Annexure-3 O of AC-50/2024

PROGRAM OUTCOME (POs)	
Course Code	**B.Sc. MEDICAL DIALYSIS TECHNOLOGY**
PO1	**Technical Proficiency:** Demonstrate how to safely and successfully operate, troubleshoot, and maintain dialysis machines and related equipment. Carry out all hemodialysis and peritoneal dialysis operations that are required, including patient preparation, supervision, and post-treatment care.
PO2	**Patient Safety and Care:** Assist patients receiving dialysis with empathy and efficiency. This includes evaluating their illnesses, identifying and managing any complications, and making sure they are comfortable and safe. To promote general health and treatment efficacy, inform patients and their families about dialysis procedures, dietary limitations, and lifestyle changes.
PO3	**Clinical Knowledge:** Recognize and put into practice the fundamentals of renal physiology, pathophysiology, and the effects of chronic renal disease on general health. To make knowledgeable judgments about patient care and modifications to dialysis treatment, interpret clinical data and laboratory results.
PO4	**Infection Control and Safety:** Follow infection control procedures to stop the spread of illnesses in the dialysis environment. Put safety precautions in place to guarantee a sterile environment and safeguard personnel and patients.
PO5	**Ethical and Professional Conduct**: Be respectful of patient rights and confidentiality when interacting with patients, families, and other members of the healthcare team. In clinical settings, exhibit moral decision-making and problem-solving abilities.
PO6	**Communication Skills**: Clearly explain treatment plans and processes to patients, families, and medical staff through effective communication. Accurately and thoroughly record all patient care activities in medical records.
PO 7	**Critical Thinking and Problem-Solving:** Apply critical thinking techniques to evaluate and handle difficult clinical situations and unforeseen problems while receiving dialysis. To enhance the effectiveness of dialysis operations and improve patient outcomes, modify and implement problem-solving strategies.
PO8	**Continual Learning and Professional Development**: Maintaining up to date with the latest developments in dialysis technology and optimal practices requires continuous learning and professional growth. Engage in professional organizations that are pertinent to your subject and help it grow.

Course Outcomes (COs)	
Course Code	**B.Sc. MEDICAL DIALYSIS TECHNOLOGY**
SEMESTER I	
BMDT 101 L	**Human Anatomy Part I**
CO1	Define basic technical terminology and language associated with medical anatomy
CO2	Identify and describe the gross anatomy of various tissues and organs in the human body along with Skeletal and Muscular Systems
CO3	Understand and demonstrate the anatomy of Respiratory system, Circulatory system, Digestive system and Excretory system with it's clinical application
BMDT 102 L	**Human Physiology Part I**
CO1	Describe basic physiological principles involved in normal funtioning of the human body and thier applications in comprehending the pathophysiology of various diseases.
CO2	To understand the basic mechanism, operation and regulation of different organ systems such as Cardiovascular system, Digestive system, Respiratory system and Muscle-Nerve physiology.
CO3	Ability to identify techniques to evaluate the funtioning of organ systems and interpret the results as normal or abnormal.
BMDT 103 L	**General Biochemistry & Nutrition**
CO1	Understand the fundamental principles of biochemistry, including the chemistry and functions of biomolecules such as carbohydrates, proteins, lipids and nucleic acids.
CO2	Gain insights into the principles of bioenergetics and enzymology in human body.

CO3	Undersand basics of collection, handling and processing analysis of blood and urine samples for clinical diagnostics.
BMDT 104 L	**Introduction to National Health Care System (Multidisciplinary/Interdisciplinary)**
CO1	Understand the measures of the health services and high-quality health care
CO2	Gain Basic insight into the main features of Indian health care delivery system and how it compares with the other systems of the world.
CO3	Introduction to Background objectives, action plan, targets, operations,in various National Heath Programmes.
CO4	Introduction the AYUSH System of medicines.
BMDT 105 P	**Community Engagement and Clinical Visit (Including related practicals to the Parent course)**
CO1	Understand the role of health professional in community
CO2	Personality Development
AEC 001 L	**English and Communication Skills**
CO1	Develop ability to read, write and speak better in English language
CO2	Grow personally and professionally to develop confidence in the field of healthcare.
AEC 002 L	**Environmental Sciences**
CO1	Understand and define terminology commonly used in enviromental sciences
CO2	Understand the concepts of ecosystems, biodiversity and its conservation
CO3	Understand the relationship between humans and enviroment
CO4	Discuss the factors affecting the availability of natural resources, their conservation and management.
CO5	Discuss the goals, targets, challenges and global strategies for sustainable development
SEMESTER II	
BMDT 106 L	**Human Anatomy Part II**
CO1	Understand and demonstrate the anatomy of Reproductive system, Endocrine system, Nervous system, Sensory system and Lymphatic system with it's clinical application
BMDT 107 L	**Human Physiology Part II**
CO1	Understand the basic physiological fucntions of Special senses and Skin,.
CO2	To understand the basic mechanism, operation and regulation of different systems such as Nervous system, Endocrine system, Reproductive system and Excretory system
CO3	Ability to identify techniques to examination of the physiological funtioning of sensory and motor systems and interpret the results as normal or abnormal.
BMDT 108 L	**General Microbiology**
CO1	Understanding the Basic principles of Microbiology with General Methods for recovery, identification of pathogens, culture techniques, procedures, antibiotic testing and sterilization techniques.
CO2	Understand the applications of universal safety precautions.
CO3	Adept knowledge about the systemic bacteriology including morphology, species, lab diagnosis, isolation and identification.
CO4	Basic knowledge of pathogenic diseases and their clinical features
BMDT 109 L	**Basic Pathology & Hematology**
CO1	Know the basic concepts in hematology and clinical pathology
CO2	Ability to collect blood and urine sample under guidance

CO3	Understanding types of anemias and basics of leukemias
BMDT 110 L	**Introduction to Quality and Patient Safety (Multidisciplinary / Interdisciplinary)**
CO1	Understand the basic concepts of Quality in Health Care System and develop skills to implement sustainable quality assurance programs in the health system.
CO2	Understand the basics of emergency care and life support skills.
CO3	Understanding of the concepts for infection prevention and control.
CO4	Knowledge on the principles of on-site disaster management and prevent harm to workers, property, the environment and the general public.
CO5	Ability to apply healthcare quality improvement and patient safety principles, concepts, and methods at the micro, meso and macro system levels.
BMDT 111 P	**Community Engagement and Clinical Visit (Including related practicals to the Parent course)**
CO1	Understand the role of health professional in community
CO2	Personality Development
SEC 001 L	**Medical Bioethics & IPR**
CO1	Ability to recognise and understand ethical concerns in research and healthcare sector.
CO2	Adapt skills to rationally justify decisions by understanding the complexity and multi - dimensionality of medical or clinical ethical concerns.
CO3	Gain awareness about significance of patent, copyright, plagarism and their applications in legal problems
SEC 002 L	**Human Rights & Professional Values**
CO1	Acquire conceptual clarity and develop respect for norms and values of freedom, equality, fraternity and justice
CO2	Awareness of civil society organizations and movements promoting human rights
CO3	Understand the difference between values of human rights and their duties
SEMESTER III	
BMDT 112 L	**Introduction To Dialysis**
CO1	Define dialysis and its purpose in the treatment of kidney failure.
CO2	Differentiate between the types of dialysis: hemodialysis and peritoneal dialysis, including their indications, procedures, and outcomes.
CO3	Explain the basic principles of renal function and how dialysis mimics or supports these functions.
CO4	Participate in practical exercises or simulations to apply theoretical knowledge to real-world scenarios, enhancing hands-on skills.
BMDT 113 L	**Concept of Renal Disease & Disorders**
CO1	Identify and explain the common types of renal diseases, including acute kidney injury (AKI), chronic kidney disease (CKD), glomerulonephritis, and nephrolithiasis.
CO2	Recognize and describe the clinical symptoms and signs associated with various renal disorders, such as edema, hypertension, and altered urine output.
CO3	Interpret diagnostic tests and procedures, including blood tests, urinalysis, imaging studies, and kidney biopsies, to diagnose renal diseases.
CO4	Identify common complications and comorbid conditions associated with renal disorders, such as cardiovascular disease, anemia, and bone mineral disorders. Explain how these complications impact patient management and overall treatment outcomes.
BMDT 114 L	**Pharmacology in Dialysis**
CO1	Explain the fundamental principles of pharmacology, including drug absorption, distribution, metabolism, and excretion, with a focus on how these processes are altered in patients with renal impairment.

CO2	List and describe the types of medications commonly used in dialysis patients, including antihypertensives, erythropoiesis-stimulating agents, phosphate binders, and vitamin D analogs.
CO3	Evaluate the challenges of managing medications in patients with renal disease, including adjustments for renal function and monitoring for adverse effects.
GEC 001 L	**Pursuit of Inner Self Excellence (POIS)**
CO1	Students will become self-dependent, more debility for their study and career related matter ecisive and develop intuitive
CO2	Student's ability to present their ideas will be developed.
CO3	Enhanced communication skills, public speaking & improved Presentation ability.
CO4	Students will be able to explore their inner potential and inner ability to become a successful researcher or technician & hence become more focused.
CO5	Students will observe significant reduction in stress level.
CO6	With the development of personal attributes like Empathy, Compassion, Service, Love & brotherhood, students will serve the society and industry in better way with teamwork and thus grow professionally.
GEC 002 L	**Organizational Behavior**
CO1	Describe and apply motivation theories to team and organizational scenarios in order achieve a team's or an organization's goals and objectives.
CO2	Explain the effect of personality, attitudes, perceptions and attributions on their own and other's behaviors in team and organizational settings.
CO3	Explain types of teams and apply team development, team effectiveness, and group decision making models and techniques.
SEMESTER IV	
BMDT 116 L	**Fundamental of Dialysis**
CO1	Describe the pre-treatment procedures for preparing patients for dialysis, including assessment, education, and ensuring patient readiness.
CO2	Monitor patients during dialysis sessions, recognizing normal and abnormal signs and symptoms, and intervening appropriately when issues arise.
CO3	Understand and apply regulatory standards and clinical guidelines relevant to dialysis practice, ensuring compliance with best practices and legal requirements.
CO4	Integrate theoretical knowledge with practical skills to effectively plan and execute dialysis treatments.
BMDT 117 L	**Nutrition in Dialysis**
CO1	Understanding Nutritional Needs in Dialysis
CO2	Nutritional Assessment and Monitoring
CO3	Dietary Management in Hemodialysis and Peritoneal Dialysis
CO4	Integration of Nutritional Therapy with Medical Care
AEC 003 L	**Computers and Applications**
CO1	Introduction to Hardware and processing of computers and storage devices.
CO2	Adept knowledge of computer software and applications such as Microsoft office (Word, Excel and Power Point)
CO3	Application of operating systems, computer networks & internet in Health Care Settings.
AEC 004 L	**Good Clinical Laboratory Practice and Research Skills**
CO1	Proficiency an adept knowledge of Good Clinical Laboratory Practice (GCLP), ethical principles and guidelines to ensure patient rights and welfare in clinical research.
CO2	Understand the importance of Ethical Guidelines and Good Documentation Practices (GDP) in conducting Clinical Research.

CO3	Effectively understand the Basics of Biostatistics, Research Study Designing, Methodology, Implementation and Grant Application.
SEMESTER V	
BMDT 119 L	**Applied Dialysis Technology I**
CO1	Demonstrate the ability to set up, operate, and maintain various dialysis machines and related equipment accurately and safely. Perform routine and advanced troubleshooting for dialysis equipment, identifying and resolving issues efficiently to ensure optimal performance.
CO2	Execute hemodialysis and peritoneal dialysis procedures according to established protocols, including patient preparation, monitoring during treatment, and post-treatment procedures. Apply advanced techniques and adaptations in dialysis procedures to address complex patient needs and unique clinical scenarios.
CO3	Conduct comprehensive patient assessments before, during, and after dialysis treatments, including monitoring vital signs, access sites, and overall patient well-being. Manage patient care effectively during dialysis sessions, recognizing and responding to complications or adverse reactions promptly
CO4	Implement rigorous infection control protocols, including the use of aseptic techniques and proper handling of dialysis equipment and supplies. Ensure adherence to safety standards to minimize risks and protect both patients and healthcare staff from potential hazards.
BMDT 120 L	**Advance Dialysis Technology I**
CO1	Demonstrate proficiency in performing advanced dialysis procedures, such as high-flux hemodialysis, extended dialysis sessions, and advanced peritoneal dialysis techniques. Apply advanced techniques in managing complex clinical scenarios, including patients with multi-organ failure or unique physiological conditions.
CO2	Identify and describe the latest advancements in dialysis technology, including new machine features, enhanced dialyzers, and novel treatment modalities. Integrate new technologies into practice, evaluating their effectiveness and applicability in various clinical situations.
CO3	Manage patients with complex medical conditions requiring advanced dialysis interventions, including those with challenging access issues or multiple comorbidities. Develop and implement individualized treatment plans that address the specific needs and complexities of advanced dialysis patients.
CO4	Critically appraise current research and clinical studies related to advanced dialysis technologies and their impact on patient outcomes. Apply evidence-based practices to optimize dialysis treatments and incorporate new findings into clinical protocols and patient care strategies.
CO5	Resolve complex technical issues related to dialysis equipment, including troubleshooting advanced machine functions and performing in-depth maintenance. Implement advanced quality control measures to ensure the reliability and accuracy of dialysis technology.
DSE 001 L	**Basics of Clinical Skill Learning**
CO1	Ability to Measure Vital Signs, do basic physical Examination of the patients, NG tube basics, Administration of Medicines
CO2	Understand about Asepsis, and the Cleanliness related to asepsis and on mobility of the patients
DSE 002 L	**Hospital Operation Management**
CO1	Understand and apply the knowledge of Medico-Legal regulations and Medical Ethics in Healthcare System.
CO2	Ability to utilize Hospital Information system in Hospital services.
CO3	Understand the operation management of Equipment’s and medical records in Health Care services.
SEMESTER VI	
BMDT 122 L	**Applied Dialysis Technology II**
CO1	Analyze and resolve complex clinical scenarios and technical problems related to dialysis technology using critical thinking and problem-solving skills. Develop and apply innovative solutions to improve dialysis procedures and patient outcomes based on clinical experiences and feedback.
CO2	Document all relevant patient information, treatment details, and equipment usage accurately and comprehensively in medical records. Communicate effectively with patients, families, and healthcare team members, ensuring clear understanding of treatment plans, procedures, and any issues that arise.

CO3	Participate in quality assurance processes, including monitoring and evaluating dialysis practices to ensure adherence to standards and protocols. Contribute to continuous improvement initiatives by identifying areas for enhancement in dialysis technology and patient care practices.
CO4	Demonstrate professionalism and ethical behavior in all aspects of dialysis technology, including patient interactions, confidentiality, and adherence to ethical standards. Respect patient rights and preferences while providing compassionate and patient-centered care.
BMDT 123 L	**Advance Dialysis Technology II**
CO1	Integrate advanced pharmacological knowledge with dialysis practice, including the use of specialized medications and management of drug interactions unique to advanced dialysis settings. Adjust medication regimens based on the advanced needs of dialysis patients, considering factors such as drug clearance and patient-specific responses.
CO2	Engage in quality improvement initiatives related to advanced dialysis practices, including developing and implementing strategies to enhance patient outcomes and treatment efficiency. Contribute to innovation in dialysis technology by identifying opportunities for improvement and participating in research or development projects.
CO3	Collaborate effectively with interdisciplinary teams, including nephrologists, nurses, dietitians, and other healthcare professionals, to provide comprehensive care for patients undergoing advanced dialysis. Lead and participate in case discussions, treatment planning, and problem-solving in a team-based environment.
CO4	Discuss ethical issues related to advanced dialysis treatments, including decision-making in complex cases and the allocation of resources. Exhibit professionalism in all aspects of advanced dialysis care, maintaining high standards of patient care, confidentiality, and ethical practice.