Undergraduate Qualifications

B.Voc in Dialysis Technology

As per guidelines of the National Higher Education Qualification Framework (NHEQF)

Year	Qualification Title	NCrF Level
Year-1	Undergraduate Certificate in Dialysis Technology	Level4.5
Year-2	Undergraduate Diploma in Dialysis Technology	Level5
Year-3	Bachelor of Vocation in Dialysis Technology	Level5.5

School of Health Science and Technology

(Academic Year: 2025- 2026)

Program Overview

Dialysis Technology is a specialized field of healthcare that focuses on the treatment of patients with kidney failure and other renal disorders. This program is designed to equip students with the technical skills and medical knowledge required to operate dialysis machines, monitor patients during treatment, and ensure the effective functioning of dialysis procedures. Dialysis Technologists play a crucial role in improving the quality of life for patients suffering from chronic kidney disease (CKD) and acute renal failure.

The Dialysis Technology program provides in-depth training in renal anatomy, physiology, and pathology, enabling students to understand kidney functions and disorders. The curriculum covers hemodialysis, peritoneal dialysis, vascular access techniques, infection control, and fluid and electrolyte balance management. Additionally, students learn about patient assessment, dialysis prescription interpretation, and the management of dialysis-related complications.

This program combines theoretical learning with extensive hands-on clinical training in hospitals and dialysis centers, allowing students to develop essential practical skills. Through simulations and real-world exposure, students gain proficiency in operating dialysis machines, conducting water treatment for dialysis, monitoring patient vitals, and responding to medical emergencies during treatment.

Graduates of the Dialysis Technology program have diverse career opportunities in hospitals, dialysis centers, nephrology clinics, and research institutions. They can work as Dialysis Technologists, Hemodialysis Technicians, Peritoneal Dialysis Coordinators, or Renal Care Specialists. With the increasing prevalence of kidney diseases and the growing need for dialysis treatments worldwide, this field offers a stable and rewarding career path.

Scope:

1. **Employment in Hospitals and Dialysis Centers**
   Graduates can work as dialysis technicians in government and private hospitals, nephrology clinics, and dedicated dialysis centers.
2. **Supporting Renal Treatment Procedures**
   Trained professionals assist in hemodialysis and peritoneal dialysis procedures, monitor patient vitals, and manage dialysis equipment.
3. **Opportunities in Medical Equipment Companies**
   Scope in sales, servicing, and training roles for companies dealing in dialysis machines, water treatment units, and related consumables.
4. **Higher Studies and Certifications**
   Graduates can pursue M.Voc, specialized diplomas, or certifications in nephrology care, renal nutrition, or dialysis management.
5. **Academic and Teaching Opportunities**
   With experience and further qualifications, individuals can become trainers or lecturers in paramedical colleges and vocational training institutes.

Career Path

Entry

1. Dialysis Technician
2. Junior Dialysis Assistant
3. Patient Care Technician (Dialysis)

Mid

1. Senior Dialysis Technician
2. Dialysis Coordinator
3. Technical Trainer (Dialysis)

Senior

1. Dialysis Unit Incharge
2. Supervisor (Dialysis)
3. Clinical Manager (Dialysis)
4. Quality Control Officer (Dialysis Services)

Program Learning Outcomes

Program Specific Outcomes	
	A Graduate of B.Voc in Dialysis Technology should be able to:
PSO1	Demonstrate the acquisition of comprehensive knowledge and coherent understanding of dialysis in a broad multidisciplinary context, their different learning areas, their linkages with related fields of study, and current and emerging developments associated with the health industry.
PSO2	Demonstrate the acquisition of practical, professional, and procedural knowledge required for carrying out professional or highly skilled work/tasks related to dialysis including knowledge required for undertaking self-employment initiatives, and knowledge and mind-set required for entrepreneurship involving enterprise creation, improved product development, or a new mode of organization.
PSO3	Demonstrate the acquisition of skills in areas related to specialization in healthcare in a broad multidisciplinary context, including wide-ranging practical skills, involving variable routine and non-routine contexts relating to the dialysis technology.
PSO4	Demonstrate the acquisition of the capacity to extrapolate from what has been learned, translate concepts to real-life situations and apply acquired competencies in new/unfamiliar contexts, rather than merely replicate curriculum content knowledge, to generate solutions to specific problems.

Generic Program Outcomes	
	A graduate of B.Voc in Dialysis Technology should be able to:
PO5	Demonstrate the capability for complex problem-solving
PO6	Demonstrate the capability for critical thinking
PO7	Demonstrate the ability for creativity
PO8	Demonstrate the skills that enable them to communicate effectively
PO9	Demonstrate the capability for analytical reasoning/thinking
PO10	Demonstrate the ability for coordinating and collaborating with others
PO11	Demonstrate the capability for leadership readiness
PO12	Demonstrate 'learning how to learn" skills
PO13	Demonstrate the capability for digital and technological skills
PO14	Demonstrate multicultural competence and inclusive spirit
PO15	Demonstrate the acquisition of knowledge and attitude that are required for value inculcation
PO16	Demonstrate the ability for autonomy, responsibility, and accountability
PO17	Demonstrate the acquisition of and ability to apply the knowledge, skills, attitudes, and values required to take appropriate actions for environmental awareness and action
PO18	Demonstrate the capability to participate in community-engaged services/ activities for promoting the wellbeing of society.
PO19	Demonstrate the ability to identify with or understand the perspective, experiences, or points of view of another individual or group, and to identify and understand other people's emotions

Abbreviation And Definition

Abbreviation	Definition
MDP	Multidisciplinary
AEC	Ability Enhancement Courses
VAC	Value Added Courses
SEC	Skill Enhancement Courses
MC	Major (Core)
MD	Major (Discipline)
MIP	Major (Industry Practice)
VETI	Vet (Industry Immersion)
MI	Minor (Electives)

Semester Wise Structure & Curriculum

UG Certificate in Dialysis Technology | NCrF – 4.5

Semester-1							
	Course Title	**Category**	**L**	**P**	**Pr**	**Credits**	
	Human Anatomy and Physiology	MC-1	0	3	0	3	
	Basics of Biochemistry	MC-2	0	3	0	3	
	Concept of Health and Hospital Services	MDP	3	0	0	3	
	Professional Skills (Team Skills)	SEC	3	0	0	3	
	On the Job Training -1	MIP	0	0	8	8	
	Total		**6**	**6**	**8**	**20**	

Semester-2							
	Course Title	**Category**	**L**	**P**	**Pr**	**Credits**	
	Microbiology	MC-4	0	3	0	3	
	Clinical aspects of Pathology	MC-5	0	3	0	3	
	Fundamentals of Business	MDP	3	0	0	3	
	Employability Skills (Basics)	SEC	3	0	0	3	
	On the Job Training – 2	MIP	0	0	8	8	
	Total		**6**	**6**	**8**	**20**	

UG Diploma in Dialysis Technology | NCrF – 5.0

Semester-3							
	Course Title	**Category**	**L**	**P**	**Pr**	**Credits**	
	Principles of Dialysis	MC 6	0	3	0	3	
	Basics of Renal Dialysis Technology	MC-7	0	3	0	3	
	Environmental Sciences	MDP-3	3	0	0	3	
	Communication Skills (English)	AEC-1	0	4	0	4	
	On the Job Training – 3	MIP	0	0	8	8	
	Total		**3**	**10**	**8**	**21**	

Semester-4							
	Course Title	**Category**	**L**	**P**	**Pr**	**Credits**	
	Introduction to Kidney Disease and Renal Replacement Therapy	MC-8	3	0	0	3	
	Medical Ethics and Statutory Approvals	MC 9	3	0	0	3	
	Cultural Diversity in the Indian Society	VAC-1	3	0	0	3	
	Professional Skills (Career Skills)	SEC-3	3	0	0	3	
	On the Job Training – 4	MIP	0	0	8	8	
	Total		**12**	**0**	**8**	**20**	

B.Voc in Dialysis Technology | NCrF – 5.5

Semester-5							
	Course Title	**Category**	**L**	**P**	**Pr**	**Credits**	
	Renal Nutrition	MC 10	3	0	0	3	
	Pharmacology related to Dialysis	MC 11	3	0	0	3	
	General Medicine and Surgery	Mc 12	3	0	0	3	
	Business Communication	AEC	0	4	0	4	
	On the Job Training – 5	MIP	0	0	8	8	
	Total		**9**	**4**	**8**	**21**	

Semester-6							
	Course Title	**Category**	**L**	**P**	**Pr**	**Credits**	
	Biomedical Waste Management	MC 13	3	0	0	3	
	Medical Record Keeping	MC 14	3	0	0	3	
	Universal Human Values	VAC	3	0	0	3	
	On the Job Training – 6	MIP	0	0	12	12	
	Total		**9**	**0**	**12**	**21**	

Curriculum (Course-wise)

Semester 1

Course Code		**Course Name**	Human Anatomy and Physiology	**Course Category**	Skill	Major	L	P	Pr	C
							0	3	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the basic structures and functions of major organs and systems in the human body.	1
CLO2	Explain the relationship between the structure and function of organ systems.	2
CLO3	Apply knowledge of anatomy and physiology to describe physiological processes.	3
CLO4	Analyze the interrelationships between organ systems in maintaining health.	4
CLO5	Evaluate the impact of anatomical or physiological dysfunctions on health.	5

Module 1: Human anatomy and physiology

Introduction to anatomy and physiology - Definition, difference between structures and functions. Different terms used in anatomy. Levels of body organization Characteristics of the living human organism – Eleven systems of the human body and its associated organs. Scopes of human anatomy and physiology-Scopes and career prospects, branches and divisions.

Module 2: Cell, tissue, bones and skeletal muscular system

Organization of the human body- Cell, cellular organelles, structures and functions, Cell division processes. Types of tissues, their structure and functions. Skeletal system- structure and function of different bones and joints, skeletal system of humans, position of bones and skeletons. Muscular system- Structure, composition, and functions of different muscles and their positions.

Module 3: Blood, Lymph, Circulatory and Cardiovascular system

Blood- Structure, composition, functions, synthesis processes, mechanism, and normal ranges of blood and blood components. Lymphatic system- composition and circulation process of lymph, structure and functions of different associated organs of the lymphatic system. Cardiovascular system- Structure, position, and functions of the heart, veins, and arterial supplies, different blood circulation systems, cardiac output, and cardiac cycle.

Module 4: Respiratory, Urinary and Digestion system

Respiratory System- identifying different organs, their structure, position, and functions involved in the respiratory system, respiratory mechanism, lungs capacity. Urinary System- structure and function of organs of the urinary system, urine composition, mechanism of urination, filtration, and storage process. Digestion System- structure and functions of organs involved in the digestion process, their metabolic activity, associated organs of digestion and their structure and functions.

Module 5: Endocrine, Nervous system and Reproductive system

Endocrine Glands- definition of endocrine glands, their classification, structural, functional descriptions of each gland, and their hormones. Nervous System – Description of the brain, spinal cord, and a complex network of nerves, understanding of the central nervous system and peripheral nervous system. Sensory Nervous System- Understanding the sensory system, organs of the sensory system, their structure and function. Reproductive system- Understanding the both male and female reproductive organs, their structures, secretions, and functions.

Suggested Readings

1. "Human Anatomy & Physiology" by Elaine N. Marieb& Katja Hoehn
2. "Anatomy and Physiology: The Unity of Form and Function" by Kenneth S. Saladin
3. "Essentials of Human Anatomy and Physiology" by Elaine N. Marieb
4. "Human Anatomy and Physiology" by Stuart Fox
5. "Anatomy and Physiology for Health Professionals" by J. L. H. Asimov

Course Code	MC3	Course Name	Basics of Biochemistry	Course Category	Skill	Major	L	P	Pr	C
							0	3	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Recall and define the basic terminology, concepts, and principles in biochemistry, including the structure and function of biomolecules such as proteins, carbohydrates, lipids, and nucleic acids.	1
CLO2	Explain the biochemical pathways involved in energy production and metabolism, including glycolysis, the citric acid cycle, and oxidative phosphorylation.	2
CLO3	Apply the principles of enzyme kinetics to analyze enzyme behavior and understand their role in biochemical reactions.	3
CLO4	Analyze and differentiate between various biochemical techniques (e.g., chromatography, electrophoresis) used for the separation and identification of biomolecules.	4
CLO5	Evaluate the role of biochemistry in human health and disease, and synthesize knowledge to understand how biochemical imbalances can lead to various medical conditions.	5

Module 1: Essentials of Biochemistry

Introduction to biochemistry: Importance and scope in medicine – Definition, different medical abbreviations, chemical reagents, equipment, and instruments used in biochemistry laboratory, Language of Biochemistry- Concepts, terminologies, and introduction to essentials of biochemistry., Laboratory Techniques and Instruments in Biochemistry- Different instruments, techniques, and chemicals used in biochemical studies.

Module 2: Nutrients in the human body

Introduction to Macronutrients: Classification and Biological Significance of various macronutrients involved in biological processes., Metabolic processes of macronutrients: Metabolic process of all macronutrients in the human body and study of their inter-relation, Introduction to Micronutrients: Classification and biological significance of various micronutrients involved in biological processes, Water-the nectar of life: Role of water in metabolism and different regulatory processes in the human body, Metabolism: Activities and fate of metabolic products.

Module 3: Enzymes and co-enzymes

Enzymes: Introduction and classification: Introduction to enzymes and co-enzymes, their types and classification, enzyme-substrate complex., Factors affecting enzymatic activities: Effect of pH and Temperature in enzyme activity, Substrate Concentration and Enzyme Kinetics, Enzyme Inhibition, Enzymes in Clinical Diagnostics.

Module 4: Introduction to Nucleic Acids

Nucleic acids-structure and functions: Introduction to different nucleic acids, structure of DNA and RNAs, Double helix structure, Concepts of complementary base pairs. DNA replication and Protein synthesis, Mutation of nucleic acids- types and significance: Types of mutations, Replication errors, DNA damage agents, Impact of mutations on protein function, Functional consequences of mutations, Significance in medical diagnosis, Application of Nucleic acid- Applications of nucleic acid in diagnostic and therapeutic treatment processes.

Module 5: Metabolic Disorders and human health

Metabolic disorders in the human body: Common biochemical pathways affected in metabolic disorders, Identification and causes of disorders, Symptoms and clinical presentation, Diagnostic approaches and techniques, Treatment and management strategies, Ethical and social considerations.

Suggested readings

1. "Principles of Biochemistry" by Albert Lehninger
2. "Biochemistry" by Jeremy M. Berg, John L. Tymoczko, and Lubert Stryer
3. "Biochemistry: A Short Course" by John L. Tymoczko, Jeremy M. Berg
4. "Essential Biochemistry" by Charlotte W. Pratt and Kathleen Cornely
5. "Biochemistry for Dummies" by John T. Moore

Course Code		**Course Name**	Concept of Health and Hospital Services	**Course Category**	MDP		L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Define key concepts related to health, well-being, and hospital services.	1
CLO2	Explain the structure and functions of health care delivery systems in India and globally.	2
CLO3	Analyze real-life scenarios to identify the roles and responsibilities of various hospital departments.	3
CLO4	Compare and contrast different types of health care services (public vs. private) and their impacts on patient care.	4
CLO5	Develop a health promotion program or intervention plan for a specific community based on health needs assessment.	5

Module 1: Concept of Health and Well-being

Definition and Dimensions of Health (Physical, Mental, Social, Spiritual, Emotional), Determinants of Health: Biological, Environmental, Behavioral, Social, Economic, Concepts of Disease and Illness Acute vs. Chronic, Infectious vs. Non-infectious, Indicators of Health – Mortality rate, Morbidity rate, Life expectancy, DALY, Concepts of Well-being and Quality of Life, Changing concepts of health Biomedical, Ecological, Psychosocial, Holistic, Role of lifestyle and behavior in health maintenance

Module 2: Health Care Delivery System in India

Overview of Health Care System in India, Levels of Health Care: Primary, Secondary, Tertiary, Functions and Services at Each Level, Role of Government in Health Care – MOHFW, NRHM/NHM, Public Health Infrastructure: Sub-centers, PHCs, CHCs, District Hospitals, Role of Private Sector, Voluntary Organizations, and NGOs, Indigenous Systems of Medicine (AYUSH), Recent Initiatives: Ayushman Bharat, Digital Health Mission

Module 3: Hospital Services and Administration

Definition, Aims, and Classification of Hospitals, Functions of Hospitals – Curative, Preventive, Educational, Research, Types of Hospitals – General, Specialty, Teaching, Rural, Urban, Hospital Departments OPD, IPD, ICU, Emergency, Operation Theatre, Pharmacy, Radiology, Laboratory, Hospital Administration – Organizational Structure, Duties of Hospital Administrator, Human Resource Management in Hospitals, Equipment and Material Management, Legal Aspects: Medical Ethics, Consumer Protection Act, Medical Negligence

Module 4: Community Health and Preventive Services

Definition and Importance of Community Health, Principles and Levels of Prevention: Primary, Secondary, Tertiary, Role of Community Health Workers – ASHA, ANM, MPW, Immunization

Programs and National Health Campaigns, Water Supply, Sanitation, Waste Disposal in Health, Nutrition and Health – Community Nutrition Programs, Health Education and IEC (Information, Education, Communication), Maternal and Child Health (MCH) and Reproductive Health Services

Module 5: Health Planning, Policies, and Global Health

Health Planning in India – Five Year Plans and Health Goals, National Health Policy – Evolution and Objectives, Health Committees: Bhore, Mudaliar, Shrivastava, Role of International Health Agencies WHO, UNICEF, Red Cross, UNDP, World Bank, Global Health Issues – Pandemics, Malnutrition, Access to Care, Sustainable Development Goals (SDGs) and Health, Health Economics Cost of Health Care, Financing, Insurance, Role of Health Information Systems and Surveillance

Suggested Readings

1. Principles of Hospital Administration and Planning – Dr. B.M. Sakharkar
2. Hospital Administration – C.M. Francis & Mario C. deSouza
3. Essentials of Hospital Management & Administration – Yashpal Bhatia
4. Textbook of Hospital Administration – D. C. Joshi & Mamta Joshi
5. Hospital and Health Services Administration – S.L. Goel
6. Hospital Management – G.D. Kunders

Course Code		**Course Name**	Professional Skills (Team Skills)	**Course Category**	General	SEC	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Explain the importance of team skills and list the key team skills	2
CLO2	Apply cognitive skills such as critical thinking, problem-solving and the ability to learn, for smooth and efficient functioning in the workplace	3
CLO3	Apply non-cognitive skills such as empathy, creativity, teamwork, collaboration, interpersonal skills, and resilience for smooth and efficient functioning in the workplace	3
CLO4	Use trust and collaboration while working in a team	3
CLO5	Display effective communication as team leaders and members for the proper functioning of the team	3

Module 1: **Communication Basics**
Communication: Basics and Importance, Speaking: Greetings and Introductions, Writing: Understand Personal Experiences and Thoughts, Non-verbal Communication, Active Listening, Negotiation, Self-Presentation, Self-Presentation: Excelling at Interviews, Self-Presentation: Rocking the Group Discussion, Selling

Module 2: **Communication at Workplace**
Speaking: On the Telephone, Speaking: Making Requests, Writing: Write Effective Notes, Writing: Write Effective Emails, Negotiation: Negotiation in Action Getting to YES

Module 3: **Teamwork**,
Work Effectively in a Team, Collaborate to Achieve Team Goals, Build Effective Relationships with Stakeholders, Conflict Management,

Module 4: **Customer Centricity,**
Types of Customers, Responding Effectively to Customers,

Module 5: **Attitudes and Behavioural Skills**,
Time and task management, Quality consciousness, Result Orientation, Self-Development - Positive Attitude, Self-Awareness: Know Yourself, Responding to Change, Personal Health, Hygiene, and Grooming, Adopting safety practices, Gain Financial Literacy

Module 6: **Problem Solving**
Problem Solving: Introduction to Critical Thinking, Problem Solving: Introduction to Creative Thinking, Problem-Solving: Introduction to Decision Making, Decision Making: Respond Effectively to a Situation,

Module 7: **Workplace Awareness**
Cultural Fitment & Gender Diversity, Identify and Align with High-growth Sectors, Organisational Structure and Values, Searching and Applying for Relevant Job,

Module 8: **Success in Job Interviews**
How to Prepare for a Job Interview, How to Prepare for Job Interview - Getting Ready, How to Conduct Yourself at the Venue, How to Answer Questions During the Interview, How to Effectively Conclude the Interview, How to follow up after the Interview, Ace your Job Interview,

Suggested Readings

1. "The Five Dysfunctions of a Team" by Patrick Lencioni
2. "Team of Teams" by General Stanley McChrystal
3. "The Five Behaviors of a Cohesive Team" by Patrick Lencioni
4. "The New Science of Building Great Teams" by Michael A. West
5. "First, Break All the Rules" by Marcus Buckingham and Curt Coffman

Semester -2

Course Code		**Course Name**	Microbiology	**Course Category**	Skill	Major	L	P	Pr	C
							0	3	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the basic principles of microbiology, including types of microorganisms and their characteristics.	1
CLO2	Explain the role of microorganisms in human health, including pathogenic and beneficial microbes.	2
CLO3	Apply microbiological techniques to identify and classify microorganisms in clinical and laboratory settings.	3
CLO4	Analyze the mechanisms of microbial infections and their impact on human health.	4
CLO5	Evaluate the effectiveness of antimicrobial treatments and infection control practices in preventing disease spread	5

Module 1: Introduction to Microbiology:
Understanding the role of microbiology in healthcare, Overview of microorganisms (bacteria, viruses, fungi, protozoa), The classification of microorganisms, Importance of microbiology in infectious disease diagnosis and treatment, Techniques used in microbiological research and clinical practice, Historical development of microbiology and key pioneers (e.g., Louis Pasteur, Robert Koch).

Module 2: Microbial Structure and Function:
The structure and function of prokaryotic and eukaryotic cells, Bacterial cell components (cell wall, cell membrane, flagella, pili), Viruses and their structure (capsid, envelope, genetic material), Fungi and protozoa characteristics, The life cycle of bacteria, viruses, fungi, and protozoa, The role of microbial structures in pathogenicity.

Module 3: Microbial Genetics and Evolution:
Introduction to microbial genetics and genetic material, DNA replication, transcription, and translation in microorganisms, Genetic recombination in bacteria (transformation, transduction, conjugation), Mutation and its role in microbial evolution, Antibiotic resistance and its genetic mechanisms, The impact of microbial genetics on infection control and treatment.

Module 4: Microbial Pathogenesis and Host Defense Mechanisms:
Mechanisms of microbial pathogenicity (adherence, invasion, toxin production), The immune response to microbial infections (innate and adaptive immunity), The role of inflammation in infection, The concept of virulence factors and their role in infection severity, Host defense mechanisms (phagocytosis, antibodies), Pathogenesis of common infectious diseases (e.g., tuberculosis, malaria, influenza).

Module 5: Microbial Cultivation, Identification, and Control:
Techniques for cultivating microorganisms in the laboratory (agar plates, broths, selective media), Methods of identifying microorganisms (gram staining, biochemical tests, molecular techniques), Antimicrobial susceptibility testing, Principles of sterilization and disinfection, Infection control practices in healthcare settings (hand hygiene, isolation protocols), Vaccination and its role in infection prevention.

Module 6: Clinical Microbiology and Disease Diagnosis:
Overview of clinical microbiology in diagnostic settings, Collection and transport of clinical samples (blood, urine, sputum, etc.), Techniques for isolating pathogens from clinical specimens, Interpretation of microbiological test results, The role of microbiology in diagnosing common infections (e.g., urinary tract infections, respiratory infections, foodborne diseases), The importance of antimicrobial stewardship in clinical practice.

Suggested Readings

1. "Microbiology: A Systems Approach" by Marjorie Kelly Cowan
2. "Microbiology: Principles and Explorations" by Jacquelyn G. Black
3. "Brock Biology of Microorganisms" by Michael T. Madigan
4. "Medical Microbiology" by Patrick R. Murray
5. "Microbiology for Dummies" by Jennifer Stearns

Course Code		Course Name	Clinical aspects of Pathology	Course Category	Skill	Major	L	P	Pr	C
							0	3	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Recall the basic concepts and terminology used in pathology, including types of diseases and their manifestations.	1
CLO2	Explain the role of pathology in diagnosing diseases and understanding their progression.	2
CLO3	Apply pathological techniques to analyze tissue samples and identify abnormalities.	3
CLO4	Analyze the relationship between pathological findings and clinical symptoms in various diseases.	4
CLO5	Evaluate the importance of pathology in guiding treatment decisions and improving patient outcomes.	5

Module 1: Understanding of Clinical

Orientation of pathological Lab: Introduction to the organization and functioning of pathological laboratories, encompassing equipment, safety protocols, and essential procedures. Creating a foundational understanding for effective and efficient laboratory operations. Quality control: Study of quality control measures in pathology laboratories, focusing on ensuring accuracy, reliability, and compliance with standards. Implementation of quality assurance protocols for precise diagnostic outcomes.

Module 2: Urine and Stool Examination

Urinary system: Explore the urinary system, encompassing anatomy, physiology, and key functions. Emphasis on the role of the kidneys, urinary tract, and associated mechanisms. Sample collection and Diagnosis: Methods of urine sample collection, techniques and protocols. Physical, Chemical and Microscopic diagnostic procedures for analyzing urine samples to identify and interpret various medical conditions. Digestive system: Explore the anatomy and physiology of the digestive system, covering its organs, functions, and key processes, Sample collection and Diagnosis: Stool sample collection, techniques and protocols. Diagnostic procedures for analyzing stool samples to identify and interpret various medical conditions.

Module 3: Sputum and Semen Analysis

Sputum Analysis: Study of sputum analysis techniques in pathology, including collection methods and diagnostic interpretation. Identifying different conditions and infections through microscopic examination and laboratory procedures, Semen Analysis: Comprehensive exploration of semen analysis in pathology, covering collection protocols and laboratory procedures.

Module 4: Body Fluids

Introduction to different body fluids: Introduction to various body fluids, exploring their types,

characteristics, and diagnostic significance, Diagnosis of body fluid: Understanding the analysis and interpretation of fluids such as cerebrospinal fluid, synovial fluid, and pleural fluid.

Module 5: Advance Analysis Techniques

Instrumentation: Explore the advanced instrumentation in pathology laboratories, covering cutting-edge technologies for precise diagnostics. Different equipment and their applications in pathological diagnosis, Immunological and molecular diagnosis: Study of immunological and molecular diagnostic techniques in pathology. Application of advanced methods for disease detection and characterization.

Suggested Readings

1. Robbins and Cotran Pathologic Basis of Disease" by Kumar, Abbas, and Aster
2. "Clinical Pathology" by David L. Stoeckle
3. "Essential Pathology" by Alan B. Weerasinghe
4. "Clinical Laboratory Science: The Basics and Routine Techniques" by Mary Louise Turgeon
5. "Pathology: Implications for the Physical Therapist" by Catherine C. Goodman

Course Code		Course Name	Fundamentals of Business	Course Category	General	MDP	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Describe various business forms, their advantages, legal requirements, and the registration process for establishing a business	2
CLO2	Describe the nature and significance of business economics and its role in informed decision-making	2
CLO3	Explain the principles and necessity of business ethics and the concept and importance of social responsibility	2
CLO4	Describe the concepts and processes of management, planning, organizing, directing, controlling, and the traits and styles of effective leadership	2
CLO5	Identify various organizational structures and explain their advantages	1

Module 1: **Introduction to Business**
Different Types of Business Forms, What is Business?, Types of Business, Advantages of different business forms, Legal requirements for establishing different businesses, Registration process of a business, Steps involved, Necessary documents, Importance, Costs associated, Government agencies, Benefits, Common mistakes to avoid.

Module 2: **Economics and Business**
Nature and Significance, Meaning of business economics, Nature, Role of business economics in decision-making, Fundamentals, Cost-benefit analysis, Demand and supply analysis, Pricing strategies, Economic forecasting, External factors affecting business decisions.

Module 3: Ethics and Social Responsibility
Need of Business Ethics, Meaning, Principles, Need, Concept of Social Responsibility Need, Meaning, Need.

Module 4: **Management and Leadership**
Concept of management, Process, Nature, Importance, Scope, Planning, Importance, Characteristics, Process, Types of Plans, Organising, Concept, Steps, Principles, Importance, Directing and Controlling, Concept, Principles, Elements and Importance, Controlling and its Features, Importance and Process of Controlling, Leadership, Concept, Meaning, Effective Leadership Traits, Leadership Styles.

Module 5: **Organizational Structure**
Types and advantages of different types of organizational structure, Organisational Structure, Types, Choosing the right type of organizational structure, Necessity, Right structure and Growth,

Stages in Organisational Development, Organisational Developmental Strategy, Organisational Practices in 5 phases of growth, Organisational success.

Suggested Readings

1. "Fundamentals of Business" by Stephen J. Skripak
2. "Principles of Business: A Hands-On Approach" by Harry A. Kahn
3. "Business: A Changing World" by O.C. Ferrell, Geoffrey Hirt, Linda Ferrell
4. "Introduction to Business" by Jeff Madura
5. "Business Essentials" by Ronald J. Ebert and Ricky W. Griffin

Course Code		**Course Name**	Employability Skills (Basics)	**Course Category**	General	SEC	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Demonstrate proficiency in various forms of communication to achieve desired outcomes in personal and professional interactions	3
CLO2	Demonstrate proficiency in workplace communication skills and negotiation techniques for efficient and productive communication within the workplace	3
CLO3	Describe teamwork dynamics within the team environment	2
CLO4	Identify different types of customers and effectively respond to their needs and inquiries, fostering a customer-centric approach	1
CLO5	Demonstrate personal and professional competencies for personal growth, organizational success, and overall well-being	3
CLO6	Demonstrate critical thinking, creative thinking, and decision-making skills to respond effectively to a variety of situations	3
CLO7	Demonstrate an understanding of cultural and gender diversity in the workplace to foster a culture of inclusivity and collaboration.	3
CLO8	Prepare for job interviews, including readiness, conclusion strategies, and post-interview follow-up, to excel in job interviews.	3

Module 1: Communication Basics

Communication: Basics and Importance, Definition, Importance, Improving communication skills for better personal and professional relationships, Speaking: Greetings and Introductions, Conversations, Types of conversations, WORDS approach, Writing: Understand Personal Experiences and Thoughts, How to write a paragraph, CRAFT approach, Non-verbal Communication, Definition, Importance, Improving non-verbal communication, Active Listening, Definition, RESPECT approach, Negotiation: Understanding Perspectives, Definition, OPEN approach, Self-Presentation: Making a Great First Impression, APPEAR approach, Self-Presentation: Excelling at Interviews, What do recruiters look for?, PERFECT approach, Self-Presentation: Rocking the Group Discussion, Definition of group discussion, PITCH approach, Selling: Communicate Effectively to Gain Acceptance, Communication methods to gain acceptance for product, service, idea, ACCEPT approach.

Module2: Communication at Workplace

Speaking: On the Telephone, Everyday communications, Ways to communicate politely and effectively on the telephone, WORDS approach, Speaking: Making Requests, Ways to request politely, The difference between permission and request, WORDS approach, Writing: Write

Effective Notes, Definition of note-taking, Effectively writing notes, Organising notes, PILOT approach, Cornell method of note-taking, Writing: Write Effective Emails, Importance, The difference between written and verbal communication, PILOT approach, Negotiation: Negotiation in Action Getting to YES, Types of outcomes, GAINS approach.

Module 3: **Teamwork**,
Work Effectively in a Team, Importance of working in a team, CAUSE model, Collaborate to Achieve Team Goals, Importance, Identifying goals, SUCCESS model, Build Effective Relationships with Stakeholders, What is a stakeholder?, Types of stakeholders, TREAT technique for managing stakeholders, Conflict Management: Identify and Resolve Conflicts, Reasons for conflicts, Techniques to resolve conflicts, CALM approach.

Module 4: **Customer Centricity**
Types of Customers, Potential, Past, Current, Types of personalities (OCEAN), Responding Effectively to Customers, Importance, LAST approach.

Module 5: **Attitudes and Behavioural Skills**
Time and task management: Plan and Manage Tasks Within a Timeline, Time management definition, Planning and managing tasks, Staying organized, PLOT approach, Time and task management: Plan, Prioritise, and Manage Tasks, Managing time, Organizing and prioritizing tasks, TRAIN model, Quality consciousness: Introduction to Quality, Defining quality consciousness, The importance of establishing standards, Quality Consciousness: Understand the Impact of Errors, Defining errors, The impact of errors, Avoiding mistakes, Result Orientation: Introduction to Result Orientation, Defining result orientation, The importance of a result-oriented mindset, How to succeed and get desired results?, Result Orientation: Plan Tasks to Achieve Goals, Becoming result-oriented, Result orientation process, Self-Development - Positive Attitude, Defining attitude, The importance of positive mindset, GLAD model, Self-Awareness: Know Yourself, Defining self-awareness, Identifying strengths, Interests and areas of improvement, Using strengths to achieve goals, Responding to Change: Understand and Adjust to Change, Defining change, Reacting to change, Ways to adapt to change, Personal Health, Hygiene, and Grooming, The importance of grooming, Importance of personal hygiene, Grooming essentials, Effects of not maintaining appearance, Adopting safety practices: Health, Environment, and Safety Awareness, Ways to stay fit and healthy, Keeping surroundings clean, Keeping yourself safe, PASS technique for fire extinguishers, Gain Financial Literacy, Importance of financial literacy, Financial tools in daily life, Components of salary, Types of bank accounts, Importance of insurance.

Module6: Problem Solving
Problem Solving: Introduction to Critical Thinking, Importance of critical thinking, Applications, Analysing problems, Link between ideas, REASON model, Problem Solving: Introduction to Creative Thinking, Defining creative thinking, Importance, Applications, Problem-Solving: Introduction to Decision Making, Defining decision making, Importance, Elements of decision making, Decision Making: Respond Effectively to a Situation, Decision-making process, Application in different scenarios, DECIDE model.

Module7: Workplace Awareness
Cultural Fitment & Gender Diversity, Stereotyping and unconscious bias, Diversity issues and how to resolve them, Features of a diverse workplace, Behavioural elements of a diverse workplace,

Identify and Align with High-growth Sectors, Types of skill sets, Steps before applying for a job, Organisational Structure and Values, Organizational structure and hierarchy, Organizational values, Work environment and culture, Searching and Applying for Relevant Job, Platforms for finding job vacancies, Creating a resume, Cover letter formats, Job application requirements.

Module8: Success in Job Interviews

How to Prepare for a Job Interview - Gaining Confidence, Describing strengths and qualities, Do's and Don'ts for identifying strengths, Researching roles and responsibilities, Knowing your resume, The importance of knowing about the company, Asking questions to the interviewer, How to Prepare for Job Interview - Getting Ready, List of documents for the interview, Behaviour at the interview venue, Grooming and appearance for the interview, How to Conduct Yourself at the Venue, How to make a good first impression, Tips for conducting yourself well at the venue, How to Answer Questions During the Interview, Making a good impression, Tips to answer questions effectively, How to Effectively Conclude the Interview, Asking relevant questions to the interviewer, How to follow up after the Interview, Following up to know the application status, Accepting the job offer, Handling negative results, Ace your Job Interview, Identify and describe your strengths and weaknesses, Updating resume, Mock interviews, Tricks to do well in an interview.

Suggested Readings

1. "Employability Skills" by Christine Lockwood
2. "The 7 Habits of Highly Effective People" by Stephen Covey
3. "Essential Skills for Business Success" by R. Glenn
4. "The Employability Skills Handbook" by Carol Dixon
5. "How to Get a Job: The Ultimate Guide to Finding a Job" by K. McGregor

Semester -3

Course Code		**Course Name**	Principle of Dialysis	**Course Category**	Skill	Major	L	P	Pr	C
							0	3	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the basic concepts of dialysis, including diffusion, osmosis, and ultrafiltration.	1
CLO2	Explain the role of dialysis in treating kidney failure and other renal disorders.	2
CLO3	Apply dialysis principles to understand and manage patient care in different clinical settings.	3
CLO 4	Analyze the impact of dialysis treatment protocols on patient outcomes and healthcare practices.	4
CLO5	Evaluate the effectiveness of dialysis technologies and methods in addressing global renal health challenges.	5

Module 1: Introduction to Dialysis

Overview of Dialysis: Definition, purpose, and significance in the treatment of renal failure, Types of Dialysis: Hemodialysis vs. Peritoneal dialysis – basic concepts and differences, Kidney Function and Renal Failure: Understanding kidney anatomy and function, stages of renal failure, and when dialysis is required, Indications for Dialysis: Conditions requiring dialysis, including acute and chronic renal failure, and other related medical conditions.

Module 2: Hemodialysis

Mechanism of Hemodialysis: How hemodialysis works, principles of diffusion and ultrafiltration, Dialysis Machine: Components of the hemodialysis machine, how it functions, and its role in treatment, Dialyzer: Function of the dialyzer (artificial kidney), types, and the principles behind its design, Vascular Access: Types of access points (AV fistula, grafts, central venous catheter) and their significance, Complications in Hemodialysis: Potential complications such as infection, clotting, hypotension, and electrolyte imbalances.

Module 3: Peritoneal Dialysis

Mechanism of Peritoneal Dialysis: How peritoneal dialysis works, the role of the peritoneal membrane as a filter, Types of Peritoneal Dialysis: Continuous Ambulatory Peritoneal Dialysis (CAPD) and Automated Peritoneal Dialysis (APD), Dialysis Solutions: Composition and functions of the dialysis fluid used in peritoneal dialysis, Benefits and Challenges: Comparison with hemodialysis, advantages, and limitations of peritoneal dialysis, Complications in Peritoneal Dialysis: Infection (peritonitis), fluid imbalance, and other potential risks.

Module 4: Dialysis in Clinical Practice

Dialysis Treatment Protocol: How treatment schedules are set, patient monitoring, and

adjustments made based on patient needs., Nutritional Considerations: Dietary restrictions and recommendations for dialysis patients., Role of Dialysis in Managing Fluid Balance and Electrolyte Imbalance: Strategies for controlling fluid overload, managing potassium, sodium, and calcium levels, Post-Dialysis Care: Care required after dialysis, including monitoring for complications, managing fatigue, and follow-up visits.

Module 5: Innovations and Future Directions in Dialysis

Advancements in Dialysis Technology: New developments in dialysis machines, dialyzers, and catheter systems, Bioartificial Kidneys: Exploration of future potential for bioartificial kidney development and regenerative medicine in renal failure treatment, Home Dialysis: Growing trend of home-based dialysis options and their benefits and challenges, Personalized Dialysis: Tailoring dialysis treatment to individual patient needs based on factors such as age, comorbidities, and lifestyle, Ethical and Social Considerations: Ethical issues surrounding dialysis access, allocation, and cost, and the psychological and social implications for patients and families.

Suggested Readings

1. Hemodialysis: The Comprehensive Guide by Allen R. Nissenson
2. Principles and Practice of Dialysis by John T. Daugirdas
3. Manual of Dialysis by Alan S. R. W. C. Thomas
4. Dialysis Therapy by Robert W. Schrier
5. Dialysis: A Practical Handbook by Jean M. Schainker

Course Code		**Course Name**	Basics of Renal Dialysis Technology	**Course Category**	Skill	Major	L	P	Pr	C
							0	3	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the basic components and function of renal dialysis machines and related equipment.	1
CLO2	Explain the role of dialyzers, bloodlines, and fluid systems in the dialysis process.	2
CLO3	Apply knowledge of dialysis technology to set up and monitor dialysis treatment sessions.	3
CLO4	Analyze the importance of proper equipment maintenance and troubleshooting in ensuring safe dialysis treatment.	4
CLO5	Evaluate the advancements in renal dialysis technology and their impact on patient care and treatment outcomes.	5

Module 1: Introduction to Renal Dialysis
Overview of renal function, Causes and types of kidney failure, Dialysis as renal replacement therapy, History and development of dialysis, Indications for dialysis, Basic principles of dialysis.

Module 2: Hemodialysis Technology
Hemodialysis machine components, Dialyzer function and types, Blood and dialysate flow systems, Vascular access for hemodialysis, Monitoring parameters during hemodialysis, Hemodialysis procedure steps.

Module 3: Peritoneal Dialysis Technology
Types of peritoneal dialysis (CAPD and CCPD), Peritoneal dialysis setup and equipment, Dialysate composition and flow, Peritoneal catheter placement, Monitoring and complications in peritoneal dialysis, Procedure for peritoneal dialysis.

Module 4: Dialysis Equipment and Machines
Dialysis machine setup and operation, Blood pressure and flow rate monitoring, Dialyzer and filters, Water treatment and purification systems, Safety protocols in dialysis technology, Maintenance and troubleshooting of dialysis machines.

Module 5: Patient Care and Management in Dialysis
Assessment of dialysis patients, Nutritional management, Infection control and prevention, Dialysis complications (hypotension, cramping, etc.), Patient education and psychological support, Emergency management during dialysis.

Suggested Readings

1. Renal Dialysis: A Textbook of Dialysis by Peter D. Jaffrin
2. Hemodialysis: A Comprehensive Guide by G. S. Danziger
3. Essentials of Renal Dialysis by Brian J. Smith
4. Renal Dialysis Nursing: A Clinical Guide by Jennifer G. Callen
1. Textbook of Dialysis by Robert W. Schrier

Course Code	MDP 3	Course Name	Environmental Sciences	Course Category	MDP	MDP	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Identify and describe the components of the environment (hydrosphere, lithosphere, atmosphere, biosphere) and explain the interrelationship between human activities and the environment.	1
CLO2	Explain ecosystem structure, components, energy flow, trophic levels, and analyze the characteristics of various ecosystems including terrestrial, freshwater, and marine.	2
CLO3	Apply knowledge of environmental issues (such as greenhouse effect, ozone depletion, and deforestation) to analyze their impacts on global and local ecosystems.	3
CLO4	Analyze various types of pollution (air, water, land) and assess their causes, consequences, and potential control strategies for minimizing environmental degradation.	4
CLO5	Evaluate the effectiveness of environmental protection laws, management practices, and global initiatives (such as IUCN, EPA) in addressing environmental challenges and promoting sustainable practices.	5

Module 1: Components of Environment
Understanding the hydrosphere, lithosphere, atmosphere, and biosphere, defining each with examples, and exploring the interaction between man and the environment.
Module 2: Ecosystem
Introduction to basic concepts of ecosystems, components of ecosystems, tropic levels, food chains, and food webs, ecological pyramids, ecosystem functions, and energy flow in ecological systems, along with characteristics of terrestrial, freshwater, and marine ecosystems.
Module 3: Global Environmental Problems
Examining global environmental issues such as the greenhouse effect, acid rain, El Niño, ozone depletion, deforestation, desertification, salinization, biodiversity loss, and chemical and radiation hazards.
Module 4: Environmental Pollution and Degradation
Analyzing the pollution of air, water, and land, focusing on causes, nature, impacts, and control strategies, with perspectives on pollution in urban, industrial, and rural areas, and the effects of habitat pollution from chlorinated hydrocarbons (DDT, PCBs, dioxins, etc.), endocrine-disrupting chemicals, and nutrient pollution.
Module 5: Environmental Management
Understanding health and sanitation in environmental contexts, identifying environmental diseases (infectious and pollution-related), exploring the spread and control of these diseases, and

addressing health hazards due to pesticide and metal pollution, waste treatment, solid waste management, and environmental standards and quality monitoring.

Module 6: Environmental Protection Act

Overview of environmental laws, national movements, and environmental ethics, taking a holistic approach to environmental protection and conservation, with a focus on IUCN's role in environmental protection. Understanding the concept of UN declarations, human rights policies in India, and the recent North-South debate on implementation priorities, as well as the role of the Environmental Protection Agency (EPA).

Module 7: Special Environmental Issues

Focus on oil spills, wastewater treatment, chemical degradation, and the impact of heavy metals on the environment.

References and Suggested Readings

1. Environmental Science: Earth as a Living Planet by G. Tyler Miller and Scott Spoolman
2. Fundamentals of Environmental Science by William P. Cunningham and Mary Ann Cunningham
3. Environmental Science: A Global Perspective by Richard T. Wright and David W. Lea:

Course Code	AEC	Course Name	Communication Skills (English)	Course Category	General	AEC	L	P	Pr	C
							0	4	0	4
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Use basic English to communicate effectively in everyday situations	3
CLO2	Exchange information and give instructions clearly and effectively	3
CLO3	Describe past experiences, current activities, and future plans	2

Module 1: Everyday English Basics

Getting Started: Alphabet, Colors, Nice to Meet You, About You: Getting to know you, Where are you from?, This is my Family, School: In the classroom, At school, Time: My Day, My Week, My Month, Shopping: How much is it?, Shopping for clothes, Food: At the supermarket, At a restaurant, Food I like, Health: Making an appointment, At the doctor, Community: Finding an apartment, Around town, Work: Jobs, Getting a job, Getting to work, Calling in sick.

Module 2: Everyday English – 1

Greetings and Introductions: Ask - about personal details, what something is called (how to say things in English), where someone is from, Give someone personal details, Greet someone, Introduce - others, someone else, yourself, Talk about your nationality, Tell someone where you are from, Thank someone, Exchanging Information: Arrange a meeting, Ask what kind of work someone does, Give instructions, Talk about - computer parts, schedules, Tell someone what work you do, Family and Friends: Ask about marital status, Compliment someone, Describe someone, Greet someone, Introduce someone, Talk about - art, family, How much? How many?: Ask the price of something, Buy - food, tickets for a concert, Make a salad, Talk about - a band, breakfast, food, pets, quantities, Describing your home: Arrange a meeting, Buy things for - the bathroom, the bedroom, Describe an apartment, Make - plans, suggestions, Plan a party, Talk about - living room furniture, pets, things you use in the kitchen, Tell someone where you live, Thank someone, Describing Routines: Ask - a favor, about someone's daily routine, the time, what kind of work someone does, Disagree with someone, Give instructions, Plan a weekend, Tell someone the time, Talk about - family responsibilities, schedules, Things we can/can't do: Ask - about a birthday, the date, the price of something, Express feelings, Give information about - a party, Invite someone to a party, Make plans, Offer - help, someone food and drink, Plan a party, Refuse politely, Shop for clothing, Solve a problem, What's happening?: Ask someone what's happening, Explain what you are doing, Introduce yourself, Make suggestions, Offer help, Talk about - art, basketball, current actions, dance, what you are doing, Tell someone what's happening.

Module 3: Everyday English – 2

Greetings and Introductions: Ask - about a tourist attraction, about hotel facilities, where someone is from, Describe - a hotel room, how you feel, Excuse yourself, Greet someone, Introduce yourself, Spell a name, Talk about - likes and dislikes, professions, Routines and Actions: Ask - about a tourist attraction, where someone is, Talk about - art, free time, hunger, likes and dislikes, sports, Give - directions, someone your location, Describe - actions that are happening, how you feel, routines, Talking about the Past: Ask about past experiences and events, Describe - a burglary, how you feel, Report a burglary, Talk about the past, Thank someone, Past Experiences: Ask about past experiences and events, Explain Tai Chi, Talk about - animals, basketball, cooking, disappointments, free time, likes and dislikes, professions, sports, Keep in touch, Talking about the Future: Ask about the weather, Get information about the weather, Talk about - a future trip, future plans, space travel, the future, the weather, Give information about the weather, Let's Trade Apartments: Ask a favor, Buy presents, Plan a weekend, Talk about - a future trip, things we must / mustn't do, things we should / shouldn't do, Things we have done: Talk about - past experiences and events, sports, things you have / haven't done, your dreams, your interests, Solve problems on a trip, Comparing People and Things: Apologize, Go shopping for clothes, Keep in touch, Pack a suitcase, Say goodbye to a friend, Talk about a tour.

Suggested Readings

1. "English Communication for Technical Students" by M. Ashraf Rizvi
2. "English for Everyone: English Vocabulary Builder" by DK
3. "The Elements of Style" by William Strunk Jr. & E.B. White
4. "Improve Your English: English in the Workplace" by D. H. Palmer
5. How to Speak and Write Correctly" by Joseph

Semester -4

Course Code		**Course Name**	Introduction To Kidney Disease and Renal Replacement Therapy	**Course Category**	Skill	Major	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the basic concepts of kidney function and common causes of kidney disease.	1
CLO2	Explain the various stages of chronic kidney disease (CKD) and its impact on overall health.	2
CLO3	Apply knowledge of renal replacement therapies, including hemodialysis, peritoneal dialysis, and kidney transplantation.	3
CLO4	Analyze the indications for initiating renal replacement therapy based on patient condition and clinical guidelines.	4
CLO5	Evaluate the benefits and challenges of different renal replacement therapies in improving patient outcomes.	5

Module 1: Introduction to Kidney Function and Structure

Overview of kidney structure and function, Role of kidneys in homeostasis, Filtration, reabsorption, and secretion processes, Understanding nephron anatomy and function, Importance of kidneys in regulating electrolytes, fluid balance, and waste elimination.

Module 2: Types of Kidney Disease

Classification of kidney diseases (acute kidney injury, chronic kidney disease, glomerulonephritis, polycystic kidney disease), Causes and risk factors of kidney disease, Symptoms and progression of chronic kidney disease (CKD), Stages of CKD and their clinical implications, Diagnosis and screening tests for kidney diseases.

Module 3: Chronic Kidney Disease and Its Management

Understanding the pathophysiology of chronic kidney disease, Impact of CKD on other organ systems, Management strategies for CKD (diet, medications, blood pressure control), Preventing progression of kidney disease, Role of early detection and patient education in managing CKD.

Module 4: Renal Replacement Therapy (RRT) Options

Overview of renal replacement therapies, Indications for initiating dialysis or transplantation, Types of dialysis (hemodialysis, peritoneal dialysis), Kidney transplantation: criteria, donor matching, and immunosuppression, Comparing advantages and challenges of different RRT modalities.

Module 5: Nursing Care in Renal Replacement Therapy

Nursing role in managing patients undergoing dialysis, Pre-dialysis and post-dialysis care, Monitoring fluid balance, electrolyte levels, and vital signs, Educating patients about dialysis and kidney transplantation, addressing psychosocial aspects of living with kidney disease and undergoing RRT.

Suggested Readings

1. Chronic Kidney Disease: A Practical Guide to Its Management by W. J. Griffith
2. The Kidney Disease Solution by Duncan Capicchiano
3. Renal Replacement Therapy: Principles and Practice by Joseph V. Bonventre
4. The Kidney and Hypertension by Ronald W. Busse
1. Introduction to Kidney Disease by John W. Kluge

Course Code		Course Name	Medical Ethics and Statutory Approvals	Course Category	Skill	Minor	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Recall key concepts and principles of medical ethics, including autonomy, beneficence, non-maleficence, and justice.	1
CLO2	Explain the legal and ethical implications of patient consent, confidentiality, and decision-making in healthcare.	2
CLO3	Apply medical ethics principles to resolve ethical dilemmas in clinical practice.	3
CLO4	Analyze the role of statutory approvals, regulations, and laws in healthcare decision-making and patient care.	4
CLO5	Evaluate the impact of medical ethics and statutory requirements on healthcare delivery and patient outcomes.	5

Module 1: Introduction to Medical Ethics

the foundational principles of medical ethics, including autonomy, beneficence, non-maleficence, and justice, ethical dilemmas faced by healthcare professionals and the importance of making ethical decisions in patient care.

Module 2: Patient Rights and Informed Consent

the concept of patient rights, including the right to informed consent, confidentiality, and autonomy. the processes involved in obtaining valid consent for treatment, understanding capacity and competence, and the ethical implications of refusal or withdrawal of treatment.

Module 3: Confidentiality, Privacy, and Documentation

the ethical and legal aspects of patient confidentiality, privacy laws (such as HIPAA), and the proper management of patient records. emphasizes the importance of safeguarding personal health information and maintaining trust in the healthcare provider-patient relationship.

Module 4: End-of-Life Care and Ethical

explores the ethical challenges in end-of-life care, including decision-making regarding life-sustaining treatment, palliative care, and euthanasia., the role of healthcare professionals in providing compassionate care, respecting patient wishes, and managing ethical dilemmas at the end of life.

Module 5: Statutory Approvals in Hospitals

Overview of Statutory Approvals, Hospital Registration and Licensing, National Accreditation (NABH) and International Accreditation (JCI), Building and Infrastructure Approvals (Fire Safety, Health & Safety Compliance), Medical Device and Equipment Approvals, Licensing and

Certification of Medical Professionals (Doctors, Nurses, Technicians), Environmental Compliance and Waste Management in Hospitals, Health and Safety Standards: Infection Control, Patient Safety Protocols, Health Insurance Approvals and Empanelment, Pharmaceutical Licensing and Regulations for Hospital Pharmacies, Data Privacy and Patient Confidentiality (Compliance with IT Act and Health Data Protection), Compliance with National Health Policies and Regulations (e.g., Ayushman Bharat), Regulations Related to Diagnostic Laboratories in Hospitals, Hospital Clinical Trial Approvals (CDBT, ICMR), Legal Compliance: Medical Negligence, Malpractice Laws, and Liability, Renewal of Accreditations and Licensing, Role of Hospital Administration in Ensuring Compliance with Statutory Requirements, Case Studies on Statutory Approvals in Hospitals

Suggested Readings

2. Medical Ethics: A Very Short Introduction by Tony Hope
3. Bioethics: Principles, Issues, and Cases by Lewis Vaughn
4. Medical Ethics: Accounts of Ground-Breaking Cases by Gregory E. Pence
5. Ethics in Medicine by M. A. S. B.A. Fletcher
1. Ethics and Professionalism in Medicine by Baruch A. Brody

Course Code	VAC-1	Course Name	Cultural Diversity in the Indian Society	Course Category	VAC	VAC	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Define and describe the key components of Indian culture and explain the factors contributing to its diversity.	2
CLO2	Analyse the role of major religions in shaping India's societal fabric and historical coexistence.	2
CLO3	Examine the linguistic landscape of India and its impact on national identity and social cohesion.	3
CLO5	Evaluate the diversity of ethnic and tribal communities, their challenges, and contributions to India's cultural mosaic.	3
CLO6	Assess the impact of globalization and modernization on Indian culture and propose strategies to promote cultural harmony and integration.	2

Module 1: Foundation of Indian Diversity
Define culture and its components (language, religion, customs, traditions, art, etc.), Explain the historical factors contributing to India's cultural diversity (geographic, linguistic, religious, and social), Analyse the concept of unity in diversity and its relevance to Indian society.

Module 2: Religious Diversity
Describe the major religions of India (Hinduism, Islam, Christianity, Sikhism, Buddhism, Jainism) and their core beliefs, Examine the historical coexistence and conflicts among different religious groups, Analyse the role of religion in shaping Indian society and culture.

Module 3 - Linguistic Diversity
Explain the linguistic landscape of India, including Indo-Aryan, Dravidian, and other language families., Analyse the impact of language diversity on identity, communication, and social cohesion, Discuss the role of language in nation-building and cultural integration.

Module 4 – Ethnic and Tribal Diversity
Define ethnicity and tribe, and differentiate between them, Explore the diversity of ethnic and tribal groups in India, their geographical distribution, and cultural practices, Analyse the challenges faced by ethnic and tribal communities in contemporary India.

Module 5 – Cultural Dynamics and Challenges
Examine the processes of acculturation, assimilation, and pluralism in Indian society, Analyse the impact of globalization and modernization on Indian culture, Discuss the challenges posed by cultural diversity, such as communalism, casteism, and regionalism, Explore strategies for

promoting cultural harmony and national integration.

Suggested Readings

1. "India After Gandhi: The History of the World's Largest Democracy" by Ramachandra Guha
2. "The Wonder That Was India" by A.L. Basham
3. "India: A Sacred Geography" by Diana Eck
4. An Area of Darkness" by V.S. Naipaul
5. "India Unbound" by Gurcharan Das

Course Code	SEC 3	Course Name	Professional Skills (Career Skills)	Course Category	SEC	SEC	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

COURSE LEARNING OUTCOME

CLO1	Prepare a professional fit to purpose résumé in line with the job description and digital and AI-era practices
CLO2	Prepare for job interviews
CLO3	Participate in recruitment-related group discussions
CLO4	Prepare self for achieving career goals through career planning and life-long learning
CLO5	Identify career opportunities in consideration of personal potential and aspirations.

Module 1: Résumé Skills

- **Résumé Skills: Preparation and Presentation** - Comprehend the importance of a résumé, identify essential components of a good résumé while preparing it.
- **Résumé Skills: Common Errors** - Identify common errors in a résumé.
- **Keywords Specific Resume** - Align resume to new-age AI-powered hiring practices
- **Skills vs Job Description** - Prepare a resume to map the job description
- **Make Specialized Resumes for Different Job Applications** - Create Resumes using AI Tools
- **Self-Presentation Even Before Interview** - Present a Video Resume
- **Work Portfolio** - Prepare a work portfolio
- **Digital Media Profiles** - Manage professional presence on digital media platforms

Module 2: Interview Skills

- **Introduction to Interviews** - Describe the meaning and types of interviews.
- **Common questions** - Describe the important questions generally asked in a job interview.
- **Exchange of views**
- **Interview Skills: Preparation and Presentation** - List key interviewee skills
- **Interview Procedure** - Describe the interview procedure
- **Interview Skills: Common Errors** - Identify common errors people make during an interview.

Module 3: Interview Simulation

- **Job Simulation Formats** - Critique the performance of a few simulated interviews
- **Comment Critically on Simulated Interviews** - Critique the performance of a few simulated interviews
- **Demonstrate an Ideal Interview** - Critique the performance of a few simulated interviews

Module 4: Group Discussion Skills

- **Meaning and Importance of Group Discussion** - Describe the meaning and importance of a Group Discussion in a selection process.
- **Procedure of a Group Discussion** - Describe the procedure of a Group Discussion, identify essential skills to be evaluated during a Group Discussion.
- **Group Discussion: Common Errors** - Identify common errors people commit in a Group Discussion.
- **Group Discussion: Simulation** - Identify common errors people commit in a Group Discussion.

Module 5: Career Planning

- **What is Career? Why a Specific Career?** - Explain the process of career development and its importance for professionals
- **Importance of Career Development** - Explain the process of career development and its importance for professionals
- **Knowing Yourself — Personal Characteristics (MBTI - personality Test)** - Explain the process of career development and its importance for professionals
- **Career Aptitude Tests** - Explain the process of career development and its importance for professionals
- **Career opportunities in Industry & Goals** - Explain the process of career development and its importance for professionals

Module 6: Exploring Career Opportunities

- **Knowledge about the World of Work** - Identify career opportunities in selected fields of work
- **Sources of Career Information** - Identify career opportunities in selected fields of work
- **Skills & Career - Current Trends** - Identify career opportunities in selected fields of work
- **Process of Career Exploration** - Identify career opportunities in selected fields of work

Module 7: Lifelong Learning

- **Developing Eligibility** - Develop skills and abilities to support career goals using life-long learning
- **Concept of Life-Long Learning** - Develop skills and abilities to support career goals using life-long learning
- **Sources of Life-long learning** - Develop skills and abilities to support career goals using life-long learning
- **Case Study** - Use the necessary components to prepare for a career in an identified occupation (as a case study).

Suggested Readings

1. Knock 'em Dead Resumes – *Martin Yate*
2. The Resume Writing Guide – *Lisa McGrimmon*
3. Modernize Your Resume – *Wendy Enelow & Louise Kursmark*
4. Cracking the Code to a Successful Interview – *Evan Pellett*
5. 101 Great Answers to the Toughest Interview Questions – *Ron Fry*
6. Interview Like a Boss – *Hans Van Nas*
7. How to Answer Interview Questions – *Peggy McKee*

Semester -5

Course Code		**Course Name**	Renal Nutrition	**Course Category**	Skill	Major	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the nutritional needs and dietary restrictions for patients with kidney disease.	1
CLO2	Explain the role of nutrition in managing chronic kidney disease and improving patient outcomes.	2
CLO3	Apply knowledge of renal diets to develop meal plans for patients on hemodialysis or peritoneal dialysis.	3
CLO4	Analyze the impact of protein, electrolytes, and fluid intake on kidney function and dialysis treatment.	4
CLO5	Evaluate the effectiveness of dietary interventions in preventing complications and improving quality of life for patients with kidney disease.	5

Module 1: Introduction to Renal Nutrition:
Understanding the role of nutrition in kidney health, Overview of kidney function and how it relates to nutrition, The impact of kidney disease on nutrient metabolism, Key considerations in renal nutrition for patients with chronic kidney disease (CKD), Dialysis and its nutritional implications, Goals of renal nutrition therapy.

Module 2: Nutrient Requirements in Kidney Disease:
Assessing nutrient needs in renal disease, Protein intake in CKD and dialysis patients, Carbohydrate metabolism in renal disease, Managing electrolyte imbalances (sodium, potassium, calcium, phosphorus), Fluid management and restrictions, Micronutrient deficiencies in kidney disease, Role of vitamins and minerals in kidney health.

Module 3: Protein and Amino Acids in Renal Nutrition:
The importance of protein in renal health, Protein restriction in CKD and its impact on disease progression, High-quality protein sources for dialysis patients, Amino acid metabolism and its relationship with kidney function, Assessing nitrogen balance and protein requirements in renal patients.

Module 4: Sodium, Potassium, and Fluid Management:
Managing sodium intake in kidney disease, The role of potassium in CKD and dialysis patients, Dietary sources of potassium and sodium, Understanding fluid retention in kidney disease, Strategies for managing fluid balance, Dialysis fluid management and dietary adjustments.

Module 5 Nutritional Management in Dialysis and Post-Transplant Care:
Dietary considerations for patients on hemodialysis and peritoneal dialysis, Adjusting nutrient intake based on dialysis modality, Post-transplant nutritional needs, Managing immunosuppressive medications and their effects on nutrition, Weight management and lifestyle changes post-kidney transplant, Long-term monitoring and follow-up in renal nutrition care.

Suggested Readings

1. Renal Diet Cookbook: 500 Easy and Delicious Recipes for Managing Kidney Disease by M. A. Patel
2. Nutrition and Diet Therapy in Renal Disease by Laura M. Byham-Gray
3. Manual of Renal Diet Therapy by Joan R. Smith
4. Clinical Guide to Nutrition in Renal Disease by Peter W. Preedy
5. Renal Nutrition: A Guide for Clinical Practice by Laura J. Wilund

Course Code		Course Name	Pharmacology related to Dialysis	Course Category	Skill	Minor	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	Co-requisite		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Recall the common medications used in the management of patients undergoing dialysis.	1
CLO2	Explain the pharmacokinetics and pharmacodynamics of drugs in patients with kidney disease.	2
CLO3	Apply knowledge of drug interactions and dosages specific to dialysis patients to ensure safe medication administration.	3
CLO4	Analyze the effects of dialysis on drug clearance and the adjustments needed for various medications.	4
CLO5	Evaluate the role of pharmacological treatments in managing complications of dialysis, such as anemia, hypertension, and electrolyte imbalances.	5

Module 1: Introduction to Pharmacology in Dialysis

Overview of pharmacology and its relevance to dialysis patients, The impact of kidney function on drug absorption, distribution, metabolism, and excretion, Understanding how renal failure alters drug pharmacokinetics, Importance of dose adjustments in dialysis patients, Principles of drug therapy in chronic kidney disease (CKD) and end-stage renal disease (ESRD).

Module 2: Pharmacokinetics and Dialysis

The role of dialysis in altering drug clearance, Differences in pharmacokinetics during hemodialysis and peritoneal dialysis, Influence of dialysis techniques on drug removal, Managing drug levels and monitoring therapeutic outcomes, Effects of dialysis duration and frequency on drug pharmacokinetics.

Module 3: Medications Used in Dialysis Patients

Common medications used in dialysis patients (e.g., erythropoiesis-stimulating agents, phosphate binders, antihypertensive medications), Adjustments in drug therapy for dialysis patients (antibiotics, analgesics, anticoagulants), Medications to manage anemia, bone mineral disorders, and electrolyte imbalances in CKD patients, Potential drug interactions in dialysis therapy.

Module 4: Electrolyte and Fluid Management in Dialysis

Role of pharmacological agents in managing fluid and electrolyte balance, Use of diuretics, sodium bicarbonate, and potassium binders, Impact of dialysis on serum electrolyte levels (potassium, calcium, phosphate), Managing acid-base balance in dialysis patients, Importance of monitoring electrolyte imbalances and adjusting drug therapy accordingly.

Module 5: Complications and Adverse Drug Reactions in Dialysis

Common drug-related complications in dialysis patients (e.g., drug toxicity, bleeding risks, cardiovascular events), Managing adverse drug reactions in dialysis patients, Impact of altered renal function on drug efficacy and safety, Strategies for preventing and managing complications related to medications, Role of nurses in monitoring and educating patients on pharmacological therapy during dialysis.

Suggested Readings

1. Pharmacology in Dialysis by David S. Goldfarb
2. Pharmacology for the Renal Patient by E. J. Safirstein
3. Drug Therapy in Dialysis Patients by R. R. Wilkes
4. Renal Pharmacology: A Guide to the Renal Patient by M. J. Chino
5. Pharmacology for Healthcare Professionals by George M. B. Rubin

Course Code		**Course Name**	General Medicine and Surgery	**Course Category**	Skill	Minor	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the fundamental principles and concepts in general medicine and surgery.	1
CLO2	Explain the pathophysiology, diagnosis, and treatment options for common medical and surgical conditions.	2
CLO3	Apply diagnostic and therapeutic approaches to manage general medical and surgical cases.	3
CLO4	Analyze patient data, including clinical symptoms, lab results, and imaging studies, to formulate treatment plans.	4
CLO5	Evaluate the effectiveness of medical and surgical interventions in improving patient outcomes and managing complex conditions.	5

Module 1: Introduction to General Medicine and Surgical Principles
the fundamental concepts of general medicine, including common medical conditions, diagnosis, and treatment strategies, overview of surgical principles, including pre-operative assessments, anesthesia considerations, and post-operative care protocols.

Module 2: Medical Diagnosis and Treatment Techniques
the diagnostic process, including patient history-taking, physical examination, and diagnostic testing such as imaging, lab work, and specialized tests, treatment approaches for common medical conditions, such as pharmacological therapies, lifestyle modifications, and surgical interventions, allowing students to apply medical knowledge in clinical scenarios.

Module 3: Surgical Procedures and Techniques
common surgical procedures, techniques, and their indications. major and minor surgeries across various specialties, with an emphasis on patient preparation, sterile techniques, surgical tools, and intraoperative management.post-operative care, including monitoring for complications and patient recovery.

Module 4: Emergency Medicine and Surgical Interventions
management of medical and surgical emergencies, including trauma, cardiac arrest, respiratory failure, and acute abdomen. perform rapid assessments, initiate life-saving treatments, and coordinate with multidisciplinary teams during emergencies, including the role of surgery in acute care.

Module 5: Clinical Ethics and Patient Care in Medicine and Surgery
ethical considerations in medical and surgical practice, including patient consent, autonomy, and confidentiality, the importance of effective doctor-patient communication, shared decision-making, and managing challenging clinical situations, ensuring the provision of compassionate and ethical care in both medical and surgical contexts.

Suggested Readings

1. "Current Diagnosis & Treatment in General Medicine" by Maxine A. Papadakis
2. "Principles and Practice of Surgery" by Sir Alfred Cuschieri
3. "Textbook of General Surgery" by Peter R. C. Harris
4. "General Surgery: Principles and Practice" by David J. Yousem
5. "Essentials of General Surgery" by Peter M. M. Elkin

Course Code		Course Name	Business Communication	Course Category	General	AEC	L	P	Pr	C
							0	4	0	4
Pre-requisite			Nil	Co-requisite		Nil				

Course learning outcomes:

CLO No.	At the end of the course the learners will be able to:	Bloom's Taxonomy (Bt) Level
CLO1	Discuss the scope and complexity of business communications	2
CLO2	Carry out effective interpersonal communication, including the use of listening skills, verbal skills and non-verbal communication	3
CLO3	Apply practical techniques for effective group communication, including presentations, interviews, meetings, conferences, public relations	3
CLO4	Carry out written business correspondence including letters, documents reports, etc.	3
CLO5	Communicate effectively with the help of digital media including emails, virtual meetings and social media posts	3

Module 1: Overview of Business Communications

Introduction to Business communication – Introduction, Scope of Business Communications, Complexity of Business Communications, Importance of Communication for Business, Impact of Poor Communication, Definition and Introduction to Business Communication, Types & Levels of Business Communication, Types of Business Communication, Levels of Business Communication, Real-Life Examples-Based Exercises for Practice, Dimensions of communication in an Organisation – Introduction, Discussing the Scope and Complexity of Business Communications, Common Dimensions of Communication in an Organization, Common Channels of Communication in an Organization, Real-Life Examples-Based Exercises for Practice, Channels of communication in an organization – Introduction, Discussing the Scope and Complexity of Business Communications, Understanding and Applying the Level of Communication in Vertical and Horizontal Hierarchy, Barriers to Business Communication – Introduction, Discussing the Scope and Complexity of Business Communications, Discussing the Barriers Observed in Effective Business Communications, Engaging in Real-Life Examples-Based Exercises to Overcome Communication Barriers.

Module 2: Interpersonal Skills

Effective interpersonal communication – Introduction, Carrying Out Effective Interpersonal Communication, Describing Effective Interpersonal Communication, Applying Knowledge through Real-Life Examples-Based Exercises, Listening Skills – Introduction, Carrying Out Effective Interpersonal Communication, Applying Effective Listening Skills, Enhancing Practical Mastery through Real-Life Examples-Based Exercises, Speaking Skills – Introduction, Carrying Out Effective Interpersonal Communication, Applying Effective Speaking Skills, Reinforcing Practical Mastery through Real-Life Examples-Based Exercises, Loud Reading Skills –

Introduction, Understanding Non-Verbal Cues, Impact of Non-Verbal Communication, Developing Effective Non-Verbal Communication Skills, Real-Life Examples and Exercises, Non-Verbal Communication – Introduction, Reading Beyond the Surface, Reading & Interpersonal Communication, Decoding the Unspoken, Real-Life Examples and Exercises.

Module 3: Group Communications

Principles of group communication – Introduction, Core Principles, Applicability Across Settings, Real-Life Exercises, Effective presentations – Introduction, Building a Winning Presentation, Time Management: Your Key Ally, Real-Life Examples and Exercises, Effective Meetings and conferences – Introduction, Building Effective Gatherings, Real-Life Examples and Exercises, Effective Interviews – Introduction, Preparation: Fueling Your Confidence, Shining in the Spotlight: Commanding the Conversation, Adapting to Diverse Stages: Navigating Different Dynamics, Beyond the Conversation: Leaving a Lasting Impression, Real-Life Exercises for Success.

Module 4: Written Business Correspondence

Letter Writing – Introduction, Core Principles for Clarity and Impact, Exploring Diverse Forms of Correspondence, Ethical Considerations and Cultural Awareness, Real-Life Exercises for Growth, Report Writing – Introduction, Key Principles, Types of Business Reports, Real-Life Exercises, Documentation maintenance – Introduction, The Value of Good Maintenance, Navigating the Physical and Digital, Mastering the Maze: Organization and Categorization, Version Control: Preserving the Chain of History, Safeguarding the Knowledge: Security Measures, Real-Life Exercises.

Module 5: Digital Business Correspondence

Email Etiquette – Introduction, The Pillars of Professionalism, To, CC, and BCC, Subject Line, Opening Salutation, Closing Salutation, Pro Tip, Virtual Meetings & Netiquette – Introduction, Choosing the Right Platform, Preparation is Key, Communication and Netiquette, Building Rapport and Collaboration, Real-Life Exercises, Visual Storytelling, Collaborative Learning, Expanding Your Toolbox, Examples for Real-Life Exercises, Digital Work Collaboration – Notion, etc. – Introduction, Building Bridges, Not Walls, The Digital Toolkit, Mastering the Symphony, Real-Life Exercises, Engaging Activities, Expanding Your Toolkit.

Module 6: Social Media Communications & Digital Marketing

Introduction to social media communications – Discuss the various social media communications used in business and digital tools and best practices associated with them, Introduction to digital marketing – Discuss the various social media communications used in business and digital tools and best practices associated with them.

Suggested Readings

1. Business Communication: Process and Product by Mary Ellen Guffey
2. Business Communication Today by Courtland L. Bovee and John V. Thill
3. The Business Communication Handbook by Judith Dwyer
4. Effective Business Communication by Herta A. Murphy
5. Business Communication: A Case Method Approach by P.D. Chaturvedi

Semester -6

Course Code		**Course Name**	Biomedical Waste Management	**Course Category**	Skill	Minor	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the key principles and regulations of biomedical waste management.	1
CLO2	Explain the different types of biomedical waste and their proper classification and disposal methods.	2
CLO3	Apply appropriate procedures for handling, storage, and disposal of biomedical waste in healthcare settings.	3
CLO4	Analyze the environmental and health impacts of improper biomedical waste disposal and the importance of safe practices.	4
CLO5	Evaluate the effectiveness of biomedical waste management programs in minimizing health risks and ensuring regulatory compliance.	5

Module 1: Introduction to Biomedical Waste and Regulations
definition of biomedical waste, the various types of biomedical waste (infectious, non-infectious, hazardous), and the regulations governing its management, global standards and national guidelines for biomedical waste disposal, with a focus on the role of healthcare facilities in waste management.

Module 2: Classification and Segregation of Biomedical Waste
identifying and classifying different categories of biomedical waste, such as sharps, pathological waste, pharmaceutical waste, and chemical waste., importance of proper segregation at the source to ensure safe handling and disposal, including the use of color-coded bins and labels for each waste type.

Module 3: Handling, Storage, and Transportation of Biomedical Waste
safe handling and storage practices for biomedical waste to prevent contamination and exposure, guidelines on storing waste in appropriate containers, the need for secure transportation within healthcare facilities, and the protocols for safely moving waste to disposal sites.

Module 4: Treatment and Disposal Methods
various treatment and disposal methods for biomedical waste, including autoclaving, incineration, chemical disinfection, and landfilling, emerging technologies and techniques for reducing the environmental impact of waste disposal, as well as the criteria for selecting appropriate methods based on the type of waste.

Module 5: Health and Environmental Impact of Improper Waste Management

potential risks of improper biomedical waste management, including exposure to infections, toxins, and environmental pollution., consequences of inadequate waste disposal on public health and the environment, emphasizing the need for education, training, and adherence to waste management protocols to mitigate these risks**.**

Suggested Readings

1. Biomedical Waste Management by M.K. Jha
2. Manual of Biomedical Waste Management by Anil Kumar Bhatia
3. Waste Management in Health Care Facilities by M. A. S. S. Sudhakar
4. Biomedical Waste: A Manual for Healthcare Institutions by Vinay Kumar
5. Biomedical Waste Management and Infection Control by S. G. Joshi

Course Code		**Course Name**	Medical Record Keeping	**Course Category**	Skill	Minor	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Recall the basic principles and regulations regarding medical record keeping and documentation.	1
CLO2	Explain the importance of accurate, clear, and timely medical record documentation in patient care.	2
CLO3	Apply appropriate methods for maintaining and organizing medical records according to legal and ethical standards.	3
CLO4	Analyze medical records to ensure they comply with healthcare regulations and support clinical decision-making.	4
CLO5	Evaluate the effectiveness of medical record-keeping practices in improving patient care, confidentiality, and legal compliance.	5

Module 1: Introduction to Medical Record Keeping:
Understanding the importance of medical records in healthcare, Types of medical records (paper-based, electronic health records), Legal and ethical considerations in record keeping, Patient confidentiality and privacy laws (HIPAA, Data Protection Act), The role of medical record keeping in patient care and safety.

Module 2: Types of Medical Records and Documentation:
Overview of different types of medical records (clinical notes, diagnostic reports, treatment plans, prescriptions), Essential components of a medical record (patient history, physical examination, progress notes), Structured vs. unstructured documentation, Types of forms and documents used in healthcare (consent forms, medical histories, etc.), The role of standardized formats in record-keeping.

Module 3: Electronic Health Records (EHR) and Technology in Record Keeping:
Benefits and challenges of electronic health records, Key features of EHR systems, Data entry and management in electronic records, Integrating EHR with other healthcare systems (laboratory, pharmacy), Privacy and security measures in electronic record systems, Regulatory guidelines for EHR systems.

Module 4: Legal and Ethical Aspects of Medical Record Keeping:
Understanding the legal requirements for medical record retention, Patient rights and access to medical records, Managing subpoenas and legal requests for records, Record keeping in the event of malpractice or litigation, Documentation as evidence in healthcare disputes, Ethical considerations in maintaining patient records.

Module 5: Medical Coding and Billing:
Introduction to medical coding systems (ICD, CPT, HCPCS), The importance of accurate coding in medical record keeping, Medical billing procedures and their relationship to record keeping, The role of coding in insurance claims and reimbursements, Common coding errors and their consequences, Ensuring compliance with coding regulations.

Module 6: Medical Record Retention and Disposal:
Guidelines for the retention and disposal of medical records, Legal and regulatory requirements for record retention (timelines, formats), Best practices for organizing and storing patient records, Secure disposal methods for paper and electronic records, Ethical and legal considerations when disposing of medical records, Implementing record retention policies in healthcare facilities

Suggested Readings

1. "Medical Record Keeping and Documentation" by P. K. Maity
2. "Introduction to Health Care and Documentation" by Carolyn P. Sultz
3. "Health Information Management: Concepts, Principles, and Practice" by Kathleen M. LaTour
4. "The Complete Guide to Medical Record Keeping" by Anya Turner
5. "Medical Record Documentation" by Michael J. Marks

Course Code		**Course Name**	Universal Human Values	**Course Category**	General	VAC	L	P	Pr	C
							3	0	0	3
Pre-requisite			Nil	**Co-requisite**		Nil				

Course learning outcomes:

CLO No.	**At the end of the course the learners will be able to:**	**Bloom's Taxonomy (Bt) Level**
CLO1	Explain the importance of living a harmonious life aligned with universal human values	2
CLO2	Discuss the vast potential of human beings and their responsibility to the universe on its account	2
CLO3	Develop universal human values and practice them consciously to be good human beings	3
CLO4	Conduct oneself in alignment with the universal human values while dealing with the ways of the world	3
CLO5	Explain the importance of living a harmonious life aligned with universal human values	2

Module 1: Introduction to Universal Human Values

Concept of Universal Human Values – Overview, What are values?, Human values, What are universal human values?, Relation with holistic living – What is holistic living?, Relation of universal human values and holistic living.

Module 2: Living in Harmony

Living in harmony - as a human – What is Living in Harmony?, Life in harmony, What does living in harmony look like for an individual?, Living in harmony - as a family – Key roles of shared values, Shared values of families, Living in harmony - as a society and a race – Respect, Equality, Kindness, Honesty, Safety, Diversity, Cooperation, Environmental Care, Freedom.

Module 3: Human Potential

Human potential – individual – How do we unlock human potential?, How to identify our potential?, Human potential – collective – Overview, Collaboration and working together, Impact of individual self on environment – Ripple Effect of Your Interactions, Impact of social group on their environment – Impact of family on environment, Impact of peer group on environment, Who is responsible? – Harmful impact of humans, Positive impact of humans.

Module 4: Developing Universal Human Values

Introduction to Developing Universal Human Values – Developing Human Values, Self Reflection, Educate Yourself, Promote Open-Mindedness, Volunteer and Service, Emulate Role Models in Actions, Engage in Dialogue, Develop Global Perspective, Love and Compassion – Love and its forms, Love, Compassion and Inter-relatedness, The greatest proponents of Love and

Compassion, Practicing Love and Compassion, Truth – Introduction to Truth, Great Individuals who are remembered for their value of truth, Practising Truth, Non-Violence – Introduction to non-violence, Important people who followed and propagated non-violence, Practising non-violence, Service – Introduction to service, Various forms of Service, Constitutional Values, Justice and Human Rights – Fundamental Values, Fundamental Rights, Fundamental Duties, Patriotism, Pride and Gratitude for the Nation, Good Practices – Self Worth, Self-Care, Holistic Living, Mindfulness and Meditation, Self-Reflection, Journal Writing, Impact Assessment.

Module 5: Common Scenarios

Routine Scenarios – Love and Compassion based scenarios, Truth based scenarios, Non-violence based scenarios, Peace based scenarios, Service based scenarios, Renunciation or Sacrifice based scenarios, Life-changing Scenarios – Career Dilemma, Relationship Conflict, Health Crisis, Moral and Ethical Dilemma, Personal Loss, Financial Crisis.

Suggested Readings

1. Human Values and Education by R. R. Gaur
2. The Universal Declaration of Human Rights by UNESCO
3. The Essence of Human Values by G. C. Pati
4. Human Values: A Sociological Perspective by M. H. Geyer
5. Human Values and Ethics in the Workplace by Rajendra P. Joshi