

Soban Singh Jeena University Almora

Centre for Vocational Education & Skill Development



SYLLABUS

B.Voc. Nutrition and HealthCare Science

COURSE OVERVIEW:

This is the basic course in Health Care where students will get the exposure to work in Hospital. The subject gives them a vast and wide insight of the traditional and contemporary aspects in Health care. The input of basic fundamentals, coupled with the practical knowledge will be given to the students to help them in understanding of basic duties of General Duty Assistant.

The discipline of nutrition empowers learners to develop an understanding of the concept, principles of nutrition which will enable them to make the best possible choices of food for meeting the nutritional needs of self, family and community at large. It is so designed to help learners understand the concept of food and nutrition security and create an awareness regarding major public health/nutrition problems affecting vulnerable sections of the society and strategies, programmes, policies enacted by the Government for combating these problems. Further the course will focus on study about the concept, scope, need, importance and process of nutrition education. Yet another focus of the discipline is to provide knowledge to learners for nutritional therapy and counseling service for the purpose of disease management. Creating awareness towards food safety and quality control measures, laws and policies is another important focus.

The syllabus will help learners develop knowledge and skills in this area. This would make them competent to meet challenges of becoming a responsible citizen and effective nutrition educator.

OBJECTIVES OF THE COURSE:

In this course, following are the main objectives of this course.

- To train paramedical staff or providing quality service to the society.
- To understand the effective communication, identification of hazards and their management.
- To understand the rules and regulations to be followed by a General Duty Assistant in a hospital.
- To understand the clinical duties that includes taking and recording vital parameters, medical histories, preparing patients for examination and dispensing medical prescription.
- To help students recognize that food is a basic requirement of life.
- Describe basic food preparation techniques.
- Identify the physical, chemical, and/or microbiological changes in food caused by heat, enzymes, changes in pH, freezing, incorporation of air, and mechanical manipulation.
- Understand food quality.
- Learn fundamentals of modifying recipes to meet current nutrition recommendations for fat, cholesterol, fiber etc. without sacrificing flavor or appearance.
- Learn to find credible sources of information on food science and nutrition.

- Identify sources and functions of carbohydrates, proteins, fats, alcohol, vitamins, minerals and water in the human body.
- Demonstrate the importance of a balanced diet and use tools that can be utilized to evaluate the nutritional adequacy of a diet.
- Identify the relationship between diet and chronic diseases/illnesses (cardiovascular disease, diabetes, obesity, cancer, hypertension, osteoporosis etc.) and what modifications can be made in the diet to reduce the risk for these diseases/illnesses.
- Be able to read and interpret a nutrition label.
- Utilize nutrition terminology and related terminology appropriately.
- Demonstrate lifelong healthful eating habits by differentiating between beneficial and non-beneficial dietary practices.

SALIENT FEATURES:

- To train paramedical staff or providing quality service to the society.
- To understand the effective communication, identification of hazards and their management.
- To understand the rules and regulations to be followed by a General Duty Assistant in a hospital.
- To understand the clinical duties that includes taking and recording vital parameters, medical histories, preparing patients for examination and dispensing medical prescription.
- To understand administrative duties that include scheduling appointments, maintaining a rapport between patients and hospital administration
- The syllabus of nutrition at Senior Secondary level develops an understanding in the learners that the knowledge and skills acquired through the study of nutrition facilitates development of good health and well-being for self, family and community. It endeavors to - Acquaint learners with the basics of food, nutrition, health, fitness and food safety and quality control.
- Sensitize learners to the common nutritional disorders effecting vulnerable groups in our country and strategies to manage them.
- Impart knowledge of nutrition and lifestyles to enable prevention and management of diseases.
- Develop skills of communication to assist in advocacy and dissemination of knowledge to community.
- Enable learners to become alert and aware consumers, and inculcate healthy food habits.

LIST OF EQUIPMENT AND MATERIALS:

The list given below is suggestive and an exhaustive list should be prepared by the skill teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

Material Required for HealthCare/Medical room containing the following:-

- Sphygmomanometer
- Thermometer
- Wall Mounted Stadiometers
- Weighing scale
- Hospital bed with pillow
- Side Table or tray
- Bedside mangle tool
- Hospital Stretchers
- Blanket
- First Aid box
- Sanitizers
- Wheel Chair
- Nebulizer
- Mattresses
- Small Wastebasket or a bucket lined with a plastic garbage bag
- Clock
- Good source of light
- Large bottle for water
- Clipboard with paper and a pen for writing in the daily log
- Bell or noisemaker to call for assistance
- Cotton balls
- Rubbing alcohol
- Measuring cup capable for holding 250ml
- Aprons for GDA
- Latex household cleaning gloves for GDA
- Disposable vinyl gloves
- N-95 respiratory masks for use when sick person is coughing or sneezing
- Medicines like Ibuprofen for reducing fever, sore throat and muscle aches
- ORS to prevent dehydration
- Good ventilation

The list given below is suggestive and an exhaustive list should be prepared by the vocational teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

- 1) Computer
- 2) LCD Projector
- 3) Projection Screen
- 4) White/Black Boards
- 5) Flip Charts
- 6) Video and audio recorders

CAREER OPPORTUNITIES:

This basic course of Health Care will teach the students to learn how to analyze customer demand and promote good care to patients in hospital. This course will allow students to work in many different areas of paramedical departments. While all teach health care concept, this course is tailored for particular objective in order to most effectively prepare the students for their paramedic career, which can range from Paramedical staff to nurse and GDA.

The students will acquire a job with a low stress level, good work-life balance and solid prospects to improve and get promoted to higher levels of recognition.

- Hospitals
- Research institutes
- Community sectors
- Health & Wellness centres
- Education sector
- Hospitality sector
- Food Industries

VERTICAL MOBILITY:

This course will assist the participating students to further update their career by vertically moving either to B.Sc. Nursing and health care oriented applied undergraduate courses of different university.

At B.S. level, students may start their career as a Dietitian and they can reach at higher level over the period of time by pursuing master degree and PhD. For the career progression, following career options are available in the field of nutrition:

- Dietitian-Clinical/Community/Public Health/Research
- Teaching/Research scholar
- Food service manager
- Animal nutritionist
- Health promotion specialist
- International aid/Development worker
- Health & Wellness coach

B. Voc. NUTRITION AND HEALTHCARE MANAGEMENT

Sem	Paper Serial	Paper code	Subject name	Internal	Terms End Examination	Practical	Total
1	1	101	Communication and Self-management Skills	25	75		400
	2	102	Basic Human Physiology	25	75		
	3	103	Foods & Nutrition- Basic Concepts	25	75		
	4	104	Hospital Management - I	25	75		
2	1	201	Organizational Behaviour	25	75		400
	2	202	Food Safety and Hygiene	25	75		
	3	203	Role of General Duty Assistant - I (for in-patient/out-patient care)	25	75		
	4	204	Public Health Nutrition- Concepts, Disorders, Policies	25	75		
3	1	301	Fundamentals of Biochemistry	25	75		400
	2	302	Hospital Management – II(Operation theatre and First Aid/Personal hygiene)	25	75		
	3	303	Nutrition Through Life Cycle	25	75		
	4	304	Food Processing Technology	25	75		
4	1	401	Diet in Health and Disease - I	25	75		400
	2	402	Food Science	25	75		
	3	403	Role of GDA-II (In elderly and Child-Care) & Medical Record/Documentation	25	75		
	4	404	Advanced Nutrition	25	75		
5	1	501	Diet in Health and Disease -II	25	75		500
	2	502	Bio-medical Waste Management	25	75		
	3	503	Role of GDA – III (in Disaster Management and Emergency Response)	25	75		
	4	504	Maternal and Child Nutrition	25	75		
	5	505	Nutrition and Fitness	25	75		
6		601	Project work and Viva	100	300		400

SEMESTER-1

- ✚ 101: Communication and Self-management skills
- ✚ 102: Basic Human Physiology
- ✚ 103: Foods & Nutrition- Basic concepts
- ✚ 104: Hospital Management-I

✚ 101: COMMUNICATION AND SELF-MANAGEMENT SKILLS

Unit 1: Grammar

- **Word Classes** (Open & Closed)
- **Sentence** – Kinds – Transformation, Phrase, Clause and its kinds, Simple, Complex & Compound sentences, (Only definitions & Structure)
- **Tenses** - Use of verbs in the Sentences

Unit 2: Vocabulary

- Morphology
- Synonyms & Antonyms
- One Word Substitution
- Homophones & Homonyms

Unit 3: Communication Skills

- Definition & its all Types
- Communication Cycle & Barriers of communication
- Principles for Effective Communication
- Varieties in English (Indian, British & American)

Unit 4: Writing Skills

- **Letters** (Formal & Informal),
- **Report Writing** (Scientific and Formal)
- Memorandum
- Curriculum Vitae
- Personal Employment Interview
- Group Discussion.
- **Phonetics**: 44 sounds, consonants, vowels & Diphthongs, Transcription of words, Accent, Syllable cluster and Intonation

Unit 5: Sentence Building – (Advanced Level)

- Conditionals
- Modals
- Time expressions
- Describing places, things, talking more about actions

Unit 6: Personality Development (Grooming)

- Developing Confidence and killing nervousness

- Attitude management and personality enhancement
- Grooming for professional etiquettes and manners.

Unit 7: Creative writing

- Narrating the situations / describing different situations
- Elaborating pictures
- Business E-mail Invitation
- Complaint
- Appreciation for job

Unit 8: Real-life conversation

- Talking about self and expressing feelings
- Oratory Skills (Public speaking skills / techniques)
- Body language & Dress code.

❖ Practicals:

1. Seminar
2. Extempore
3. Mock Interviews & GD
4. Newspaper Advertisements
5. Quiz\ MCQ test practice in the syllabus subjects
6. Translations : Mother Tongue to English
7. SWOT Analysis, Motivation and Time Management

❖ Reference Books:

1. Developing of Communication Skills -Krishna Mohan & Meera Banerji
2. Macmillan foundation English – R.K. Dwivedi A.Kumar
3. A Practical English Grammar A.J. Thomson -Oxford
4. Mastering English Grammar – S.H.Burton
5. Technical Communication- Raman Sharma- Oxford
6. Written Communication in English – Sarah Freeman Orient Longman Pvt. Ltd.
7. A Course in Phonetics & Spoken English -J.Sethi & P.V.Dhamija
8. Radiance- Tengse
9. Soft Skills – by K. Alex
10. English Grammar and Composition – Rajendra Pal & Suri

Unit 1: Respiratory system

- **Breathing, respiration and their difference**
- **Types of respiration:** aerobic and anaerobic
- **Human respiratory system:** respiratory passage and respiratory organs involved, their structure and function
- **Respiration:** steps involved in respiration
- **Mechanism of breathing:** Inspiration and Expiration
- **Exchange of gases:** Factors that affect rate of diffusion of gases, Sites where gaseous exchange takes place (between alveoli and blood & between blood and tissues)
- **Transport of gases:** Transport of CO₂ and transport of O₂.
- **Regulation of respiration:** Nervous regulation and chemical regulation
- **Respiratory volume and capacities**

Unit 2: Digestive System

- **Digestion**
- **Human digestive system:** Alimentary canal (buccal cavity, tongue, teeth, pharynx, oesophagus, stomach, small intestine, large intestine) and associated organs (salivary glands, liver, pancreas) and their functions.
- **Process of digestion of food:** carbohydrates, protein and fats.

Unit 3: Circulatory system

- **Blood vessels:** Arteries and Veins
- **Blood:** Its composition (plasma and formed elements), functions, Blood clotting, Blood grouping, Rh factor
- **Human heart:** Appearance, position, protective covering, structure (atrium, ventricle, valves)
- **Double circulation:** Pulmonary and systemic circulation
- **Cardiac cycle**
- **Nodal tissue:** S-A node, A-V node, Bundle of His, working of nodal tissue
- **Control of heart beat:** Nervous and endocrine control
- **ECG (Electrocardiogram)**
- **Heart output/ cardiac output**
- **Pulse, difference between heart beat and pulse**
- **Blood pressure: Factors affecting blood pressure**

Unit 4: Lymphatic System

- **Lymphatic system** (lymph, lymphatic capillaries, lymphatic vessels, lymphatic nodes and lymphatic ducts.
- **Functions of lymphatic system**

Unit 5: Excretory system

- **Excretion**
- **Nitrogenous waste materials:** Ammonia, Urea, Uric Acid
- **Homeostasis and osmoregulation :** Osmoconformers and Osmoregulators
- **Human excretory system:** Kidneys, Ureter, Urinary Bladder and Urethra: Their structure and functions
- **Nephron:** Number, structure and its parts, types of nephron
- **Physiology of excretion:** Urea formation and Urine formation, Mechanism of concentration of filtrate.
- **Regulation of kidney function**
- **Urine:** quantity, physical properties, chemical composition, abnormal constituents in urine, conduction of urine and micturition.

Unit 6: Musculo-skeletal system

- **Muscles:** Types of muscles and morphology of muscles
- **Functional classification of body muscles**
- **Structure of striated muscles:** ultrastructure of striated muscles, difference between A-Band and I-Band
- **Structure of contractile protein :** thick myofilament and thin myofilament, difference between actin and myosin filament
- **Properties of muscle fibres**
- **Muscle contraction:** Mechanism of muscle contraction (stimulation, contraction and relaxation)
- **Difference between red and white muscle fibres**
- **Skeleton system:** Types, difference between exoskeleton and endoskeleton, functions of skeletal system
- **Cartilage and bones:** Their types, difference between bones and cartilage
- **Skeletal system in man: Axial skeleton-** skull, vertebral column, ribs and sternum
- **and Appendicular skeleton-** girdles and limb bones, difference between pelvic and pectoral girdle.
- **Joints:** Types of joints- Fibrous joint, cartilaginous joint, synovial joint (all the synovial joints)

Unit 7: Reproductive system

- **Structure of male and female reproductive organs.**
- **Gametogenesis**
- **Menstrual cycle**
- **Fertilization and implantation**
- **Pregnancy and embryonic development**

Unit 8: Nervous system

- **Human neural system:** CNS and PNS
- **Neuron :** Structure and functions

Unit 9: Endocrine System

- **Types of glands:** exocrine, endocrine and heterocrine glands.
- **Hormones:** Definition, transport, characteristics.
- **Endocrine glands:** Their secretion and functions, disorders due to their hypo & hypersecretion
 - a) Hypothalamus – its hormones
 - b) Pituitary gland - its hormones
 - c) Pineal gland - its hormones
 - d) Thyroid gland - its hormones
 - e) Parathyroid gland - its hormones
 - f) Thymus gland- its hormones
 - g) Adrenal gland - its hormones
 - h) Pancreas- its hormones
 - i) Gonads - its hormones

❖ Suggested Readings:

- Best CH & Taylor NB. 1989. *The Human Body*. ASI Publ. House. (Source: National Book Depot, Bombay).
- Chatterjee CC. 1992. *Human Physiology*. Vols. I, II. Medical Allied Agency. Guyton AC. 1991. *Text Book of Medical Physiology*. WB Saunders.
- Mukherjee KL. 1994. *Medical Laboratory Technology*. Vol I. Tata McGraw Hill.
- Wilson KJW & Ross JS. 1987. *Ross and Wilson Anatomy and Physiology in Health and Illness*. 6th Ed. Churchill Livingstone.

✚ 103: FOODS & NUTRITION- BASIC CONCEPTS

Unit 1: Food, Nutrition, Health

- Define Food, Nutrition, Health
- Primary Health Care and Nutritional Status
- Inter-relationship of food in maintaining good health and well-being

Unit 2: Food

- Functions of food
- Constituents of food
- Nutrient and Food Groups: Basic concepts

Unit 3: Nutrients

- Macro and micronutrients
- Functions
- Sources
- Digestion
- Absorption
- Utilization
- Requirements

Unit 4: RDA

- RDA
- RDA for Indians (ICMR 2010)
- Uses of RDA in planning diets.
- Concepts of meal planning
- Factors affecting meal planning and Balanced diet (concept and guidelines in planning balanced diets)

❖ Suggested Readings:

- Borgstrom G. 1968. *Principles of Food Science*. Vols. I, II. Macmillan.
- Desrosier NW & Desrosier JN. 1997. *The Technology of Food Preservation*. AVI Publ. Griswold RM. 1962. *The Experimental Study of Foods*. Houghton Mifflin.
- Khader V. 1999. *Text Book on Food Storage and Preservation*. Kalyani.
- Krishna Swami K. 2000. *Nutrition Research – Current Scenario*. Oxford & IBH. Lowe B. 1955. *Experimental Cookery*. John Wiley.
- Manay NS & Shadaksharaswamy M. 1997. *Foods, Facts and Principles*. New Age International.
- Meyer LH. 1976. *Food Chemistry*. AVI Publ.
- Potter NN & Hotchkiss HJ. 1996. *Food Science*. CBS.
- Subbulakshmi G & Udipi SA. 2006. *Food Processing and Preservation*. New Age International

104: HOSPITAL MANAGEMENT-I

Unit 1: Principle of hospital management

- History and growth of management sciences
- Traditional management vs. modern health care management
- Evolution of management theory
- Healthcare management as a profession.
- Evaluation of Management Concepts, Modern Management concept and its implication in health sector
- Management components i.ee. Planning, Organizing, Staffing, Motivating, Leading, Co-ordination and Controlling

Unit 2: Role of GDA in admission of patient in Hospital

- Responsibilities of GDA in admitting the patient in hospital.
- Various ways of transporting a patient from OPD to IPD.

Unit 3: Assessment of health of patient

- Purpose and Procedure of the health assessment.
- State effective ways of obtaining health history.
- Major components of obstetrical history.
- Importance of culture in the health assessment.

Unit 4: Techniques of Physical assessment of the patient

- Explain the significance and purpose of physical examination
- Techniques of physical examination viz.
- Inspection
- Palpation
- Percussion
- Auscultation
- Manipulation

Unit 5: Assistance in examination of eyes, ears, nose, throat, neck, chest.

- Role of GDA in assisting the health examination of a patient.
- Precautions to be taken while examining Height and weight of the patient.
- Technique for chest and abdomen examination

Unit 6: Collection of specimen of urine, stool, sputum, blood etc.

- Various techniques of collecting the specimen of urine, stool, sputum, blood, etc.

Unit 7: Various equipment and supplies in furnishing the patient

- Explain the significance and importance of a waste basket in patient's unit.
- Procedures of bedding standards for the patient.

❖ Suggested Reading:

Principles of Management- L. M. Prasad - S. Chand
Essential Management - Koontz - Tata McGraw Hill
Management - Peter Drucker

SEMESTER-2

- ✚ 201: Organizational Behaviour
- ✚ 202: Food Safety and Hygiene
- ✚ 203: Role of General Duty Assistant-I (for in-patient/out-patient care)s
- ✚ 204: Public Health Nutrition- Concepts, Disorders, Policies

✚ 201: ORGANIZATIONAL BEHAVIOUR

Unit 1: Introduction to Organizational Behaviour

- What is Organizational Behaviour
- Importance, Level and scope of Organizational Behaviour
- Objectives of Organizational Behaviour
- Contributing discipline
- Discipline to the Organizational Behaviour field
- Models of Organizational Behaviour
- Nature and limitations of Organizational Behaviour

Unit 2: Motivation and Leadership

- Introduction to motivation
- Characteristics of motivation, Process of motivation, Importance of motivation
- Motivational theories (content & process theory)
- Introduction to Leadership, features of Leadership, different styles of Leadership, importance of Leadership, quality of a good leader
- Leadership theories (trait theory, behavioural theory, fielder's contingency theory, path goal theory)

Unit 3: Communication

- Importance of communication, communication process
- Forms of organizational communication
- Barriers to effective communication
- Improving communication effectiveness

Unit 4: Individual and Group Behavior

- What is individual Behavior
- Cause of individual Behavior
- Factors affecting individual Behavior
- What is Group Behavior
- Types of Group Behavior
- Stages of group dynamics
- Learning theories (classical conditioning theory, operant conditioning theory, social learning theory)

Unit 5: Organizational structure and culture

- Concept of organizational structure
- Steps in formation of organizational structure
- Concept of organizational culture, element and characteristics of organizational culture, function of organizational culture

Unit 6: Development and change

- Concept of organizational change and development
- Meaning, characteristics of organizational change
- Process of planned change
- Resistance to change
- Kurt Lewin model
- Meaning and characteristics of organizational development

- **Suggested Reading:**

- Organization Behavior – S. P. Robbins – Prentice Hall
- Organizational Behavior – Fred Luthans – McGraw Hill
- Organizational Behavior – M. L. Prasad – S. Chand

202: FOOD SAFETY AND HYGIENE

Unit 1: Food Hazards

- Physical, Chemical, Biological

Unit 2: Food borne diseases, concepts, causes, and preventive measures

- **Types of Foodborne diseases**
- **Food borne intoxications:** Staphylococcal poisoning, *Bacillus cereus* poisoning, botulism
- **Food borne infections:** Salmonellosis, Shigellosis, Enteropathogenic *Escherichia coli* diarrhoea, Hepatitis A, Shellfish poisoning
- **Food borne toxic infections:** *Clostridium Perfringens* Gastroenteritis, Enterotoxigenic *Escherichia Coli* Gastroenteritis, Cholera, *Yersinia Enterocolitica* Gastroenteritis, *Campylobacter Jejuni* Diarrhoea
- **Mycotoxins:** Aflatoxicosis, Ergotism
- **Food Borne diseases due to naturally occurring intoxicants:** Lathyrism, Veno-occlusive Disease (VOD), Epidemic Dropsy.

Unit 3: Food Spoilage:

- **Factors Responsible for Food Spoilage**
- **Chemical Changes due to Spoilage**
- **Spoilage of Different Foods**
 - ✓ Spoilage of Meat
 - ✓ Spoilage of Poultry and Poultry Products
 - ✓ Spoilage of Fish and other Sea Foods
 - ✓ Spoilage of Fruits and Vegetables
 - ✓ Spoilage of Cereals and Cereal Products
 - ✓ Spoilage of Milk and Milk Products
 - ✓ Spoilage of Soft Drinks, Fruit Juices, Fruit Preserves
 - ✓ Miscellaneous Products

Unit 4: Food contaminants:

- **Naturally occurring toxicants:** Toxicants in animal foods, plant foods, anti-nutritional factors in foods
- **Environmental contaminants:** Biological contaminants, Pesticide residues, veterinary drug residues, heavy metals.
- **Miscellaneous contaminants**

Unit 5: Food additives:

- **Food additive and their classification**
- **Functional role of different additives:** Antioxidants, preservatives, food color, flavouring agent, emulsifying and stabilizing agents, anti-caking agents, sequestrants, buffering agents (acid, base and salt), anti-foaming agent, sweetening agent, other additives.

Unit 6: Food Adulteration:

- Concept/Definition as given by FSSAI, foods commonly adulterated, Common adulterants present in foods, effect of adulterants on human health.
- Methods of detection of some adulterants.

Unit 7: Food packaging:

- Concepts, significance, functions
- Classification of packaging materials: Flexible. Rigid, retail or shipping
- Packaging methods
- Labelling requirements and bar coding
- Packaging laws and regulation

Unit 8: HACCP- A food safety assurance system:

- **HACCP:** Need for HACCP, Benefits of HACCP, Principles of HACCP

Unit 9: Food regulations- Standard and quality control

- Food Standards and Regulations in India
- The Prevention of Food Adulteration Act, 1954.
- **Compulsory national legislations:** Essential Commodities Act, 1955, Standard of Weights and Measures Act, 1976, Export (Quality Control and Inspection) Act, 1963
- **Voluntary Based Product Certifications:** Bureau of Indian Standards Act, 1986, Agmark Grading and Marking Act and Rules, 1937 (Agmark), Consumer Protection Act, 1986.
- **Codex alimentarius**

PRACTICAL:

- Market survey of preserved fruit and Vegetable products
- Visit to food testing lab/or any agency of food standards
- Nutritional labeling Development and understanding of computer graphics as an aid
- Simple test for food adulteration

❖ Suggested Reading:

- Ignou study material
- Ayres JC. 1968. **The Safety of Foods.** AVI Publ.
- Hayes WJ. 1975. **Toxicology of Pesticide.** The Willams & Wilkins Co.
- Jacob T. 1976. **Food Adulteration.** Sib Wasani Macmillan Co.
- Jathcock, J.N. **Nutritional Toxicology.** Academic Press.
- Liener, I.E. 1980. **Toxic Constituents of Plant Foodstuffs.** Academic Press.
- Swaminathan MS. 1985. **Advanced Text Book on Food and Nutrition.** Vol II. The Bangalore Printing & Publ. Co.

203: ROLE OF GENERAL DUTY ASSISTANT-I (For in-patient/out-patient care)

Unit 1: Role, functions and qualities of patient care assistant

- Essential duties and responsibilities of Patient care assistant
- Good qualities of Patient care assistant

Unit 2: Daily care plan and care needed for the patient and Identification of vital signs

- Various activities of patient's daily care routine, including bathing, feeding, excreta disposal, transfer of patients, medication, etc.
- Important vital signs of the body.
- Abnormal vital signs

Unit 3: Components and elements required for patient comfort

- Basic components required for patients comfort.
- Various elements of patients safety

Unit 5: Daily care needed by the patient and its implementation

- Report any evident changes and appearance.
- Provide care needed by the patient.
- Objectives of care plan.
- Role of GDA in preparation and implementation of care plan

Unit 6: Role of GDA in feeding a patient

- Characteristics of a healthy person.
- Various types of diets and their importance with regard to nutrition

Unit 7: Types of bed in hospitals

- Features and importance of various types of bed in a hospital.
- Various steps of bed making.
- Roles and functions of General Duty Assistant in bed making.

Unit 8: Therapeutic Position

- Various positions of patients.
- Therapeutic position.
- Importance of fowler's position

204: PUBLIC HEALTH NUTRITION

Unit 1: Public health nutrition

- Definition, concept, scope

Unit 2: Healthcare

- Concept, levels of healthcare
- Healthcare system in India
- Role of public nutritionist on healthcare delivery

Unit 3: Major Deficiency Disorders ((Prevalence, Causes, Consequences and its control)

- PEM (Protein Energy Malnutrition)
- Nutritional Anaemia with special reference to Iron Deficiency Anaemia
- Vitamin A Deficiency (Xerophthalmia)
- Iodine Deficiency Disorders
- Zinc deficiency

Unit 4: Other Nutritional Problems ((Prevalence, Causes, Consequences and its control)

- Vitamin B-complex deficiencies
- Vitamin C deficiency
- Vitamin D deficiencies
- Overweight/Obesity

Unit 5: Non-Communicable Diseases (Concept, Prevalence, Causes)

- Diabetes
- Cardiovascular diseases
- Cancer

Unit 6: Nutrition policy and programmes

- **National Nutrition Policy (NNP)**
- **Integrated Child Development Services (ICDS) Programme**
- **Supplementary Feeding Programmes:** National Programme of Nutritional Support to Primary Education (Mid Day Meal Programme), Special Nutrition Programme (SNP), Pradhan Mantri's Gramodaya Yojana (PMGY), Balwadi Feeding Programme, Composite Nutrition Programme, Applied Nutrition Programme.
- **Nutrient Deficiency Control Programmes:** National Prophylaxis Programme for Prevention of Blindness due to Vitamin A Deficiency, National Nutritional Anaemia Control Programme, National Iodine Deficiency Disorders Control Programme (NIDDCP)
- **Food Security Programmes:** Public Distribution System (PDS) and the Targeted Public Distribution System (TPDS), Antyodaya Anna Yojana (AAY), Annapurna Scheme, National Food for Work Programme (NFFWP)

- **Self Employment and Wage Employment Schemes:** Sampoorna Gramin Rojgar Yojana, Swarna Jayanthi Gram Swarozgar Yojana (SGSY)
- Programmes for welfare of Adolescent girls and Women (Rashtriya Kishore Swasthya Karyakram (RKSK),Rajiv Gandhi Scheme for Empowerment of Adolescent Girls(SABLA), Indira Gandhi Maitritva Sahyog Yogna (IGMSY), PMMVY.

❖ **Suggested Reading:**

- Ignou study material
- Anderson L, Dibble MV, Turkki PR, Mitchell HE & Pynbergen HJ. 1982. **Nutrition in Health and Disease.** JB Lippincott Co.
- Jelliff BD. 1966. **The Assessment of the Nutritional Status of the Community.** WHO.
- Jolliff N. 1962. **Clinical Nutrition.** Hoeber Medical Division.
- McLaren DS. 1983. **Nutrition in the Community.** John Wiley.
- Park JE & Park K. 2000. **Text Book of Preventive and Social Medicine.** Barnasidas Bhanot Publ.
- Shukla PK. 1982. **Nutritional Problems of India.** Prentice Hall.

SEMESTER-3

- ✚ 301: Fundamentals of Biochemistry
- ✚ 302: Hospital Management-II (Operation theatre & First Aid/ Personal hygiene)
- ✚ 303: Nutrition through life cycle
- ✚ 304: Food Processing Technology

✚ 301: FUNDAMENTALS OF BIOCHEMISTRY

Unit 1: Introduction

- Origin of life and history of Biochemistry
- Biomolecules to cell
- Cells and organelles

Unit 2: Carbohydrates

- Nature and nomenclature
- Classification of carbohydrates
- Monosaccharides
- Oligosaccharides
- Storage and structure of polysaccharide
- Chemical properties of carbohydrates

Unit 3: Lipids and membranes

- Classification of lipids
- Fatty acids
- Simple lipids
- Compound lipids
- Properties of fat

Unit 4: Nucleic acid

- Nucleic acid and building blocks
- Nucleotide
- Types and functions of nucleic acid

Unit 5: Amino acids and proteins

- Amino acids and proteins
- Chemistry of amino acids
- Classification of amino acids

- Essential amino acids
- Properties (physical and chemical)
- Myoglobin and Haemoglobin

Unit 6: Enzymes

- Characteristics of enzymes
- Classification of enzymes
- Co-factors
- Enzyme regulation

❖ Suggested reading:

- **Nutritional biochemistry**, Tom Brody
- **Nutritional biochemistry** by Sharma D.C.
- **Nutritional biochemistry** by Patricia Trueman

✚ 302: HOSPITAL MANAGEMENT- II (OPERATION THEATER AND FIRST AID/ PERSONAL HYGIENE)

Unit 1: Good Hygiene practice and Factors affecting good health

- Grooming routines to be followed for personal hygiene.
- Importance of personal hygiene.
- Factors that affect health and prevent diseases.

Unit 2: Personal Grooming and Hand washing methods

- Importance of good appearance and grooming in life and workplace
- Method of hand washing.
- Importance of washing and maintain good hand hygiene.

Unit 3: First Aid and Equipment for First Aid

- Purpose of First Aid.
- Principles of First Aid.
- Facilities and materials used for administering First Aid
- Role and functions of a first aider

Unit 4: Types of Burns

- Causes of various types of burns.
- Reasons for using different methods for treating burns.

Unit 5: Operation Theatre

- Enlist the operation theatre equipment.
- Define ideal operation theatre.
- Setting up of operation theatre.
- Minor operation theatre.
- Types of operation theatre

✚ 303: NUTRITION THROUGH LIFE CYCLE

Unit 1: Nutrition across Life Cycle

- Significance of Nutrition across Life Cycle

Unit 2: Infant and prechool children:

- Growth and development: Physiological changes, growth monitoring, health monitoring
- Energy Requirements of Infants (from Birth to 12 Months)
- Diet and feeding pattern: Feeding 0-6 months infant, feeding 6-12 months infant, feeding preschoolers
- Problems of Infants and Preschoolers Nutrition

Unit 3: Nutrition during Childhood and Adolescence:

- Older Children and Adolescents: Changes in Physical Development and Body Composition, Sexual Maturity, Psycho-social Change
- Nutrient Needs and Recommended Dietary Intakes
- Diet and Dietary Patterns
- Problems of Older Children and Adolescent Nutrition

Unit 4: Nutrition during Adulthood and Old Age:

- **Adults:** Nutrient Requirements of Adults, Diet and Social Considerations, Fulfilling Nutrient Needs at Different Socio-economic Levels
- **Elderly:** Definition of Old Age, Nutrition and Ageing, Physiological Changes Associated with Ageing, Changing Body Composition and Techniques for Measuring Body Composition, Changing Body Composition
- **Nutritional Requirements and Dietary Modifications in the Diet of the Elderly**
- **Guidelines for Planning Balanced Diets for Elderly**

Unit 5: Nutrition during pregnancy and lactation:

- Physiological Changes in the Body during Pregnancy, Changes in Uterus and Breasts, Expansion in Plasma Volume and Red Cell Mass, Hormonal Profile in Pregnancy, Organ Functions, Placental Transfer of Nutrients, Maternal Weight
- Nutritional Needs during Pregnancy
- Anaemia during Pregnancy: Causes, Diagnosis of Anaemia, Signs and Symptoms, Effects of Anaemia on Pregnancy and its Outcome, Iron Folic Acid Supplementation, Counselling for Anaemia.
- Lactation: Anatomy and Physiology of Breastfeeding, Composition of Breast Milk, Advantages of Breastfeeding to the Baby, Malnutrition - Effects on Milk and Effects on Mothers
- Nutritional Requirement during Lactation, Diet during Lactation Dietary Management, Other Concerns during Breastfeeding

❖ Suggested Readings:

- Anderson L, Dibble MV, Turkki PR, Mitchell HS & Rynbergen HJ. 1982. *Nutrition in Health and Disease*. JB Lippincott Co.
- Beal VA. 1980. *Nutrition in the Life Span*. John Wiley.
- Falkner F & Tanner JM. 1978. *Human Growth*. Vols. I-III. Plenum Press.
- FAO/WHO/UNU. 1985. *Energy and Protein Requirement*. Tech. Report 724. WHO.
- Ghosh S. 1988. *The Feeding and Care of Infant and Young Children*. Voluntary Health Association of India, New Delhi.
- Guthrie HA. 1989. *Introductory Nutrition*. Times Mirror/Mosby College Publ.
- ICMR. 1990. *Nutrient Requirement and Recommended Dietary Allowance for Indians*. A Report of Expert Group of the ICMR, NIN, Hyderabad.
- Khetarpaul N, Katyal S.K. & Grover I. 2001. *Infant Health and Nutrition*. Agro Tech. Publ. Academy.
- Krause MV & Mahan LK. 1990. *Food, Nutrition and Diet Therapy*. WB Saunders.
- Robinson CH & Lawler MR. 1986. *Normal and Therapeutic Nutrition*. McMillan.
- Williams SR, Worthington RS, Sneholinka ED, Pipes P, Ress JM & Mahal KL. 1988. *Introduction Nutrition throughout the Life Cycle*. Times Mirroe/Mosby College Publ.

304: FOOD PROCESSING TECHNOLOGY

Unit 1: Introduction of Food Processing

- **Food Spoilage and Causes**
- **Food Processing:** Aims of Food Processing, Historical Development in Food Processing, Methods and Principles of Food Preservation
- **Traditional Methods of Food Processing**

Unit 2: Methods of food processing

- **Thermal Processing:** Cooking, Blanching, Pasteurization, Commercial Sterilization, Canning
- **Dehydration:** Expression of Moisture Content, Classification of Types of Water found in Foods, Mechanism of Drying, Drying Techniques and Methods
- **Preservation by Concentration:** Methods of Concentration, Changes due to Concentration Process
- **Freezing:** Freezing Systems
- **Microwave Processing:** A Look at Microwave Processing, Advantages of Microwave Heating, Microwave Food Processing Applications, Microwave vs. Conventional Heating
- **Irradiation**
- **Fermentation:** Types of Fermentation and Fermented Foods
- **Deep Fat Frying**
- **Use of Salt, Sugar and Chemicals as Preservatives**

Unit 3: Chemical, Physical and Nutritional alterations occurring in foods during processing and storage

- Alterations Occurring in Fruits and Vegetables
- Alterations Occurring in Milk and Milk Products
- Alterations Occurring in Meat and Poultry
- Alterations Occurring in Fish
- Alterations Occurring in Egg
- Alterations Occurring in Cereal, Cereal Products and Legumes
- Alterations Occurring in Nuts/ Oil seeds and Spices

Unit 4: Pre and primary processing

- Production, Harvesting and Handling of Fresh Foods
- Preparation of Raw Materials for Processing
- Primary Processing: Cereals, Pulses, Oilseeds

Unit 5: Fermentation, malting and germination

Unit 6: Product development and evaluation

- Need for the Product Development, Influencing Factors, Consumer Oriented Product Development
- **Sensory Evaluation:** Acceptance Tests, Sensory Evaluation during Product Life Cycle
- **New Products and Ingredients:** Functional Foods
- **Shelf life:** Major Modes of Food Deterioration, Evaluation of the Food Quality, Procedures for Determination and Monitoring of Shelf life

❖ Suggested Readings:

- Desrosier NW & Desrosier JN. 1977. *The Technology of Food Preservation*. AVI Publ.
- Frank AP. 1987. *Modern Processing, Packaging and Distribution System for Foods*. AVI Van nonstand Reinhold Co.
- Frazier WC. 1988. *Food Microbiology*. Tata McGraw Hill.
- McWilliams M. 1993. *Foods - Experimental Perspectives*. Macmillan.
- Potty VH & Mulky MJ. 1993. *Food Processing*. Oxford & IBH.
- Srilakshmi B. 2001. *Food Science*. New Age International.
- Swaminathan MS. 1993. *Food Science and Experimental Foods*. Ganesh & Co.

SEMESTER-4

- ✚ 401: Diet in health and disease-I
- ✚ 402: Food Science
- ✚ 403: Role of GDA-II (In elderly and child care) and medical record/documentation
- ✚ 404: Advanced Nutrition

✚ 401: DIET IN HEALTH AND DISEASE-I

Unit 1: Causes, Physiological conditions, Clinical symptoms and Dietary management of Infections and fevers:

- Fever
- Typhoid
- Influenza
- Malaria
- Tuberculosis
- AIDS

Unit 2: Causes, Physiological conditions, Clinical symptoms and Dietary management of diseases of Liver and Pancreas:

- Jaundice
- Infective Hepatitis
- Pneumonia
- Liver cirrhosis
- Hepatic encephalopathy
- Liver transplantation
- Cholecystitis and cholelithiasis
- Pancreatitis
- Diabetes

Unit 3: Causes, Physiological conditions, Clinical symptoms and Dietary management of diseases of Gastrointestinal diseases:

- **Upper gastrointestinal diseases**
 - Gastro Esophageal Reflux Disease (GERD)
 - Indigestion
 - Peptic Ulcer
 - Gastric surgery
- **Intestinal diseases**
 - Dumping Syndrome
 - Constipation
 - Diverticular disease

- Diarrhoea
- Malabsorption
- Inflammatory Bowel Diseases
- Irritable Bowel Diseases
- Intestinal Gas and Flatulence

PRACTICALS

Diet planning of the following diseases of people with different age-groups:

- Fever
- Typhoid
- Influenza
- Malaria
- Tuberculosis
- AIDS
- Jaundice
- Infective Hepatitis
- Pneumonia
- Liver cirrhosis
- Hepatic encephalopathy
- Liver transplantation
- Cholecystitis and cholelithiasis
- Pancreatitis
- Diabetes
- Gastro Esophageal Reflux Disease (GERD)
- Indigestion
- Peptic Ulcer
- Gastric surgery Dumping Syndrome
- Constipation
- Diverticular disease
- Diarrhoea
- Malabsorption
- Inflammatory Bowel Diseases
- Irritable Bowel Diseases
- Intestinal Gas and Flatulence

Suggested Readings:

- Robinson, Lawler, Chenoweth & Garwick, 1987. *Normal and Therapeutic Nutrition*. 17th Ed. Macmillan Publishing Co.
- Shills ME & Young VR. *Modern Nutrition in Health and Disease*. 7th Ed. Lea & Febiger.

402: FOOD SCIENCE

Unit 1: Carbohydrates in food

- **Sources, Characteristics, Classification**
- **Sugars:** Chemistry, functionality and their Role in Food Industry
- The Functional Role of Sugars in Foods
- Sweetener

Unit 2: Food polysaccharides and their applications

- **Characteristics and Functional Properties of Native and Modified Starches:** Starches, Modified starches
- **Food Hydrocolloids:** Classification
- **Non-Starch Polysaccharides:** Cellulose, Carboxy methyl cellulose, Hemicellulose, Pectin
- **Algal Polysaccharides:** Agar, Alginate, Carrageenan
- **Seed Gums:** Locust Bean, Guar Gum
- **Exudate Gums:** Gum Arabic, Gum Ghatti, Gum Karaya, Gum Tragacanth
- **Microbial Polysaccharides:** Xanthan, Gellan, Curdlan, Dextran, Pullulan

Unit 3: Protein

- **Classification, Composition, Biological Functions, Food Sources of Proteins**
- **Functional Properties of Proteins**
 - a. Hydration
 - b. Viscosity, Gelation and Texturization
 - c. Dough Formation
 - d. Emulsifying and Surface Properties of Proteins
 - e. Foaming Properties, Binding of Flavour and other substances
- **Protein Concentrates, Isolates and Hydrolysates and their applications:** Protein Concentrates, Protein Isolates, Protein Hydrolysates

Unit 4: Lipids

- **Lipids:** Classification of Lipids, Categories of Fats and Oils
- **Functional Properties of Food Lipids**
- **Deep Fat Frying:** Factors Affecting Process of Deep Fat Frying, Maintaining the Quality of Frying Oil
- **Deteriorative Changes in Fats and Oils:** Autoxidation, Factors Influencing Lipid Oxidation, Lipolysis, Thermal Decomposition
- **Antioxidants** – Preventing the Deteriorative Changes in Fats and Oils

Unit 5: Minerals

- Classification of Minerals
- Nutritional and Functional Role of Minerals in Foods
- Bioavailability of Minerals
- Estimation of Minerals in Foods
- Effect of Processing on Mineral Content of Foods

Unit 6: Enzymes

- Classification of Enzymes
- **Biotechnological Applications of Enzymes:** Enzyme Utilization in Industry, Enzymatic Analysis in Foods, Enzymatic Analysis in Foods

Unit 7: Sols, Gels and Emulsions

- **Colloids, Colloidal systems and Applications of Colloidal Chemistry to Food Preparations**
 - a. Classification of Colloidal Systems
 - b. Properties of Colloidal Systems
- **Definition and Properties of Solutions**
- **Sols, Gels and Suspensions**
 - a. Properties of Sols
 - b. Gels and its Properties
 - c. Suspensions
- **Emulsions**
- **Foams:** Antifoaming Agents

Unit 8: Properties of food

- **Introduction to Quality Attributes of Food**
- **Gustation - the Sense of Taste:** Chemicals Responsible for the Four Basic Tastes i.e., Sweet, Salt, Sour and Bitter, Factors Affecting Taste Quality
- **Texture in Foods:** Objective Measurement and Evaluation of Food Texture 8.4.2 Rheology of Foods
- **Colour:** Functions of Colour in Foods, Measurement of Colour in Foods, Qualitative and Quantitative Analysis of Colour

❖ Suggested Readings:

- B. Srilaxmi: Food Science.
- Ignouhelp.in

403: ROLE OF GDA-II (IN ELDERLY AND CHILD CARE) AND MEDICAL RECORD/DOCUMENTATION

Unit 1: Role of GDA in elderly

- Explain biological ageing
- Enlist myths and facts about ageing
- Enlist the common health problems that old people may suffer
- Legal needs of the elderly
- Changes that occur in different systems of body during old age
- Explain the reasons for caring the elderly
- Security and safety needs of an elderly people
- Enlist any five requisites for better feeding during old age
- Food and fluid needs of elderly people
- Enlist the common problem of skin and nails in elderly
- Enumerate the common problems related to sensory organ in old age
- Common eye problems that may occur in old age
- Common problems that occur in endocrine glands during old age

Unit 2: Role of GDA in child care

- Enlist different age group before 18 years of age
- Explain the stages of learning and thinking abilities amongst infants and children's
- Explain the importance of nutrition and hydration required for infants and children
- Safety needs of children

Unit 3: Role of GDA in medical records and documentation

- Explain the purpose of health service planning
- Explain the significance of documentation in decision analysis
- Importance of documentation in assuring quality services to patients
- Explain the importance of mentioning the Date and time during recording
- Importance of confidentiality in maintaining medical record of the patient
- Describe the procedure of making corrections and omissions in healthcare documents
- Explain LAMA
- Explain change of shift note
- Purpose of Transfer and discharge note
- Explain different format and methods of documentation
- Enlist the documents maintained by the hospital in MLC and RTA cases
- Explain POMR

404: ADVANCED NUTRITION

Unit 1: Understanding nutrition

- **Nutrition Science:** Basic Concepts
- **Nutritional Requirements:** Definition of Concepts in Relation to Human Nutritional Requirements, Basic Terminology in Relation to Nutritional Requirements
- **Methods for Studying the Nutrient Requirements:**
 - a. Population Survey of Dietary Intakes of Nutrients
 - b. Growth Studies
 - c. Depletion and Repletion Studies
 - d. Nutrient Balance Studies
 - e. Use of Isotopically Labeled Nutrients: Nutrient Turnover
 - f. Obligatory Losses of Nutrients
- **Goals of National and International Requirement Estimates and RDAs**
- **Dietary Guidelines**

Unit 2: Human energy requirements

- **Energy: Some Basic Concepts**
- **Definition and Components of Energy Requirement**
- **Factors Affecting Energy Expenditure and Requirement**
 - a. Factors Affecting the BMR
 - b. Factors Affecting the Thermic Effect of Food
 - c. Factors Affecting the Energy Expended in Physical Activity
- **Methods of Estimation of Energy Expenditure and Requirements**
 - a. Direct Calorimetry
 - b. Indirect Calorimetry
 - c. Double Labelled Water (DLW) Technique
 - d. Heart Rate Monitoring (MRM) Method
 - e. Factorial estimation of Total Energy Expenditure
- **Energy Requirements and Dietary Energy Recommendations**
 - a. Energy Requirements of Infants (from Birth to 12 Months)
 - b. Energy Requirements for children and Adolescents
 - c. Energy Requirement of Adults
 - d. Energy Requirement during Pregnancy
 - e. Energy Requirement during Lactation

Unit 3: Carbohydrates

- **Classification of Carbohydrates:** Classification on the Basis of Degree of Polymerization (DP), Classification Based on Digestive Fate of Carbohydrates
- **Functions, Digestion and Absorption Metabolic Utilization of Carbohydrates**
- **Regulation of Blood Glucose Concentration**
- **Dietary Fibre:**
 - a. Components of Dietary Fibre
 - b. Properties of Fibre
 - c. Effects of Dietary Fibre
 - d. Potential Health Benefits of Dietary Fibre
 - e. Recommended Intake of Fibre
- **Resistant Starch:** Factors Influencing RS content of Foods, Potential Health Benefits
- **Fructo-Oligosaccharides (FOS)**
- **Glycemic Index (GI):** Factors Affecting GI of Foods, GI in Chronic Diseases
- **Modification of Carbohydrate Intake for Specific Disorder**

Unit 4: Proteins

- **Proteins:** Classification, Food Sources, Digestion, Absorption and Transport of amino acids, Functions
- **Methods of Determination of Proteins and Amino Acid Content in Foods**
- **Improvement of Quality of Protein in the Diet**
- **Methods of Estimating and Assessing Protein Requirements at Different Stages of Life Cycle**
- **Nutritional Requirements and Recommended Allowances for Proteins and Amino Acids**
- **Protein Deficiency**

Unit 5: Lipids

- **Fats: Some Basic Facts**
- **Types of Fats and its Metabolism:** Classification of Fats and Fatty Acids, Digestion of Fats, Absorption of Fats, Transport and Storage of Fats in the Body
- **Functions of Fat and Oils**
- **Nutritional Requirements of Fats and Oils:** Adults, Pregnancy and Lactation, Infancy, Young and Older Children, Choice of Cooking Medium in the Context of n-3 and n-6 Fatty Acid Ratio in Indian Diets
- **Excessive Fat Intake:** Changing Trends in Dietary Intake, Eating Out, Diseases: Association and Preventive Measures

Unit 6: Water

- **Water:** An Essential but Overlooked Nutrient, Functions of Water in the Body
- **Water Distribution and Compartments of Body Water:** Compartments of Body Water, Forces Influencing Water Distribution
- **Water Balance:** Water Intake, Water Output (Losses of body water), Regulation of Water Balance
- **Requirements for Water**
- **Disturbances in Fluid Balance:** Dehydration, Oedema

Unit 7: Fat-Soluble Vitamins

- **Vitamin A, Vitamin D, Vitamin E, Vitamin K**

Unit 8: Water-Soluble Vitamins

- **Thiamin** (Vitamin B, or Aneurin), **Riboflavin**, **Niacin**, **Pyridoxine** (Vitamin B₆), **Folate**, **Cyanocobalamin** (Vitamin B₁₂), **Ascorbic acid** (Vitamin C), **Interaction with other Nutrients**

Unit 9: Macro minerals

- General Nutritional Functions of Minerals
- Absorption and Metabolism of Minerals
- Calcium, Phosphorus, Magnesium, Sodium, Potassium and Chloride
- Interactions of Macrominerals with other Nutrients

Unit 10: Micro minerals

- Iron, Zinc, Copper, Selenium, Chromium, Manganese, Iodine, Fluorine

Unit 11: Food components other than essential nutrients

- **Functional Foods: Classification**
- **Bioactive Substances from Protein Foods**
- **Non-Glycerides in Edible Oils**
- **Probiotics and Prebiotics**
 - a. Definition and Characteristics
 - b. **Probiotics:** Dietary Sources and their Mode of Action/Effects
 - c. **Prebiotics:** Dietary Sources and their Mode of Action/Health Effects

- **Polyphenols**
 - a. Definition and Classification
 - b. Bioavailability of Polyphenols
 - c. Influence of Polyphenols on Macronutrients and Minerals
 - d. Health Benefits of Polyphenols
- **Phytoestrogens**
 - a. Dietary Sources and Chemical Forms
 - b. Physiologic Effects
- **Other Dietary Factors with Antinutritional Effects**
 - a. Protease Inhibitors
 - b. Saponins
 - c. Amylase Inhibitors
 - d. Lectins or Haemagglutinins
 - e. Phytates
- **Health Benefits of other Dietary Factors with Antinutritional Effects**

❖ **Suggested Readings:**

- Anderson L, Dibble, Turkki PR, Mitchell HS & Rynbergen HJ. 1982. *Nutrition in Health and Disease*. JB Lippincott
- Bamji MS, Rao **Macro minerals** NP & Reddy V. 1999. *Text Book of Human Nutrition*. Oxford & IBH.
- FAO/WHO/UNU 1985. *Energy and Protein Requirement*. Tech. Report 7824, WHO.
- ICMR. 1990. *Nutrient Requirement and Recommended Dietary Allowance for Indians*. A Report of Expert Group of the ICMR, NIN, Hyderabad.
- James WPT & Schofield EC. 1990. *Human Energy Requirements – A Manual for Planners and Nutritionists*. Oxford University Press.
- Jelliffe DB. 1966. *The Assessment of the Nutrition Status of the Community*. WHO.
- Jolliffe N. 1962. *Clinical Nutrition*. Hoeber Medical Division.
- Khader V, Sumathi S & Manorama R. 1998. Course Manual of the Short Course on "Recent Advances in Vitaminology", Center for Advanced Studies, Department of Foods and Nutrition, Post Graduate and Research Centre ANGRAU, Hyderabad.
- Passmore R & Eastwood MA. 1986. *Human Nutrition and Dietetics*. Elbs Churchill.
- Pike RL & Brown ML. 1988. *Nutrition - An Integrated Approach*. John Wiley.
- Robinson CH & Lawler MR. 1986. *Normal and Therapeutic Nutrition*. Macmillan.
- Shills ME, Olson JA, Shike M & Ross AC. 1999. *Modern Nutrition in Health and Disease*. Williams & Wilkins.
- Swaminathan MS. 1985. *Advanced Text Book on Food and Nutrition*. Vols.I, II. The Bangalore Printing & Publ. Co.

SEMESTER-5

- ✚ 501: Diet in health and disease -II
- ✚ 502: Bio-medical waste management
- ✚ 503: Role of GDA- III (In Disaster Management & Emergency Response)
- ✚ 504: Maternal and Child Nutrition
- ✚ FN-505: Nutrition and Fitness

✚ 501: DIET IN HEALTH AND DISEASE -II

Unit 1: Causes, Physiological conditions, Clinical symptoms and Dietary management of cardiovascular diseases:

- Hypertension
- Hypercholesterolemia

Unit 2: Causes, Physiological conditions, Clinical symptoms and Dietary management of:

- Obesity
- Underweight
- Cancer
- Lactose intolerance
- Celiac disease
- Gout

Unit 3: Causes, Physiological conditions, Clinical symptoms and Dietary management of disease of Kidneys:

- Glomerulonephritis
- Acute Renal Failure
- Chronic Renal Failure
- Dialysis
- Renal Transplant
- Urolithiasis or Renal Calculi

Unit 4: Causes, Physiological conditions, Clinical symptoms and Dietary management of Inborn errors of metabolism:

- Phenylketonuria
- Galactosemia
- Fructosuria
- Menke's Disease
- Wilson's Disease

PRACTICALS:

Diet planning of the following diseases:

- Hypertension
- Hypercholesterolemia
- Obesity
- Underweight
- Cancer
- Lactose intolerance
- Celiac disease
- Gout
- Glomerulonephritis
- Acute Renal Failure
- Chronic Renal Failure
- Dialysis
- Renal Transplant
- Urolithiasis or Renal Calculi
- Phenylketonuria
- Galactosemia
- Fructosuria
- Menke's Disease
- Wilson's Disease

❖ Suggested Readings:

- Robinson, Lawler, Chenoweth & Garwick, 1987. *Normal and Therapeutic Nutrition*. 17th Ed. Macmillan Publishing Co.
- Shills ME & Young VR. *Modern Nutrition in Health and Disease*. 7th Ed. Lea & Febiger.
- Stanfield PS, Hui YH & American Dietetics Association 1992. *Nutrition and Diet Therapy*. 2nd Ed. Jones & Bartlett Publ.

502: BIO-MEDICAL WASTE MANAGEMENT

Unit 1: Biomedical Waste

- Define bio-medical waste.
- Enlist the risks involved in poor waste management In hospital.
- Importance of hospital waste management with respect to hospital staff and general public.
- Explain how bio-medical waste management helps in environment protection.
- Enlist the routes of Transmission of infection in hospitals.

Unit 2: Sources and disposal methods of Bio-medical waste

- Enlist the sources of bio-medical waste.
- Areas of biomedical waste generation in hospital.
- Method of disposing off micro biological and biotechnological waste in hospitals

Unit 3: Segregation, packaging, transportation and storage of Bio-medical waste

- Explain autoclaving and shredding.
- Transportation process of bio-medical waste.
- Procedure of treatment of general waste and bio-medical waste in hospital.
- State the importance of color-coding criteria recommended by WHO.

Unit 4: Role of personnel involved in waste management

- State the functions of hospital waste management committee.
- Duties of medical superintendent regarding bio- medical waste management.
- Duties of matron in bio–medical waste management.
- Importance of training on hospital waste management to different categories of staff in a hospital

❖ Suggested Readings:

- Principles of Hospital Management- S. A. Tabish
- Hospital Management- S.L. Goel
- Hospital Administration- Francis
- Bio-Medical Waste Act & Rules Govt. of India
- Current Issues in BMW Waste Handling- ISHA, Bangalore

✚ 503: ROLE OF GDA-III (IN DISASTER MANAGEMENT & EMERGENCY RESPONSE)

Unit 1: Knowledge of goals, cycle and phases of disaster management and emergency response

- Define disaster
- Importance of disaster management
- Phases of disaster management
- Two preparedness measures that should be taken to avoid an earthquake disaster in a multi-storey residential building

Unit 2: Knowledge of structure, roles and responsibilities of emergency response team

- Explain significance of ERT
- Enlist the members of an ERT
- Enlist the equipment used by an ERT
- Explain method of rescue and evacuation drill
- Benefits of drills

Unit 3: Knowledge of classification, causes, methods and techniques of extinguishing fire using appropriate equipment

- Terms: Rescue, Alarm, Extinguish, Evacuate
- Enlist the fire-fighting equipment
- Explain the classification and causes of fire
- Methods of extinguishing fire
- Explain procedures of dealing with fire emergencies
- Differentiate between fire Prevention and fire protection

504: MATERNAL AND CHILD NUTRITION

Unit 1: Pregnancy

- Nutritional needs during pregnancy
- Common disorders of pregnancy (Anaemia, HIV infection, Pregnancy induced hypertension)
- Relationship between maternal diet and birth outcome.

Unit 2: Maternal health

- Maternal health and nutritional status
- Maternal mortality
- Issues relating to maternal health

Unit 3: Lactating mother health

- Nutritional needs of nursing mothers and infants
- Determinants of birth weight
- Consequences of low birth weight
- Breastfeeding biology, Breastfeeding support and counselling

Unit 4: Infant and young child

- Infant and young child feeding and care - Current feeding practices and nutritional concerns
- Guidelines for infant and young child feeding
- Breast feeding, weaning and complementary feeding.

Unit 5: Malnutrition

- Assessment and management of moderate
- Severe malnutrition among children
- Micronutrient malnutrition among preschool children

Unit 6: Child health and morbidity

- Child health and morbidity
- Neonatal, infant and child mortality
- IMR
- Link between mortality and malnutrition

Unit 7: Overview of maternal and child nutrition policies and programmes

- Integrated Child Development Services Scheme
- Janani-Shishu Suraksha Karyakram.
- Janani Suraksha Yojana.
- Pradhan Mantri Surakshit Matritva Abhiyan.
- DAKSHATA Implementation Package.
- MCH Programme

❖ Suggested Readings:

- Bamji MS, Rao NP & Reddy V.1999. *Text Book of Human Nutrition*. Oxford & IBH.
- Falkner F & Tanner JM. 1978. *Human Growth - Postnatal Growth and Neurobiology*.Vol. II. Plenum Press.
- Falkner F & Tanner JM. 1986. *Human Growth - A Comprehensive Treatise*. Development Biology Press.
- Falkner F & Tanner JM. 1986. *Human Growth – Methodology, Ecological, Genetic and Nutritional Effects on Growth*. Vol. III. Plenum Press.
- Francis DEM. 1986. *Nutrition in the Life Span*. John Wiley.
- Sachdeva HPS & Choudhary P. 1994. *Nutrition in Children*. Cambridge Press.
- Williams SR, Worthington RS, Sneholinka ED, Pipes P, Ress JM & Mahal KL. 1988. *Nutrition Throughout the Life Cycle*. Times Mirror/Mosby College Publ.
- Ziegler EE & Filer LJ. 1996. *Present Knowledge in Nutrition*. International Life Science Institute, Washington, D.C.

✚ 505: NUTRITION AND FITNESS

Unit 1: Understanding Fitness:

- Definition of fitness, health and related terms
- Assessment of fitness
- Parameters of Fitness
- Fitness Tests
- Approaches for keeping fit
- Role of nutrition in fitness
- Nutritional guidelines for health and fitness

Unit 2: Sports Nutrition

- What is Sports Nutrition
- Evolution and Growth of Sports Nutrition as a Discipline
- Nutritional Demands of Sports and Dietary Recommendations

Unit 3: Physical activity

- Importance, frequency, intensity, time and type with examples
- Guidelines and physical activity pyramid
- BMI

Unit 4: Weight Management

- Assessment of overweight and obesity
- Etiology of overweight and obesity
- Health complications of overweight and obesity


Unit 5: Diet and exercise for weight management

- Fad diets
- Principles of planning weight reducing diets

❖ Suggested Readings:

- Falkner F & Tanner JM. 1978. *Human Growth - Principles and Prenatal Growth*. Vol. I. Bailliere Tindall.
- Falkner F & Tarnner JM. 1980. *Human Growth Methodology. Ecological, Genetic, and Nutritional Effects on Growth*. Vol. III. Plenum Press.
- Passmore R & Eastwood MA. 1986. *Human Nutrition and Dietetics*. ELBS Churchill Livingstone.
- Pike RL & Brown ML. 1988. *Nutrition - An Integrated Approach*. John Wiley

SEMESTER 6

 **601: Project work and Viva**

NUTRITION & HEALTHCARE

❖ List of Journals

- *Plant Foods for Human Nutrition*
Kluwer Academic Publisher, P.O. Box 322, 3300, AH Dordrecht, The Netherlands
- *Journal of Food Science and Technology*
Association of Food Scientists, CFTRI, Mysore 570013 (India); afsti@soncharnet.in
- *Nutrition and Food Science*
www.emeraldinsight.com/authors
- *Food Chemistry*
Professor Gordon Birch, School of Food Biosciences, University of Reading, Whiteknights, Po Box 226, Reading RG6 6AP, UK
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