தமிழ்நாடு டாக்டர் எம்.ஜி.ஆர். மருத்துவப் பல்கலைக்கழகம்
The Tamilnadu Dr. M.G.R. Medical University
69, Anna Salai, Guindy, Chennai, Tamilnadu, India

Allied Health Science

B.Sc. Dialysis Technology

Regulation, Curriculum and Syllabus
(2010-2011)

Course Guideline & Framework

Eligibility	12th Pass/Post Diploma, 17 years completed
Duration	3 Yrs
No of Beds	50
No of Emergency Beds	10
No of Ambulances	2
No of Dialysis Units	10
Own/ Tie up with specialty hospital OT	Institution should offer training in Nephrology, General Medicine, ICU, Ortho, Gen surgery, Neuro, CT Surg, Plastic
Maximum Student Intake	> 100 beds 20 students
Medical College	Medical Colleges affiliated to the Tamil Nadu Dr. MGR Medical University can start this course with maximum student intake of 20
Common room	1
Class room(25x10sq ft)	2
Skills lab (Synman	Yes
Teaching responsibility	Designated Course Director Nephrologists or M.D. General Medicine Surgeon to be named
Faculty	Part time lecturers to be named: 1 anesthetist, 1 General Medicine, 1 Urology, 1 Nephrologists Trauma Surgeon, 1 Emergency Physician and other relevant specialties
Training Modality	
1st Year	Theory
2nd Year	Theory and Practical's
3rd Year	Theory, Practical's and Log Book
Examinations	
1st Year	Theory written examinations
2nd Year	Theory, Practical's & Viva – Internal
3rd Year	Practical's & Viva-External
Multimedia	LCD Projector, Computers, Internet
Library	Minimum of 200sq.ft & 200 books

FEE	
University Affiliation fee	Rs.200000 one time fee
Security deposit	Rs. 2 lakhs Refund as per University Norms
Inspection fee	Rs 25000
Inspection duration	Every yr for 3 yrs, then once in 3 yrs
Registration University fee	Rs 1000 per student

BRIEF SUBJECTS TO BE COVERED

Anatomy	Pharmacology
Physiology	Microbiology
Biochemistry	Medical outlines
Pathology-I	Pathology-II
Principles of Management	Operating Theatre Technology
English	Medical Ethics
Basics of Computer	Toxicology
Principles of Emergency care	Principles of ABCD
Introduction to surgery	Coronary care, Perfusion, Dialysis, lCU

BASIC ANATOMY

THEORY

Introduction to Anatomy

Basic Anatomical terminology

Osteology - Upper limb – clavicle, scapula, humerous, radius, ulna
Lower limb - femur, hipbone, sacrum, tibia, fibula
Vertebral column

Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum & thoracic vertebrae

Lungs – Trachae, bronchial tree

Heart – Surface anatomy of heart, chambers of the heart, valves of the heart, major blood Vessels of heart, pericardium, coronary arteries.

Myology – Muscles of thorax, muscles of upper limb (arm & fore arm)
Flexor and extensor group of muscles (origin, insertion, nerve supply, action)

Histology – Types of tissue
(a) Epithelia - Squamous
Glandular
Transitional
Cartilage

(b) Connective tissue – bone, fibrous tissue, muscle

Excretory sytem – Kindneys**,** ureters, bladder, structure of nephrons **.**

PRACTICALS

Osteology – Bones identification (right and left side) and prominent features and muscle attachment of the bone, clavicle, scapula, radius, ulna, humerous, femur, hip bone, sacrum, tibia, fibula.

Histology – Slides for identification and general features

PHYSIOLOGY

THEORY

1) The Cell:

(i) Cell Structure and functions of the varies organelles.
(ii) Endocytosis and exocytosis
(iii) Homeostastis
(iv) Acid base balance and disturbances of acid base balances (Alkalosis, Acidosis)

2) The Blood:

(i) Composition of Blood, functions of the blood and plasma proteins.

(ii) Erythropoisis, pathological and Physiological variation of the RBC.

(iii) Structure, function and metabolism of Hemoglobin

(iv) Erythrocyte Sedimentation Rate.

(v) Detailed description about WBC.

(vi) Platelets, coagulation of blood, anti coagulants, bleeding disorders.

(vii) Blood groups and oRh factor

3) Cardio-Vascular System:

(i) Physiological Anatomy of the heart
(ii) Heart sounds
(iii) Cardiac cycle, Cardiac output.
(iv) Auscultatory areas.
(v) Cardiac murmurs.
(vi) Arterial pressures, blood pressure
(vii) Hypertension
(viii) Hormonal regulations for arterial pressure and determination of arterial Blood pressure.
(ix) Electro cardiogram (ECG)
(x) Applied physiology of coronary circulation.
(xi) Foetal circulation
(xii) Circulatory shock.

4. Respiratory system:

(i) Physiological Anatomy of Respiratory tract.
(ii) Non-Respiratory functions of the Respiratory tract.
(iii) Respiratory movements.
(iv) Definitions and Normal values of Lung volumes and Lung capacities.
(v) Measurement of Lung volumes and capacities.
(vi) Exchange of Respiratory gases in the Alveoli.
(vii) Transport of Respiratory gases in the blood.
(viii) Artificial Respiration.

5. Excretory system:

(i) Urine Formation
(ii) Micturation
(iii) Renal function tests, renal disorders.
(iv) Renal dialysis.

6. Reproductive system:

(i) Physiological Anatomy of the Male & Female Reproductive organs.
(ii) Formation of semen and spermatogenesis.
(iii) Brief account of menstrual cycle.

7. Central Nervous system:

(i) Functions of CSF.
(ii) Significance of CSF Analysis.

8. Endocrine sytem:

Functions of the pituitary, thyroid, parathyroid, adrenal and pancreatic Hormones.

9. Digestive system:

(i) Physiological Anatomy of the GIT.
(ii) Food Digestion in the mouth, stomach, intestine
(iii) Absorption of foods
(iv) Role of bile in the digestion.

PRACTICAL

1) The compound Microscope
2) Estimation of Hemoglobin – By sahli's method
3) Determination of ESR-By westergren's method
4) Determination of Blood Groups.
5) Determination of packed cell volume.
6) Measurement of human blood pressure.
7) Examination of Respiratory system.
8) Effect of posture on vital capacity.
9) Measurement of ECG.
10) Functions of the saliva, gastric juice, pancreatic juice.
11) Kidney function tests

BIO-CHEMISTRY

Biomolecules and the cell:

Major complex biomolecules of cell and cell organelles-Prokaryotic and eukaryotic cell

Carbohydrates

Chemical structure, function- Classification- Monosaccharides- Disaccharides-Polysaccharides-Homopolysaccahrides-Heteropolysaccharides-Glycoproteins

Proteins:

Amino acids- Classification- Structure of proteins- Determination of protein structure- Properties of proteins- Denaturation- Classification of proteins- Antigen, Antibody- Types, Plasma proteins- Blood clotting.

Lipids:

Chemical structure, functions, Classification-fatty acids Triacylglycerols, Phospholipids, glycoproteins, Lipoproteins- Steroids - Amphipathic lipids.

Nucleic acids:

Purines and pyrimidine- Structure of DNA – Watson & Crick model of DNA - Structure of RNA – Types of RNA

Enzymes:

Definition – Nomenclature – Classification – Factors affecting enzyme activity – Active site – Coenzyme – Enzyme Inhibition – Mechanism of enzyme action – Units of enzyme – Isoeznzymes – Enzyme pattern in diseases.

Vitamins & Minerals:

Fat soluble vitamins(A,D,E,K) – Water soluble vitamins – B-complex vitamins-principal elements(Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and sulphur)- Trace elements – Calorific value of foods – Basal metabolic rate(BMR) – respiratory quotient(RQ) Specific dynamic action(SDA) – Balanced diet – Marasmus – Kwasoirkar

Hormones:

Classification – Mechanism of action – Hypothalamic hormones – Pitutary – Anterior, posterior – Thyroid – Adrenal cortex, Adrenal medulla – Gonadal hormones – Menstrual cycle – GI hormones

Acids and bases:

Definition, pH, Henderson – Hasselbalch equation, Buffers, Indicators, Normality, Molarity, Molality

BIOCHEMISTRY SYLLABUS FOR PRACTICALS – (UNDER – GRADUATES)

QUALITATIVE TESTS OF MONOSACCHARIDES (GLUCOSE AND FRUCTOSE)

1. Molisch's test
2. Fehling's test
3. Benedict's test
4. Seliwanoff's test

QUALITATIVE TESTS OF LIPIDS

1. Solubility tests
2. Emulsification tests
3. Saponification tests

QUALITATIVE TESTS OF PROTEINS

1. Isoelectric precipitation tests

2. Heat coagulation tests

PATHOLOGY-I

1. Cellular adaptation, Cell injury & cell death.
   Introduction to pathology.
   Overview: Cellular response to stress and noxious stimuli.
   Cellular adaptations of growth and differentiation.
   Overview of cell injury and cell death.
   Causes of cell injury.
   Mechanisms of cell injury.
   Reversible and irreversible cell injury.
   Morphology of cell injury and necrosis.
   Examples of cell injury and necrosis
   Apoptosis
   Sub cellular responses to injury
   Intercellular accumulations
   Pathologic calcification
   Cellular aging.

2. Inflammation.
   General features of inflammation
   Historical highlights
   Acute inflammation
   Chemical mediators of inflammation
   Outcomes of acute inflammation
   Morphologic patterns of acute inflammation
   Summary of acute inflammation
   Chronic inflammation
   Systemic effects of inflammation
   Consequences of defective or excessive inflammation

3. Genetic disorders.
   Mutations
   Mendelian disorders
   Disorders with multifactorial inheritance
   Normal karyotype
   Cytogenetic disorders
   Single-gene disorders with nonclassic inheritance
   Molecular diagnosis
   Diagnosis of genetic diseases

4. Immunity disorders.
   General features of the immune system
   Disorders of the immune system

5. Infectious diseases.
   General principles of microbial pathogenesis
   Viral infections
   Bacterial infections-Rheumatic heart disease.
   Fungal infections
   Parasitic infections

6. Neoplasia.
   Definitions
   Nomenclature
   Biology of tumor growth benign and malignant neoplasms
   Epidemiology
   Molecular basis of cancer
   Molecular basis of multistep carcinogenesis
   Carcinogenic agents and their cellular interactions
   Host defense against tumors-Tumor immunity
   Clinical features of tumors

7. Environmental and nutritional disorders.
   Environmental and disease
   Common environmental and occupational exposures
   Nutrition and disease.
   Coronary artery disease.

FIRST YEAR

PRINCIPLES OF NURSING

In the teaching of the principles of nursing, stress shall be laid on basic principles of the subject with more emphasize on its applied aspects.

(i) Goal:

The broad goal of the teaching of undergraduate students in the Principles of nursing aims at providing comprehensive knowledge of the principles of asepsis, assessment of vital signs, dressings, small procedures, assisting the physician in the care of the sick patient and adequate documentation of therapy instituted.

(ii) Objectives

(A) Knowledge:

At the end of the course the student shall be able to:

(a) Explain the principles of asepsis and its necessity in the clinical area;
(b) Assess the medical condition of the patient with respect to his vital signs;
(c) Triage the patient needing immediate medical attention.

(B) Skill

At the end of the course the student shall be able to;

(a) Perform small procedures like bed making, insertion of intravenous canulae, give Injections, cleaning and dressing of wounds, care of bed ridden patients, bladder catheterization.

(b) Assist the physician in procedures and therapy of patients;

(c) Document all treatments undertaken with medico-legal completeness.

(C) Integration:

At the end of the integrated teaching the student shall acquire an integrated knowledge of nursing principles and its importance in the care of the sick patient.

SYLLABUS

The course in Principles of Nursing is to provide understanding of essential principles in the care of the sick patient as to well as to learn the skills needed to assist the physician in the practice of dialysis therapy.

1. Bed making
2. Bladder catherization
3. Injections – intravenous, intramuscular, subcutaneous
4. Insertion of intravenous canulae
5. Cleaning and dressing of wounds and vascular access sites AND PERITONEAL CATHETER EXIT SITE
6. Assisting the physician in procedures like minor surgery, vascular access, etc
7. Removal of sutures
8. Care of bed ridden patients,
9. Documentation
10. Collection of blood, urine and stool specimens and their transfer aseptic precautions to the laboratory
11. CAPD EXCHANGES

Nice to Know

1. Introduction of vascular dialysis independently
2. Minor suturing

TEACHING SCHEDULE:

Teaching Hours – 15 Hrs.

SECOND YEAR

MICROBIOLOGY

In the teaching of microbiology (including virology), stress shall be laid on basic Principles of the subject with more emphasize on its applied aspects.

(i) Goal

The broad goal of the teaching of undergraduate students in microbiology aims at providing comprehensive knowledge of the hepatotrophic viruses, the human immunodeficiency virus (HIV), opportunistic infections, microbiology of urinary tract infections and microbiology of vascular access infection

(ii) Objective

(A) Knowlwdge:

At the end of the course the student shall be able to:

(a) Comprehend the pathogenicity of viruses relevant in the dialysis patient including Mode of transfusion, universal precautions, vaccinations and universal precautions:

(b) Comprehend the common pathogens causing urinary tract infections and its Pathogenesis;

(c) Comprehend the common pathogens causing vascular access infection (femoral, Jugular, subclavian catheters) and prevention of infection.

(d) Comprehend the sampling methods for culture and sensitivity of various patient samples

(e) COMPREHEND CAPD EXIT SITE INFECTION AND PERTIONITIS

(B) Skills:

At the end of the course the student shall be able to;

(a) Use aseptic precautions for procedures to prevent oinfection.

(b) Send blood and other samples collected appropriately for purposes of culture and Sensitivity;

(c) Integration:

From the integrated teaching, the student shall be to comprehend the need for ouniversal precautions, safety mechanisms including vaccination in the prevention of blood borne infections.

SYLLABUS

The course in Microbiology is to provide an understanding of the structure of the pathogens involved in urinary tract infections and viruses in the dialysis area as a Foundation for the scientific study and practice of dialysis therapy.

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 vascular access infection (femoral, jugular, subclavian catheters)
5. Microbiology of urinary tract infections
6. Sampling methodologies for culture & sensitivity
7. Candida infection

TEACHING SCHEDULE:

Teaching Hours – 15 Hrs.

PATHOLOGY-II

In the teaching of pathology, stress shall be laid on basic principles of the subject with More exphasize on its applied aspects

(i) Goal:

The broad of the teaching of undergraduate students in pathology aims at providing comprehensive knowledge of the urinary system, kidney diseases (including Chronic Kidney Disease), Pathology of the kidney in various disease states, pathology of the Peritoneum and pathology of urinary tract infections.

(ii) Objectives:

(A) Knowledge:

At the end of the course the student shall be able to;

(a) Comprehend the congenital abnormalities of urinary system;

(b) Classify kidney diseases including glomerular, tubulointerstitial and vascular Diseases;

(c) Comprehend the causes and the pathology of Chronic Kidney Disease;

(d) Comprehend the pathology of the kidney on various disease states;

(e) Comprehend the pathology of the peritoneum in peritonitis;

(f) Comprehend the pathology of urinary tract infections.

(B) Skills:

At the end of the course the student shall be able to;

(a) Teach preventive strategies of urinary tract infections,

(b) Explain to patients the mechanisms to slow down the progression of Chronic Kidney Disease;

(c) Explain prevention of peritonitis to patients on peritoneal dialysis.

(C) Integration:

From the integrated teaching, the student shall be able to comprehend the measures to prevent and slow the course of Chronic Kidney Disease and prevent urinary tract Infections and peritonitis….

SYLLABUS

The course in Pathology is to provide an understanding of the pathology of urinary tract Infections, peritonitis and Chronic Kidney Disease.

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
9. Pathology of urinary tract infections
10. Pyelonephritis & tuberculous pyelonephritis

TEACHING SCHEDULE:

Teaching Hours – 15 Hrs.

NUTRITION

In the teaching of nutrition, stress shall be laid on basic principles of the subject with More emphasize on its applied aspects.

(i) Goal:

The broad goal of the teaching of undergraduate students in nutrition aims at providing an introduction to the science of nutrition, comprehensive knowledge of nutrients and Planning a diet according to the nutritional requirements of the patients.

(ii) Objectives:

(A) Knowledge:

At the end of the course the student shall be able to:

(a) Comprehend the relation of diet to health and disease;

(b) Classify various nutrients;

(c) Plan a diet according to the nutritional need of a particular patient.

(B) Skills:

At the end of the course the student shall be able to;

(a) Prepare basic diet plans for patients of various kidney diseases.

SYLLABUS

The course in Nutrition is to provide an understanding of the nutritional needs of the Patients with kidney diseases and to learn to plan appropriate diet for them.

1. Introduction to science of nutrition
2. Food pattern and its relation to health
3. Factors influencing food habits, selection and food stuffs
4. Food selection, storage & preservation
5. Classification of nutrients – macronutrients and micronutrients
6. Proteins – types, sources requirements and deficiencies of proteins
7. Carbohydrates sources, requirements & efficiency
8. Fats – types, sources, requirements, deficiency and excess of fats
9. Water – sources of drinking water, requirements, preservation of water
10. Minerals – types, sources, requirements deficiencies of minerals
11. Vitamins – types, sources, requirements deficiencies of vitamins
12. Planning diets including renal diets
13. Introduction to cookery + and demonstrate to patients preparation of renal diet

TEACHING SCHEDULE:

Teaching Hours – 15 Hrs.

PHARMACOLOGY

In the teaching of pharmacology, stress shall be laid on basic principles of the subject With more emphasize on its applied aspects.

(i) Goal:
The broad of the teaching of undergraduate students in pharmacology aims at Providing an introduction to the pharmacology of drugs related to kidney diseases and Dialysis technology.

(ii) Objectives:

(A) Knowledge:

At the end of the course the student shall be able to:

(a) Comprehend the various drugs used in kidney diseases and dialysis; especially Antibiotics, anti microbials, inotropes and diuretics anti – convulsants

(b) Classify antihypertensives according to their action and specific indications;
(c) Learn about dialyzability of drugs;

(d) Comprehend the adjustments for varying degrees of renal dysfunction;

(e) Comprehend the indications, dose and side effects of erythropoietin and intravenous iron

(f) Comprehend the dose of heparin to be used in hemodialysis, side effects and use of Protamine sulfate;

(g) Comprehend use of formalin, sodium hypochlorite and hydrogen peroxide, etc used For sterilizing dialysers, tubings and machine as disinfectants and cleaning the Dialysis machines and other antiseptics like alcohol, betadine, chlorhexidine, Ethylene oxide etc
(h) Comprehend composition of dialysate solutions and peritoneal dialysis solutions;

(i) Comprehend indications for and use of potassium exchange resins.

(j) Use of various phosphate binders and oral and iv preparations of Vit D and their Monitoring

(B) Skills:

At the end of the course the student shall be able to;

(a) Prepare basic medication plan for patients with kidney diseases;

(b) Prepare hemodialysis dialysate concentrates.

SYLLABUS

The course in pharmacology is to provide an understanding of the drug therapy of the Patients with kidney diseases including those on dialysis and to learn to plan appropriate Prescription for them.

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. Dialyzable drugs – phenobarbitone, lithium, methanol etc.
6. Vitamin d & its analogues, phosphate binders, iron, folic acid & other vitamins Of therapeutic value
7. Erythropoientin in detail
8. Heparin including low molecular weight heparin
9. Protamine sulphate
10. Fomalin, sodium hypochlorite, hydrogen peroxide – role as disinfectants & adverse effects of residual particles applicable too formalin
11. Haemodialysis concentrates – composition & dilution (acetate & bicarbonates)
12. Peritoneal dialysis fluid in particular hypertonic solutions – composition
13. Potassium exchange resins with special emphasis on mode of administration

TEACHING SCHEDULE:

Teaching Hours – 20 Hrs.

SYLLABUS – II YEAR DIALYSIS TECHNOLOGY

MISCELLANEOUS SUBJECTS

Community Medicine
Basic physics
Introduction to genetics
Basic medical electronics

SYLLABUS – III YEAR DIALYSIS TECHNOLOGY

CONCEPTS OF DISEASE AND OUTLINES OF CLINICAL EVALUATION

In the teaching of concepts of disease and clinical evaluation of patients, stress shall be Laid on basic principles of the subject with more emphasize on its applied aspects

(i) Goal:

The broad goal of the teaching of undergraduate students in concepts of disease and Clinical evaluation aims at providing an introduction to various kidney disease and their Evaluation.

(ii) Knowledge

At the end of the course the student shall be able to:

(a) Comprehend the various presentations of kidney diseases;

(b) Learn how to diagnose and evaluate patients with various disease conditions like Acute renal failure, nephrotic / nephritic syndrome, urinary tract infection, Asymptomatic urinary abnormalities, Chronic Kidney Disease (especially stage v), renal stone diseases, obstructive nephropathies, congenital & inherited renal diseases, pregnancy associated renal diseases, renal vascular disorders and hypertension associated renal diseases, renal vascular disorders and hypertension associated renal diseases;

(c) Learn to order appropriate test towards confirmation of diagnosis;

(d) Learn to initiate therapy in each of these conditions;

(e) Learn the appropriate time of referral to nephrology services in each of the conditions.

(f) Screening for renal diseases in the community and hospital patients.

(B) Skills:

At the end of the course the student shall be able to;

(a) Collect medical history from patients with various kidney diseases;

(b) Clinically examine patients with kidney diseases and order appropriate Investigations;

(c) Write rational prescriptions for patients with kidney diseases.

SYLLABUS

The course in concepts of disease and clinical evaluation is to provide an understanding Of the nature of various diseases and evaluation of the same.

1. Acute renal failure
2. Nephrotic syndrome – primary & secondary
3. Nephritic syndrome
4. Urinary Track Infection – urinary track infections
5. Asymptomatic urinary abnormalities
6. Chronic Kidney Disease
7. Renal stone diseases
8. Obstructive nephropathies
9. Congenital & inherited renal diseases
10. Pregnancy associated renal diseases
11. Renal vascular disorders & hypertension associated renal diseases

TEACHING SCHEDULE:

Teaching Hours – 20 Hrs.

DIALYSIS TECHNOLOGY

In the teaching of dialysis technology, stress shall be laid on basic principles of the Subject with more emphasize on its applied aspects.

(i) Goal:

The broad goal of the teaching of undergraduate students in dialysis technology aims at Providing an in-depth knowledge of hemodialysis and peritoneal and peritoneal dialysis Therapy.

(ii) Objectives:

(A) Knowledge:

At the end of the course the student shall be able to:

(a) Comprehend the various modalities of renal replacement therapy with knowledge of Merits and demerits of each;
(b) Comprehend the principles of hemodialysis and peritoneal dialysis;
(c) Learn how to offer dialytic therapy for renal failure patients;
(d) Learn the various forms of hemodialysis and when each is to be applied;
(e) Learn to manage complications of dialysis therapy;
(f) Learn dialysis therapy in various special groups of patients e.g., unstable patients in The intensive care unit, children, cardiac patients etc;
(g) Learn plasmapheresis, Continuous therapies
(h) Manage anticoagulation on patients on dialysis;
(i) Measure the adequacy of dialysis
(j) Adminster various drugs in emergencies and as a routine
(k) Use blood transfusion

(B) Skills:

At the end of the course the student shall be able to;
(a) Start and close hemodialysis sessions independently;
(b) Successfully cannulate arterio-venous fistulae for hemodialysis;
(c) Train patients and their caregivers in performing peritoneal dialysis;
(d) Do water maintenance for the hemodialysis room;
(e) Maintain hemodialysis machines with respect to regular disinfection;
(f) Operate hemodialysis machines, CAPD cylers reuse machines independently
(g) Participate in Conduct of renal transplant programme.
(h) Use pulse oximeters, pressure monitors defibrillators correctly

SYLLABUS

The course in dialysis technology is to provide an understanding of the various forms of renal replacement therapy and successful performance of the same in patients with renal Failure.

TEACHING SCHEDULE

PART I

1. History, types of Dialysis,
2. Principles of Dialysis, quantification of adequacy
3. Dialysis Team-rights-responsibilities-patient doctor relationship
4. Dialysis reuse
5. Dialyser Membranes
6. Vascular Access – Temporary & Permanent
7. Equipment – Accessories – Function
8. Computer applications in Dialysis
9. Dialysate delivery system
10. Composition of dialysate
11. High flux / high efficiency dialysis
12. Continuous Renal Replacement Therapy / Slow Low Efficiency Dialysis
13. Complications in dialysis patients

14. Water treatment-pre treatment, deionizer, Reverse Osmosis
15. Dialysis in Neonates, infants & children
16. Renal data maintenance

Teaching Hours – 20 Hrs.

PART II

1. Machine and patient monitoring during hemodialysis
2. Patient Assessment – Pre, intra & post dialysis
3. Lab data analysis
4. Acute and chronic dialysis prescription
5. Medications in dialysis patients
6. Nutrition management in dialysis patients
7. Anticoagulation
8. Infection control and universal precautions
9. Phychosocial aspects & patient education
10. Quality assurance in dialysis
11. Complications of hemodialysis – Acute & chronic
12. Acute and Chronic Peritoneal Dialysis
13. History, access, physiology of Peritoneal Dialysis
14. PD – Transport kinetics, ultrafiltration, UF, Intermittent PD, Continuouos Ambulatory Peritoneal Dialysis, Automated Peritoneal Dialysis, Dialysis Solutions, Novel uses of PD
15. Infectious and non infectious complications of PD
16. Renal transplant co-ordination
    (Recipient and donor workup, psychosocial and legal aspects, cadaver donor Maintenance, principles of post operative management and follow-up)
17. Principles of Intensive care
    (Mornitoring and diagnostic procedures in ICU, General care of patient in ICU, Fluid management and parenteral nutrition, Infectious diseases in ICU, Respiratory Failure, Acid-base and electrolytes disorders, cardio vascular failure, liver failure, Head injury, principles of transfusion therapy)
18. Principles of Extracorporeal Short Wave Lithotripsy
19. Ventilator maintenance
20. An introduction to common Urosurgical procedures & instruments and their Maintance and
21. Preparation of dialysis patients for various surgical procedure and post operative Dialysis support
22. Basic and advanced cardiac life support

ANNEXURE – III

List of books for dialysis therapy

1. Oxford textbook of Nephrology
2. The Kidney – Brenner (Vol I/II)
3. Diseases of the Kidney and the urinary tracy – Schrier (Vol I, II, & III)
4. Textbook of Dialysis therapy – Nissenson
5. Textbook of Peritoneal Dialysis – Ram Gokal
6. Handbook of dialysis – John T. Daugirdas

List of Journals for dialysis therapy:

1. Kidney International
2. Nephrology, Dialysis, Transplantation
3. Seminars in Dialysis
4. Seminars in Nephrology

ENGLISH

Communication:-

Role of communication
Defining Communication
Classification of communication
Purpose of communication
Major difficulties in communication
Barriers to communication
Characteristics of successful communication – The seven Cs
Communication at the work place
Human needs and communication "Mind mapping"
Information communication

Comprehension passage:-

Reading purposefully
Understanding what is read
Drawing conclusion
Finding and analysis

Explaining:-
How to explain clearly
Defining and giving reasons
Explaining differences
Explaining procedures
Giving directions

Writing business letters:-
How to construct correctly
Formal language
Address
Salutation
Body
Conclusion

Report writing:-
Reporting an accident
Reporting what happened at a session

Reporting what happened at a meeting

BASICS OF COMPUTER

COURSE CONTENT:

Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM – kilobytes. MB, GB their conversions – large computer – Medium, Micro, Mini computers – Different computer languages – Number system – Binary and decimal conversions – Different operating system – MS DOS – Basic commands – MD, CD, DIR,TYPE and COPY CON commands – Networking – LAN, WAN,MAN(only basic ideas)

Typing text in MS word – Manipulating text – Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page No's in a document – Printing a file with options – Using spell check and grammar – Find and replace – Mail merge – inserting tables in a document.

Creating table in MS-Excel – Cell editing – Using formulas and functions – Manipulating data with excel – Using sort function to sort numbers and alphabets – Drawing graphs and charts using data in excel – Auto formatting – Inserting data from other worksheets.

Preparing new slides using MS-POWERPOINT – Inserting slides – slide transition and animation – Using templates – Different text and font sizes – slides with sounds – Inserting clip arts, pictures, tables and graphs – Presentation using wizards.

Introduction to Internet – Using search engine – Google search – Exploring the next using Internet Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation – Sending messages – Attaching files in E-mail – Introduction to "C" language – Different variables, declaration, usage – writing small programs using functions and sub – functions.

PRACTICAL

- Typing a text and aligning the text with different formats using MS-Word
- Inserting a table with proper alignment and using MS-Word
- Create mail merge document using MS-word to prepare greetings for 10 friends
- Preparing a slide show with transition, animation and sound effect using MS-Powerpoint
- Customizing the slide show and inserting pictures and tables in the slides using MS-powerpoint

- Creating a worksheet using MS-Excel with data and sue of functions
- Using MS-Excel prepare a worksheet with text, date time and data
- Preparing a chart and pie diagrams using MS-Excel
- Using Internet for searching, uploading files, downloading files creating e-mail ID
- Using C language writing programs using functions

B.Sc. ALLIED HEALTH SCIENCES

B.Sc. Degree in Dialysis Technology

Ist Year

S. No.	Subject	Internal Assessment (IA)		Theory		Practical		Viva	
		Max	Min	Max	Min	Max	Min	Max	Min
1.	Anatomy, Physiology Biochemistry and Pathology-I	50	25	100	50	50	25	-	-

Internal Paper:

S. No.	Subject	Internal Assessment		Theory	
		Max	Min	Max	Min
1.	*English	50	25	100	50
2.	*Computer	50	25	100	50

* English and Computer are internal papers. Marks to be sent to the university. There will be no university examination for English and Computer paper.

Internal Assessment

Theory (20)	Practical (20)	Log Book/Project/Record(10)

* Wherever there is no Log Book/Project/Record work the 10 mark be added to the Practical of the respective subject.

II nd Year

S. No.	Subject	Internal Assessment (IA)		Theory		Practical		Viva	
		Max	Min	Max	Min	Max	Min	Max	Min
1.	Microbiology, Pathology-II, Nutrition and Pharmacology	50	25	100	50	-	-	-	-
2.	Community Medicine, Basic Physics, Introduction to genetics and Basic Medical Electronics	50	25	100	50	-	-	-	-

B.Sc. Degree in Dialysis Technology

III rd Year

S. No.	Subject	Internal Assessment (IA)		Theory		Practical		Viva	
		Max	Min	Max	Min	Max	Min	Max	Min
1.	Dialysis Technology	50	25	100	50	50	25	50	25

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