HIMALAYAN UNIVERSITY, ARUNACHAL PRADESH

BACHELOR OF SCIENCE

DIALYSIS TECHNOLOGY

1ST YEAR

1st Semester

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	101	General English	30	70	100	40
2	102	Computer Fundamentals	30	70	100	40
3	103	Human Anatomy	30	70	100	40
4	104	Human Physiology	30	70	100	40
5	105	Practical	30	70	100	40

2nd Semester

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	201	General Pathology	30	70	100	40
2	202	General Microbiology	30	70	100	40
3	203	General Biochemistry	30	70	100	40
4	204	General Pharmacology	30	70	100	40
5	205	Practical	30	70	100	40

2ND YEAR

3rd Semester

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	301	Applied Anatomy	30	70	100	40
2	302	Applied Physiology	30	70	100	40
3	303	Applied Pathology	30	70	100	40
4	304	Applied Biochemistry	30	70	100	40
5	305	Applied Microbiology	30	70	100	40
6	306	Practical	30	70	100	40

4th Semester

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	401	Applied Pharmacology	30	70	100	40
2	402	Concepts of Renal Disease and Management	30	70	100	40
3	403	Concepts of Dialysis Technology and Nutrition	30	70	100	40
4	404	Practical	30	70	100	40

3RD YEAR

5th Semester

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	501	Health Care	30	70	100	40
2	502	Social Factors in Health	30	70	100	40
3	503	Practical	30	70	100	40

6th Semester

S. NO.	SUB. CODE	SUBJECT NAME	MARKS			
			INTERNAL	THEORY	TOTAL	PASS
1	601	Applied Dialysis Technology - I	30	70	100	40
2	602	Applied Dialysis Technology - II	30	70	100	40
4	603	Applied Dialysis Technology - III	30	70	100	40
3	604	Hospital Training	30	70	100	40

HIMALAYAN UNIVERSITY, ARUNACHAL PRADESH

BACHELOR OF SCIENCE

DIALYSIS TECHNOLOGY

1ST YEAR

1st Semester

General English (101)

1) English, Communication Skill and Public Relations:

2) Writing Skills: Basics of English grammar How to write good and correct English .what is a Sentence? Types of Sentences - simple, compound, complex.

3)Listening skills : What is listening? Types of Listening Purpose of Listening, Obstacles of listening

4)Reading Skills : Purposes of reading Types of reading - skimming, scanning, extensive reading, intensive reading, Loud and silent reading

5) Rapport Building Interpersonal Response, Traits, Managing Difficult Communication Traits in a hospital, communication in terminal illness

6)Effective Communication - The Ten Commandments The process of communication & different type of communication Communication- Definitions, Meaning, nature of communication, Purpose of communication

7) FORMAL LETTERS: Formal Style of Communication, Formal and Informal Letters, Essentials of a Formal Letter, Mechanics of Writing a Formal Letter, Drafting the Letter, Some Basic Equipment, The Format, Letters of Request, Letters of Complaint, Replying to Letters of Complaint, Letters about Jobs, Applications, Accepting an Offer, Declining an Offer, Letters to Government and Other Organisations, Letters of Complaint, Letters Giving Instructions, Letters of Request,

8)WRITING REPORTS: Different Stages in Writing a Report, Types of Report, Reporting Case History: Informal Reports, Reporting Case History: Formal Reports, Referral Letters, Referral Letters, Reply to Referral Letter

CLINICAL CASE STUDY: Significance of case study method some features, How is clinical case study prepared, Analyzing the case, Documentation and presentation, Conclusions

IMPROVING STUDY SKILLS: How do People Learn, Reading with a Purpose, What are Study Skills, Locating Information, Study Strategies for Better Comprehension: SQ3R, Variations of the SQ3R Approach

WRITING SUMMARIES-I : The technique of summarizing, Let us sum up, Key words

F**ORMAL CONVERSATION:** FACE-TO-FACE: Making Enquiries and Giving Information at Public Offices, Making Enquiries at Hotels and Other Places, Making Enquiries : Taking a Medical History, Giving Advise to Patients. and their Relatives, Arguing with and Persuading People, Describing a Process

INFORMAL CONVERSATIONS: FACE-TO-FACE : Greetings: Enquiries about one's Health, Everyday Situations, Social Life, Other Informal Situations

TELEPHONE CONVERSATIONS: Face-to-Face and Telephone Conversation Compared, Formal Conversation, Emergency Calls, Business Calls, Informal Conversation

INTERVIEWS: Preparation for an Interview, Unfolding the Personality: Specimen Interviews

CASE PRESENTATION: How is a Case Presentation Prepared, Data Collection and Compilation of Material, Audiovisual Aids, Choice and Method of Use, How to Make the Case Presentation, Conclusion.

Computer Fundamentals (102)

Introduction to Computer: Meaning or Definition of Computer**,** Evolution of computer**,** Features of Computer**,** Main Operation of the Computer**,** Main Elements of Computer System**,** Bits, Bytes and Words**,** Device in Computer**,** Various Input & output Device.

Applications of computer:advantages and limitations of computers.

Memory:overview of storage devices.main memory,storage evaluation criteria,random access memory,read only memory,secondary storage devices.

Generation of Computers and their Classification Generation of Computers**,** Classification of Computers

Operating System Meaning of Operating System**,** Function of Operating System**,** Language Translators

Database Meaning Of Database**,** Data Processing System**,** Function of Data Processing**,** Objectives of Database**,** Type of Database**,** Functions of Database Management

System(DBMS),Advantages & Disadvantages of DBMS,Various Database Structures or database models

Windows Graphical User Interface, Windows, Features of Windows, Control Button of windows, Various Icons on Desktop

Microsoft Word (INTRODUCTION)

Microsoft Excel (INTRODUCTION)

Microsoft PowerPoint (INTRODUCTION)

Internet – Features, Different type of network, Internet,

Patient Management Medical Establishments using Computer, One or More Computer,Network,Software,Training,Service Operators of System Computerization in Hospitals and Nursing Homes, Features of a Hospital Software Packages, Password Protection ,Various Application of Different Medical ,Software and Support

---

Human Anatomy (103)

Introduction ,subdivisions of anatomy,anatomical nomenculature-

in terms of position ,location and fundamental planes

Introduction to bones of human body of:

Bone: definition, composition, functions ,classification and features of a long bone.

Cartilage: definition, components and classification.

Joints: definition of joints, classification and function

Upper limb: clavicle, scapula, humerus, radius, ulna, carpus, metacarpus & phalanges,

Lower limb: hipbone, femur, tibia, fibula, tarsus. Metatarsus & phalanges, Skull: name the bone of the skull an sutures between them, Thorax: ribs and their articulation,

Vertebral column: cervical , thoracic , lumbar , sacral and coccygeal

Surface markings of the body: Nine regions of the abdomen, Four quadrants of the hip

Introduction to vital organs:

Respiratory organ Nasopharynx , Oropharynx, Larynx, Trachea, Bronchi , Lungs (and their lobular segments), Thoracic, Pleura and pleural cavity

Circulatory organ Anatomical position of the heart, Pericardium of the heart, Chambers of the heart, Great vessels of the heart, Valves of the heart

Digestive organs Tongue, Teeth, Oral cavity, Pharynx, Esophagus, stomach

Reproductive organs Male and female gonads: testes, epididymis, ovary, fallopian tube, uterus, vagina, Introduction to male genital organs, Introduction to female genital organs

Liver and spleen Introduction, Anatomical position, Gall bladder

Excretory organs Cortex and medulla of kidney, Ureter, Urinary bladder, Urethra (male and female) **,**nephrons.

Nervous System : Basic anatomy of nervous system, Central nervous system, Peripheral nervous system, Autonomic nervous system.

Muscles Introduction, origin and insertion, function.

Human Physiology (104)

Cell : Definition ,Structure and functions the cytoplasmic organelles , Reproduction: meiosis, mitosis

The important physio- chemical laws applied to physiology Diffusion **,** Osmosis**,** Bonding, Filtration**,** Dialysis**,** Surface tension**,** Adsorption**,** Colloid

Fundamentals of different organ system:

Cardiovascular system: Systole, Diastole ,Blood circulation, Conduction system of Heart ,ECG. Cardiac Output, Cardiac Stroke.

Respiratory system: Functions of Respiratory Tract, Mechanism of Breathing and Respiration, Muscles of Respiration. Common Respiratory Disorders.

Digestive system: Digestion of food in mouth, stomach & small intestines. Absorption of food, function of liver.

Excretory system: Structure & function of kidney and urinary bladder. Mechanism of urine formation. disorders of kidney.

Reproduction system: Male and Female Reproductive organs .Mensuration cycle.

Endocrine system: Functions of various endocrine glands and hormones secreted by them

Lymphatic system: Lymph vessels, lymph nodes and lymphoid organs, their structure & functions.

Blood Definition, Composition, Function

Formation of different types of blood cells Erythrocytes, Leucocytes, Thrombocytes

Mechanism of Blood clotting

Cerebrospinal fluid Formation, Composition, Function

Special senses Hearing, Taste, Smell, Touch, Sight

Practical (105)

1. Study and care of Microscope.

2. Collection of blood samples.

3. Separation of plasma from blood.

4. Demonstration of Vacutainers and its use.

5. Preparation and Examination of blood smear.

6. Histology of Skeletal Muscle.

7. Histology of smooth muscle.

8. Histology of bone.

9. Histology of hyaline cartilage

10. Histology of elastic cartilage

11. Histology of Epithelial tissues:Columnar Epithelium,Squamous Epithelium,Cuboidal Epithelium.

12. Study of Lab Equpiments.

13. Study of lab specimens

English: Job application ,Resume writing .Interviews ,Group discussions, Essay writing, Formal and informal communication.

Computers: Presentations , using excel sheet ,Identification of computer devices,

******

2nd Semester

General Pathology (201)

Introduction, Cell Injury ,Cell Death and Cellular Adaptation, Inflammation and types of Inflammation, Infections and types of Infections, Wound Healing and Neoplasia.

Pathology of Human Body

Introduction, Atherosclerosis and Other Vascular Diseases .

Morphological Responses of the Cardiovascular System and Ischemic Heart Diseases.

Pathology of Bacterial Pneumonia and Abscess, Tuberculosis.

Kidney and Urinary Tract Diseases.

Chronic Obstructive Pulmonary Diseases,

Pathology of The Esophagus and Stomach,

Pathology of The Small and Large Intestines

General Microbiology (202)

CLASSIFICATION OF MICROORGANISMS.

BACTERIOLOGY Introduction, Structure, Classification & Metabolism of Bacteria **.**Bacterial growth curve , Basis of Antimicrobial Action- .Antibiotics.

Infections by staphylococcus and streptococcus, Infections by Mycobacterium.*tuberculosis*, Infections by E.*coli*, Infections by Salmonella.*typhi* **.**

VIROLOGY Introduction, Structure, Classification and multiplication of viruses, Viral genetics and pathogenesis of Virus, HIV virus, Hepatitis virus, Influenza virus, Herpes Virus .Antiviral drugs

MYCOLOGY General concepts of mycology, Classification of Fungus, Structure of Fungi and disease mechanisms, Diagnosis of Fungal Infections, Treatment of Fungal Infection.

STERILIZATION AND DISINFECTION.STAINING TECHNIQUES.

General Biochemistry (203)

Chemical Bonding Valency, Electrovalent Bonding (Ionic Bonding), Covalent Bonding **Molecular Weight of Compounds**

Solutions Definition and Importance of Solutions**,** Types of Solutions**,** Diffusion, Osmosis and Dialysis

Electrolytes Acids, Bases and Salts**,** Ionization**,** Physiological Importance of Electrolytes **,**

Cell: Eukaryotic Cell,its Structure and function,cell organelles structure and functions.Biological membrane and transport .Passive and Active Transport.

Carbohydrates: classification,glycolysis and its energetic,TCA cycle and its energetics, fate of pyruvate, Regulation of blood glucose by Insulin and Glucagon. Normal Blood Glucose levels.

Lipids:Classification and importance of lipids, Types of Fatty acids, Triacylglycerols ,importance of TAG ,Phospholipids classification and function, prostaglandins and steroids.Digestion and Transportation of Lipids.

Amino acids, Proteins and Enzymes: Classification of amino acids, Importance of amino acids, Classification of Proteins, structure and functions of proteins .Classification of enzymes, Properties of Enzyme, Factors affecting Enzyme action ,Diagnostic Significance of Enzymes.

General Pharmacology (204)

Introduction, Basic concepts of drugs, Factors affecting drug response. Routes of administration of drugs, Effects of Drugs on the body, Prevention of adverse effects to drugs .Drugs and laws ,Paramedics Responsibility in Drug Administration,Terminology ,drug store, Ethical and Legal Aspects. Antibiotics, Antifungals, Antivirals, Time of Administration, Abbrievations and Symbols used. Antiseptics and Disinfectants,

---

Practical (205)

1. Blood collection.
2. TLC
3. DLC
4. Microscopic Urine analysis.
5. Microscopic Stool Examination.
6. Staining techniques: Grams staining, Acid Fast Staining, Negative Staining, Simple Staining.
7. Laboratory instruments: Principle and working of Centrifuge, Incubator, colorimeter.
8. Blood grouping.
9. Type of Stains and their Action: Acidic Stains and Basic Stains .
10. Types of media for Bacterial Culture: Nutrient Agar , Nutrient Broth, Macconkey Agar

11. Bleeding Time and Clotting Time..

******

2ND YEAR

3rd Semester

Applied Anatomy (301)

1. Basic anatomy of urinary system – structural anatomy of kidney, bladder, ureter, urethra, prostate
2. Histology of kidney
3. Blood supply of kidney
4. Development of kidney (in brief)
5. Anatomy of peritoneum including concept of Abdominal Hernias
6. Anatomy of vascular system,
    - Upper limb vessels – Course, Distribution, Branches, Origin & Abnormalities
    - Neck vessels – Course, Distribution, Branches, Origin & Abnormalities

Femoral vessels - Course, Distribution, Branches, Origin & Abnormalities

---

Applied Physiology (302)

1. Mechanism of Urine Formation

2. Glomerular filtration Rate (GFR)

3. Clearance Studies

4. Physiological values – Urea, Creatinine, Electrolytes, Calcium, Phosphorous, Uric acid, Magnesium, Glucose24 hours .Urinary Indices – Urea, Creatinine, Electrolytes, Calcium, Magnesium

5. Physiology of Renal Circulation

- Factors contributing & modifying renal circulation
- Autoregulation

6. Hormones produced by kidney & physiologic alterations in pregnancy

7. Haemostasis – Coagulation cascade, Coagulation factors, Autoregulation, bt, ct, pt, ptt, thrombin time. Acid Base Balance – basic principles & common abnormalities like Hypokalemia, Hyponatremia, Hyperkalemia, Hypernatremia, Hypocalcemia, Hypercalcemia, etc.

Applied Pathology (303)

1. Congenital abnormalities of Urinary System
2. Classification of Renal Diseases
3. Glomerular Diseases – Causes, Types & Pathology
4. Tubulointerstitial diseases
5. Renal vascular disorders
6. End stage Renal Diseases – Causes & Pathology
7. Pathology of kidney in Hypertension, Diabetes mellitus, Pregnancy
8. Pathology of peritoneum – Peritonitis – Bacterial, Tubular & Sclerosing Peritonitis ,Dialysis induced changes.
9. Pathology of Urinary Tract Infections
10. Pyelonephritis & Tuberculous Pyelonephritis

Applied Biochemistry (304)

1. Specimen collection:
Pre-analytical variables.Collection of blood. Collection of CSF other fluids. Urine collection. Use of preservatives. Anticoagulants.

2. Introduction to laboratory apparatus
Pipettes: different types (graduated, volumetric, Pasteur, automatic etc). Calibration of glass pipettes. Burettes, beakers, petri dishes, depression plates. Flasks: different types (volumetric, round bottomed, Erlen Meyer conical etc). Funnels: different types (conical,Buchner etc). Bottles: reagent bottles – graduated and common, wash bottles – different type specimen bottles

3. Measuring cylinders, porcelain dish
Tubes: test tubes, centrifuge tubes, test tube draining rack. Tripod stand, wire gauze, Bunsen burner. Cuvettes, significance of cuvettes in colorimeter, cuvettes for visible and UV range.Cuvette holder racks: bottle, test tube, pipette, dessicator, stop watch, timers, scissors. Dispensers: reagent and sample. Maintenance of lab glass ware and apparatus. Glass and plastic ware in laboratory. Use of glass: significance of boro silicate glass, care and cleaning of glass ware, different cleaning solutions of glass. Care and cleaning of plastic ware, different cleaning solution.

4. Instruments (Theory and demonstration) Diagrams to be drawn
Use, care and maintenance of: water bath, oven & incubators, water distillation plant, water de ionisers, refrigerators, cold box, deep freezers, reflux condenser, centrifuge, balances, colorimeter, spectrophotometer, pH meter and electrodes. Centrifuges: definition, principles, Svedberg unit, centrifugal force, centrifugal field, RPM, conversion of G to RPM and vice

versa, different types of centrifuges. Manual balances: single pan, double pan, triple balance, direct read out electrical balances. Guideline to be followed and precautions to be taken while weighing. Weighing different types of chemicals, liquids, hygroscopic compounds etc. Colorimeter, spectrophotometer, pH meter, electrodes, salt bridge solution: principles, parts, types, guidelines to be followed and precautions to be taken while using.

5. Safety of measurements

6. Conventional and SI unit

7. Atomic structure

Dalton's theory, properties of electrons, protons, neutrons, and nucleus, Rutherford's model of atomic structure, Bohr's model of atomic structure, orbit and orbital quantum numbers, Heisenberg's uncertainly principle. Electronic configuration, Aufbau principle, Pauli's exclusion principle, etc. Valency and bonds: different types of strong and weak bonds in detail with examples. Theory & Practicals for all the following under this section: molecularweight, equivalent weight of elements and compounds, normality, molarity. Preparation of molar solutions (mole/litre solution) eg: 1 M NaCl, 0.15 M NaCl, 1 M NaOH, 0.1 M HCl,
0.1 M H2S04 etc. Preparation of normal solutions. eg, 1N Na2CO3, O.1N Oxalic acid, 0.1 N HCl, 0.1N H2SO4, 0.66 N H2S04 etc., percent solutions. Preparation of different solutions:v/v w/v (solids, liquids and acids). Conversion of a percent solution into a molar solution.

8. Dilutions

Diluting solutions: e.g. preparation of 0.1 N NaCl from 1 N NaCl & from 2N NaCl etc, preparing working standard from stock standard, body fluid dilutions, reagent dilution techniques, calculating the dilution of a solution, body fluid reagent etc, saturated and super saturated solutions. Technique for preparation of standard solutions eg: glucose, urea, etc, significance of volumetric flask in preparing standard solutions. Volumetric flasks of different sizes, preparation of standard solutions of deliquescent compounds (CaCl2,potassium carbonate, sodium hydroxide etc). Preparation of standards using conventional and SI units acids, bases, salts and indicators.

9. Acids and Bases

Definition, physical and chemical properties with examples. Arrehenius concept of acids and bases, Lowery – Bronsted theory of acids and bases. Classification of acids and bases. Differences between bases and alkali, acidity and basicity, monoprotonic and polyprotonic acids and bases. Concepts of acid base reaction, hydrogen ion concentration, ionisation of water, buffer, pH value of a solution. Preparation of buffer solutions using pH meter. Salts: definition, classification, water of crystallization, definition and different types, Deliquescent and Hygroscopic salts.

10. Acid- base indicators: (Theory and Practicals)
Theory

Definition, concept, mechanism of dissociation of an indicator, colour change of an indicator in acidic and basic conditions, use of standard buffer solution and indicators for pH determinations, preparation and its application, list of commonly used indicators and their pH range, suitable pH indicators used in different titrations, universal indicators.

Practicals

Titration of a simple acid and a base (preparation of standard solution of oxalic acid and using this solution finding out the normality of a sodium hydroxide solution. Acid to be titrated using this base Calculation of normality of an acid or a base after titration, measurement of hydrogen ion concentration.

11. Quality control

Accuracy, precision. Specificity, sensitivity, limits of error allowable in laboratory, percentage error. Normal values and Interpretations.

12. Special Investigations

Serum electrophoresis, immunoglobulins, drugs: digitoxin, theophyllines, regulation of acid base status, Henderson Hasselbach equations, buffers of the fluid, pH regulation, disturbance in acid base balance, anion gap, metabolic acidosis, metabolic alkalosis, respiratory acidosis, respiratory alkalosis, basic principles and estimation of blood gases and pH, basic principlesand estimation of electrolytes, water balance, sodium regulation, bicarbonate buffers,

nutrition, nutritional support with special emphasis on parental nutrition, calorific value, nitrogen balance, respiratory quotient, basal metabolic rate, dietary fibers, nutritionalimportance of lipids, carbohydrates and proteins, vitamins.

PRACTICALS

Analysis of normal urine.
Composition of urine.
Procedure for routine screening.
Urinary screening for Inborn Errors of Metabolism.
Common Renal Disease.
Urinary calculus.
Urine examination for detection of abnormal constituents.
Interpretation and diagnosis through charts.
Liver function tests.
Lipid profile.
Renal function test.
Cardiac markers.
Blood gas and Electrolytes.
Estimation of Blood sugar, Blood urea and Electrolytes.
Demonstration of strips, demonstration of glucometer.

Applied Microbiology (305)

1. Hepatotrophic viruses in detail – mode of transfusion, universal precautions, vaccinations
2. Human immunodeficiency virus (HIV), mode of transfusion, universal precautions
3. Opportunistic infections
4. Microbiology of urinary tract infections
5. Microbiology of vascular access infection (femoral, jugular, subclavian catheters)
6. Sampling methodologies for culture & sensitivity

Practical (306)

******

4th Semester

Applied Pharmacology (401)

1. IV fluid therapy with special emphasis in renal diseases.
2. Diuretics: classification, actions, dosage, side effects & contraindications.
3. Anti hypertensives: classification, actions, dosage, side effects & contraindications, special reference during dialysis, vasopressors, drugs used in hypotension.
4. Drugs & dialysis: dose & duration of administration of drugs.
5. Dialysable drugs: phenobarbitone, lithium, methanol etc.
6. Vitamin D & its analogues, phosphate binders, iron, folic acid & other vitamins of therapeutic value.
7. Erythropoietin in detail.
8. Heparin including low molecular weight heparin.
9. Protamine sulphate.
10. Formalin, sodium hypochlorite, hydrogen peroxide: role as disinfactants & adverse effects of residual particles applicable to formalin.
11. Haemodialysis concentrates: composition & dilution (acetate & bi-c arbonates).
12. Peritoneal dialysis fluid in particular hypertonic solutions: composition.
13. Potassium exchange resins with special emphasis on mode of administration.

Concepts of Renal Disease and Management (402)

1. Acute Renal Failure
2. Nephrotic syndrome – primary & secondary
3. UTI – urinary tract infections
4. Asymptomatic urinary abnormalities

5. Chronic Renal Failure
6. Renal Stone Diseases
7. Obstructive Uropathies
8. Congenital & Inherited Renal Diseases
9. Tumors of kidney
10. Pregnancy associated renal diseases
11. Renal vascular disorders & hypertension associated renal diseases

---

Concepts of Dialysis Technology and Nutrition (403)

BASICS OF DIALYSIS TECHNOLOGY

1. Indications of dialysis
2. Types of dialysis
3. Principles of dialysis – definition
4. Haemodialysis apparatus – types of dialyser & membrane
5. Types of vascular access for haemodialysis
6. Introduction to haemodialysis machine
7. Priming of dialysis apparatus
8. Dialyser reuse
9. Common complications of haemodialysis /peritoneal dialysis
10. Monitoring of patients during dialysis

NUTRITION

INTRODUCTION TO SCIENCE OF NUTRITION

- Definition
- Food pattern and its relation to health
- Factors influencing food habits, selection and food stuffs
- Superstitions, culture, religion, income, composition of Family, age, occupation, special groups, etc
- Food selection, storage & preservation
- Prevention of food adulteration

CLASSIFICATION OF NUTRIENTS

- Macronutrients and micronutrients
- Proteins – types, sources, requirements and defiencies of Proteins
- □□Carbohydrates sources, requirements & deficiency
- Fats – types, sources, requirements and deficiency of fats
- Water – sources of drinking water, requirements, Preservation of water
- Minerals – types, sources, requirements defficiencies of Minerals

- Vitamins - types, sources, requirements defficiencies OF Vitamins

PLANNING DIETS

- Need for planning diets
- Concept of a balanced diet
- Food group & balanced diet
- Influence of age, sex, occupation & physiological state
- Recommended dietary intake in planning diet
- Steps in planning balanced diet
- Planning renal diet

Practical (404)

1. Hemodialysis Apparatus.
2. Preparing Diet Chart for different kidney Diseases.

******

3RD YEAR

5th Semester

Health Care (501)

1. Introduction to Health
a) Definition of health, determinants of health, health indicators of India, health team concept.
b) National health policy

c) National health programmes (Briefly objectives and scope)
d) Population of India and family welfare programme in India

2. Introduction to Nursing
a) What is nursing? Nursing principles, inter-personnel relationships.
b) Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
c) Nursing position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.

d) Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.
e) Bed side management: giving and taking bed pan, urinal.
f) Observation of stools, urine, sputum

g) Use and care of catheters, enema giving.
h) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
i) Care of rubber goods.
j) Recording of body temperature, respiration and pulse.

k) Simple aseptic techniques, sterilization and disinfection.
l) Surgical dressing: observation of dressing procedures.

3. First Aid :
Syllabus as for Certificate Course of Red Cross Society of St. John's Ambulance Brigade.

Social Factors in Health (502)

1. Course description
This course will introduce student to the basic concepts of sociology, principles, social processes and social institutions in relation to the individual, family and community. The various social factors affecting the family in rural and urban communities in India will be studied.

2. Introduction
a. Meaning, definition and scope of sociology.
b. Its relation to anthropology, psychology, social psychology.
c. Methods of sociological investigations: case study, social survey, questionnaire, interview and opinion poll methods.
d. Importance of its study with special reference to health care professionals.

3. Social factors in health and disease
a. Meaning of social factors.
b. Role of social factors in health and disease.

4. Socialization
_
a. Meaning and nature of socialization.
b. Primary, secondary and anticipatory socialization.
c. Agencies of socialization.

5. Social groups
a. Concepts of social groups, influence of formal and informal groups on health and sickness.
b. The role of primary groups and secondary groups in the hospital and rehabilitation setup.

6. Family
a. The family, meaning and definitions.
b. Functions of types of family.
c. Changing family patterns.
d. Influence of family on individual's health, family and nutrition.

e. The effects of sickness in the family
f. Psychosomatic diseases and their importance.

7. Community
a. Rural community: meaning and features.
b. Health hazards of rural communities.
c. Health hazards of tribal communities.
d. Urban community: meaning and features.
e. Health hazards of urban communities.

8. Culture and health
a) Concept of culture.
b) Concept of health.
c) Culture and health.
d) Culture and health disorders.

9. Social change
a) Meaning of social changes.
b) Factors of social changes.
c) Human adaptation and social change.
d) Social change and stress.
e) Social change and deviance.
f) Social change and health programme.
g) The role of social planning in the improvement of health and rehabilitation.

10. Social problems of disabled
(Consequences of the following social problems in relation to sickness and disability and remedies to prevent these problems):
a) Population explosion.
b) Poverty and unemployment.
c) Beggary.
d) Juvenile delinquency.
e) Prostitution.
f) Alcoholism.
g) Problems of women in employment.

11. Social security
a) Social Security and social legislation in relation to the disabled.

12. Social work
a) Meaning of social work.
b) The role of a medical social worker.

Practical (503)

******

6th Semester

Applied Dialysis Technology - I (601)

1. Indications of dialysis.
2. History & types of dialysis.
3. Theory of haemodialysis: diffusion, osmosis, ultrafilteration & solvent drag.
4. Haemodialysis apparatus: types of dialyser & membrane, dialysate.
5. Physiology of peritoneal dialysis.
6. Dialysis machines: mechanism of functioning & management:
a) Haemodialysis machine.
b) Peritoneal dialysis machine.
7. Biochemical investigations required for renal dialysis.
8. Adequacy of dialysis:
a) Haemodialysis.
b) Peritoneal dialysis.
c) Peritoneal equilibriation test (PET).
9. Anti coagulation.
10. Withdrawal of dialysis criteria:
a) Acute dialysis.
b) Chronic dialysis.
11. Dialyser reuse.
12.Water treatment system.

Applied Dialysis Technology - II (602)

1. Dialysis in special situations:
a) Patients with congestive cardiac failure.
b) Advanced liver disease.
c) Patients positive for HIV, HBSAg & HCV.
d) Failed transplant.
e) Poisioning cases.
f) Pregnancy.
2. Dialysis in infants & children.
3. Special dialysis procedures:
a) Continuous therapies in haemodialysis.
b) Different modalities of peritoneal dialysis.
c) Haemodiafiltration.
d) Haemoperfusion.

e) SLED.
f) MARS.
4. Plasmapheresis:
5. Special problems in dialysis patients:
a) Psychology & rehabilitation.
b) Diabete.s
c) Hypertension.
d) Infections.
e) Bone diseases.
f) Aluminium toxicity.
6. Renal anaemia management: chronic dialysis.

Applied Dialysis Technology - III (603)

1. Vascular access for haemodialysis & associated complications.
2. Peritoneal access devices: types of catheter, insertion techniques & associated complications.
3. Complications of dialysis:
a) Haemodialysis: acute & long term complications.
b) Peritoneal dialysis: mechanical & metabolic complications.
4. Peritonitis & exit site infection.
5. Recent advances in haemodialysis.
a) Nocturnal dialysis.
b) Online dialysis.
c) Daily dialysis.
6. Telemedicine in dialysis practice.

Hospital Training (604)

******