentration, Moisture requirement, Nutrient content - inhibitory substances of biological structure / combined effects of factors affecting growth.
- b. Role of micro organism in food microbiology; Economic importance of Moulds, Yeast, Bacteria.

2. FOOD FERMENTATION

A brief knowledge of the preparation of Bread, Malt Beverages, Wine, Distill liquor, Vinegar, Fermented Vegetables and dairy products.

3. CONTAMINATION OF FOODS

Different sources of contamination of plants, animals, sewage, soil, water, air, human being.

4. FERMENTATION, PUTREFACTION AND DECAY

1. Fermentation - aerobic respiration, anaerobic, respiration, products of fermentation.
2. Part played by micro-organisms in putrefaction and decay.

5. GENERAL PRINCIPLES UNDERLYING SPOILAGE

Chemical changes caused by Microorganism spoilage fitness or unfitness of food for consumption – causes of spoilage – classification of foods based on spoilage – factors affecting – kinds and numbers of micro organism in food; Growth and chemical changes caused by micro organisms.

UNIT-III

CONTAMINATION AND SPOILAGE OF FOODS

Principles of food spoilage by microbiological, physical and biological factors - contamination, preservation and spoilage of cereal and cereal products, baked products, Fruits and vegetables and their products, Fleshy food, Milk and Milk products and Fats and oils.

UNIT-IV

MICROBIOLOGY OF FOOD POISONING, FOOD INFECTIONS AND FOOD BORNE DISEASES

1. Microbial food poisoning by Staphylococci, Salmonella and clostridium botulinum (Botulism). Measures to prevent microbial food poisoning.
2. Food infections - Food borne diseases - Dysentery diarrhoea, Typhoid, Cholera.

UNIT-V

PRINCIPLES OF FOOD PRESERVATION

- a. Use of high and low temperature. Canning of fruits and vegetables.
- b. Preservation of drying, use of chemicals in food preservation. Part played by antibiotics in the preservation of fleshy foods, concept, meaning, principles, significance and limitations of Hazard Analysis and Critical control point. [HACCP]

References

1. Joshua. A.K. Microbiology - India printing works, Madras - 1971.
2. Carpenter, Microbiology - 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 Microbiology
5. Pelczar J. Michael; Microbiology concepts and Application
6. Ananthanarayan. R. & Paniker C.K.J; Textbook of Microbiology.
7. Frazier.W.C; Food Microbiology-McGraw Hill Book and Co; New York.
8. Smith and Water; Introductory food services-McGraw Hill Book and Co., New york, 1971.
9. West Wood and Harger; Food Service in Institutions, 1966. John Wiley and Sons. Incorporation, New York, London.
10. ADAMS M.R. and MOSS M.O; Food microbiology, the Royal society and chemistry. Cambridge 1991.
11. Banwart. G.J; Basic food microbiology, Chapman and Hall, New York.
12. HOBBS BC and Roberts. D; Food poisoning and food Hygiene. Edward Arnold (A diceision of Hodder and Stoughton), London.
13. Sarda Mornmore; HACCP, A practical Approach, Edn.1997.

ALLIED I

PAPER I

CHEMISTRY I

UNIT-I

- 1.1 Extraction of Metals Minerals and Ore difference - Minerals of Iron, Aluminum and Copper - Ore Dressing or concentration of Ore - Types of Ore Dressing Froth Floatation and Magnetic separation.
- 1.2 Refining of Metals - Types of Refining - Electrolytic, Van Arkel and Zone Refining.
- 1.3 Extraction of Uranium and Thorium.

UNIT - II

- 2.1 Cyclo-alkanes preparation properties of Cyclo-hexane -- Bayers strain theory.
- 2.2 Polarization - Inductive effect, mesomeric effect and steric effect - [Acid and Base strength.]
- 2.3 Stereo isomerism - Types, Causes of optical activity of [lactic acid] and tartaric acid - Racemisation - Resolution - Geometrical isomerism - maleic and fumaric acid.

UNIT - III

- 3.1 Chemical Kinetics - Distinction between Order and Molecularity - derivation of First order rate equation - half life period of first order reaction - determination of rate constant of hydrolysis of ester Catalysis - catalyst - auto catalyst - enzyme catalyst - promoters - catalytic poisoning - Active center - Distinction between homogeneous and heterogeneous catalysts - Industrial application of catalysts.
- 3.3 Photochemistry - Grothus Drapers law, stark einsteines law - quantum yield - photosynthesis, phosphorescence - fluorescence - chemiluminescence's - photosensitization.

UNIT - IV

- 4.1 VSEPR Theory - Shapes of Simple Molecules BF_3 , PCl_5 , SF_6 and XeF_6
- 4.2 Fuels - Calorific value of fuels - Non-conventional fuels - need of Solar energy - Applications - Bio-fuels.
- 4.3 Osmosis - Osmotic pressure - reverse osmosis - desalination of sea water.

UNIT - V

- 5.1 Nuclear Chemistry - Definition of Half life period - Group displacement law - Radioactive series. Nuclear Fission and Fusion - Application of nuclear chemistry in Medicine, agriculture, industries - C^{14} dating.
- 5.2 Crude Oil - Petroleum - Petroleum Refining - Cracking - Applications of Cracking. Naphthalene - Preparations, Properties and uses of Naphthalene - Structure of Naphthalene.
- 5.3 Elements of symmetry - unit cell - crystal lattice - types of cubic lattice - one example for each.

ENVIRONMENTAL STUDIES

(For all UG Degree Courses)

UNIT-I: INTRODUCTION TO ENVIRONMENTAL SCIENCES: NATURAL RESOURCES :

Environmental Sciences - Relevance - Significance - Public awareness - Forest resources - Water resources - Mineral resources - Food resources - conflicts over resource sharing - Exploitation - Land use pattern - Environmental impact - fertilizer - Pesticide Problems - case studies.

UNIT-II: ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION:

Ecosystem - concept - structure and function - producers, consumers and decomposers - Food chain - Food web - Ecological pyramids - Energy flow - Forest, Grassland, desert and aquatic ecosystem.

Biodiversity - Definition - genetic, species and ecosystem diversity - Values and uses of biodiversity - biodiversity at global, national (India) and local levels - Hotspots, threats to biodiversity - conservation of biodiversity - Insitu & Exsitu.

UNIT-III: ENVIRONMENTAL POLLUTION AND MANAGEMENT

Environmental Pollution - Causes - Effects and control measures of Air, Water, Marine, soil, solid waste, Thermal, Nuclear pollution and Disaster Management - Floods, Earth quake, Cyclone and Land slides. Role of individuals in prevention of pollution - pollution case studies.

UNIT-IV: SOCIAL ISSUES - HUMAN POPULATION

Urban issues - Energy - water conservation - Environmental Ethics - Global warming - Resettlement and Rehabilitation issues - Environmental legislations - Environmental protection Act. 1986 - Air, Water, Wildlife and forest conservation Act - Population growth and Explosion - Human rights and Value Education - Environmental Health -

HIV/AIDS - Role of IT in Environment and Human Health - Women and child welfare - Public awareness - Case studies.

UNIT-V: FIELD WORK

Visit to a local area / local polluted site / local simple ecosystem - Report submission

REFERENCES

1. KUMARASAMY, K., A.ALAGAPPA MOSES AND M.VASANTHY, 2004. ENVIRONMENTAL STUDIES, BHARATHIDSAN UNIVERSITY PUB, I, TRICHY
2. RAJAMANNAR, 2004, ENVIRONEMNTAL STUDIES, EVR COLLEGE PUB, TRICHY
3. KALAVATHY,S. (ED.) 2004, ENVIRONMENTAL STUDIES, BISHOP HEBER COLLEGE PUB., TRICHY

II SEMESTER
PAPER II
HUMAN PHYSIOLOGY

Objectives

1. To enable students to understand the structure and basic physiology of various organs of the body.
2. To obtain better understanding of the principles of Foods and Nutrition through the study of physiology.

UNIT-I : CELL-TISSUES

Introduction to the cell - A typical cell, cell division. Tissues - classification, structure and function of epithelial, muscular and connective tissues.

UNIT-II : TRANSPORT AND MAINTENANCE

- a. Blood, lymph, spleen and RES: Blood composition and function - plasma proteins, distribution functions. Cell components - RBC - Structure, function, normal count; WBC - classification, function, normal values. Blood coagulation, Erythropoiesis, blood grouping. ABO system and RH system, spleen and RES – functions.
- b. Heart and circulation: Structure of the heart and blood vessels, origin and conduction of heart beat, cardiac cycle, ECG, blood pressure – definition and factors affecting it.
- c. Respiratory system: Structure of pharynx, larynx, trachea, bronchi, lung and lung cavities. Physiology of respiration- Mechanism of respiration, gaseous exchange, nervous and chemical control of respiration.
- d. Excretory system: Structure and function of kidney, urine formation, micturition.

UNIT-III : DIGESTIVE SYSTEM AND ITS ACCESSORIES

Structure and functions of the digestive organs. Deglutition, Digestion and absorption of carbohydrates, proteins and fats, movements of G.I Tract.

UNIT-IV : NERVOUS SYSTEM

- a. Neuron structure and functions - structure of Brain and Spinal cord - Lobes and functions of cerebrum, cerebellum, of brain stem. Autonomic nervous system - functions, reflex arc.

UNIT-V: ENDOCRINE AND REPRODUCTIVE SYSTEM

- a. General structure of male and female reproductive organs, puberty, menstrual cycle.
- b. Elementary knowledge - pituitary, thyroid, parathyroid, adrenal glands and islets of langerhans - functions and hypo and hyper activities.

References

1. Guyton, A.C. Human Physiology and Mechanisms and Diseases. W.B. Saunders and Co., Philadelphia., 1992.
2. Kimber, D.E; Gray, C.E; Stackpole, C.E and Leavel, L.C; Anatomy and physiology. The Mac Millan Co., New York, 1972.
3. Ham, A.W, Histology, Pitman Medical Publishing Co., Ltd, London, 1967.
4. Wright, Applied Physiology, Oxford University Press, Madras, 1966.
5. Strand, F.L, Modern physiology. The Macmillan Co., New York, 1968.
6. Horrobin, D.R. Essential physiology. Medical and Technical Publishing Co. Ltd. Lancaster, 1973.
7. Davison, Hand Segal, H.B, Introduction to physiology, Gruea and Stration, London, 1975.
8. Langley, L.L. Cell functions, East West Press Ltd, New Delhi, 1968.
9. Chatterjee, C.C. Human Physiology. Vol I & II, Medical Allied Agency, Calcutta, 1983.
10. Vidhya Rathan, Handbook of Human physiology, Jaypee Brothers, New Delhi, 1986.
11. Chaudhri, S.K. Concise Medical physiology, New Central Book Agency, Calcutta, 1988.
12. Best, C.H & Taylor, N.B. The Living Body, Asia publishing House, B. Mumbai, 1964.
13. Vander, A.J; Sherman, J.H and Luciano, D.S. Human physiology - The Mechanisms of Body functions, TMH Publishing Co. Ltd., Delhi, 1990.

CORE PRACTICAL I

A. MICROBIOLOGY

1. Examination of Yeast, moulds, Protozoa and Bacteria.
2. Examination of Unstained Organisms, wet methods and hanging drop preparations.
3. Examination of stained organisms, Simple Staining and Gram method of staining.
4. Common culture media and uses.
5. Purifying water at home – Microorganisms present in water.

B. HUMAN PHYSIOLOGY

1. Microscopic study of different tissues - epithelial, connective, muscular and nervous tissue.
2. Microscopic structure of bone, cartilage.
3. Study of anatomy of sheep's brain, heart and kidney.
4. Microscopic study of blood, WBC, RBC estimation, Hb estimation, bleeding time, clotting time.
5. Blood grouping, blood pressure, histology of artery and vein.
6. Microscopic structure of lung and trachea.
7. Microscopic structure of the reproductive organs and endocrine glands - ovary, uterus, mammary glands, testis, thyroid, pituitary, adrenal.

ALLIED I
PAPER II
CHEMISTRY II

UNIT-I

1.1 Co-ordination Chemistry:

Nomenclature of co-ordination compounds - Werner Theory of Co-ordination Compound - Chelation - Functions and structure of Haemoglobin and Chlorophyll.

1.2 Industrial Chemistry:

Fertilizers and manures - Bio-fertilizers- Organic Manures and their importance - Role of NPK in plants - preparation and uses of Urea, Ammonium nitrate, potassium nitrate and super phosphate of lime.

1.3 Contents in Match sticks and match box - Industrial making of safety matches. Preparation and uses of chloroform, DDT, gamhexane and Freon.

UNIT-II

2.1 Carbohydrates:

Classification - structure of glucose - Properties and uses of starch - uses of Cellulose Nitrate - Cellulose acetate.

2.2 Amino Acid and Protein:

Classification of Amino Acids - preparation and properties of Glycine - Classification of Protein based on Physical properties and biological functions

2.3 Primary and Secondary structures of protein (Elementary Treatment only) composition of RNA and DNA and their biological role. Tanning of leather - alum [aluminum tri chloride tanning - vegetable tanning]

UNIT-III

3.1 Electro Chemistry:

Specific and equivalent conductivity - their determination - effect of dilution of conductance.

3.2 Kohlrawsh Law - Determination of dissociation constant of weak Electrolyte using Conductance measurement - Conductometric Titrations

3.3 P^H and determination by indicator method - Buffer solutions - Buffer action - Importance of buffer in the living system - Derivation of Henderson equation.

UNIT-IV

4.1 Paints - Pigments - Components of Paint - Requisites of a good paint. Colour and Dyes - Classification based on constitution and application.

4.2 Vitamins:

Biological activities and deficiency diseases of Vitamin A, B, C, D, E and K - Hormones - Functions of insulin and adrenaline.

4.3 Chromatography - Principles and application of column, paper and thin layer chromatography

UNIT-V

5.1 Drugs- Sulpha Drugs - Uses and Mode of action of Sulpha Drugs -- Antibiotics - Uses of Penicillin, Chloramphenicol, streptomycin. Drug abuse and their implication alcohol - LSD

5.2 Anaesthetics - General and Local Anaesthetics - Antiseptics - Example and their application. Definition and one example each for analgesics antipyretics, tranquilizers, sedatives, causes for diabetes, cancer and AIDS.

5.3 Electrochemical corrosion and its prevention - fuel cells.

**ALLIED PRACTICAL
CHEMISTRY**

VOLUMETRIC ANALYSIS

- 1) Estimation of hydrochloric acid using std. sulphuric acid
- 2) Estimation of Borax using std sodium carbonate
- 3) Estimation of sodium hydroxide using std sodium carbonate.
- 4) Estimation of FeSO₄ using std. Mohr salt Solution.
- 5) Estimation of Oxalic acid using std FeSO₄
- 6) Estimation of FAS using Std oxalic acid
- 7) Estimation of Fe²⁺ using diphenylamine / N phenyl anthranilic acid as indicator.

ORGANIC ANALYSIS:

Reactions of aldehyde (aromatic), carbohydrate, carboxylic acid (mono and dicarboxylic), phenol, aromatic primary amine, amide and diamide. Systematic analysis of organic compounds containing one functional group and characterizations by confirmatory tests.

VALUE EDUCATION
(For all UG Degree Courses)

UNIT-I

Value Education - Definition - relevance to present day - Concept of Human Values - self introspection - Self esteem.

UNIT-II

Family values - Components, structure and responsibilities of family - Neutralization of anger - Adjustability - Threats of family life - Status of women in family and society - Caring for needy and elderly - Time allotment for sharing ideas and concerns.

UNIT-III

Ethical values - Professional ethics - Mass media ethics - Advertising ethics - Influence of ethics on family life - psychology of children and youth - Leadership qualities - Personality development.

UNIT-IV

Social values - Faith, service and secularism - Social sense and commitment - Students and Politics - Social awareness, Consumer awareness, Consumer rights and responsibilities - Redressal mechanisms.

UNIT-V

Effect of international affairs on values of life/ Issue of Globalization - Modern warfare - Terrorism. Environmental issues - mutual respect of different cultures, religions and their beliefs.

Reference Books

1. T. Anchukandam and J. Kuttainimathathil (Ed) Grow Free Live Free, Krisitu Jyoti Publications, Bangalore (1995)

2. Mani Jacob (Ed) Resource Book for Value Education, Institute for Value Education, New Delhi 2002.
3. DBNI, NCERT, SCERT, Dharma Bharti National Institute of Peace and Value Education, Secunderabad, 2002.
4. Daniel and Selvamony - Value Education Today, (Madras Christian College, Tambaram and ALACHE, New Delhi, 1990)
5. S. Ignacimuthu - Values for Life - Better Yourself Books, Mumbai, 1991.
6. M.M.M.Mascaronhas Centre for Research Education Science and Training for Family Life Promotion - Family Life Education, Bangalore, 1993.

WEBSITES AND e-LEARNING SOURCES:

www.rkmissiondhe.org/education.html/

www.clallam.org/lifestyle/education.html/

www.sun.com/./edu/progrmws/star.html/

www.infoscouts.com

www.secretofsuccess.com

www.1millionpapers.com

<http://militaryfinance.umuc.edu/education/edu-network.html/>

III SEMESTER

PAPER III

FOOD SCIENCE

Objectives

To enable students :

Obtain knowledge of different food groups and their nutritive value

Understand the scientific principles underlying food preparation

Develop skill and techniques in food preparation with conservation of nutrients and palatability using cooking methods generally employed.

UNIT-I

Functions of food in relation to health - classification of foods based on nutrients. Food groups - Basic Four, Basic Five and Basic Seven.

UNIT-II

Preliminary preparation of foods prior to cooking with special reference to conservation of nutrients and palatability, different methods of cooking on acceptability and nutritive value of foods. Dry methods - frying, broiling, parching, and baking. Moist methods - boiling, stewing, cooking under pressure. Micro-wave cooking - advantages and disadvantages.

UNIT-III : EXPERIMENTAL STUDY OF FOODS

Cereal and Cereal products - Microscopic structure of various starch granules - Nutritive value of Rice, Wheat and locally available millets. Effect of cooking on the nutritive value of cereals. Gelatinisation, Dextrinization, gluten formation.

Pulses and nuts - Composition, Nutritive value of grams, dhals - some common nuts - meat substitutes - soya products. Textured Vegetable Protein (TVP). Effect of cooking on pulses.

Vegetables and Fruits - Classification, composition and Nutritive value - methods of minimize the loss of nutrients, color, texture, flavor. Browning reaction - changes during cooking.

UNIT-IV : ANIMAL FOODS

- a. Milk and milk products - Composition and Nutritive value, Principles of milk cookery, Milk protein, coagulation, problems in milk cookery. Effect of cooking and processing on milk
- b. Meat - Nutritive values, methods of cooking - Post mortem changes in meat, factors affecting tenderness - organ meat.
- c. Fish - Classification, Nutritive value - selection, Methods of cooking
- d. Poultry - Nutritive value, economic aspects. Principles and methods of cooking poultry.
- e. Eggs - Structure, composition, Nutritive value, selection - principles of egg cookery - uses of eggs in cookery, methods of cooking eggs.

UNIT-V

- a. Fats and Oils - Types - saturated, MUFA, PUFA, Hydrogenation - Invisible fats - uses of fat in cookery - factors affecting absorption of fats - smoking point - Rancidity.
- b. Spices and Condiments - Uses and abuses in Indian cookery.
- c. Sugar and Sugar Products - Jaggery - uses in Indian cookery - Stages in sugar, Indian sweets
- d. Beverages - Classification, Nutritive value and uses - coffee, tea, cocoa.

References

1. Bennion, M. and Hughes, D. Introductory foods Macmillan Publishing Co. Inc. New york. 1975.
2. Brich C.G. Spencer M and Cancerron, A.G Food Science, Pergamon Press, New York, 1977.
3. Gopalan. C, Ramasastry, P.N, Balasubramanian, S.C. Nutritive value of Indian Foods, National Institute of Nutrition, Hyderabad, 1977.

4. Growworld. R.H, The experimental study of foods. Houghton Mifflin Co, Boston, 1972.
5. Swaminathan. M, Food Science and Experimental foods. Ganesh and Co, Madras, 1979.
6. Mudambi. S.R, Rao, S.M. Food Sciene, Wiley Eastern Ltd, New Delhi, 1986.

ALLIED II

PAPER III

BIOCHEMISTRY I

UNIT- I :CHEMISTRY OF CARBOHYDRATES.

Definition and classification of Carbohydrates, Linear and ring form of all monosaccharides (Glucose and Fructose), Physical and chemical properties of carbohydrates, Occurrence, structure, physical and chemical properties of disaccharide (Sucrose and Lactose), polysaccharides (Starch and Cellose).

UNIT- II : CHEMISTRY OF AMINO ACIDS.

Definition , classification and properties of Amino acids, isoelectric point, Isoelectric pH, Zwitter ion. Reaction with Ninhydrin, 1-fluro-2, 4, dinitrobenzene [FDNB] and Sieg Fried's carbamino reaction. Essential and Non essential Amino acids.

UNIT-III : CHEMISTRY OF PROTEINS

Classification based on shape and size, solubility and biological function. Peptide bond. Structure of protein - Primary, secondary, tertiary and quaternary. N-Terminal determination - Edmans and dansyl chloride methode. C-Terminal determination. Denaturation.

UNIT-IV: CHEMISTRY OF LIPIDS

Introduction, definition of fatty acids, classification, nomenclatures, structures, properties of fatty acids. Structure and function of prostaglandins, triacyl glycerol, phospholipids [lecithin, cephalin, phosphotidyl inositol, phosphotidyl serine], Spingomyelin, Plasmologen, Glycolipids and Cholesterol. Bile salts Functions.

UNIT-V CHEMISTRY OF NUCLEIC ACID

Definition- Nucleoside, nucleotide and polynucleotide. Double helical structure of DNA and its biological function, structure of RNA: tRNA, mRNA and rRNA- occurrence, chemistry and its biological function, difference between DNA and RNA, Properties - T_m, Hypo and Hyper Chromicity.

BOOKS RECOMMENDED

1. Lehinger's principle of Biochemistry (2000), Nelson and Cox.
2. Harper's Biochemistry - Rober K. Murray, Daryl K.Grammer, McGrawHill, Lange Medical Books
3. Fundamentals of Biochemistry - J.L Jain, Nitin Jain, S. Chand & Company.
4. Biochemistry - Dr. Amit Krishna De, S. Chand & Co., Ltd. et al
5. Biochemistry - Dr. Ambica shanmugam, published by author.
6. Bio molecules - C. Kannan, MJP publishers, Chennai-5

SKILL BASED SUBJECT I

PAPER I

BAKERY

Objectives:

To enable the students to

- Understand the principles of baking
- Acquire basic knowledge on bakery techniques.

UNIT- I

Baking: Introduction, principles of baking, Basic ingredients

Types of wheat flour, wheat flour and their baking quality: Doughs and batters, nutritive values.

Water: role in baking.

UNIT- II

Leaving agents: Definition, physical, chemical and biological leavening agents, role of these in baking.

Sugars: Types of sugars, role in baking.

Fats: Types of fats in baking, role in baking

Milk and Milk products: Role and nutritional contribution in baking

Salt, flavorings and spices: Role in baking.

UNIT-III

Bread: Ingredients, procedures for bread making, types of bread, common defects in bread making, bread improvers.

Cakes: Ingredients, types of cakes, preparation of cakes, causes of variation in cake quality.

UNIT-IV

Biscuits: Ingredients, essentials to get good biscuits, preparation of biscuits, nutritive values.

Pastries: Ingredients, types, nutritive values, essentials in making a good pastry, preparation of pastry

Cookies: Ingredients, types, preparation of sandwiches, nutritive values.

UNIT-V

Icings and filling: Ingredients, types

Sandwiches: Ingredients, types. Preparation of sandwiches, nutritive values

Baking ovens: Side-flue and similar ovens, steam-pipe ovens, hot air ovens, advantages and disadvantages, maintenance of sanitation and hygiene in a bakery unit.

References

1. Vijaya khader, Text book of food science and technology, Indian council of Agricultural Research, New Delhi, 2001
2. Kumud Khanna et al, The art and science of cooking, A student manuum, 3rd edition,. Published by Pr.Ouseph for phoenix, publishing House Pvt Ltd, 1998
3. Earl R.Palan, Judith A.Studler, preparing for the service industry, An introductory approach, AVI publishing co Ltd, 2000
4. William C practical in baking, 2000
5. Lilian Hiagland Meyer, Food chemistry CBS publishers and Distributors, 2004

NON-MAJOR ELECTIVE I

PAPER I

HEALTH AND FITNESS

Objectives

To enable the students to

- Learn about the terms related to health and fitness
- Comprehend the interaction between fitness and nutrition

UNIT-I:

Health: Concept of Health, changing concepts definitions of health, dimensions of health, concept of well being, spectrum of health, determinants of health, ecology of health, right to health, responsibility for health, indicators of health.

UNIT-II:

Exercise and Health related fitness: Health related fitness, health promotion, physical activity for health benefits.

Sports related fitness: Role of nutrition in sports, nutrition to athletic performance.

UNIT-III:

Body weight and composition for Health and Sports: Ideal body weight, values and limitations of the BMI, composition of the body, Diet during training, prior to competition, during Dietary supplements after competition for sports.

UNIT-IV:

Exercise performance: Energy expenditure during physical activity, carbohydrate metabolism and performance, fat metabolism and performance, effect of exercise on protein requirements, physique and sports performance.

UNIT-V:

Exercise programmes: Resistance exercise training, aerobic exercise, types of exercise, effective for weight contrast, - dieting or exercise, weight reduction programme for young athletes.

REFERENCES:

1. K. Park Text book of preventive and social medicine, 15th edition, MIS Banarsidas Bhano Publishers, Jabalpur, 1997.
2. Melvin H.Williams, Nutrition for Health, fitness and Sports, 7th edition, MC Graw Hill international Edition, 2005.
3. Micheal J.Gibney, Ian A Macdonald and Helan M.Roche, Nutrition and Metabolism, Blackwell Publishing Company, Bangalore, Reprint 2004.

**IV SEMESTER
PAPER IV
HUMAN NUTRITION**

Objectives

1. To introduce the students to the principle of Human Nutrition.
2. To gain skill in qualitative tests and quantitative estimation of nutrients.

UNIT-I

1. History of Nutrition - Development of Nutrition as a Science - Definition of Nutrition
2. Carbohydrates - Definition and composition, classification, carbohydrate, Review of Digestion, absorption and metabolism - 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. Water - water balance, water compartment, physiological variation.

UNIT-II

1. Energy units - Kilocalories, Megajoules, determination of energy value of foods, using Bomb calorimeter, gross calorific values, Physiological energy, value of foods, relation between oxygen used and calorific value, determination of direct calorimetry.
2. Relation between Respiratory quotient and energy output - Specific dynamic action of food 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 - ICMR committee percent calories supplied by carbohydrates, fats and proteins in average Indian diets - Energy requirements for different age groups.

UNIT-III

1. Lipids - Classification, Composition function - essential fatty acids, deficiency, food sources of EFA, Triglyceride reaction of TGL, saponification, hydrogenation, Rancidity, Function of TGL, Characteristics of animal and vegetable fats, sterols - cholesterol - function, food sources, phospholipids - function, keone bodies - fat requirements - food sources, dietary lipids and their relation to the causation of Atherosclerosis and Ischaemic heart disease.
2. Protein - Composition - structure and classification, function of protein, Amino acids - Indispensable and dispensable amino acids - special function of amino acids - protein deficiency - Evaluation of protein quality - PER, BV, NPU, NPR, chemical score, mutual and amino acid supplementation of proteins.

UNIT-IV

- a. Fat soluble vitamins - Vitamin A, D, E and K - function effects of deficiency, sources, requirements, units of measurement and hyper - vitaminosis.
- b. Function, effects of deficiency, sources and requirements of water soluble vitamins - ascorbic acid, thiamine, riboflavin and Niacin.
- c. Importance of folic acid, Vit B-12, pyridoxine, Biotin and Pantothenic acid to the body.

UNIT-V

1. Distribution in the body, functions, food sources, requirements and effects of deficiency of calcium, phosphorous, Iron and Iodine.
2.
 - a. Trace elements in human nutrition - copper, fluorine, zinc - functions, food sources, requirements and effects of deficiency.
 - b. Selenium and Vitamin E relationship.
 - c. Chromium and glucose tolerance factor.

References

1. Guthrie H. Andrews - Introductory Nutrition C.V. Mosby Co.St. Lours.
2. Bogert, J.G.V. Briggs, D.H. Calloway Nutrition and physical fitness, 11th edition - 1985 - W.B. Saunders Co., Philadelphia, London, Toronto.

3. Wardlaw, G.M. Insel, P.H. - Perspectives in Nutrition (1990) Times Mirror / Mosby College Publishing Co. St. Louis, Toronto, Boston.
4. William; Sue Rodwell - Nutrition and Diet Therapy (1985) 5th edition, Mosbey Co. St. Louis
5. M. Swaminathan "Principles of Nutrition and Dietetics", 1993, Bappeo 88, Mysore Road, Bangalore - 560 018.
6. Maurice E Shils, James A. Olson, Moshe Shike "Modern Nutrition in health and disease" eighth edition, Vol I & II Lea & Febiger Philadelphia, A waverly company, 1994.

CORE PRACTICAL II

A. I. FOOD SCIENCE

1. Cookery Practicals;
2. Grouping of foods - Discussion on nutritive value
3. Technique in measurement of food stuff - use of standard measuring cups and spoons.
4. Different recipes from cereals, pulses, vegetables, fruits, fleshy foods, egg, milk and milk products.
5. Beverages - preparation of stimulating, nourishing and refreshing beverages
6. Fats and oils - preparation of shallow and deep fried foods.
7. Sugar cookery - preparing recipes at different stages of sugar cookery.

II EXPERIMENTAL FOODS PRACTICAL

1. Cereals

Microscopic study of different starches

- a. Methods of combining starch and boiling water
 - b. Study of effects of moist heat on starch
 - c. Preparation of white sauces and soups
 - d. Gluten formation
2. Pulses - Effect of hard and soft water, alkali, cooking time of grams and dhals.
 3. Vegetables - Effect of acids, alkali, covering, steaming and pressure cooking on the different pigments and acceptability of vegetables.
 4. Fruits - Study of different methods of preventing enzymatic browning of cut fruits, pectin content of fruits.
 5. Eggs - Coagulation of egg protein - factors. Egg white foam - effect of beating, sugar, acid and temperature.
 6. Milk cookery - Coagulation of milk protein, paneer, cooking of vegetables in milk
 7. Fats and oils - comparison of smoking temperature of some fats and oils
 8. Sugar and Jaggery - Different stages of crystallization of sugar
 9. General visit to food Industry and Factories.

B. HUMAN NUTRITION

1. Qualitative tests for sugars - glucose, fructose, lactose, maltose and glucose.
2. Qualitative estimation of reducing sugar
3. Qualitative tests for proteins.
4. Qualitative tests for minerals.
5. Quantitative estimation of calcium
6. Quantitative estimation of phosphorous.
7. Quantitative estimation of vitamin C.
8. Demonstration Experiments.
 - a. Estimation of total nitrogen in foods (Micro or Macrokjeldahl method)
 - b. Lipid extration
 - c. Demonstration of Iodine value
 - d. Estimation of Iron
 - e. Qualitative tests for vitamin A
 - f. Quantitative estimation of Carotene

ALLIED II

PAPER IV

FOOD PRESERVATION

Objectives

1. To obtain knowledge about food preservation.
2. To help the students to contribute proper utilization of foods and prevent wastes.

UNIT-I

1. Importance of processing - methods of processing cereals (wheat, rice, maize, pulses)
2. Processing of fruits and vegetables, meat, fish, poultry, egg.

UNIT-II

1. Processing of oil seeds, processing of milk and milk products.
2. Processing of condiments and spices. Beverages, tea, coffee and cocoa.

UNIT-III

1. Preservation - using sugar, jams and alkalies.
2. Chemical preservation and use of antibodies. Removal of moisture, drying, dehydration and concentration.

UNIT-IV

Use of low temperature, refrigeration and freezing. Use of high temperature, canning and sterilization. Use of microwaves, recent technologies like ohmic heating membrane technology and extrusion technology.

UNIT-V

1. Food packaging: Food packaging and labeling various packing methods. Recent trends in packaging and labeling.

2. Food marketing and distribution: Food marketing - regulated and co-operative markets, Civil supplies and public distribution system, Improved methods of handling foods.

References

1. Manoranjan kalia, professor, Dept of Food Science and Nutrition, Himachal Pradesh Agricultural University, Palampur, Himachal Pradesh.
2. Walter A. Mercer, Vice-President, Western Research Laboratory and National Canners Association, Berkeley, California.
3. Norman N.Potter, Professor Food Technology, Cornell University, Ithaca, New York.

ALLIED PRACTICAL

A. BIOCHEMISTRY

1. Qualitative test for carbohydrate - Test for Monosaccharide - Glucose, Fructose.
2. Qualitative test for protein.
3. Qualitative estimation of amino acid - Tryptophan, Tyrosine, Arginine, Cystine, Histidine.

B. FOOD PRESERVATION

1. Preservation of food items by the use of high and low temperatures.
2. Traditional methods of food preservation a) Drying b) Salting c) Changes during drying
3. Preservation of foods by the use of class I and class II Preservatives
4. Use of sorbic acid and sulphurdioxide as an antimicrobial preservatives.
5. Visit to Preservation Unit.

SKILL BASED SUBJECT II

PAPER II

FOOD PRODUCT DEVELOPMENT AND MARKETING STRATEGY

UNIT-I:

Basic principles and concept of food product development, cultural approach to development of dietary pattern of various groups-language, linguistic, regional, religious (ethnic), Factors involved in food habit alteration, availability, importance and role of different research and development departments in food production industry.

UNIT-II:

Steps in product development-material resources based on market demand, standardization methods involved in product development. Portion size and portion control; Calculation of nutritive value and cost of production, shelf life and storage stability evaluation procedure of developed food products.

UNIT-III:

Formulation of new food products for infants, preschool children, adolescents, pregnant and nursing mothers, old age, sports persons, armed sources personnel and therapeutic uses. Selection and training of judges, Development of Score Card and analysis of data, Role of advertisement and Technologies in promotion of new products.

UNIT-IV:

Concept of market and marketing - approaches of study marketing and marketing functions, market structure, marketing efficiency and market integration, Role of Government in promoting agricultural marketing. Market promotion and positioning of food products.

UNIT-V:

Conditions for sale, license and identification and quality processing, conditions for distribution, storage and sanitation, Studying the global market status, Role of export promoting agencies, Economic feasibility of new products.

REFERENCES:

1. Sivarama Prasad.A, 1985, Agricultural Marketing in India-Mittal Publications, New Delhi.
2. Acharya.S.S, and N.L.Agarwal, 1992, Agricultural Marketing in India-Oxford and IBH Publishing Pvt., Ltd., New Delhi.
3. Developing New Food Products For a Changing Market Place, 2nd Edition, 2005, Aaron, L.Brody, John B.Lord.
4. New Food Product Development, 2004, Gordon W.Fuller.

NON-MAJOR ELECTIVE II

PAPER II

INTERIOR DESIGN

Objectives

To enable students to :

1. Gain understanding of the basic are principles
2. Learn to apply colour in the interiors.

UNIT-I

Art in daily living - importance of good taste, objectives of interior design.

UNIT-II

Design - Elements of design - line, shape, size, space, texture, pattern, colour and light, types and characteristics of design, principles of design - Harmony, Balance, Rhythm, proportion, Emphasis.

Colour - Qualities of colour - Hue, value and intensity, colour harmony, developing colour schemes for different rooms.

UNIT-III

Furniture and Furnishings - Selection and arrangement of furniture in different rooms. Different types of furnishing materials - Factors considered in their selection. Floor coverings, curtains, draperies, window treatment.

UNIT-IV

Accessories - selection, use and care of accessories, Types - traditional and modern - art objects, pictures, flower arrangement.

UNIT-V

Lighting - Importance of lighting - principles and types of lighting, Lighting needs for various activities.

PRACTICALS

1. Evaluation of design
2. Preparation of color chart and various color schemes.
3. Arranging various areas applying all the art principles
4. Application of design principles in
 - a. Preparation of greeting card, poster and a wall hanging
 - b. Flower arrangement.
 - c. Window treatment

Reference

1. Alexander, M.J. Design Interior Environment, Harcourt Brace, Havana, 1972.
2. Goldstein and Goldstein. Act in Everyday Life, Macmillan Co, New York, 1960.
3. John Lester and Steven Violet. The world of House plants and Flower Arranging, Galahod Book, New York, 1975.
4. Coe Stella and Ikebana. A practical and philosophical guide to Japanese Flower Arrangement, Century publishing Co. Ltd., London, 1984.
5. Jean, T. Flower arranging, Mac Donald Guidelines, London, 1980.

V SEMESTER

PAPER V

HUMAN DEVELOPMENT

Objectives

1. To understand development aspects (both normal and exceptional) from conception to old age as they can be guided effectively.
2. To have complete knowledge about the behavior pattern of the individual and various factors influencing them.

UNIT-I

- a. The concept of development and growth - principles governing growth and development, developmental tasks of different stages.
- b. Stages of Life span - conception, infancy, Early childhood, Late childhood, adolescence, adulthood, middle age and old age.

UNIT-II

- a. Prenatal Development - Conception, test tube baby, Periods of prenatal development - signs of pregnancy.
- b. Prenatal care - Management of normal pregnancy - hygiene, diet and medical supervision and hazards during pregnancy.
- c. Labor - sign of labor, stages of labor - types of birth, multiple pregnancy.
- d. Post-natal care, prevention of gynecological complications.
- e. Adjustment of the newborn to temperature, breathing, feeding and elimination.

UNIT-III

- a. Infancy (Birth to 2 years) - Development - physical and motor, social, emotional, cognitive and language, Minor ailments.
- b. Effect of stimulation - care of infants, feeding, toilet training, bathing, clothing, sleeping and immunization, prevention of accidents, importance of mothering and emotional growth. Importance of psychological needs.

UNIT- IV

- a. Early childhood (preschool stage 2 - 6 years) - Physical and motor development, emotional, social, cognitive and language development, creativity, importance of play, importance of family relationship, behavior problems - causes and treatment.
- b. Importance of preschool education.
- c. Late childhood (Elementary school period 6 - 12 years) - Developments - physical, social, emotional, cognitive and language. Sex Education.
- d. Children with special needs - identification and rehabilitation.

UNIT-V

- a. Adolescence (12 - 18 years) Physical, emotional, intellectual and motor development, personal adjustment and mal adjustment. Delinquency - causes, prevention and rehabilitation. Drug addiction and alcoholism - rehabilitation.
- b. Adulthood (18 - 60 years) - Characteristics and developmental tasks. All aspects of development and vocational development.
- c. Old age (60 years and above) - Physical and psychological changes, problems of the aged, family attitude towards the aged, place of the aged in Indian society.

PRACTICALS AND RELATED EXPERIENCES

1. Assessment of the creativity of preschool children
2. Sociometric study on adolescents
3. Study on qualities preferred by the adolescents in their life partner.
4. Study on problem of the aged.
5. Study on mentally retarded children, blind, deaf and dumb.

References

1. Devadass, R.P; Jaya, N. A Text Book on Child Development, Macmillan Indian Ltd., Delhi, 1996.
2. Parikh, S; Sudarshan, R. Human Development and Structural Adjustment, UNPP, Delhi, 1993.
3. Mussen etal. Child Development and personality, Harper and Row publishers, New York, 1990.

4. Suriakanthi. A. Child Development, Swagath Fine Auto, Sivakasi, 1991.
5. Papalia, D.E. Human Development, Tata McGraw Hill Publishing company Ltd, New Delhi, 1997.
6. Suriakanthi, A. A Handbook on Human Development, Gandhigram Rural University, Gandhi gram, 1992.
7. Charles, S.P. Adolescent Psychology, Vikas House, New Delhi, 1983.
8. Hurlock, E.B. Development psychology Tata Mc Graw Hill Publishing Co, Ltd, New Delhi, 1975.
9. Hurlock, E.B. Adolescent Development, Tata McGraw Hill Co. Ltd, New Delhi, 1973.
10. Arya Subash, C. Infant and child care of the Indian Mother, Vikas Publishing Co., Delhi, 1970.

PAPER VI

NUTRITION THROUGH LIFE CYCLE

Objectives

To understand the Nutritional needs from birth to adult and old age.

UNIT-I : RECOMMENDED ALLOWANCES

RDA for Indian basis for requirement, computation of allowance based on energy expenditure, components of energy expenditure. General concepts about growth and development through different stages of life.

UNIT-II

Nutrition in Infancy, Preschool and School going age :

- a. Preschool - Growth and development of preschool children, Food habits and nutrient intake of preschool children. Dietary allowances and supplementary foods.
- b. School going age - Physical development, Nutritional status of school children, school lunch program, factors to be considered in planning a menu, food habits and nutritional requirement, packed lunch.

UNIT-III

Nutrition during Adolescence and Adults:

- a. Adolescence: Changes of growth characteristics of adolescents. Nutritional needs of the adolescents. Eating disorders.
- b. Adults: Nutrition for adults. Basis for requirement. Nutrition and work efficiency.

UNIT-IV : NUTRITION IN PREGNANCY

ICMR Nutrient allowances, Dietary guidelines. Common nutrition related problem of pregnancy and Lactation. Current scenario in the field of Nutrition in pregnancy and Lactation.

UNIT-V

1. Geriatric Nutrition

Nutrition allowances - Dietary Guidelines - Nutrition and work efficiency modifications in diet. Physiological changes in aging - psycho social and economical factors affecting eating behavior.

2. Infancy

Rate of growth, weight as the indicator, Nutrition allowances for the infants. Breast feeding. Weaning foods suitable for infants. Premature infant and their feeding infant formulas. Lactose intolerance.

Reference

1. Clark, N., Sports Nutrition Guide Book, Versa Press, U.S.A., 1997.
2. Williams, M.H Nutrition Aspects of Human, physical and Athletic performance, II Edition, Springfield publication, Illinois, 1995.
3. Lankford, R.T. Marie and Steward, J., Nutrition and physical fitness, Foundation of Normal and Therapeutic Nutrition, Wiley Medical publication, New York, 1985.
4. William, Sue Rodwell - Nutrition and Diet Therapy (1985) 5th edition Moshey Co., St Louis.
5. M. Swaminathan "Principles of Nutrition and Dietetics" 1993, Bappeo 88, Mysore Road, Bangalore - 5600018.
6. Maurice E, Shils, James A. Olson, Moshe Shike "Modern Nutrition in health and disease" eighth edition, Vol I, II Lea & Febiger Philadelphia, A Waverly Company, 1994.

PAPER VII

COMMUNITY NUTRITION

Objectives

To enable the students to :

1. Understand the malnutrition problems and prevalence in India
2. Gain knowledge on the national effort in combating malnutrition
3. Appreciate the national and International contributor towards national improvement in alleviating nutrition problems.

UNIT-I

Nutrition and National Development Malnutrition - Etiology , symptoms, Prevalence of malnutrition - Under nutrition and Over nutrition, balance between food and population growth.

UNIT-II

Nutritional problems confronting our country - PEM - Prevalence, classification - Kwashiorkar and Marasmus - etiology, symptoms, pathological changes, biochemical changes, Anaemia - Prevalence, etiology, symptoms, prophylaxis programmes.

IDD - Etiology, Prevalence, symptoms, prophylaxis

Fluorosis - Etiology, prevalence, symptoms

Vitamin A deficiency - Etiology, prevalence, symptoms, prophylaxis.

UNIT-III

Methods of assessment of Nutritional status - sampling, Direct assessment - Diet survey, anthropometry, clinical and biochemical estimation. Indirect assessment - Food balance sheet, Agricultural data, Ecological parameter and vital statistics, use of growth chart.

UNIT-IV

Role of National and International organizations - ICDS, Noon Meal Programme, FAO, WHO, UNICEF, CARE, ICMR, ICAR, CSIR, NIN, CFTRI, National Nutrition Policy, NGO.

UNIT-V

Nutrition Education - Meaning, Scope, Methods - Planning, conduct of evaluation of Nutrition education Programme.

Reference

1. Health and Hygiene - A Lesties Banks and Hislop J.A., Universal Tutorial Press, London.
2. Challenges in Rural Development - Senha H.K, Discovery publishing.
3. Food consumption and planning - Vol V, International encyclopedia.
4. Theory and practice of public Health, Oxford University press, London.
5. Applied Nutrition and Health Education, Sabarwal B, Common wealth publishers, New Delhi.
6. Foundations of Community Health Education, Mc Graw Hill, London.
7. Nutritional Problems of India, P.K. Shukla, Prentice Hall, India.

ELECTIVE I

PAPER I

ENTREPRENEURSHIP MANAGEMENT

OBJECTIVES

To enable the students to

- Learn the qualities of an entrepreneur.
- Understand the process and procedures of setting up of an enterprise.
- Develop management skills for entrepreneurship.

UNIT-I:

Entrepreneurship definition, need, scope and characteristics of entrepreneurship.

Intrinsic and extrinsic factors - contributing to entrepreneurship development - qualities of an entrepreneur.

UNIT-II:

Enterprise and entrepreneurs guidelines to start an enterprise, favourable factors to start an enterprise. Barrier in setting up an enterprise. Problems faced by women entrepreneurs.

UNIT-III:

Marketing - market surveys, product selection, criteria for principles of product selection and development - sales management - sales promotion - pricing of a product.

UNIT-IV:

Financial Management - book keeping, breakeven analysis, working capital cost concept, financial ratios and their significance.

UNIT-V:

Personnel management - Principles and Techniques of managing employees in all enterprise performance appraisal.

REFERENCES:

1. Gupta and Sourirasan, N.P (1985), Entrepreneurial Development, New Delhi, Sultanchand and Sons Educational Publishers.
2. Holt D.H. (1990) Entrepreneurship, New Delhi, New Venture Creation, Prentice Halls of India.
3. Khanka S.S. (1990), Entrepreneurial Development, New Delhi, Chand.S
4. Deshpande. M.R. (1984), Entrepreneurship of Small Scale Industries Concept, Growth Management, New Delhi, Deepavel Deep Publications.
5. Paramjeet Kavir Dillon (1993), Women Entrepreneurships Problems and Percepts, New Delhi, Blaze Publishers Co., Ltd.

SKILL BASED SUBJECT III

PAPER III

PRE SCHOOL MANAGEMENT

OBJECTIVES

- To train the students in organizing and administration of a preschool for children below 6 years of age.
- To develop in the students knowledge and understanding of the methods, equipments and materials required for early childhood education.
- To develop in them the skills in handling the equipment and materials used for various activities of a preschool.

UNIT-I:

Early childhood education - need, importance and objectives of early childhood education, different types of preschools.

UNIT-II:

Curriculum and programme - principles, long and short term planning. Daily programme, importance of various activities - informal talk, songs, stories, dramatization, science experiences, creative activities play activities, field trips, functions and celebrations. Readiness programme - general readiness, reading, writing and arithmetic readiness.

Food needs and requirements for children - importance, planning and conducting feeding programmes in a preschool.

UNIT-III:

Requisites of a preschool - preschool building - site and location. Plan of a preschool, space allotment for indoor and outdoor play. Space for routine activities and office work. Furniture and equipment, principles of selections, equipment for various development, care and use of play equipment, equipment needed for various preschools, indigenous play equipment.

UNIT-IV:

Personnel - teaching and non-teaching - selection of staff and other personnel. Academic qualification, personality characteristics, functioning of personnel.

UNIT-V:

Management of schools - budgeting, administration, records maintenance. Home-school relationship - need and scope, methods.

PRACTICALS:

1. Visit to different types of preschools to observe the methods, equipment and materials.
2. Preparing equipment and materials for various activities of a preschool.
3. Designing and preparation of case profile and other information of a preschool child and cumulative records.
4. Planning the programme and participating in a preschool for a week.

REFERENCES:

1. Read K.C., The Nursing School. The Human Relationship Laboratory, Delhi, IB Publishing Co.
2. Devadoss R.P. The text book on Child Development, New Delhi, the Macmillan Co., 1979.
3. Grewal J.S. Early Childhood Education - Foundation and Practice, agra, National Psychological Corporation 1984.
4. Hammond etal. Good Schools for Young Children, New York, Macmillan Co., New York 1963.

VI SEMESTER

PAPER VI

FOOD SERVICE MANAGEMENT

Objectives

Understand the basic principles of management in food services units.

Accept responsibilities in catering establishment and hospitals.

Become conscientious caterer and food service administrator.

Develop skills in setting up food service units.

Understand the concept and principles of resource management.

To create an awareness of the renewable source of energy.

UNIT-I

FOOD SERVICE INDUSTRY

Types of catering - history of development - commercial - Hotel, Motel, Restaurant, Cafeteria and Chain hotels.

Welfare - Hospital, School lunch, Residential establishment and Industrial catering.

Transport - Air, Rail, Sea and Space, Miscellaneous - Contract and outdoor.

UNIT-II

PHYSICAL PLANT

a. Place of art in every day life - Importance of good taste - objectives of Interior design. Design elements - types of design - principles of design - Harmony, Proportion, balance rhythm and emphasis.

b. Layer of food service units - Planning of areas as work units with relevant spacing.

UNIT-III

QUANTITY FOOD PURCHASE

Standards for selection of fresh food. substitutes in the form of convenience or ready prepared food purchase and storage.

- a. Quantity food preparation: Menu planning - Indian and Western - standardization and standardized recipes portion control. Effective use of left over.
- b. Quantity Food Service: Types - their objectives, styles of service - Waiter of waitress service, counter service - snack bar, buffet service, Banquet and Vending.

UNIT-IV

1. PRINCIPLES OF RESOURCE MANAGEMENT

Definition, Management Process - planning, controlling evaluating goals, values and standards.

Decision making: concepts, types of decisions, steps in decision making, methods of resolving conflicts.

Resource Management - Classification, characteristics, factors affecting the use of resources.

Management of time, energy and money - Time management - Time norms, plans and time management.

Energy management - Fatigue - types and causes of fatigue - principles and techniques Mundel's class of changes - work simplification. Personal management, recruitment and selection. Induction, training - Supervision and Dismissal of employees - Legal controls - Labor policies and welfare measures.

Money management: Types of income - management process applicable to money - planning, controlling and evaluating - the use of income - elements of buymanship. Cost control, food cost, labor overheads and projects.

2. SANITATION AND SAFETY

Sanitation of plant, kitchen, hygiene, personal hygiene, garbage disposal pest control - Health and safety at work, causes and types of accidents, accordance and applications.

UNIT-V

The computer in catering: Use of computer for the control of stock, recipes and menus.

References

1. Bennion, M and Hughes, D. 1975 - Introductory foods, Macmillan Publishing Co. Inc-New York.
2. Brich, C.G Spencer, M. and Cameron, A.G. 1977 - Food Science, 2nd edition, pergamon press, New York.
3. Pechkam, G.C. 1979 - Foundations of food preparation the Macmillan Publishing Co., New York.
4. Swaminathan, M. 1979, Food Service and Experimental Foods, Ganesh & Co., Madras.
5. Manay Shakunthala, N and Shadakshaiswamy, M 1987 - Foods, Fats & Principles. Willey Eastern Ltd. New Delhi, Bangalore.
6. Mydambi, S.R. and Rao S.M. 1986 - Food Science, Wiley Eastern Ltd. New Delhi. Bangalore.

PAPER X
DIETETICS

Objectives

To enable students :

1. To obtain knowledge on role of diet in disease conditions.
2. To gain experience in planning, preparing and serving therapeutic diet.

UNIT-I

1. Principles of diet therapy - Routine Hospital diets - special feeding methods - Tube feeding, parental nutrition.
2. The Dietitian - Clarification - Responsibilities in Indian context - Diet counseling - Registered dietitian.

UNIT-II

1. Etiology, symptoms and modification of diet in gastro intestinal disease, peptic ulcer - diarrhea and constipation.
2. Etiology, symptoms and modification of diet in diseases of liver and gall bladder. a. hepatitis b. cirrhosis c. Cholecystitis and Cholelithiasis.

UNIT-III

1. Prevalence, pathogenesis, symptoms, risk factors and modification of diet in cardiovascular disease - Atherosclerosis, hypertension.
2. Prevalence, types, etiology, symptoms, diagnosis and treatment of metabolic disorder - Diabetes mellitus.

UNIT-IV

1. Etiology, symptoms and modification of diet in disease of kidney - glomerulo nephritis, nephritic syndrome, acute and chronic renal failure, dialysis - urinary calculi.
2. Symptoms, Risk factors and modification of diet in cancer - Nutritional problems of cancer therapy - Role of antioxidants in the prevention of degenerative diseases.

UNIT-V

1. Etiology, symptoms and modification of diet in febrile conditions - Typhoid, Tuberculosis.
2. Etiology, symptoms and modification of diet in obesity and underweight.

References

1. Sue Rodwell Williams Nutrition and Diet therapy 1985. The C.V. Mosby Saint Louis.
2. Bogeri, J.G.V Brigg – D.H. Colloway, Nutrition and Physical fitness 1973, W.B. Saunders Philadesphra - London.
3. F.P. Antra Clinical nutrition & Dietetics 1973. Oxford University Press, Delhi, London, New York.
4. M.V Krause & M.A. Mahan, Food Nutrition and Diet Therapy 1992. W.B. Sunders company, Philadelphia London, Toronto.
5. Robinson, C.H. Lawles, M.R. Chenoweth, W.L. Garwick, A.E. Normal and Therapeutic Nutrition 1990. The Macmillan Company, New York.
6. M. Swaminathan, Essential of Nutrition Vol I & II 1974. The Ganesy and company, Madras-17.
7. K.M. King, F.Morley, R & Burgess, Nutrition for developing countries 1972, Oxford University Press, Delhi, London, New York.
8. Wilson, E.P, Fisher K.H and Fuqua M.E. principles of Nutrition 1975. John Willey & sons New York, London.
9. G.A. Helen - Introductory Nutrition 1974; C.V. Mosby Company Sant Louis.
10. C. Gopalan S.C Balacubramanian S.V. Ramestri and Visweswara Rao Diet Atlas. 1971, ICMR New Delhi, India.
11. Aykroyd, W.R. Gopalan C and S.C Balasubramanian the nutritive values of Indian foods & planning of satisfactory diets 1971, ICMR New Delhi.
12. Davidson & Passmore R & Brock J.B Human Nutriton & dietetics, 1976. The English Languages Bood Society & Churchill Living stone.
13. David, M. Paize et al. Clinical, Nutrition, 1988 C.V. Moshy Co. St. Louis.

Journals

1. Journal of American Dietetics Association, American Dietetic Association, U.S.A.
2. India Journal of Nutrition and Dietetics - Avinashilingam Institute for Home Science and High Education Coimbatore.

CORE PRATICAL III

A. NUTRITION THROUGH LIFE CYCLE

1. Menu planning and food Exchange list
2. Nutritional and food requirements to meet the needs of the following.
 - a. Infant and children
 - b. School children
 - c. Adolescent
 - d. Adult
 - e. Old people
 - f. Athletes
3. Nutritional and food requirements to meet the special needs of a) Expectant women b) Lactating women.

B. COMMUNITY NUTRITION

1. Conduct of Socio-economic survey.
2. Conduct of Diet survey
3. Conduct of Clinical Examination
4. Planning, conducting and Evaluating Nutrition Education programme.

CORE PRACTICAL IV

A. FOOD SERVICE MANAGEMENT

1. Visit to well-organised food services units
2. Hostel Commercial Industrial Hospital Transport.
3. Table setting and service-appraising and drawing silver cutlery and crockery
Folding of Napkins – Laying of table cloth, table mats – Arrangement of cover and table – appointment according to the menu – serving food at the table
clearing of the table.
4. Standardisation any 3 selected quantity recipes and their preparation. Calculation of nutritive value, yield of cost per serving – size of serving.
5. Quantity Cookery: Preparation of South Indian, North Indian and Western menu for 25 members.
6. Organising, preparing and serving one special meals for 50 members.

B. DIETETICS

Planning and preparing of diets for the following conditions / stages.

1. Clear fluid, full fluid and soft diet.
2. Diet in fever – Typhoid, tuberculosis.
3. Diet in obesity and under weight.
4. Diet in atherosclerosis and hypertension.
5. Diet in ulcer, diarrhoea and constipation.
6. Diet in hepatitis and cirrhosis of liver.
7. Diet in diabetes mellitus with and without insulin.
8. Diet in Nephritis and Nephrosis
9. Visit to the dietary department of hospital.

ELECTIVE II

PAPER II

FOOD QUALITY CONTROL

OBJECTIVES

To enable students

- To gain knowledge on food safety and food laws.
- To study about quality control and common food standards.

UNIT-I:

Quality Control: Objectives, Importance, functions of quality control, stages of quality control in food industry.

Food Quality Assurance: Design of company quality assurance program, Microbiological concerns.

Managing quality in supply chain and marketing of food products.

UNIT-II:

Government Regulations In Quality Control: FAO/WHO codex Alimentarius commission, PFA, AGMARK, BIS, FPO, fair average quality (FAQ) specification for food grains, ISO 9000 series.

HACCP: Background, current status, structured approach, principles, benefits and limitation.

Consumer Protection Act (CPA)

UNIT-III:

Food Standards: Cereals and products - bread, biscuits, cakes products.

Fruits Products: Jam, juices, squashes, ketchup, sauce.

Oils and Fats: Coconut oil, groundnut oil, palm oil, sunflower oil, vanaspati.

Milk and Products: Skimmed milk powder, partly skimmed milk powder, condensed sweetened milk. Other products - coffee, tea, sugar, honey, toffees.

UNIT-IV:

Food Safety: Meaning of food safety

Importance of Food: Quality and safety for developing countries.

Patent: Definition, requirements, patent law in India, administrator, need for patent system, advantages, precautions to be taken by applicants, patent procedures, non-patenable.

Food Hazards: Physical, Chemical, Biological hazards associated with food types. Effect of processing and storage on microbial safety.

UNIT-V:

Food Adulterator: Adulteration of food - common adulterants and tests detect common adulterants.

REFERENCES:

1. A.Y.Sathe, A first course in food analysis - New Age Publications, 1999.
2. Norman.N. Potter and Joseph. H. Hotchkiss, Food Science - CBS Publishers, 1996.
3. M.Swaminathan, Food Science, Chemistry and Experimental Foods - Bappco Publishers.
4. BIS standards.
5. Desrosier and Desrosier, Technology of food preservation - CBS Publishers, Fourth edition, 1999.

ELECTIVE III

PAPER III

FOOD PACKAGING

OBJECTIVES

To enable students

- The understand the need for food packaging and the recent packaging materials and labeling.
- Learn and gain knowledge on food packaging and applications during transportation.

UNIT-I:

Food Packaging: Definition, functions of packaging materials for different foods, characteristics of packaging material. Food packages – bags, pouches, wrappers, tetra packs.

UNIT-II:

Packaging Materials: Introduction, purpose, requirements, types of containers.

Modern Packaging Materials and Forms: Glass containers, metal cans, composite containers, aerosol containers, rigid plastic packages, semirigid packaging, flexible packaging.

UNIT-III:

Packages of Radiation Stabilized Foods: Introduction, rigid containers, flexible containers, general methods for establishing radiation stabilization. Radiation measurement of radiations.

Biodegradable packaging material - biopolymer based edible firm.

UNIT-IV:

Packages of dehydrated products. Orientation, metallization, co-extrusion of multilayer films, stretch, package forms and techniques. Aseptic packaging, retortable containers, modified and controlled atmosphere packaging, skin, shrink and cling film packaging, micro-ovenable containers, other package forms and components of plastics.

UNIT-V:

Packaging of Finished Goods: Weighing, filling, scaling, wrapping, cartooning, labeling, marking and trapping.

Labeling: Standards, purpose, description types of labels, labeling regulation barcode, nutrition labeling, health claims, mandatory labeling provision.

REFERENCES:

1. Vijaya Khader, Text book of Food Science and Technology, Indian Council of Agricultural Research, New Delhi, 2001.
2. Stanley Sacharous. Roger C Griffin. Principles of Food Packaging 2nd Edition AVI Publishers Co. Westport.
3. F.A. and Paine. H.Y. Leonard Hill. A hand book of Food Packaging. Blackie Sons Ltd., London.
4. Sacharows.S. Handbook of packaging materials, AVI Publishers Co., Westport.
5. Crosby N.T. Food Packaging materials. Applied Science Pub., Ltd., London.
6. Paine F.A. The packaging media. Blackie and Sons Ltd., London
7. NIIR. Food Packaging Technology hand book, Delhi.

SKILL BASED SUBJECT IV

PAPER IV

CHILD GUIDANCE AND COUNSELING

Objectives

To enable students to :

provide necessary theoretical background to the field of child guidance.

acquaint them about the needs of guidance and counseling at various stages of development.

give practical experience in the methods of investigation and in the application of the technique of guidance and counseling to such children and their family members.

equip the students with necessary skills required for their prospective jobs as child counselors in child guidance clinics pediatric departments, school counselor or family counselors in family counselors in family welfare organization.

UNIT-I

Historical Background to the child guidance movement and services.

Causes and determinants of common childhood problems genetic - psychological, socio cultural factors. Description and analysis of common varieties of behavioural problems of normal children - typical problems.

UNIT-II

Meaning of counseling and guidance

Need and scope of counseling and guidance

Principles of counseling and guidance of the children, Adolescents and adults at Home, school community. Role of counsellor, qualification and qualities of a counsellor.

UNIT-III

Role of tests in counseling and guidance - Diagnostic Methods, Interview and case study - psychological test - situation and observational techniques (play etc). recording of Electrophysiological correlates like (ECG etc.)

UNIT-IV : TECHNIQUES OF COUNSELING

Direct and Indirect counseling, methods of Management of Children in child guidance clinic - Techniques of individual management - play technique - psychochoma and group therapy - psychotherapy, Behavioral therapy and Behavior modification - Remedial and family therapy and Parent counseling - use of drugs in the treatment of behavior problems - Techniques and follow up procedures.

UNIT-V : AREAS OF COUNSELING

Emotionally disturbed

Physically Handicapped

Socially Maladjusted

Mentally Retarded

Gifted

Children with severe Behavior problems

Blind deaf and dumb - Educational, special approaches.

References

1. Anastase A (1976) Psychological Testing, Macmillan Publishing Co., Inc. New York.
2. Banard H.W., Fullwer P.W. (1972) - Principles of guidance - Allied publisher
3. Ginnolt - group psychotherapy with children - Mc Graw Hill (1961)
4. Kaat D.B (1974) Fundamentals of child counseling - Houghton Mifflin.
5. Loulit (1957) Clinical Psychology of exceptional children harpet row.
6. Ratrica Millan (1974) - Counselling in Education. J.M. sent and sons. Ltd., London.

7. Rutter and Hersey (1977) - Child psychiatry - Modern approaches butter worth group.
8. Taylor H.J.F (1971) - School counseling - Macmillan Education Ltd., London.
9. Wodman B. (1972) - Manual of child psycho pathology - Mcgraw Hill.

