DRAFT REGULATIONS FOR DIPLOMA IN DIALYSIS TECHNOLOGY (DTT) PROGRAMME

SRI GURU RAM DAS UNIVERSITY OF HEALTH SCIENCES, SRI AMRITSAR

Applicable from Academic Session 2025-2026

AS PER THE NATIONAL COMMISSION FOR ALLIED AND HEALTHCARE PROFESSIONS (NCAHP) ACT, 2021

Curriculum of Dialysis Technology, Dialysis Therapy Technology & Dialysis Therapy Program

Background

Educational programs should provide the Dialysis Care Associate/ Dialysis Therapy Technologist/ Dialysis Therapist with a scientific theoretical foundation of the profession and enable them, as practitioners, to be able to synthesize, evaluate and apply their knowledge in a clinical setting.

The aims of the recommended curriculum are to produce the Dialysis Care Associate/ Dialysis Therapy Technologist/ Dialysis Therapist who are:

- Technically and clinically competent;
- Aware of the importance of quality assurance;
- Understand the theoretical basis for evidence-based practice;
- Effective members of the multidisciplinary team;
- Prepared to participate in or initiate research into practice;
- Can work according to registration requirements on the respective continents.

All aspects of dialysis therapy technology have been considered in the development of this curriculum, together with the identification of the roles expected for different levels of dialysis therapy technologist/ dialysis therapist based on their qualification and experience. The need for connecting the dots between the education and employment practices has been the road map for devising this curriculum.

The National Curriculum Taskforce on Dialysis Therapy Technology/ Dialysis Therapy has successfully designed the career and qualification map indicating growth opportunities for a professional in the career pathway.

Diploma in Dialysis Technology (DDT)

Introduction:

Learning objectives:

1. Demonstrate Knowledge about Renal failure & its management and apply the principles of dialysis; develop skills necessary to provide safe and effective care to the individual undergoing hemodialysis treatments.
2. Function as a dialysis care associate under the supervision of the senior dialysis therapy technologist/dialysis therapist/nephrologist or physician in a dialysis facility that provides dialysis treatment to the individuals diagnosed with acute or chronic kidney disease.
3. Demonstrate the use of hemodialysis equipment with an understanding of how to operate Dialysis equipment and the knowledge of alternate dialysis procedures.
4. Assess the patient for any complications with an understanding of the problem and recognize the need to report the complications to the physician or nephrologist.
5. Demonstrate polite and strategic communication skills, grooming skills, professional etiquette.
6. Able to understand operation, routine maintenance, identification of malfunction, troubleshooting and minor repair for all equipment used in dialysis units such as hemodialysis machines, water treatment plants, dialyzer reprocessing machines, etc.

Scope of the Curriculum & Expectation from the future graduate in the providing patient care:

1. The primary goal of the Diploma in Dialysis Technology program is to prepare Dialysis Care Associate‟s with a specific emphasis on clinical skills and technical knowledge.
2. Trainees acquire the knowledge and procedural skills necessary to deliver a high standard of care to the patients with chronic kidney disease requiring renal replacement therapy.
3. This program involves all aspects of care for patients undergoing chronic Hemodialysis and Peritoneal dialysis.
4. The overall goal of this training is to foster the trainee‟s development into an Allied & Healthcare Personnel in the field of dialysis.
5. The program intends for its graduates to contribute to a new generation of academic dialysis Professionals equipped to address the challenging problems in dialysis therapy.

Eligibility for admission:

Selection procedure

1. Candidate should have passed 10+2 with science.
2. Minimum percentage of marks: 50% aggregate in PCB
3. Reservation for SC/ST/OBC categories: As per Govt. of India rules

Provision of Lateral Entry:

Since this is the basic entry level for dialysis professionals, lateral entry is not applicable.

Duration of the program

Duration of the program is 2.5 years or 5 semesters (inclusive of six months of internship) with 705 hours of Lecture & 1425 hours of Practical Training and another 720 hours dedicated for internship.

Total number of hours – 2850

Total Credits: 100

Medium of instruction:

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Attendance:

A candidate will be permitted to appear for the University Examination for any semester if he/she secures not less than 80% of attendance in the number of instructional days at industry during the calendar year, failing which he/she should complete the number of days/hours and undergo the next semester/final examination conducted by the university.

A candidate has to secure a minimum of 80% in skills training (practical) for qualifying to appear for the final examination. No relaxation, whatsoever, will be permissible to this rule under any ground including indisposition, etc.

Assessment:

Formative Assessment

Structured logbook
Structured case presentation
Case presentation
Internal Assessment Examinations (Theory & Practical‟s)

Summative Assessment

End Semester Examination
Viva-voce examination.
Objective Structured Clinical Examination (OSCE)
Objective Structured Practical Examination (OSPE)

Marks qualifying for a pass.

For End Semester Examination subjects: 50% in internal assessment, 50% in theory examination, 50% in practical examination and 50% in aggregate

Curriculum Scheme

Semester I														
			Credit/ Week				Hours/ Semester					End Semester		Grand Total
Course Code	Course	Result in Group (RG) #	Lecture	Tutorial/ Clinical Training	Practical/ Research Project	Credits	Lecture	Practical/ Tutorial	Total Hours	Attendance %	Continuous Internal assessment CIA- Theory/ Practical (a)	Theory (b)	Practical/ Viva (c)	Theory: a+(b÷2) =100 Practical: a + c =100
DDT-001	Introduction to Healthcare Delivery System in India		3	1		4	45	30	75	80	100			100
DDT-002	Basic computers and information Science, Communication and soft skills		1		1	2	15	30	45	80	100			100
DDT-003	Human Anatomy & Physiology	A	4	1		5	60	30	90	80	50	100		100
DDT-004	Basics of Microbiology, Bio-chemistry, pathology		4	1		5	60	30	90	80	50	50		100
DDT-005	Human Anatomy & Physiology Practical"s	A			1	1		30	30	80	50		50	100
DDT-006	Community orientation & Clinical Visit			3		3		135	135	80	100			100
Total			**12**	**6**	**2**	**20**	**180**	**285**	**465**		**450**	**150**	**50**	**600**

Semester II														
			Credit/ Week				Hours/ Semester					End Semester		Grand Total
Course Code	Course	Result in Group (RG)#	Lecture	Tutorial/ Clinical Training	Practical/ Research Project	Credits	Lecture	Practical/ Tutorial	Total Hours	Attendance %	Continuous Internal assessment CIA- Theory/ Practical (a)	Theory (b)	Practical/ Viva (c)	Theory: a+(b÷2) =100 Practical: a + c =100
DDT-007	Medical Terminology and Record keeping, Medical Law and Ethics		5			5	75		75	80	100			100
DDT-008	Basics of Pharmacology		3	1		4	45	30	75	80	50	100		100
DDT-009	Professionalism and values		1	1		2	15	30	45	80	100			100
DDT-010	Introduction to Kidney diseases		3	1		4	45	30	75	80	50	100		100
DDT-011	Clinical Postings I			6		6		270	270	80	50		50	100
Total			**12**	**9**	**0**	**21**	**180**	**360**	**540**		**350**	**200**	**50**	**500**

Semester III															
			Credit/ Week				Hours/ Semester					End Semester		Grand Total
Course Code	Course	Result in Group (RG) #	Lecture	Tutorial/ Clinical Training	Practical/ Research Project	Credits	Lecture	Practical/ Tutorial	Total Hours	Attendance %	Continuous Internal assessment CIA- Theory/ Practical (a)	Theory (b)	Practical/ Viva (c)	Theory: a+(b÷2) =100 Practical: a + c =100
DDT-012	Principles and practice of Dialysis (Part I)	B	4	1		5	60	30	90	80	50	100		100
DDT-013	Instruments Specific to Dialysis Therapy		4	1		5	60	30	90	80	50	100		100
DDT-014	Principals of Management		3	0		3	45		45	80	100			100
DDT-015	Pharmacology related to dialysis		2	1		3	30	30	60	80	50	100		100
DDT-016	Principles and practice of Dialysis Practical"s	B			1	1		30	30	80	50		50	100
DDT-017	Clinical Postings II			6		6		270	270	80	100			100
Total			**13**	**9**	**1**	**23**	**195**	**390**	**585**		**400**	**300**	**50**	**600**

Semester IV														
			Credit/ Week				Hours/ Semester					End Semester		Grand Total
Course Code	Course	Result in Group (RG) #	Lecture	Tutorial/ Clinical Training	Practical/ Research Project	Credits	Lecture	Practical/ Tutorial	Total Hours	Attendance %	Continuous Internal assessment CIA- Theory/ Practical (a)	Theory (b)	Practical/ Viva (c)	Theory: a+(b÷2) =100 Practical: a + c =100
DDT-018	Principles and practice of Dialysis (Part II)	C	4	1		5	60	30	90	80	50	100		100
DDT-019	BLS	D	2			2	30		30	80	50	100		100
DDT-020	Renal Nutrition		2			2	30		30	80	50	100		100
DDT-021	Basic Principles of Nursing Care		2			2	30		30	80	100			100
DDT-022	Principles and practice of Dialysis (Part II) Practicals	C			2	2		60	60	80	50		50	100
DDT-023	BLS Practicals	D			1	1		30	30	80	50		50	100
DDT-024	Clinical Postings III				6	6		270	270	80	50		50	100
Total			**10**	**1**	**9**	**20**	**150**	**390**	**540**		**400**	**300**	**150**	**700**

First Semester

Introduction to National Healthcare System (75 Hours)

The course provides the students a basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world. Topics to be covered under the subject are as follows:

1. Introduction to healthcare delivery system
    a. Healthcare delivery system in India at primary, secondary and tertiary care
    b. Community participation in healthcare delivery system
    c. Health system in developed countries.
    d. Private Sector
    e. National Health Mission
    f. National Health Policy
    g. Issues in Health Care Delivery System in India
2. National Health Program- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Program.
3. Introduction to AYUSH system of medicine
    a. Introduction to Ayurveda.
    b. Yoga and Naturopathy
    c. Unani
    d. Siddha
    e. Homeopathy
    f. Need for integration of various system of medicine
4. Health scenario of India- past, present and future
5. Demography & Vital Statistics-
    a. Demography – its concept
    b. Vital events of life & its impact on demography
    c. Significance and recording of vital statistics
    d. Census & its impact on health policy
6. Epidemiology
    a. Principles of Epidemiology
    b. Natural History of disease
    c. Methods of Epidemiological studies
    d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

Basic computers and information science, Communication and Soft Skill (45 Hours) Part A – Basic computers and information science

The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under the subject are as follows:

1. Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.
2. Input output devices: Input devices (keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices (monitors, pointers, plotters, screen image projector, voice response systems).
3. Processor and memory: The Central Processing Unit (CPU), main memory.
4. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.
5. Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).
6. Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
7. Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
8. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
9. Introduction of Operating System: introduction, operating system concepts, types of operating system.
10. Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
11. Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.
12. Application of Computers in clinical settings.

Practical on fundamentals of computers -

1. Learning to use MS office: MS word, MS PowerPoint, MS Excel.
2. To install different software.
3. Data entry efficiency

Part B – Communication, soft skill & English

Topics to be covered under Communication & soft skills course–

1. Basic Language Skills: Grammar and Usage.
2. Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
3. Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
4. Basic concepts & principles of good communication
5. Special characteristics of health communication
6. Types & process of communication
7. Barriers of communication & how to overcome.

Topics to be covered under English course–

1. Spoken Communication
    a. Learning to read the phonetic symbols
    b. Stress
    c. Intonation
    d. Rhythm
    e. Commonly mispronounced words
    f. Correct pronunciation of important commonly used words in hospital practice
2. Vocabulary and Reading
    a. Special features of English vocabulary
    b. Common errors in choice of word
    c. Semi technical vocabulary
    d. Collecting material from library on scientific topics
    e. Comprehensive exercises
3. Writing
    a. Writing letters regarding permission, leave, opening bank account etc.
    b. Taking notes from lecture / reading materials
    c. Writing reports on patient care
    d. Summarizing scientific passages
4. Grammatical and Idiomatic Usage
    a. Correction of errors
    b. Types of interrogative sentences
    c. Active-Passive voice
    d. Tense
    e. Principles of procession, clarity and specificity

Human Anatomy & Physiology (90 Hours)

1. Introduction to anatomy
   Scope of Anatomy and Physiology, Definitions and Terms, Structure and functions of the human cell, Elementary tissues of the human body, Brief account on Composition of Blood, functions of blood elements, Blood Group and coagulation of blood, Inflammation, Cellular adaptation, Cell injury & cell death.
2. Cardiovascular System
   Structure and functions of various parts of the heart, arterial and venous system, brief account on common cardiovascular disorders
3. Respiratory System
   Various parts of respiratory system and their functions, Physiology of Respiration
4. Digestive System
   Names and various parts of the digestive system – Liver, Spleen, Gall Bladder, Pancreas, Buccal Cavity, Pharynx, Oesophagus, Stomach, intestine etc.-physiology of digestion and absorption
5. Urinary System
   Various parts of urinary system and its function, structure and function of kidneys, physiology of urine formation, pathophysiology of renal disease and edema
6. Reproductive System
   Physiology and anatomy of Male & Female reproductive system-Prostate, Uterus, Ovaries, etc.
7. Musculoskeletal System
   Classification of bones & joints, structure of skeleton –structure of skeletal muscle – physiology of muscle contraction
8. Nervous System
   Various parts of nervous system, brain and its parts, functions of the nervous system; and Spinal Cord & Nerves
9. Ear, Nose, Throat and Eye
   Elementary knowledge of structure and functions of organs of taste, smell, hearing, vision
10. Endocrine System
    Endocrine glands, their hormones, and functions – Thyroid, Parathyroid, Suprarenal, Pituitary, pituitary and Thymus
11. Haemopoietic and Lymphatic System
    Name of the blood vessels & lymph gland locations, arterial and venous system of the upper and lower limbs with special reference to vascular access
12. Surface Anatomy & Surface Markings of Human Body

Basic of Microbiology, Biochemistry & Pathology (90 Hours) Part A – Microbiology

1. Morphology
    a. Classification of microorganisms, size, shape and structure of bacteria. Use of microscope in the study of bacteria.
2. Growth and nutrition
    a. Nutrition, growth and multiplications of bacteria, use of culture media in diagnostic bacteriology.
3. Culture media
    a. Use of culture media in diagnostic bacteriology, antimicrobial sensitivity test.
4. Sterilization and Disinfection
    a. Principles and use of equipment of sterilization namely hot air oven, autoclave and serum inspissator, pasteurization, antiseptic and disinfectants.
5. Immunology
    a. Immunity, vaccines, types of vaccine and immunization schedule, principles and interpretation of common serological tests namely Widal, VDRL, ASLO, CRP, RF & ELISA.
    b. Rapid tests for HIV and HBsAg (excluding technical details).
6. Systematic Bacteriology
    a. Morphology, cultivation, diseases caused, laboratory diagnosis including specimen collection of the following bacteria (excluding classification, antigenic structure and pathogenicity),
    b. Staphylococci, Streptococci, Pneumococci, Gonococci, Meningococci, C. diphtheriae, Mycobacteria, Clostridia, Bacillus, Shigella, Salmonella, *E. coli*, Klebsiella, Proteus, Vibrio cholerae, Pseudomonas & Spirochetes.
7. Virology
    a. General properties of viruses, diseases caused lab diagnosis and prevention of following viruses, Herpes, Hepatitis, HIV, Rabies and Poliomyelitis.
8. Hospital infection
    a. Causative agents, transmission methods, investigation, prevention and control of hospital infection.
9. Principles and practice Biomedical waste management

Part B- Biochemistry:

1. Carbohydrates
    Glucose and Glycogen Metabolism

2. Proteins:
    Classification of proteins and functions

3. Lipids:
    Classification of lipids and functions

4. Enzymes
    Definition, Nomenclature, Classification, Factors affecting enzyme activity, Active site. Coenzyme, Enzyme Inhibition, Units of enzymes, Isoenzymes and Enzyme pattern in diseases

5. 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 and Kwashiorkor

6. Acids and bases:

   Definition, pH, Henderson – Hassel Balch equation, Buffers, Indicators, Normality, Molarity, Molality

Part C- Pathology

1. Clinical Pathology
   a. Introduction to clinical pathology.
   b. Collection, transport, preservation, and processing of various clinical specimens.
   c. Urine Examination: collection and preservation of urine, physical, chemical, microscopic examination.
   d. Examination of body fluids.
   e. Examination of cerebro spinal fluid (CSF).
   f. Sputum examination.
   g. Examination of faeces.

2. Hematology
   a. Introduction to hematology.
   b. Normal constituents of blood, their structure and function.
   c. Collection of blood samples.
   d. Anticoagulants used in hematology.
   e. Instruments and glassware used in hematology, preparation and use of glassware.
   f. Laboratory safety guidelines.
   g. SI units and conventional units in hospital laboratory.
   h. Hb, PCV.
   i. ESR.
   j. Normal hemostasis.
   k. Bleeding time, clotting time, prothrombin time, activated partial thromboplastin time.

3. Blood Bank
   a. Introduction.
   b. Blood grouping and Rh types.
   c. Cross matching.

Human Anatomy & Physiology Practical's (45 Hours)

1. Study of Human Skeleton parts with skeletal models.
2. Study with charts and models of all organ systems mentioned above.
3. Microscopic slides examination of elementary human tissues, cells.

Community orientation & Clinical visits (135 Hours)

The objective of this particular section of the foundation course is to sensitize potential learners with essential knowledge; this will lay a sound foundation for their learning across the under-graduate program and across their career. Innovative teaching methods should be used to ensure the attention of a student and make them more receptive such as group activities, interactive fora, role plays, and clinical bed-side demonstrations. [ii]

1. The community orientation will include the entire chain of healthcare delivery system - Sub center, PHC, CHC, SDH, DH and medical college, private hospitals, dispensaries and clinics.
2. The student will also be briefed regarding governance at village level including interaction and group discussion with village panchayat and front-line health workers.

Second Semester

Medical terminologies and record keeping, Medical Law and Ethics (75 Hours) Part A- Medical terminologies and record keeping

This course introduces the elements of medical terminology. Emphasis is placed on building familiarity with medical words through knowledge of roots, prefixes, and suffixes. Topics include: origin, word building, abbreviations and symbols, terminology related to the human anatomy, reading medical orders and reports, and terminology specific to the student‟s field of study. Spelling is critical and will be counted when grading tests.[iii]Topics to be covered under the subject are as follows:

1. Derivation of medical terms.
2. Define word roots, prefixes, and suffixes.
3. Conventions for combined morphemes and the formation of plurals.
4. Basic medical terms.
5. Form medical terms utilizing roots, suffixes, prefixes, and combining roots.
6. Interpret basic medical abbreviations/symbols.
7. Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.
8. Interpret medical orders/reports.
9. Data entry and management on electronic health record system.

Part B- Medical law and ethics

Legal and ethical considerations are firmly believed to be an integral part of medical practice in planning patient care. Advances in medical sciences, growing sophistication of the modern society‟s legal framework, increasing awareness of human rights and changing moral principles of the community at large, now result in frequent occurrences of healthcare professionals being caught in dilemmas over aspects arising from daily practice.[iv]

Medical ethics has developed into a well based discipline which acts as a "bridge" between theoretical bioethics and the bedside. The goal is "to improve the quality of patient care by identifying, analyzing, and attempting to resolve the ethical problems that arise in practice".

Doctors are bound by, not just moral obligations, but also by laws and official regulations that form the legal framework to regulate medical practice. Hence, it is now a universal consensus that legal and ethical considerations are inherent and inseparable parts of good medical practice across the whole spectrum. Few of the important and relevant topics that need to focus on are as follows:

1. Medical ethics - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia
7. Organ transplantation
8. Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
9. Professional Indemnity insurance policy
10. Development of standardized protocol to avoid near miss or sentinel events
11. Obtaining an informed consent.

Basics of Pharmacology (75 Hours)

1. General Pharmacology
    a. Introduction
    b. Routes of drug administration
    c. Pharmacokinetics
    d. Pharmacodynamics
    e. Drug toxicity and safety
2. Autonomic nervous system including skeletal muscle relaxants.
    a. Cholinergic drugs
    b. Anticholinergic drugs:
    c. Neuromuscular blocking drugs
    d. Adrenergic drugs
    e. Adrenergic receptor antagonists

3. Central nervous system
    a. General anesthetics (GAs)
    b. Local anesthetics (LAs)
    c. Sedative & hypnotics
    d. Opioids
    e. NSAIDs
    f. Drug treatment of rheumatoid arthritis (RA)
    g. Drug treatment of gout:
    h. Psychopharmacology
    i. Parkinsonism
    j. Alcohol
    k. Antiepileptic drugs
4. GIT
    a. Drugs for peptic ulcer
    b. Antiemetics
    c. Laxatives and antidiarrheals
5. Blood
    a. Hematinic
    b. Anticoagulants
    c. Antiplatelet drugs
    d. Fibrinolytics and antifibrinolytics
6. Cardiovascular system
    a. Diuretics
    b. Antihypertensives
    c. Antianginal drugs
    d. Hypolipidemic
7. Respiratory System
    a. Pharmacotherapy of bronchial asthma
    b. Pharmacotherapy of cough
    c. Antihistaminic

Professionalism and Values (45 Hours)

The course on professionalism will deliver the concept of what it means to be a professional and how a specialized profession is different from a usual vocation. It also explains how relevant professionalism in terms of healthcare system is and how it affects the overall patient environment.

1. Professional values- Integrity, Objectivity, Professional competence and due care, Confidentiality
2. Personal values- ethical or moral values
3. Attitude and behavior- professional behavior, treating people equally
4. Code of conduct, professional accountability and responsibility, misconduct
5. Differences between professions and importance of team efforts
6. Cultural issues in the healthcare environment

Introduction to Kidney Disease (75 Hours)

1. Assessment and Diagnostic studies of the Urinary system
   Physical assessment of a person with kidney disease, basics of assessment, list various diagnostic tests done for kidney diseases, laboratory tests, imaging studies, normal values, interpretation of the tests including the roles and responsibilities of a technologist.

2. Classification of renal diseases
   Define renal disorders, introduction to the classification of various types of renal disorders

3. Glomerular diseases – causes, types & pathology
   Definition, etiology, pathophysiology of each type, medical and surgical management

4. Tubulointerstitial diseases & renal vascular disorders
   Definition, etiology, pathophysiology of each type, medical and surgical management

5. Acute Kidney Injury
   Definition, etiology, pathophysiology of each type, medical and surgical management

6. Chronic Kidney Diseases
   Definition, etiology, pathophysiology, diagnosis & management

Clinical Postings – Part I (270 Hours)

Students will observe the basic operations of the dialysis unit while interacting with the multidisciplinary team members involved in providing optimal care to dialysis patients. The student will be introduced to various terminology, equipment, and techniques used for treatment.

1. Care of Patient with CKD
2. Care of Patient with ARF
3. Health teaching on prevention of UTI

Third Semester

Principles and practice of Dialysis Part I (90 Hours)

1. History, types of dialysis

   Genesis of dialysis, invention and the process involved in the evolution of dialysis, types of dialysis and classification, dialysis for acute kidney injury and chronic kidney disease, introduction to Continuous Renal Replacement Therapy (CRRT)

2. Principles of dialysis, quantification of adequacy

   Principles of diffusion, filtration, ultra-filtration, convection, osmosis and diafiltration; solute transport and fluid movement during dialysis; principles of fluid dynamics; hemodialysis and peritoneal dialysis; measuring dialysis adequately: Urea reduction ratio - Urea Kinetic Modeling; pre-dialysis and post-dialysis – BUN measurement, measurement of KT/V.

3. Dialysis Team – rights, responsibilities, patient-doctor relationship

   Overview of the dialysis team; responsibilities of a technologist, nurse and doctor in the dialysis setting; building effective working relationships; its importance; dealing with difficult working relationships; respecting the rights of the patient(s); conflict management

4. Dialysis reuse

   History of dialyzer reprocessing, reason for dialysis reprocessing, steps involved in dialyzer reprocessing, hazards of dialyzer reprocessing, documentation for dialyzer reprocessing

5. Dialyzer Membranes

   Introduction to dialyzer membranes; composition of the dialyzer membranes; types, uses and sizes of the various membranes; principles on which the dialyzer membranes work; newer dialysis membranes and advantages; dialysis membrane: structure, characteristics [molecular weight cut off, ultrafiltration coefficient (Kuf), mass transfer coefficient (KoA) and efficiency, low and high flux, clearance (K)]; Biocompatibility; High performance membranes

6. Vascular Access – Temporary & Permanent

   Types of vascular access – Fistulae, Grafts, Catheters; pre-dialysis assessments for all types of vascular access; methods of needle insertion for AVFs and grafts; pre-dialysis assessment, accessing procedure, exit site care, and monitoring of catheters; understanding the role of a vascular access coordinator.

7. Equipment, Accessories, Function

   Types of equipment used in the dialysis process; parts of a dialysis machine, tubings and water supply for dialysis; overview of the various equipment, accessories and working of a dialysis machine – technology, functioning, calibration, and sterilization of dialysis machine according to their: type/brand, frequency and duration of use; importance of calibration and sterilization, recording (calibration, sterilization and set up details); planning and organizing scheduled maintenance; various indicators, alarms and sensors of the dialysis machine, corrective steps to be taken when a particular alarm goes off; hemodialysis apparatus: types of dialyzer & membrane, dialysate

   a. Dialysis machines:
   b. Latest Hemodialysis machines
   c. Conventional and Portable Machines
   d. Mechanism of functioning & management:

8. Computer applications in Dialysis

   Hospital information system and Electronic Medical Records (EMR) in the dialysis unit, scheduling of procedures, application of computers in the monitoring and maintenance of a dialysis unit

9. Dialysate delivery system

   Definition of a delivery system, types of delivery systems.

10. Composition of dialysate

    Various dialysate compositions, its uses and indications, method for obtaining various compositions of dialysate

11. High flux / high efficiency dialysis

    Definition of high flux / high efficiency dialysis, differences between high flux dialysis and hemodialysis, uses and indications for high flux dialysis, complications of high flux dialysis, precautions and contraindications, care during a high flux dialysis

12. Complications in dialysis patients

    List various complications seen in patients on dialysis, prevention of complications, education to patient on prevention of complications, emergency management of hypotension & hemorrhage

13. Water treatment-pretreatment, deionizer, Reverse Osmosis

    Purpose of water treatment for dialysis; components of a dialysis centre‟s water treatment system; advantages and disadvantages of water softeners, carbon tanks, reverse osmosis, deionization, and ultraviolet irradiation in the treatment of water for dialysis; monitoring of water treatment systems – disinfection, microbiological testing, water sampling and chemical monitoring; method for microbiological testing of the water treatment system; typical water treatment monitoring schedule; reverse osmosis process and system: definition of RO, cartridge pre – filter, reverse osmosis pump and monitor assembly, RO membranes; quality assessment mechanisms – JCI requirements, AAMI standards, ISO requirements, checklists and tools used for optimal compliance

14. Dialysis in Neonates, infants & children

    Dialysis for infants and neonates, vascular access in this special group, dialysis settings, monitoring and managing complications.

15. Renal data maintenance

    Records and reports maintained in the dialysis unit, need for maintenance of records and report, responsibility of the technologist in maintenance of records and report; medico-legal aspects in the maintenance of records.

16. Infection control and sterilization

    Morphology of microorganisms, sterilization and disinfection, microbiology of vascular access infection (femoral, jugular, subclavian catheters), sampling methodologies for culture & sensitivity, principles, and practice of biomedical waste management

17. Introduction to Kidney Transplantation:

    Introduction to the basics of kidney transplantation, comprehending recipient evaluation, understanding pre-transplant care of patients on dialysis, understanding the role of a coordinator in kidney transplantation.

18. Prevention of Renal Disease

    Staging and causes of chronic kidney disease, early diagnosis of CKD, counseling on adequate control of diabetes and hypertension, methods to control the progression of CKD, avoiding nephrotoxic drugs, community counseling and awareness about kidney disease, importance of annual master health checkups after 40 years of age, diet and medication counseling for CKD patients, early diagnosis and management of complications of CKD (anemia, malnutrition, mineral bone disease), preparing a patient before ESRD (e.g. early creation of AV fistula etc.)

Instruments specific to dialysis therapy (90 Hours)

1. Content to as Equipment"s used in Hemodialysis.
2. HD machine -Components and function
3. HD machine – Blood Circuit
4. HD machine – Dialysate circuit
5. Cleaning and disinfection of HD machine
6. OCM
7. Trouble shooting equipment related problems during HD.
8. Water treatment System
9. Purpose of water treatment
10. AAMI and ISO standards for RO water.
11. Filtration
12. Softener and carbon filtration
13. Deionizer
14. RO system
15. Ultrafiltration and UV Irradiation
16. Heat disinfection of water lines
17. Dialyzer Reprocessing Equipment
18. Types of Automated dialyzer reprocessing machine
19. Automated reuse equipment – components and function

20. Automated reuse equipment – care and maintenance
21. Equipment"s used for special procedures.
22. Defibrillators
23. Cardiac Monitors
24. Blood Temperature, Blood Volume monitor

Principals of Management (45 Hours)

The course is intended to provide a knowledge about the basic principles of Management.

1. Introduction to management
2. Strategic Management
3. Foundations of Planning
4. Planning Tools and Techniques
5. Decision Making, conflict and stress management
6. Managing Change and Innovation
7. Understanding Groups and Teams
8. Leadership
9. Time Management
10. Cost and efficiency

Pharmacology related to dialysis (60 Hours)

1. IV fluid therapy with special emphasis in renal diseases
   Define IV fluids; differentiate between various IV fluids; use of crystalloids and colloids in renal diseases; mode of action, contraindication, precautions and side effects of using various IV fluids.

2. Diuretics
   Introduction to diuretics, definition, classification, actions, dosage, side effects & contraindications

3. Anti-hypertensives
   Definition, classification, actions, dosage, side effects & contraindications, special reference during dialysis, vasopressors, drugs used in hypotension.

4. Dialyzable drugs
   List of drugs that are dialyzable; action, dosage, side effects and contraindications of phenobarbitone, lithium, methanol, etc.
   Dose & duration of drugs used in dialysis, administration of drugs and the effect of dialysis on the action of drugs

5. Iron
   Use of Iron therapy in dialysis; its metabolism, role in RBC formation and anemia; forms of iron therapy; indications for use; available forms and dosages

6. Erythropoiesis Stimulating Agent
   History of the development and use of erythropoietin; its action, function; primary role in RBC formation and secondary role; mechanism of action; synthesis and regulation; indications for use; available forms and dosages

7. Heparin including low molecular weight heparin and heparin alternatives.
   Introduction to heparin and low molecular weight heparin, description of heparin & LMWH, pharmacokinetics, mode of action, indications and use, dosage and route of administration & side effects

8. Protamine sulphate
   Introduction to protamine, mode of action, pharmacokinetics, indications, uses, dosage, route of administration, side effects, precautions, contraindications

9. Formalin, citrate, sodium hypochlorite, hydrogen peroxide
   Action, characteristics, the use of the drugs, its role as disinfectants, and adverse effects of residual particles applicable to formalin

10. Hemodialysis concentrates
    Composition & dilution (acetate & bicarbonates)

11. Peritoneal dialysis fluid in particular hypertonic solutions – composition
    Fluids used in peritoneal dialysis, the composition and strength of concentration, mode of action, uses, indications and precaution.

Principals and practice of Dialysis Practical's (30 Hours)

1. Priming of Dialysis Apparatus
2. Dialyzer reuse
3. Monitoring during dialysis
4. Managing complications during dialysis.
5. Understanding Dialysis Blood Circuit.

Clinical Postings – Part II (270 Hours)

Students will gain additional skills in clinical procedures, interaction with patients and professional personnel. Students apply knowledge from previous clinical learning experience under the supervision of a dialysis therapy technologist/ Dialysis Therapist/ Nephrologist. Students are tested on intermediate Clinical Dialysis Therapy skills.

Fourth Semester

Principles and practice of Dialysis Part II (90 Hours)

1. Preparation and positioning of patient for dialysis

2. Patient Assessment – Pre, intra & post dialysis & Machine and patient monitoring during Hemodialysis

   Introduction to patient assessment, understanding a treatment plan, Equipment preparation – Dialysate - Dialyzer and Bloodlines - Decisions regarding the appropriate size and type of catheter/ IV tubing to be used –Connecting patients to the machine- Initiation of dialysis - Removing fluid - Replacing fluid - Drawing blood samples - Testing blood samples. Measuring dialysis adequately: Urea reduction ratio - Urea Kinetic Modeling. Pre –dialysis and post dialysis - BUN Measurement. Factors affecting dialysis treatment, communicating and documenting the findings prior to the dialysis process. Starting the dialysis treatment: Monitoring during dialysis - Patient Monitoring (blood pressure, temperature, rate of blood flow, proper mixture of dialysate, and presence of air bubbles) - Technical Monitoring. Importance of reporting, HD Complications during dialysis: Clinical complications - Technical Complications- Procedure to disconnect the patient - procedure for removing the IV cannula-Post dialysis procedures, Post dialysis patient evaluation, Recording of the Treatment, Recording changes in Patient‟s condition, Preparation of status and progress reports, Equipment clean up and Maintenance, Recording the dialysis procedure on the medical report/chart of the patient, Discussion of practical clinical case scenarios involving above topics wherever possible.

3. Lab data analysis

   Tests done for a patient on Hemodialysis, interpretation of tests and normal values. Discussion of practical clinical case scenarios involving above topics wherever possible.

4. Acute and chronic dialysis prescription under supervision

   Common drugs for patients with ARF & CRF, Actions, side effects and special considerations. Discussion of practical clinical case scenarios involving above topics wherever possible.

5. Medications in dialysis patients

   List the common drugs used for a patient on dialysis. Use of antibiotics during and post dialysis, considerations to be taken. Erythropoietin use in patients on dialysis - dosage and administration. Iron preparations for oral and parental use for renal anemia- dosage, administration and side effects. Antihypertensive use - considerations during dialysis. Cardiac medications- used in patients on dialysis. Vaccines for patients on hemodialysis - need and the schedule. Discussion of practical clinical case scenarios involving above topics wherever possible.

6. Nutrition management in dialysis patients

   Introduction to nutrition and RDA‟s. Renal diet. Teaching for a patient on renal diet. Foods to avoid, method of cooking to be employed. Planning a renal diet for a patient with chronic kidney disease. Screening for under nutrition among dialysis patients. Discussion of practical clinical case scenarios involving above topics wherever possible.

7. Anticoagulation

   Use of anticoagulation in the dialysis setting, various anticoagulants used in dialysis. Monitoring during use of anticoagulants. Method of administration. Calculation of anticoagulant use & complications. Role and indications for antidote use. Heparin free dialysis - need and indication. Regional citrate anticoagulation. Discussion of practical clinical case scenarios involving above topics wherever possible.

8. Hemodialysis machine specific technology:

   Flow system, blood monitoring and control systems, arterial blood flow monitoring, the blood pump, air detection, venous blood flow/pressure monitoring, single needle system, dialysate monitoring and control systems, conductivity, temperature, deaeration and degassing, ultrafiltration & negative pressure, TMP and volumetric control, blood leak detection, isolated ultrafiltration, sodium, bicarbonate and ultrafiltration profiling, blood volume monitoring, blood temperature monitoring. Repair techniques and procedures, fault diagnostics, computer aided maintenance and planned preventative maintenance.

9. Hemodialysis

   The process of Hemodialysis, vascular access. Starting Hemodialysis, priming of the dialyzer, alarms and the settings of a dialyzer, completion of Hemodialysis, closing the Hemodialysis. Cleaning of the tubing‟s and dialyzer and the dialysis machine. Discussion of practical clinical case scenarios involving above topics wherever possible.

10. Complications of Hemodialysis– Acute & chronic

    Complications of Hemodialysis, acute complications – monitoring, prevention for acute complications. Chronic complications – list, prevention strategies, monitoring for chronic complications. Discussion of practical clinical case scenarios involving above topics wherever possible.

11. Peritoneal Dialysis

    Acute and Chronic Peritoneal Dialysis. History, access, physiology of Peritoneal Dialysis. PD – Transport kinetics, ultrafiltration, UF, Intermittent PD, Continuous Ambulatory Peritoneal Dialysis, Automated Peritoneal Dialysis, Dialysis Solutions, Novel uses of PD. Adequacy of peritoneal dialysis chronic peritoneal Dialysis - KT/V Creatinine clearance. PET - Peritoneal Equilibrium test and interpretation. Discussion of practical clinical case scenarios involving above topics wherever possible.

12. Infectious and noninfectious complications of PD

Introduction to complications in peritoneal dialysis. List of Complications: Catheter Infections Peritonitis Inadequate flow or drainage of the dialysis fluid Lesions Ultra filtration failure. Management of exit site infection, Early Exit Site Care. Chronic Care of the Healed Exit Site Diagnosing Exit Site Infections Treatment of exit-site infections Technique to culture exit site infection Medical management of CAPD peritonitis Initiation of therapy based on gram stain results Antibiotic selection, Discussion of practical clinical case scenarios involving above topics wherever possible.

13. Infection control and universal precautions

Introduction to infection control practices, need for infection control, and burden of hospital acquired infection. Introduction to universal precautions - Hand washing – Personal protective equipment – contact precaution, air borne precaution, droplet precaution - - Protection from contamination - Cleaning and disinfecting – common pathogens and their route of transmission- HIV AIDS and its spread. Biomedical waste management- Employee Health Policy- Record and report infection control procedures. Discussion of practical clinical case scenarios involving above topics wherever possible.

14. Psychosocial aspects & patient education

Psychological impact of a chronic disease. The financial implications of the disease. The family and its role in the care of the patient with CKD. Patient education - Diet, prevention of complications, drug compliance. Discussion of practical clinical case scenarios involving above topics wherever possible.

15. Instruct patients about in-home treatment and precaution

Identification of the type of patient for whom in house treatment is possible and in line with doctor‟s advice, procedure of in-house treatment options, pros and cons of in-house treatment options, The relevant protocol and procedures to be followed to carry out the process. Discussion of practical clinical case scenarios involving above topics wherever possible.

16. Quality assurance in dialysis

Standards of practice, various risks to quality and safety, JCI recommendations, NABH recommendations. Infection control policies and procedures in the dialysis unit. Discussion of practical clinical case scenarios involving above topics wherever possible.

17. General principle of hospital practice

Hospital structure and organization, Care of Patient, Basic Assessment Skills, First aid & Basic Life Support (BLS) and certification, Maintenance of Hygiene & Infection Control Practices, Principles of asepsis, Maintenance of Medications in the department, Specialized Investigations - Care of Patients, Medico - Legal Issues

BLS (30 Hours)

1. BLS in perspective
    a. The need for Medical interventions
    b. The ultimate Coronary Care Unit
    c. Emergency Cardiac Care
    d. The chain of Survival
    e. Role of the American Heart Association

2. Cardiopulmonary Function and actions for survival
    a. The Cardiovascular and Respiratory system
    b. Action for survival

3. Risk factors and prudent Heart living
    a. Risk factors for Heart Attack
    b. Prudent Heart Living
    c. Summary: The role of Prevention

4. Adult BLS
    a. Citizen response to Cardio-pulmonary Emergency
    b. Indication for BLS
    c. The sequence of BLS; Assessment, EMS activations and the ABC of CPR
    d. CPR performed by one rescuer and two rescuers
    e. Foreign – Body airway obstruction Management
    f. CPR: The Human Dimension
    g. BLS Research Initiative

5. Special Resuscitation Situation
    a. Stroke
    b. Hypothermia
    c. Near – Drowning
    d. Cardiac arrest associated with Trauma
    e. Electric shock and lightning stroke
    f. Pregnancy
    g. Asphyseration
    h. Special techniques and pitfalls and complication
    i. Unique situation

6. Pediatric BLS
    a. Epidemiology
    b. Injury prevention
    c. Prehospital care
    d. The sequence of Pediatric BLS - the ABC of CPR
    e. Activation of the EMS system obstructive
    f. Foreign Body airway
    g. BLS in Trauma

7. Ethical and Legal considerations
    a. Values in Decision Making
    b. Instituting and Discontinuing CPR
    c. Legal mandates
    d. Conclusions
    8. Safety during CPR Training and actual rescue
    a. Disease transmission during CPR Training
    b. Disease transmission during actual performance of CPR
    9. Automated External Defibrillation
    a. Importance of Automated External Defibrillation
    b. Overview of Automated External Defibrillation
    c. Advantage and Disadvantage of Automated External Defibrillation
    d. Use of Automated External Defibrillation during Resuscitation attempts
    e. Automated External Defibrillation treatment algorithm
    f. Post resuscitation care
    g. Training
    h. Maintenance of Skills
    i. Medical control
    j. Quality assurance

Renal Nutrition (30 Hours)

Nutritional management of HD patient:

1. Basic Nutrition
2. Nutritional Screening and Assessment
    - Introduction
    - Mini Nutritional Assessment
    - Nutritional Assessment
    - Medical History
    - The effect of comorbidities
    - Medications and Drug-Nutrient Interactions
    - Psychosocial History
    - Dietary History
    - Physical Examination
    - Anthropometric Measurements
    - Biochemical Assessment and Laboratory Data
    - Nutritional Assessment Tools
    - Subjective Global Assessment (SGA)
    - Dialysis Malnutrition Score (DMS)
    - Malnutrition and Inflammation Score (MIS)
    - Dialysis Malnutrition Score (DMS)
    - Malnutrition and Inflammation Score (MIS)
3. Nutrition Management in HD patients
4. Goals of nutritional management in HD patient,
5. factors influencing nutritional status,
6. Purpose of nutrition care in HD patient, diet in HD patient

Basic Principles of Nursing Care (30 Hours)

1. Bed making
2. Vital Signs Monitoring
3. Input and Output chart
4. Maintenance of emergency crash cart
5. Injections – intravenous, intramuscular, subcutaneous
6. Insertion of intravenous canulae
7. Cleaning and dressing of wounds and vascular access sites and peritoneal catheter exit site
8. Assisting the physician in procedures like minor surgery, vascular access, etc
9. Care of bed ridden patients,
10. Documentation
11. Collection of blood, urine and stool specimens and their transfer aseptic precautions to the laboratory

Principles and practice of Dialysis Part II Practical's (60 Hours)

1. Preparation and positioning of patient for dialysis.
2. Assessment of HD patients
3. Perform HD
4. Perform PD

BLS Practical's (30 Hours)

1. Identify the need of BLS.
2. Perform BLS

Clinical Posting – Part III (270 Hours)

Students will improve their skills in clinical procedures. Progressive interaction with patients and professional personnel are monitored as students practice in Dialysis Therapy unit in a supervised setting. Additional areas include problem solving, identifying machine components and basic side effect management. Students will demonstrate competence in beginning and intermediate procedures.

Fifth Semester

Internship (720 Hours)

The internship will span 6 months/ 1 semester. This will include 8 hours of practice a day, totaling to 720 hours for one semester.

As a part of this, the students will choose a relevant subject and prepare an in-depth project report of not less than 1000 words which will be handed over to the supervisor or trainer. The report can include objective, scope of the project and an in-depth report.
The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning and intermediate procedures. Students will observe the advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 8 hours per day and this may be more depending on the need and the healthcare setting.

Competency

Professional Conduct: Dialysis Technology is a highly specialized field of nephrology (care of the kidneys). The Dialysis Care Associate is an allied and health care professional who operates dialysis machines utilized for patients having kidney diseases. Its limitations, code of conduct and complying with the legal, ethical and professional aspects of the practice. Dialysis Care Associate should also be aware of rights of the patients who are seeking the Nephrology service for dignity, privacy, and confidentiality.

This professional conduct should demonstrate to the patients and peers your commitment to the very highest clinical, ethical and professional standards. This will increase public trust and confidence in the profession, therefore, will improve in understanding the role of the Dialysis Care Associate in Dialysis process.

Performance Criteria	Indicators			Measurement Criteria
	Knowledge	Skill	Behavior	
Provides safe and effective care to the individual.	• Identify individual responsibilities in relation to maintaining workplace health safety and security requirements. • Comply with health, safety and security procedures for the workplace	• Demonstrates appropriate use of barrier precautions and cleaning and disinfection procedures. • Demonstrates of vascular access care and technique. • Demonstrates best of the resources to improve the visual requirements • Be aware of the protocol of starting the dialysis • Minimize inconvenience and pain for the patient while performing the procedure	• Greets and respects all patients and their attendants in a caring, sensitive and appropriate manner • Respect towards patients regarding their health care decisions • Ensures equal care and treatment is provided to all patients • Positive attitude and patience towards patient"s requirements	• Summative Assessments • Clinical Posting • Formative assessment
Ability to understand the roles and responsibilities of a Dialysis Care Associate.	• Factual knowledge of the principles of dialysis; hemodialysis preparations, methods and techniques; vascular access care and quality control measures.	• Perform all the processes of initiating & terminating dialysis therapy. • Ability to decide on appropriate dialysis prescription.	• Proactive approach to health and safety issues • Responds properly to patient complaints and takes appropriate measures including emergency termination of dialysis if needed	• Formative assessment • Summative Assessments • Clinical Posting

	• Knowledge of possible complications and ways to treat them, ability to recognize dialyzer reaction and involve appropriate supervisory support if needed	• Identify the complication during dialysis and provide instant management.		
Understands the process of Dialysis, Operating dialysis equipment and how to perform alternate dialysis procedures	• Should have depth knowledge about how to handle dialysis machine and water treatment system. • Determines tests and procedures appropriate to the patient's condition and abilities, with nephrologist • Know when the dialysate, dialyzer or other constituents need to be replaced • Understand how to utilize existing catheters for performing dialysis	• Demonstrate and perform hemodialysis, peritoneal dialysis and extracorporeal detoxification. • Handling all types of vascular access for hemodialysis. • Understand the various indicators, alarms and sensors of the dialysis machine • Properly initiates rinse and disinfection of dialysis machine externally and internally	• Demonstrate good interpersonal relationships with dialysis team. • Seeks consent of the patient before providing information to external stake holders • Restricts self from discussing patient information and condition in any open forum/external communication	• Formative assessment • Summative Assessments • Clinical Posting • Seminars • Viva voce • Demonstration • Spotters

		• Should know how to assemble and check the extracorporeal circuit parts i.e. the patient connectors, Dialyzer connectors, Drip chamber and bubble trap, Blood pump segment, Heparin infusion line, and saline infusion line • Independently demonstrate & perform AVG/AVF cannulation and Central Venous catheter handling. • Efficiently demonstrates the water treatment plant and AAMI guidelines. • Demonstrates the reuse and reprocessing for the dialyzer. • Demonstrate BLS.		
Administration of medications under the supervision of Nephrologists.	• Properly documents the administration of medication on flow sheet. • Aseptic technique for preparing and administering medications.	• Demonstrates properly administers heparin does and bolus (Method of heparin administration) Types of heparin protocols	• Demonstrate honesty and integrity while medications handling. • Avoids discrimination and malpractice	• Formative assessment • Summative Assessments • Seminars • Viva voce

	• Should have essential knowledge of administration of other drugs as prescribed by the doctors during and before , after dialysis.	• Demonstrate efficient application of follow International Patients Safety Goals (IPSGE)	• Good communicatio n the patients and the nephrologist.	
Operation and Maintenance of all equipment	• Monitor technical/ clinical vitals during the treatment. • Understand the various indicators, alarms and sensors of the dialysis machine • Be alert and quick in Patient responses • Know whom and how to inform in case of medical emergency	• Performs basic operator troubleshooting, appropriately initiates, monitors and terminates chemical disinfect procedure for machine, dialyzer and tubing	• a sensitive and caring attitude towards the patient	• Formative assessment • Summative Assessments • Clinical Posting • Seminars • Viva voce • Demonstration • Spotting
Ability to promote ethical and cordial relationship with other health care professionals	• Should have essential knowledge of how to maintain practice in accordance with other professional health care standards	• Explains the condition that are treatable/correct able beyond your practice standards • Refers to respective specialties after careful diagnosis and with referral letter	• Honesty and understanding of own limitations	• Demonstration • Formative assessment • Summative Assessments • Clinical Posting

Ability to comply with legal, professional and ethical guidelines, law and codes	• Should have in depth knowledge of ethical practice and standard operating procedures followed in the clinical examination • Should have vital knowledge of the law, codes and guidelines set by the regulatory body of profession and is fully aware of the consequences if not followed	• Explains the uses of various diagnostic instruments and their importance in the process of examination • Follows the code of conduct set down by the council/ appropriate authorities	• Demonstrates professional behavior	• Formative assessment • Summative Assessments • Clinical Posting • Demonstration

Diploma in Dialysis Technology Log Book

Instructions

1. Following log book should be maintained for all five Semesters.
2. Print out of the sheets may be depended on the no of cases/ clinical quota mentioned in chapter 4.
3. Certificate of the Log Book should be only signed after end of each year.
4. Log book has been divided into three sections.
5. Log book needs to be checked & verified daily.
6. Posting Areas for Each Semesters:

Section	Semester	Posting Area
Section 1	Semester 1 & Semester 2	Dialysis Unit & Procedure Room for Renal Biopsy, Central Venous Catheter Insertion & , Central Venous Catheter Removal Observation
Section 2	Semester 3 & Semester 4	Dialysis Unit & PD
Section 3	Internship	Dialysis unit

Section 1: Diploma in Dialysis Technology - Semester 1 & Semester 2

HEMODIALYSIS RECORD SHEET

Date:

Name: **Age & Sex:** **Op. No/ Hosp No:**

Blood group: **Ht:** **Wt:** **BSA:**

Basic kidney Disease: **BMI:**

Co morbid conditions: **Viral Status:**

Urine Output: **Frequency of dialysis:** **Access - AVF** **Date**
CVC **Date**
Dry Weight: **AVG** **Date**

Vaccination Status:
Ongoing Therapy

Start date	Medications	Dosage	Route	Freq	Indication

INVESTIGATIONS

Date		Remarks	Date		Remarks
Hemoglobin			Calcium		
PCV			Phosphorus		
Sr. Ferritin			Uric acid		
Sr Iron			SGOT		
Sr. TIBC			SGPT		
TSAT			SAP		
Bun			T.Protein		
Sr. Creatinine			Sr.Albumin		
Sodium			iPTH		
Potassium			Vit D3		

VIRAL SEROLOGY SCREENING TEST

Date	
Hbs Ag	
Anti HCV	
HIV	
Anti HBS	

Date		
KT/V		
URR		

Intra dialytic problems if any-

Dialysate: **St Connection/ Saline drain:**
Dialyser: **Surface area:** **Ultrafiltration:**
Hours of Dialysis: **Expected weight loss:**
Heparin: **Ideal weight:**
Last Ideal wt refixed on: **Date of previous Access Dressing (CVC):**
Access Dressing Done:

Blood access:	**Jugular/Femoral/ Sub clavian catheter** **A.V Fistula / Graft/perm catheter**
Total No of Dialysis:	**Dialyser reuse number:**
Weight before Dialysis:	
Weight gain:	

Time	BP mm Hg	Pulse/min	Heparin Units/hr	BFR ml/min	VP mm Hg	Net UF	TMP mm Hg	Remarks

Post Dialysis Assessment

Post dialysis weight	**Weight Loss**
Post dialysis BP	

Work Done:

Any other Information:

Verified By: **Signature of Faculty**

HEMODIALYSIS CIRCUIT PREPARATION

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

INITIATION OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

TERMINATION OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

REPROCESSING OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	FBV	S.NO	DATE	PT NAME	SIGNATURE	FBV

Verified By : **Signature Of Faculty :**

WATER TREATMENT PLANT MAINTANANCE

S.NO	DATE	INLET PRESSURE	RO PRESSURE	CONDUCTIVITY	TDS	pH	HARDNESS

Verified By : **Signature Of Faculty :**

RENAL BIOPSY

Sr. No	Name	Date	Hospital No	Indications	Site of Sample collection	Complications during procedure	Signature

Verified By: **Signature Of Faculty:**

Central Venous Catheterization

Sr. No	Name	Date	Hospital No	Indications	Location of Catheterization	Complications during procedure	Signature

Verified By: **Signature Of Faculty:**

HEMODIALYSIS RECORD SHEET

Date:

Name: **Age & Sex:** **Op. No/ Hosp No:**

Blood group: **Ht:** **Wt:** **BSA:**

Basic kidney Disease: **BMI:**

Co morbid conditions: **Viral Status:**

Urine Output: **Frequency of dialysis:** **Access - AVF** **Date**
CVC **Date**
Dry Weight: **AVG** **Date**

Vaccination Status:
Ongoing Therapy

Start date	Medications	Dosage	Route	Freq	Indication

INVESTIGATIONS

Date		Remarks	Date		Remarks
Hemoglobin			Calcium		
PCV			Phosphorus		
Sr. Ferritin			Uric acid		
Sr Iron			SGOT		
Sr. TIBC			SGPT		
TSAT			SAP		
Bun			T.Protein		
Sr. Creatinine			Sr.Albumin		
Sodium			iPTH		
Potassium			Vit D3		

VIRAL SEROLOGY SCREENING TEST

Date	
Hbs Ag	
Anti HCV	
HIV	
Anti HBS	

Date		
KT/V		
URR		

Intra dialytic problems if any-

Dialysate: **St Connection/ Saline drain:**
Dialyser: **Surface area:** **Ultrafiltration:**
Hours of Dialysis: **Expected weight loss:**
Heparin: **Ideal weight:**
Last Ideal wt refixed on: **Date of previous Access Dressing (CVC):**
Access Dressing Done:

Blood access:	**Jugular/Femoral/ Sub clavian catheter** **A.V Fistula / Graft/perm catheter**
Total No of Dialysis:	**Dialyser reuse number:**
Weight before Dialysis:	
Weight gain:	

Time	BP mm Hg	Pulse/min	Heparin Units/hr	BFR ml/min	VP mm Hg	Net UF	TMP mm Hg	Remarks

Post Dialysis Assessment

Post dialysis weight	**Weight Loss**
Post dialysis BP	

Work Done:

Any other Information:

Verified By: **Signature of Faculty**

HEMODIALYSIS CIRCUIT PREPARATION

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

INITIATION OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

TERMINATION OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

REPROCESSING OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	FBV	S.NO	DATE	PT NAME	SIGNATURE	FBV

Verified By : **Signature Of Faculty :**

WATER TREATMENT PLANT MAINTANANCE

S.NO	DATE	INLET PRESSURE	RO PRESSURE	CONDUCTIVITY	TDS	pH	HARDNESS

Verified By : **Signature Of Faculty :**

PD CASE RECORD

NAME: HOSP.NO/OP.NO:

AGE/SEX: ADDRESS:

HT: WT: BMI: BSA:

CONTACT NO: CONSULTANT:

DOA: DOD:

ANTHROPOMETRIC ASSESMENT:

TSF: MAC: MAMC:

REASON FOR ADMISSION: PREVIOUS DATE OF VISIT:

PRIMARY DIAGNOSIS: VIRAL STATUS:

COMORBID CONDITION:

PATIENT COMPLAINT OF:

STATUS: DM/Yrs: HTN/Yrs: CAD/Yrs: VACCINATION:

PREVIOUS SURGERY UNDERGONE: YES/NO BLOOD GROUP:

NAME/DATE OF THE SURGERY DONE:

DATE OF PD CATHETERISATION:

TYPE OF CATHETER/SIZE:

DATE OF SUTURE REMOVAL:

FLUSHING DATES:

LOW SUPINE PD: YES/NO REASON FOR PD:

EXCHANGES STARTED ON:

PERCENTAGE/EXCHANGES/VOLUME:

UNDERGONE HEMODIALYSIS: YES/NO DURATION OF HD:

HD ACCESS:

PET: DATE:

ADEQUACY: DATE:

CREATININE CLEARANCE: DATE:

PREVIOUS HISTORY OF INFECTION/TREATMENT DONE:

TOTAL EPISODES/TYPE OF INFECTION: ORGANISMS INVOLVED:

PRESENT PD PRESCRIPTION:

% OF BAG	NO.OF.EXCHANGE	VOLUME	URINE OUTPUT

PLAN:

BLOOD INVESTIGATION: URINE CULTURE:

PUS CULTURE: INFECTION TYPE:

EMPIRICAL TREATMENT:

ANTIBIOTICS GIVEN:

NO.OF.DAYS:

TREAMENT PRIOR TO CULTURE REPORT:

ORGANISM: ANTIBIOTIC SENSITIVITY:

TC: DC:

ANTIBIOTICS:

DOSAGE: NO.OF.DAYS:

OTHERS:

TRANSPLANT COUNSELLING: PATIENT EDUCATION:

NUTRITIONAL EDUCATION: FOLLOW UP DATE:

COMMENTS:

PREPARED BY: **REPORTED BY:** **SIGNATURE OF FACULTY INCHARGE**

PD DAILY RECORD SHEET

NAME: HOSP.NO/OP.NO:

DATE:

PD EXCHANGE DETAILS: PRE WEIGHT: POST WEIGHT:

NO	DEX %	PRE BP	POST BP	INPUT	OUTPUT	DWELL TIME	UF	CUF	REMARKS
1									
2									
3									
4									
5									

ANTIBIOTICS GIVEN: DOSAGE: NO.OF DAY:

FLID INTAKE: URINE OUTPUT:

NET UF:

PATIENT COMPLAINTS:

EXIT SITE DRESSING: EXIT SITE SCORE:

EXIT SITE APPERANCE:

SWELLING: CRUST: REDNESS: PAIN: DRAINAGE:

INVESTIGATIONS:

1. SERUM ANALYSIS:

HB ____ PCV ___ TC ____DC _____BUN ____CREAT ____ K^+ ____ Na^{2+}____ Hco_3____ URIC ACID _____ ALBUMIN _____ T.PROTEIN _____

2. PD FLUID ANALYSIS:

TC _____ DC _____ AFB_____TB PCR _____

FUNGAL SMEAR _____ GRAM STAIN _____

ORGANISM GROWTH: ANTIBIOTIC SENSITIVITY:

MEDICATIONS:

PREPARED BY: **VERIFIEDBY:** **SIGNATURE OF FACULTY:**

Section 3: Diploma in Dialysis Technology – Internship

HEMODIALYSIS RECORD SHEET

Date:

Name: **Age & Sex:** **Op. No/ Hosp No:**

Blood group: **Ht:** **Wt:** **BSA:**

Basic kidney Disease: **BMI:**

Co morbid conditions: **Viral Status:**

Urine Output: **Frequency of dialysis:** **Access - AVF** **Date**
CVC **Date**
Dry Weight: **AVG** **Date**

Vaccination Status:
Ongoing Therapy

Start date	Medications	Dosage	Route	Freq	Indication

INVESTIGATIONS

Date		Remarks	Date		Remarks
Hemoglobin			Calcium		
PCV			Phosphorus		
Sr. Ferritin			Uric acid		
Sr Iron			SGOT		
Sr. TIBC			SGPT		
TSAT			SAP		
Bun			T.Protein		
Sr. Creatinine			Sr.Albumin		
Sodium			iPTH		
Potassium			Vit D3		

VIRAL SEROLOGY SCREENING TEST

Date	
Hbs Ag	
Anti HCV	
HIV	
Anti HBS	

Date		
KT/V		
URR		

Intra dialytic problems if any-

Dialysate: **St Connection/ Saline drain:**
Dialyser: **Surface area:** **Ultrafiltration:**
Hours of Dialysis: **Expected weight loss:**
Heparin: **Ideal weight:**
Last Ideal wt refixed on: **Date of previous Access Dressing (CVC):**
Access Dressing Done:

Blood access:	**Jugular/Femoral/ Sub clavian catheter** **A.V Fistula / Graft/perm catheter**
Total No of Dialysis:	**Dialyser reuse number:**
Weight before Dialysis:	
Weight gain:	

Time	BP mm Hg	Pulse/min	Heparin Units/hr	BFR ml/min	VP mm Hg	Net UF	TMP mm Hg	Rem arks

Post Dialysis Assessment

Post dialysis weight	**Weight Loss**
Post dialysis BP	

Work Done:

Any other Information:

Verified By: **Signature of Faculty**

HEMODIALYSIS CIRCUIT PREPARATION

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

INITIATION OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

TERMINATION OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	S.NO	DATE	PT NAME	SIGNATURE

Verified By : **Signature Of Faculty :**

REPROCESSING OF HEMODIALYSIS

S.NO	DATE	PT NAME	SIGNATURE	FBV	S.NO	DATE	PT NAME	SIGNATURE	FBV

Verified By : **Signature Of Faculty :**

WATER TREATMENT PLANT MAINTANANCE

S.NO	DATE	INLET PRESSURE	RO PRESSURE	CONDUCTIVITY	TDS	pH	HARDNESS

Verified By : **Signature Of Faculty :**