(3)

SYLLABUS

BACHELOR IN DIALYSIS TECHNOLOGY

4 Years (VIII Semesters)

(3 Years+1 Year (VII-VIII Semester) Internship)

SEMESTER –I									
Course Code	**Course Category**	**Paper Title**	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Human Anatomy	4	3	1	-	20	80	100
	Core	Human Physiology	4	3	1	-	20	80	100
	Core	General Biochemistry	4	3	1	-	20	80	100
	Core	Basic computers and information Science&Medical Law & Ethics	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
				-	-				
				-	-				
	Ability Enhancement Course	Environmental Science and Health	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 25			**Total Contact Hours- 30**						
***Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective**									

SEMESTER –II									
Course Code	**Course Category**	**Paper Title**	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Microbiology	4	3	1	-	20	80	100
	Core	General Pathology	4	3	1	-	20	80	100
	Core	General Pharmacology	4	3	1	-	20	80	100
	Core	Introduction to Healthcare Delivery System in India	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Ability	Medical terminology	2	2	-	-	20	80	100

	Enhancement Course	and Record keeping							
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 25			**Total Contact Hours- 30**						
***Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective**									

SEMESTER –III

Course Code	**Course Category**	**Paper Title**	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Introduction to Quality and Patient safety	4	3	1	-	20	80	100
	Core	Professionalism and values; Principles of Management	4	3	1	-	20	80	100
	Core	Applied pathology & microbiology & pharmacology related to Dialysis Therapy Technology	4	3	1	-	20	80	100
	Core	Applied pharmacology related to Dialysis Therapy Technology	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	General Principles and Practices of Public Health/ Forensic Psychology	2	2	-	-	20	80	100
	Ability Enhancement Course	Computer/BASIC EMERGENCY MANAGEMENT	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective	2	2	-	-	20	80	100

		courses offered by Institute/ College/University.							
Total Credit- 27			**Total Contact Hours- 32**						
***Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective**									

SEMESTER –IV

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Concepts of renal disease, dialysis & nutrition	4	3	1	-	20	80	100
	Core	Applied Dialysis Therapy Technology – Part I	4	3	1	-	20	80	100
	Core	Applied Dialysis Therapy Technology – Part II	4	3	1	-	20	80	100
	Core	DIALYSIS INSTRUMENT AND MENTAINANCE	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Communication skill for Health care professional/ introduction to national healthcare system	3	3	-		20	80	100
	Skill Enhancement Course	MEDICAL LAW/ Ethics in public health	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 28			**Total Contact Hours- 33**						
***Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective**									

SEMESTER –V

Course Code	Course	Paper Title	Credits	Contact per	Evaluation

	Category			week					
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – Part III	4	3	1	-	20	80	100
	Core	Biostatics &ResearchMethodology	4	3	1	-	20	80	100
	Core	Renal Disease Therapeutics	4	3	1	-	20	80	100
	Core	Lab Management	4	3	1	-	20	80	
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Medical psychology	3	-	-	3	20	80	100
	Ability Enhancement	Entrepreneurship development/ Introduction to quality and patient safety	2	-	-	2	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	2	20	80	100
Total Credit- 28			**Total Contact Hours- 33**						
***Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective**									

SEMESTER –VI									
Course Code	**Course Category**	**Paper Title**	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – IV	4	3	1	-	20	80	100
	Core	Advances in Dialysis Technology	4	3	1	-	20	80	100
	Core	Medical Devices	4	3	1	-	20	80	100
	Core	Regulatory Guidelines related to renal transplants	2	-	-	4	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	HOSPITAL MANAGEMENT/ Basics of clinical Skill Learning	3	3	-	-	20	80	100
	Skill	BASIC AND ADVANCE	2	2	-	-	20	80	100

	Enhancement Course	LIFE SUPPORT/ ORGANIZATIONAL BEHAVIOUR							
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 28			**Total Contact Hours- 33**						
***Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective**									

SEMESTER – VII& VIII INTERNSHIP				
Subject Code	**Course category**	**Course title**	Evaluation	
			Internal	External
VII Sem	Core	Internship	20	80
VIII Sem	Core	Internship	20	80
Internship is for 12 months,				

SEMESTER	CREDIT
I	25
II	25
III	27
IV	28
V	28
VI	28
VII	20
VIII	20
TOTALCREDITS	201

Exit: Honours' Dialysis Technology

SEMESTER-1

HUMAN ANATOMY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Human Anatomy	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describe the anatomy & terminology of cell, tissues of body Skin & its Blood supply.	Remember
	Explain the blood circulation system & skeleton system with Classification of bones, Parts of developing long bone.	Understand
	Determine the muscular system, Muscles of Upper limb, Muscles of lower limb, Muscles of Neck, Muscles of back & joints.	Apply
	Analyse the respiratory system with Bronchopulmonary segments & circulatory system:Types of blood vessels, Heart& Pericardium.	Analyse
	Assess the digestive system, role of digestive juices & enzymes & reproductive system: spermatogenesis & oogenesis.	Evaluate
	Formulate the excretory system Pathway of glomerulousfilteration rate with structure & structure of nephrones.	Create

Taxonomy: Remember, Understand, Apply, Analyse, Evaluate, Create

Learning Outcomes	1. To introduce the students to the concepts related to General anatomy, Muscular, Respiratory, Circulatory, Digestive and Excretory system 2. Demonstrate and understand the basic anatomy of Respiratory and Circulatory system 3. Demonstrate and understand the basic anatomy of Digestive and Excretory system 4. Knowledge of basic concept of human body anatomical structure. 5. Knowledge of interrelationships, gross, functional and applied anatomy of various structures in the human body.

UNIT-I

Introduction to Anatomy Anatomical terms, planes, organization of human body- cell, tissue, organ & organ system.
Musculo-skeletal system:
Types of bones, structure & divisions of the skeleton system, name of all the bones and their parts, joints-classification. Structure and types of muscles
Anatomy of the Nervous system
Central nervous system & Peripheral nervous system- different components

UNIT-II

Anatomy of Circulatory system:
General plan of circulatory system and its components-
Heart- size, location, coverings, chambers, blood supply, nerve supply, the blood vessels
General plan of circulation, pulmonary circulation
Name of arteries and veins and their positions Lymphatic system - general plan Anatomy of the Respiratory system:
Organs of Respiratory System (Brief knowledge of parts and position)

UNIT-III

Anatomy of the Digestive system:
Anatomy of alimentary tract; Parts of the tract
Accessory glands of digestion; Pancreas, Liver, Gall Bladder
Anatomy of Excretory system Kidneys- location, gross structure, excretory ducts, ureters, urinary bladder, urethra

UNIT-IV

Reproductive system
Male Reproductive System
Female Reproductive System Anatomy of the endocrine system

UNIT-V

Name of all endocrine glands their positions
Hormones and their functions- Pituitary, Pituitary, Thyroid, Parathyroid, Adrenal glands, Gonads & Islets of pancreas

PRACTICALS

1. Demonstration of parts of microscope and its uses
2. Demonstration of skeleton and joints.
3. Demonstration of deltoid and gluteus maximus, Cubital fossa.
4. Clinical Examination of Arterial Pulse
5. Demonstration of body temperature.

Reference Books:

a. Human Anatomy Regional and Applied Vol. 1, Vol.2 & Vol.3, B.D.ChaurasiaC.B.S.Publishers, New Delhi- 9th edition -2022
2. Hand Book of General Anatomy B.D.Chaurasia, C.B.S.Publishers, New Delhi-9th edition -2022
3. Text Book of Human Histology Inderbir Singh, Jaypee Brothers, Medical
4. Publishers, Delhi -7th edition - 2021
5. Gray's Anatomy Susan Standring, Elsevier Churchill Livingstone, Edinburg – 42nd edition- 2021

HUMAN PHYSIOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Human Physiology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describe the basic physiology of hematology, Homeostasis, Hemopoiesis, Hemogram, Anemia, Body Fluid, Immunity.	Remember
	Explain the basic physiological concept of cardiovascular system, functions, properties of cardiac muscle, Origin of Cardiac Impulse.	Understand
	Determine the nerve – muscle physiology, neuromuscular junction & Mechanism of muscle contraction & central nervous system.	Apply
	Analyze the Physiologic anatomy, functions of respiratory system, Mechanism of respiration & circulatory system.	Analyze
	Assess the physiology of digestive system Composition and functions of all Digestive juices, Movements.	Evaluate
	Formulate the physiological concept of excretory system, structure & function of excretory organs.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create

Learning outcomes	1. To understand the basic physiological concepts of General physiology 2. To understand the basic physiological concepts of Hematology 3. To understand the basic physiological concepts of Nerve-Muscle physiology. 4. To understand the basic physiological concepts of Respiratory physiology. **5.** To understand the basic physiological concepts of Cardiovascular physiology

UNIT-I

General Physiology
Cell, Transport across cell membrane, homeostasis, resting membrane potential, action potential
Blood
Composition and functions of Blood
RBC, WBC, Platelet count, Hemoglobin
Blood Groups - ABO and RH grouping
Hemostasis & Anticoagulants

UNIT-II

Cardio vascular system
Cardiac muscle, Pacemaker & conducting tissue
Cardiac Cycle
Cardiac output, Heart rate, ECG
Arterial blood pressure
Respiratory System
Functions of Respiratory system
Mechanism of respiration, lung volumes & capacities

UNIT-III

Nerve & Muscle physiology
Neuron structure & properties
Neuromuscular junction
Skeletal muscle structure mechanism of contraction
Cerebrospinal Fluid (CSF): Composition, functions & Circulation.
Central & autonomic Nervous system Organization of CNS
Functions of various parts of Brain, in brief
Composition, functions and circulation of CSF
Differences between sympathetic and parasympathetic division

UNIT-IV

Digestive system
Functional Anatomy, organization & innervations
Composition and functions of all Digestive juices
Digestion & Absorption of carbohydrates, proteins and fats

UNIT-V

Excretory System
Kidneys: Functions, Nephron, Juxta-glomerular Apparatus
Renal circulation
Mechanism of Urine formation
GFR
Endocrine and Reproductive systems Endocrine glands & hormones secreted
Functions of Reproductive system
Male Reproductive System: spermatogenesis, Testosterone.
Female reproductive system: Ovulation, Menstrual cycle.
Pregnancy test

PRACTICALS

1.Estimation of Hemoglobin Concentration
2.Determination of Bleeding Time and Clotting Time
3.Determination of Blood Groups
4.Recording of normal Blood Pressure
5.Determination of Vital Capacity

Reference Books:

1. A.K.Jain, Textbook of Physiology (Volume I & II) -9th edition -2021.

2. Dr. Venkatesh.D and Dr. Sudhakar H.S.Basic of Medical Physiology- Wolter-Kluwer Publication- edition – 4th edition - 2018

3. Chaudhari (Sujith K) Concise Medical Physiology - New Central Book- 7th edition - 2016

GENERAL BIOCHEMISTRY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Biochemistry	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describe the biomolecules Introduction and scope of biochemistry, Chemistry of carbohydrates, proteins, lipids.	Remember
	Explain the metabolism of glucose, fats & amino acids & their regulatory pathways.	Understand
	Determine the structure & function of enzymes & its clinical importance	Apply
	Analyze the RDA, Sources of Vitamins and Minerals, functions and deficiency of Fat soluble vitamins.	Analyze
	Assess the balanced diet, Satiety value, Energy imbalance- obesity, starvation, Limitations of the daily food guide.	Evaluate
	Formulate the conventional & specialized lab investigation, Principle and applications of Colorimeters, pH Meter.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create

Learning outcome	1. To identify the five classes of polymeric biomolecules and their monomeric building blocks. 2. Explain the specificity of enzymes (biochemical catalysts), and the chemistry involved in enzyme action. 3. Explain how the metabolism of glucose leads ultimately to the generation of large quantities of ATP. 4. Describe how fats and amino acids are metabolized, and explain how they can be used for fuel.

UNIT-I

Cell: Morphology, structure & functions of cell, cell membrane, Nucleus, chromatin, Mitochondria, Endoplasmic Reticulum, Ribosomes.

Carbohydrates: Definition, chemical structure, functions, sources, classifications, Monosaccharides, Disaccharides, Polysaccharides, mucopolysaccharide and its importance, glycoproteins

UNIT-II

Lipids: Definition, function, sources, classification, simple lipid, compound lipid, derived lipid, unsaturated and saturated fatty acid. Essential fatty acids and their importance, Blood lipids and their implications, cholesterol with its importance.

Proteins : Definition, sources, amino acids, structure of protein, their classification, simple protein, conjugated protein, derived proteins and their properties.

UNIT-III

Enzymes: Definitions, mechanism of action, factors affecting enzyme action, enzyme of clinical importance.

Nutrition 1) Vitamins: Types, functions and role. 2) Principal minerals and their functions (Ca, P, Mg, Na, K, Cl) 3) Balanced diet, Diet for Chronically and terminally ill patients, post-operative patients

UNIT- IV

Carbohydrate Metabolism: Glycolysis, TCA cycle, Glycogen metabolism, Gluconeogenesis, Maintenance of Blood Glucose. Diabetes Mellitus and its complications. 9. Lipid Metabolism: Beta oxidation, Ketone bodies, Cholesterol and atherosclerosis, obesity.

UNIT-V

Protein Metabolism: Transamination, Deamination, Fate of ammonia, urea synthesis and its inborn errors.. Water and Electrolyte, Fluid compartment, daily intake and output sodium and potassium balance

PRACTICALS

1.Introduction of Laboratory apparatus
2.Instruments (Theory & demonstration)
3. Urine Analysis
4. Analysis of blood sugar c.
5. RFTs (Estimation of blood urea, serum creatinine, creatinine clearance, and their implications)

Reference Books:

1: Essentials of Biochemistry – U.Satyanarayan , U.Chakrapani – 4th edition-2021
2: A textbook of Biochemistry – Dr SK Gupta – 2nd edition.-2019
3: Concise textbook of Biochemistry for paramedical students – DM Vasudevan, Sukhas Mukherjee – 2nd edition.-2021
4: Essentials of Biochemistry - Pankaj Naik -6th edition.-2022

ELECTRONICS & COMPUTER SCIENCES

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Electronics & Computer Sciences	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Develop a clear understanding of the fundamental concepts, theories, and principles in electronics and computer sciences	Understanding
	Acquire practical skills in applying theoretical knowledge to real-world problems in electronics and computer sciences.	Application
	Demonstrate proficiency in programming languages relevant to the course.	Learn
	Design, analyze, and simulate electronic circuits using software tools.	Analyze
	Remember electrical concept and elements of EEG.	Remember

Taxonomy: Remember, Understand, Apply, Analyze, Learn.

Learning Outcomes	1. Gain a solid understanding of the foundational concepts, theories, and principles in electronics and computer sciences, including digital systems, circuits, programming languages, algorithms, data structures, and computer architecture. 2. Develop strong problem-solving skills by applying logical reasoning, critical thinking, and analytical approaches to identify, analyze, and solve complex problems in the field of electronics and computer sciences.

UNIT-I

ELECTRICAL CONCEPTS

- **Definition and units of Basic electrical quantities:** Voltage, current, change, power, resistance, capacitance, impedance reactance, AC and DC, power factor, RMS, average and maximum value of AC.
- **Circuit Elements:** Resistors, capacitors, inductors-types symbol, colour code representations eries and parallel combination and their equivalent.
  - **Transformer** – types and construction detail.
  - **Circuit laws:** Ohm's law, Kirchoff's voltage lay, Kirchoff's current law, Wheat stone bridge.
  - **Motors:** types and uses.

UNIT-II

ELEMENTS OF ELECTRONICS

- Atomic structures, material classification according to their conduction, electronic emission.
- Semi-conductors- intrinsic, extrinsic, P type, N type, diodes, transistors, characteristics, schematic presentation.
- Application of diodes as a switch and rectifier, HWR, FWR, bridge rectifier.
- Application of transistor as an amplifier
- Power supply Unit.
- Introduction to integrated circuit.
- Introduction to Operational amplifiers - adder, sub tractor multiplier, since wave generator, square wave generator triangular generator, Schmitt trigger.

UNIT-III

DIGITAL CIRCUITS

- Binary number system, bits, bytes, octal, hexadecimal, addition, subtraction, 1stcomplement and 2stcomplement.
- **Gates:** Universal gates OR. AND. NOT. EXOR, EXNOR. Truth table and Boolean expression.
- A-D convertor

UNIT-IV

ELECTRICAL SAFTEY AND MEDICAL EQUIPEMENTS

- Physiological effect of electrical current, shock hazards from electrical equipment, methods of accident prevention.
- Classification of medical equipments according to the
  - Type of protection
  - Mode of protection

BIOELECTRICITY

Biological potentials, ECG, EEG, EMG sources of Bio-electric potential, cell testing potential, action potential and their propagation, electrodes and transducers.

TRANSDUCERS

Their principle, active and passive transducer, transducer used in bio-medical applications.

UNIT-V

ELECTROENCEPHALOGRAPH: -

- Block diagram, EEG amplifier – preamplifier, differential amplifier, basic concept, input impedance, common mode rejection ratio, pen amplifier, buffer amplifier, driving amplifier, isolation amplifier.
- Electrodes, types, surface or sub-dermal, ground reference electrode – metal clip on the earlobe.

- Filters – low frequency filters, high frequency filters, 60 Hz or notch filters, frequency response curves and time constant.
- Sensitivity and calibration of EEG amplifiers, paper speed, pen mechanism, other recording devices – CRO, principles of averaging, analog us section, digital section SN ratio.

COMPUTER SYSTEM:

- Introduction to computers – Application of computers – Concepts of Data and information – Atypical computer system – Memory concepts – History of computers – Types of computers.
- Input - output devices – Data storage devices – Software–The definition – the role of software – Housekeeping.
- The computer Internals – Typical PC configuration – Booting – Virus, Anti- virus, Data compression Techniques – On software – Versions of software.
- Number system – Binary Arithmetic – Standard codes for unit of Information.
- Operating system - Definition – Classification – Introduction to windows – Features of Windows – Desktop and Desktop icons – Starting programs – Browsing and managing windows explorer – setting – Taskbars and creating short cuts.
- Introduction to MS-DOS and WINDOWS
- MSOffice–MS–Word, Power point, Access & Excel. Introduction to Internet and E-Mail

Reference Books:

- Clinical Electroencephalography- by MisraUk

ENVIRONMENTAL SCIENCE & HEALTH

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Ability Enhancement Course	ENVIRONMENTAL SCIENCE & HEALTH	2	2	-	-	20	80	100

Course Outcomes:

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the components of Environment, basic concepts of Ecosystem & interaction of man & environment.	Receive
	Discuss the Global environment problems, biodiversity loss, deforestation & desertification.	Respond
	Demonstrate the environmental pollution with impact & control strategies of pollution in urban, rural & industrial areas.	Value
	Define the environmental management, concept of health sanitation, environmental disease.	Organize
	Revise the Environmental Protection Act, Environmental laws, National movements, environmental ethics.	Characterize
	Follow the IUCN – role in environmental protection, aims & objectives of human right policies.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	1. Current environmental issues and highlights the importance of adopting an interdisciplinary approach. 2. Sample an ecosystem to determine population density and distribution. 3. Create food webs and analyse possible disruption of feeding relationship

UNIT-I

Components of Environment – Hydrosphere, lithosphere, atmosphere and biosphere – definitions with examples; Interaction of man and environment;

Ecosystem : Basic concepts, components of ecosystem, Tropic levels, food chains and food webs, Ecological pyramids, ecosystem functions, Energy flow in ecological systems, Characteristics of terrestrial fresh water and marine ecosystems.

UNIT-II

National Health Programme-Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.

UNIT-III

Introduction toAYUSHsystemofmedicine-IntroductiontoAyurveda;Yogaand Naturopathy;Unani;Siddha;Homeopathy;Needforintegrationofvarioussystemofmedicine.

UNIT-IV

Environmental Management – Concept of health and sanitation, environmental diseases – infectious (water and air borne) and pollution related, spread and control of these diseases, health hazards due to pesticide and metal pollution, waste treatment, solid waste management, environmental standards and quality monitoring.

UNIT-V

Environmental Protection Act – Environmental Laws, national movements, environmental ethics – holistic approach of environmental protection and conservation, IUCN – role in environmental protection. Concept with reference to UN – declaration, aim and objectives of human right policies with reference to India, recent north-south debate on the priorities of implementation, Environmental Protection Agency Bioremediation – Oil spills, Wastewater treatment, chemical degradation, heavy Metals.

Reference books:

1.National Health Programmes& Policies 2020-2021 – SamtaSoni- 2nd edition.
2.Practical & Viva Community Medicine – J Kishore, Sneha Kumari- 5th edition.-2021
3.Textbook of Environmental Science – Dr Aruna Kumari Nakkella – 2022
4.Environmental Studies – Purnima Das - 2023

SEMESTER –II

GENERAL MICROBIOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Microbiology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the Classification of microorganism, size, shape and structure of bacteria & Use of microscope in the study of bacteria.	Remember
	Explain the classification & different methods with advantages and disadvantages of the various methods infection control measures.	Understand
	Determine the immunology & perform serological tests or microbiological laboratory procedures.	Apply
	Analyse the etiological agents of global infectious diseases, causative agents, transmission methods, investigation, prevention & control.	Analyse
	Assess the clinical relevance of bacteriology, parasitology mycology & virology.	Evaluate
	Formulate the causative agents & guidelines to stop the spread of infection in healthcare system.	Create

Taxonomy: Remember, Understand, Apply, Analyse, Evaluate, Create

Learning Outcome	Upon completion, students should be able to demonstrate: 1. Knowledge of microorganisms and the disease process as well as aseptic and sterile techniques. 2. Perform microbiological laboratory procedures according to appropriate safety standards

UNIT-I

Microorganisms
(a) Classification-Prokaryotes, Eukaryotes, Viruses, Fungi
(b) Morphology-size, shape, arrangement
(c) Special characteristics–spores, capsules, enzymes, mortality, reproduction
(d) Gram staining, ZN staining
(e) Different types of microscopes.

UNIT-II

Sterilization
(a) Definition.
(b) Different methods of sterilization including – Gaseous sterilization Plasma sterilization
(c) Advantage and disadvantage of various methods and their controls
(d) Sterilization of different instruments used in patients
(e) Preparation of materials for Autoclaving: packing, loading, holding time, unloading
Disinfection
(a) Definition
(b) Different type of methods including High level disinfectants
(c) Disinfection of patient care unit and rooms (O.T., Wards, ICUs & Laboratories)
(d) Central supply department Areas and floor plan for instrument cleaning high level disinfection & sterilizing area

UNIT-III

Asepsis
(a) Universal Precautions
(b) Use of aseptic precautions to prevent infection,
(c) Safety mechanisms including vaccination in prevention of blood borne infections
Hospital acquired infections

UNIT-IV

Virology with special reference to hepatitis, poliomyelitis, HIV & Influenza

UNIT-V

Immunity – Non-specific
- Natural & Acquired
- Allergy and Anaphylaxis

PRACTICALS:

1. Compound microscope and its application in microbiology.
2. Demonstration of sterilization equipments: hot air oven, autoclave.
3. Demonstration of commonly used culture media, nutrient broth, nutrient agar, blood agar, chocolate agar, Mac conkey medium, L J media.
4. Grams staining.
5. Acid fast staining

Reference books:

1: Complete Microbiology – 7 th edition -2022
2: Text & Practical Microbiology – CP Bveja& V Baveja – 3rd edition - 2022
3: Essentials of Medical Microbiology- Apurba S Sastry & Sandhya Bhat – 3rd edition-2021
4: Textbook of Microbiology – 12th edition- 2022

GENERAL PATHOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Pathology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

CO Number	CO Statement	Taxonomy
	Describes basis of systemic pathology & morphology of common disorders.	Remember
	Explain the general principles of hematology & histopathology techniques.	Understand
	Determine the general principle of cytopathology techniques & universal safety precaution.	Apply
	Analyse the general principles of clinical pathology techniques, autopsy & museum.	Analyse
	Assess the clinical information of accurate pathology diagnosis.	Evaluate
	Formulate the pathological laboratory procedures according needed for final pathologic report.	Create

Taxonomy: Remember, Understand, Apply, Analyse, Evaluate, Create

Learning Outcomes	1. The student should submit the appropriate tissue sections per protocol to demonstrate the lesion and other clinically-relevant information needed for the final pathologic report. 2. To aid hematology in the reference ranges for hemoglobin, hematocrit, erythrocytes, and leukocytes in infants, children and adult.

UNIT: I

Cell injury, cellular adaptation and cell death
- Causes of cell injury
- Reversible and Irreversible cell injury (Necrosis and its types with examples & morphology)
-Apoptosis
-Calcification
-Hyperplasia, Hypertrophy, Atrophy Metaplasia (Definition with examples).

UNIT-II

Inflammation and Repair
-Definition and type of inflammation
-Granulomatous inflammation with examples
-Chemical mediators of inflammation.
-Wound healing by 1st & 2nd intention.

UNIT-III

Fluid and Hemodynamic disturbances
-Oedema (Pathogenesis)
-Shock (Definition, Types)
-Thrombosis (Definition & Pathogenesis)
-Embolism (Definition & Pathogenesis)
-Infarction (Definition & Pathogenesis)

UNIT-IV

Neoplasia
-Definition and types of Neoplasia (Benign & Malignant neoplasms)
-Characteristics of Neoplasia.
-Pathogenesis of Neoplasia.
-Routes of spread

UNIT-V

Blood, Blood groups-ABO system, Rh system, Blood transfusion- Indication, transfusion reactions.
- Anemia- classification, morphological and Etiological, effects of anemia on body.

PRACTICALS

1. Collection of blood Samples
2. Various instruments used in Hematology
3. H b estimation.
4. Blood grouping
5. Urine complete examination

Reference Books:

1: Review of Pathology – Sparsh Gupta – 12th edition - 2020
2: Textbook of Haematology – Dr Tejinder Singh -2017
3: Essentials in Hematology & Clinical Pathology – 2nd edition - 2017
4: A textbook of Pathology–Harsh Mohan– 8th edition.-2019

PHARMACOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Pharmacology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describe the mechanism of anti-anginal drugs, hypertension, arrhythmias & partial or complete heart failure.	Remember
	Explain the pharmacotherapy of insomnia & importance of new generation anti-histaminic drugs over old generation antihistamines.	Understand
	Determine the corticosteroids & drugs which inhibit acid formation to prevent acidity and stomach/peptic ulcer.	Apply
	Analyse the anti-thrombotic agents, lipid lowering agents & anti-atherosclerotic agents.	Analyse
	Assess the antibacterial drugs & Narcotics with indications & contraindication in day to day life	Evaluate
	Formulate the types of anesthesia and mechanism of action of local & general anesthetic drugs.	Create

Taxonomy: Remember, Understand, Apply, Analyse, Evaluate, Create

Learning Outcomes	1. Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration. 2. Also recent advances in pharmacology will play a key role in research aspect of the students

UNIT- I

General Pharmacology
a) Absorption, distribution, metabolism and elimination of drugs,
b) routes of drug administration.
c) Adverse reactions to drugs.
d) Factors modifying drug response

UNIT- II

Autonomic nervous system & Peripheral nervous system
b) Sympathetic nervous system - sympathomimetics, sympatholytic
c) Parasympathetic - Cholinergic, Anticholinergics Drugs
d) Skeletal muscle relaxants
e) Local anesthetics

UNIT- III

Central nervous system
b) Drug therapy of various CNS disorders like epilepsy, depression.
c) Non-steroidal anti-inflammatory drugs
d) General anesthetics
AUTOCOIDS
a) Histamine and antihistaminic

UNIT- IV

Cardiovascular system
a) Drug therapy of hypertension, shock, angina, cardiac arrhythmias
b) Diuretics
c) Coagulants and anticoagulants, antiplatelet drugs
d) Hypo-lipidemic
Gastrointestinal and respiratory system
a) Drug treatment of peptic ulcer
b) Drug therapy of bronchial asthma

UNIT- V

Hormones
a) Drug therapy of Diabetes
b) Corticosteroids
c) Chemotherapeutic agents - b- Lactam Antibiotics, fluoroquinolones, aminoglycoside, tetracyclines, chloramphenicol

PRACTICALS
Practical based on the topics mentioned in the theory syllabus

Reference Books:

1: Padmaja Uday Kumar – Pharmacology for Dental & Allied Health Sciences – 4th edition, 2017.
2: Joginder Singh Pathania, Rupendra Kumar Bharti,VikasSood-Textbook of Pharmacology for Paramedical Students 2019
3: KD Tripathi- Essentials of Pharmacology – 8th edition, 2018.
4: HL Sharma & KK Sharma – Principles of Pharmacology – 3rd edition, 2017.

Introduction to Healthcare Delivery System in India

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Introduction to Healthcare Delivery System in India	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the historical context and evolution of the healthcare system in India.	Remember
	Understand the structure and organization of the healthcare delivery system in India.	Understand
	Apply knowledge of the healthcare delivery system to analyze and understand healthcare practices in India.	Apply
	Analyze the strengths and weaknesses of the healthcare delivery system in India.	Analyse
	Evaluate the effectiveness of healthcare policies and interventions in India.	Evaluate
	Create strategies and recommendations for improving healthcare delivery in India	Create

Taxonomy: Remember, Understand, Apply, Analyse, Evaluate, Create

Learning Outcomes	1. Understand the structure and stakeholders of the healthcare delivery system in India. 2. Recall the historical context and evolution of the healthcare system in India. 3. Analyze the challenges and issues faced by the healthcare system in India. 4. Evaluate the impact of socioeconomic factors on healthcare access and delivery in India. 5. Create recommendations for improving the healthcare delivery system in India.

UNIT- I

1. Introduction to healthcare delivery system
a. Healthcare delivery system in India at primary, secondary and tertiary care
b. Community participation in healthcare delivery system
c. Health system in developed countries.
d. Private Sector
e. National Health Mission
f. National Health Policy
g. Issues in Health Care Delivery System in India
2. National Health Programme- Background objectives, action plan, targets, operations, achievements and constraints in various National Heath Programme.

UNIT- II

Introduction to AYUSH system of medicine
a. Introduction to Ayurveda.
b. Yoga and Naturopathy
c. Unani
d. Siddha
e. Homeopathy
f. Need for integration of various system of medicine

UNIT- III

4. Health scenario of India- past, present and future
5. Demography & Vital Statisticsa. Demography – its concept
b. Vital events of life & its impact on demography
c. Significance and recording of vital statistics
d. Census & its impact on health policy

UNIT- IV

6. Epidemiology
a. Principles of Epidemiology
b. Natural History of disease
c. Methods of Epidemiological studies
d. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

PRACTICALS

Practical based on the topics mentioned in the theory syllabus

SKILL ENHANCEMENT COURSE

MEDICAL TERMINOLOGY AND RECORD KEEPING

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Skill Enhancement Course	MEDICAL TERMINOLOGY AND RECORD KEEPING	2	2	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the basic importance of medical terms into their component parts.	Receive
	Analyze and spell words correctly.	Respond
	Identify combining forms, prefixes, suffixes and terminology associated with each of the body systems.	Value
	Understand the importance and types of medical records along with its management	Organize
	Revise to compose records in hospitals	Characterize
	Follow the values and skills required in medical audit	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	1. Ensuring successful learning of basic and advance medical terminology 2. Student will able to read, write, spell and understand the medical terminology 3. Understand the types, importance and role of medical records and its management techniques.

UNIT-I

Commonly Used Prefixes, Suffixes and root words in Medical Terminology, Common Latin Terms used in Prescription Writing, Study of Standard Abbreviations.

UNIT-II

Medical Records Management: Meaning, functions, principles of record keeping, Importance of medical records to patients, doctors, and hospitals, classification of records like coding system, indexing system, types of forms basic and special, legal aspects of medical records.

UNIT-III

International Classification of Diseases (ICD), Electronic Medical Record (EMR), Records Management: Registers, forms, retention and preservation of MR, Role of MRD personnel.

UNIT-IV

Medical Registers: Meaning, types, advantages of Medical Registers, registers used in various departments, Statutory registers and reports to be maintained- specimens.

UNIT-V

Medical Audit: its process, role and importance in hospitals.

Reference Books:

- Davies, Juanita. Essentials of Medical Terminology. 3rd edition. New York. Delmar. 2008.
- Mogli. J.D. Medical Records: Organization & Management 2ndedition New Delhi: Jaypee Brothers.

SEMESTER-3

Introduction to Quality and Patient safety

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Introduction to Quality and Patient safety	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the fundamental concepts and principles of quality and patient safety in healthcare.	Remember
	Understand the importance of quality and patient safety in healthcare delivery.	Understand
	Apply quality improvement tools and techniques to identify and address healthcare quality issues.	Apply
	Analyse healthcare processes and systems to identify areas for quality improvement.	Analyse
	Evaluate the effectiveness of quality improvement initiatives in healthcare settings.	Evaluate
	Create quality improvement projects and initiatives to enhance healthcare delivery.	Create

Taxonomy: Remember, Understand, Apply, Analyse, Evaluate, Create

Learning Outcomes	1. Understand the concepts and principles of quality improvement and patient safety in healthcare. 2. Recall the importance of quality and patient safety in healthcare delivery. 3. Apply quality improvement tools and techniques to enhance healthcare outcomes. 4. Analyze healthcare processes to identify areas for quality improvement and patient safety enhancements. 5. Evaluate the effectiveness of quality improvement initiatives and patient safety measures in healthcare settings.

UNIT-I

- Concepts of Quality of Care
- Quality Improvement Approaches
- Standards and Norms
- Quality Improvement Tools
- Introduction to NABH guidelines
- Vital signs and primary assessment
- Basic emergency care – first aid and triage
- Ventilations including use of bag-valve-masks (BVMs)
- Choking, rescue breathing methods
- One- and Two-rescuer CPR
- Using an AED (Automated external defibrillator).
- Managing an emergency including moving a patient

UNIT-II

- Definition of Biomedical Waste
- Waste minimization
- BMW – Segregation, collection, transportation, treatment and disposal (including
- color coding)
- Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
- BMW Management & methods of disinfection
- Modern technology for handling BMW
- Use of Personal protective equipment (PPE)
- Monitoring & controlling of cross infection (Protective devices)

UNIT-III

- Evidence-based infection control principles and practices [such as sterilization,
- disinfection, effective hand hygiene and use of Personal protective equipment
- (PPE)],
- Prevention & control of common healthcare associated infections,
- Components of an effective infection control program, and
- Guidelines (NABH and JCI) for Hospital Infection Control

UNIT-IV

- History of Antibiotics
- How Resistance Happens and Spreads
- Types of resistance- Intrinsic, Acquired, Passive
- Trends in Drug Resistance
- Actions to Fight Resistance
- Bacterial persistence
- Antibiotic sensitivity
- Consequences of antibiotic resistance
- Antimicrobial Stewardship- Barriers and opportunities, Tools and models inhospitals

UNIT-V

- Fundamentals of emergency management,
- Psychological impact management,
- Resource management,
- Preparedness and risk reduction,
- Key response functions (including public health, logistics and governance, recovery, rehabilitation and reconstruction), information management, incident command andinstitutionalmechanisms.

Professionalism and values

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Professionalism and values	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall key principles of professionalism and ethical values in a professional context.	Remember
	Comprehend the importance of maintaining professional behavior and upholding ethical standards.	Understand
	Demonstrate the ability to apply professional standards and values in real-life situations.	Apply
	Analyze ethical dilemmas and make informed decisions based on professional values.	Analyze
	Assess personal and organizational practices against professional standards and values.	Evaluate
	Develop strategies to foster a culture of professionalism and ethical values in the workplace.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Understand the importance of professionalism and ethical behavior in the workplace. Demonstrate professionalism through effective communication, punctuality, and respect for colleagues and clients. Apply ethical principles and values to make informed decisions and solve problems. Foster a positive work environment by upholding professional standards and promoting integrity and trust.

UNIT I

Professional values – Integrity, Objectivity, Professional competence and due care, confidentiality

UNIT II

Personal values – ethical or moral values

UNIT III

Attitude and behavior – professional behavior, treating people equally

UNIT IV

Code of conduct, professional accountability and responsibility, misconduct

UNIT V

Differences between professions and importance of team efforts

Cultural issues in the healthcare environment

Suggested Readings

1. R. R. Gaur, R. Sangal, G.P. Bagaria, 2009, a Foundation Course in Value Education.
2. E.F. Schumacher, 1973, Small is Beautiful: A study of Economics as if people mattered, Blond & Briggs, Britain.
3. A. Nagraj, 1998, Jeevan VidyaekParichay, Divya Path Sansthan, Amarkantak.
4. P.L.Dhar, R.R.Gaur, 1990, Science and Humanism, Common wealth Publishers.
5. A.N. Tripathy, 2003, Human Values, New Age International Publishers
6. E G Seebauer& Robert L. Berry, 2000, Fundamentals of Ethics for Scientists & Engineers, Oxford University Press
7. B. P. Banerjee, 2005, Foundations of Ethics and Management, Excel Books.

Applied pathology & microbiology & pharmacology related to Dialysis Therapy Technology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied pathology & microbiology & pharmacology related to Dialysis Therapy Technology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall key principles of professionalism and ethical values in a professional context.	Remember
	Comprehend the importance of maintaining professional behavior and upholding ethical standards.	Understand
	Demonstrate the ability to apply professional standards and values in real-life situations.	Apply
	Analyze ethical dilemmas and make informed decisions based on professional values.	Analyze
	Assess personal and organizational practices against professional standards and values.	Evaluate
	Develop strategies to foster a culture of professionalism and ethical values in the workplace.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Understand the importance of professionalism and ethical behavior in the workplace. Demonstrate professionalism through effective communication, punctuality, and respect for colleagues and clients. Apply ethical principles and values to make informed decisions and solve problems. Foster a positive work environment by upholding professional standards and promoting integrity and trust.

UNIT I

- Basic anatomy of urinary system: structural anatomy of kidney, bladder, ureter, urethra,
- prostate.
- Histology of kidney.
- Blood supply of kidney.
- Development of kidney in brief.

UNIT II

- Anatomy of peritoneum including concept of abdominal hernias.
- Anatomy of vascular system:
  - Upper limb vessels: course, distribution, branches, origin & abnormalities.
  - Neck vessels: course, distribution, branches, origin & abnormalities.
  - Femoral vessels: course, distribution, branches, origin & abnormalities.

UNIT III

- Mechanism of urine formation.
- Glomerular filtration rate (GFR).
- Clearance studies.
- Physiological values of urea, creatinine, electrolytes, calcium, phosphorous, uric acid,
- magnesium, glucose; 24 hours urinary indices – urea, creatinine, electrolytes, calcium,
- magnesium.
- Physiology of renal circulation
  - Factors contributing & modifying renal circulation.
  - Auto regulation.

UNIT IV

- Hormones produced by kidney & physiologic alterations in pregnancy.
- Haemostasis: coagulation cascade, coagulation factors, auto regulation, BT, CT, PT, PTT,
- thrombin time.
- Acid base balance: basic principles & common abnormalities like hypokalemia,
- hyponatremia, hyperkalemia, hypernatremia, hypocalcemia, hypercalcemia, pH, etc.
- Basic nutrition in renal diseases.

Applied pathology & microbiology & pharmacology related to Dialysis Therapy Technology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied pathology & microbiology & pharmacology related to Dialysis Therapy Technology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall key principles of professionalism and ethical values in a professional context.	Remember
	Comprehend the importance of maintaining professional behavior and upholding ethical standards.	Understand
	Demonstrate the ability to apply professional standards and values in real-life situations.	Apply
	Analyze ethical dilemmas and make informed decisions based on professional values.	Analyze
	Assess personal and organizational practices against professional standards and values.	Evaluate
	Develop strategies to foster a culture of professionalism and ethical values in the workplace.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Understand the importance of professionalism and ethical behavior in the workplace. Demonstrate professionalism through effective communication, punctuality, and respect for colleagues and clients. Apply ethical principles and values to make informed decisions and solve problems. Foster a positive work environment by upholding professional standards and promoting integrity and trust.

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- Blood supply of kidney.
- Development of kidney in brief.

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- Anatomy of peritoneum including concept of abdominal hernias.
- Anatomy of vascular system:
  - Upper limb vessels: course, distribution, branches, origin & abnormalities.
  - Neck vessels: course, distribution, branches, origin & abnormalities.
  - Femoral vessels: course, distribution, branches, origin & abnormalities.

UNIT III

- Mechanism of urine formation.
- Glomerular filtration rate (GFR).
- Clearance studies.
- Physiological values of urea, creatinine, electrolytes, calcium, phosphorous, uric acid,
- magnesium, glucose; 24 hours urinary indices – urea, creatinine, electrolytes, calcium,
- magnesium.
- Physiology of renal circulation
  - Factors contributing & modifying renal circulation.
  - Auto regulation.

UNIT IV

- Hormones produced by kidney & physiologic alterations in pregnancy.
- Haemostasis: coagulation cascade, coagulation factors, auto regulation, BT, CT, PT, PTT,
- thrombin time.
- Acid base balance: basic principles & common abnormalities like hypokalemia,
- hyponatremia, hyperkalemia, hypernatremia, hypocalcemia, hypercalcemia, pH, etc.
- Basic nutrition in renal diseases.

GENERAL PRINCIPLES AND PRACTICES OF PUBLIC HEALTH/ FORENSIC PSYCHOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	General Principles and Practices of Public Health/ Forensic Psychology	2	2	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	To provide students an insight into core concepts, theories and accounting practices which are adapted and practice on day to day basis in the organization.	Receive
	It also helps to develop analytical and problem-solving skills which are required by administrators.	Respond
	To learn Patient's record keeping preoperatively, during anesthesia and post-operatively.	Value
	To learn Principles and techniques of temperature monitoring.	Organize
	Positioning during surgical procedures	Characterize
	Able to manage Indenting, Record keeping and inventory maintenance	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	1. To acquire understanding of the functions of management and administration of the healthcare business. 2. To understand healthcare delivery systems. 3. To acquire and practice leadership and managerial skills that will positively affect performance as a healthcare manager 4. Learn the basic nursing skills of various surgical procedures including the surgical instruments used in the surgical procedures 5. Assist in various invasive and non-invasive procedures

UNIT-I

Introduction to Patient Care:

a)Principles of patient care b)Types of patients (gender, age, diseases, severity of illness, triage)

Communication:

Communication with doctors, colleagues and other staffs. b)Non-verbal communication, Inter-personnel relationships.c)patient contact techniques, communication with patients and their relatives

Documentation:

a.Importance of documentation,b.initial and follow up notes;c.documentation of therapy, procedures and communication.

UNIT-II

Universal Precautions and Infection Control:

a. Hand washing and hygiene. b) Injuries and Personal protection, Insulation and safety procedures. c)Aseptic techniques, sterilization and disinfection. d)Disinfection and Sterilization of devices and equipment e) Central sterilization and supply department f) Biomedical Medical waste management.

UNIT-III

Medication Administration:

a) Oral / Parenteral route
b) Parenteral medication administration: Intra venous, intra muscular, sub-cutaneous,intra dermal routes, Intra venous Infusion
c) Aerosol medication administration, Oxygen therapy
d) Intravenous fluids,e)Blood and blood component transfusion Position and Transport of patient:
a) Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
b) Lifting and transporting patients: lifting patients up in the bed, transferringfrom bed to wheel chair, transferring from bed to stretcher.
c) Transport of ill patients (inotropes, intubated /ventilated patients)

UNIT-IV

Bedside care:

a) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.b)Recording of pulse, blood pressure, respiration, saturation and temperature.c)Bedside management: giving and taking bed pan, urine container.d)Observation of stools, urine, sputum, drainse)Use and care of catheters and rubber goods.f)Care of immobile/bed ridden patients, bed sore and aspiration prevention

Monitoring of Patient:

a)Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure,Respirationb)Multi parameter monitors, Capnography and End Tidal CO2 (ETCO2)c)Hydration, intake and output monitoringd)Monitoring ventilator parameters: Respiratory Rate, Volumes, Pressures,Compliance, Resistance

UNIT-V

Dressing and wound care:

a)Bandaging: basic turns, bandaging extremities, triangular bandages and theirapplication.b)Surgical dressing: observation of dressing procedures.c)Suture materials and suturing techniquesd)Splintinge)Basic care of patient with burns.

Reference books:

1.Hospital and patient care management – Dr.Vidhya Srinivasan &Dr.Akshay Ch.Deka-2022
2.Principles of hospital practice and patient care – P Srinivasulu Reddy – 1st edition -2019
3.Principles & Practice of Critical Care – P.K Verma – 3rd edition- 2019.
4.Standard treatment guidelines – a manual of medical therapeutics- Sangeeta Sharma & GR Sethi – 6th edition – 2021.

FORENSIC PSYCHOLOGY

UNIT-I

The Psychology of Criminal Conduct

Offender Profiling

UNIT-II

Eyewitness Testimony and Identification

Investigative Interviewing of Children

UNIT-III

Investigative Interviewing of Suspects

The Psychology of Lying and the Detection of Deception

UNIT-IV

The Psychology of False Confessions

Famous Miscarriages of Justice

UNIT-V

Jury and Decision-Making

Juvenile Delinquency and Underage Crimes

The Psychologist as Expert Witness: Practical and Ethical Issues

Reference books:

1.The Forensic Psychology of Criminal Minds- Katherine Ramsland – 1st edition -2010

2.Forensic Psychology Workbook- Connor Whiteley – 2018

3.Forensic Psychology- Avery short introduction-David Canter – 2010.

4.Forensic Psychology-Dr Lakshmaeshwar Thakur-2019.

COMPUTER/BASIC EMERGENCY MANAGEMENT

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Ability Enhancement Course	Computer/BASIC EMERGENCY MANAGEMENT	2	2	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Aim at imparting a basic level appreciation programme for the common man. Able to the use the computer for basic purposes of preparing his personnel/business letters, viewing information on Internet (the web), sending mails, using internet banking services etc.	Receive
	Make digitally literate.	Respond
	Understand to aid the PC penetration program.	Value
	Helps the small business communities, housewives to maintain their small account using the computers and enjoy in the world of Information Technology.	Organize
	Characterize Cultural and Global Awareness.	Characterize
	Receive knowledge of Professional Practice.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Systems Thinking. 2. Problem-Solving. 3. Communication. 4. Teamwork. 5. Context Awareness.

UNIT-I

Introduction and Definition of Computer: Computer Generation, Characteristics of Computer,Advantages and Limitations of a computer, Classification of computers, Functional componentsof a computer system (Input, CPU, Storage and Output Unit), Types of memory (Primary andSecondary) Memory Hierarchy. Hardware: a) Input Devices- Keyboard, Mouse, Scanner, BarCode Reader b) Output Devices – Visual Display Unit (VDU), Printers, Plotters etc. Software:Introduction, types of software with examples, Introduction to languages, Compiler, Interpreterand Assembler. Number System: Decimal, Octal, Binary and Hexadecimal Conversions, BCD,ASCII and EBCDIC Codes.

UNIT-II

MS – DOS: Getting Started on DOS with Booting the System, Internal Commands: CHDIR(CD),CLS, COPY, DATE, DEL(ERASE), DIR, CHARACTER, EXIT,MKDIR(MD), REM, RENAME(REN), RMDIR(RD), TIME, TYPE, VER, VOL, External Commands: ATTRIB, CHKDSK, COMMAND, DOSKEY, EDIT, FORMAT,HELP, LABEL, MORE, REPLACE, RESTORE, SORT, TREE, UNDELETE, UNFORMAT,XCOPY. **Introduction of Internet:** History of internet, Web Browsers, Searching and Surfing, Creating anE-Mail account, sending and receiving E-Mails.

UNIT-III

MS Word: Starting MS WORD, Creating and formatting a document, Changing fonts and pointsize, Table Creation and operations, Autocorrect, Auto text, spell Check, Word Art, Insertingobjects, Page setup, Page Preview, Printing a document, Mail Merge.

UNIT-IV

MS Excel: Starting Excel, Work sheet, cell inserting Data into Rows/ Columns, Alignment, Textwrapping , Sorting data, Auto Sum, Use of functions, Cell Referencing form, Generating graphs,Worksheet data and charts with WORD, Creating Hyperlink to a WORD document, Page set up,Print Preview, Printing Worksheets.MS Power Point: Starting MS–Power Point,, Creating a presentation using auto content Wizard,Blank Presentation, creating, saving and printing a presentation, Adding a slide to presentation,Navigating through a presentation, slide sorter, slide show, editing slides, Using Clipart, Word artgallery, Adding Transition and Animation effects, setting timings for slide show, preparing notepages, preparing audience handouts, printing presentation documents. MS – Access: creating tableand database.

UNIT-V

MS-POWERPOINT: Starting MS–Power Point,, Creating a presentation using auto content Wizard, Blank Presentation, creating, saving and printing a presentation, Adding a slide to presentation, Navigating through a presentation, slide sorter, slide show, editing slides, Using Clipart, Word art gallery, Adding Transition and Animation effects, setting timings for slide show, preparing note pages, preparing audience handouts, printing presentation documents.

BASIC EMERGENCY MANAGEMENT

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Emergency plan during crisis & knowledge of emergency equipments.	Receive
	Emergency plan specifies procedures for handling sudden or unexpected situations.	Respond
	Recognize common,urgent and emergent problems	Value
	Organize planning of special resuscitative procedures.	Organize
	Characterize medical & surgical emergencies.	Characterize
	Receive knowledge of emergency drugs or medicines.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Emergency planning 2. Prevent fatalities & injuries 3. Complex medical and surgical emergencies management.

UNIT-I

Emergency Equipment

1. Laryngoscopes
2. Endo-tracheal tubes (ETT), boogie
3. Ambu bag and mask
4. Airway adjuncts, supra-glottic airway devices including Laryngeal mask airway (LMA)
5. Types of oxygen masks, venturi etc.
6. Oropharyngeal and nasopharyngeal airways (OPA and NPA)
7. ICD tubes, bags, jars, instrument tray
8. Suction apparatus
9. Pulse oximeter
10. EtCO2 monitor
11. Oxygen pipe-line and medical gas cylinders, pipelines and manifold
12. Ambulance (Cervical) Collar, Philadelphia Collar

UNIT-II

Introductions to Emergency Services

Principles of resuscitation

1. Sudden cardiac death
2. Cardiac, respiratory arrest
3. Basic cardiopulmonary resuscitation in adults, neonates, paediatrics& pregnancy.
4. Advanced cardiac life support

UNIT –III

Specific resuscitative procedures

1. Airway management
2. Breathing and ventilation management
3. Venous and intraosseous access

4. Defibrillation and cardioversion
5. Fluid and blood resuscitation
6. Vasoactive agents in resuscitation
7. Arrhythmias

UNIT-IV

1. Medical emergencies
2. Fluids and electrolytes
3. Respiratory Emergencies
4. Gastrointestinal Emergencies
5. Cardiovascular Emergencies
6. Central Nervous System Emergencies
7. Genito urinary emergencies
8. Hematological Disorders
9. Endocrine and Metabolic Emergencies

UNIT-V

Emergency Drugs - Drug introduction, indication, contra-indications, side – effects and routes of administration with doses of following drugs:
Toxicology
Emergencies due to venomous bites and stings:
Industrial Hazards
Obstetrical emergencies
Mental Health Emergencies
Paediatric emergencies

Reference books:

1. Medical Emergencies in general practice-S.P.Gupta& O.K.Gupta-2011
2. Manual of Emergency Medicine-Lippincott & Williams & Wilkins-6th edition-2011
3. Handbook of casualty and Emergency –Rajiv-2nd edition-2019.
4. Emergency medicines-SN Chugh& Ashima Chugh-5th edition-2019

Semester 4

Concepts of renal disease, dialysis & nutrition

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Concepts of renal disease, dialysis & nutrition	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the basic anatomy and physiology of the kidneys and their role in maintaining homeostasis	Receive
	Understand the etiology, pathophysiology, and clinical manifestations of various renal diseases.	Respond
	Apply knowledge of renal diseases to assess and diagnose patients with renal impairment.	Value
	Analyze laboratory and diagnostic test results to evaluate kidney function and monitor disease progression.	Analyze
	Evaluate the effectiveness of different dialysis modalities in improving patient outcomes.	Evaluate
	Create comprehensive care plans for patients with renal disease, incorporating both medical and nutritional interventions.	Create

Taxonomy: Receive, Respond, Analyze, Evaluate, Create

Learning Outcome	1. Understand the pathophysiology and clinical manifestations of renal diseases and their impact on overall health. 2. Apply the principles of dialysis therapy for the management of end-stage renal disease. 3. Analyze laboratory and diagnostic data to assess kidney function and evaluate disease progression. 4. Evaluate the nutritional requirements and challenges in patients with renal disease and develop appropriate dietary plans. 5. Create comprehensive care plans integrating medical, dialysis, and nutritional interventions for patients with renal disease.

UNIT-I

Basic Concepts of Renal Diseases

1. Acute renal failure.
2. Nephrotic syndrome – primary & secondary.
3. Nephritic syndrome.
4. UTI (urinary tract infections.)
5. Asymptomatic urinary abnormalities.
6. Chronic renal failure.
7. Renal stone diseases.
8. Obstructive uropathies.
9. Congenital & inherited renal diseases.
10. Tumors of kidney.
11. Pregnancy associated renal diseases.
12. Renal vascular disorders & hypertension associated renal diseases.

UNIT-II

Basic Concepts of Dialysis Therapy Technology

1. Definition.
2. Indications of dialysis.
3. Types of dialysis.
4. Principles of dialysis.
5. Haemodialysis apparatus - types of dialyzer & membranes.
6. Types of vascular access for haemodialysis.
7. Introduction to haemodialysis machine.
8. Priming of dialysis apparatus.
9. Dialyzer reuse.
10. Common complications of haemodialysis.
11. Monitoring of patients during dialysis.

UNIT –III

Basic Concepts of Nutrition

1. Introduction to science of nutrition.

a. Definition.

MODEL CURRICULUM HANDBOOK OF DIALYSIS THERAPY TECHNOLOGY (Intellectual property of Ministry of Health and Family Welfare) Page 85 of 138

b. Food pattern and its relation to health.

c. Factors influencing food habits.

d. Superstitions, culture, religion, income, composition of family, age, occupation, special group etc.

e. Food selection, storage and preservation.

f. Prevention of food adulteration.

UNIT-IV

2. Classification of nutrients.

a. Macronutrients and micronutrients.

b. Types, sources, requirements and deficiency of proteins.

c. Sources, requirements and deficiency of carbohydrates.

d. Types, sources, requirements and deficiency of fats.

e. Sources, requirement and storage of drinking water.

f. Types, sources, requirements and deficiency of minerals.

g. Types, sources, requirements and deficiency of vitamins.

3. Planning of diets.

a. Need for planning of diets.

b. Concepts of balanced diet.
c. Food groups and balanced diet.
d. Influence of age, sex, occupation & physiological state.
e. Recommended dietary intake.
f. Steps in planning balanced diet.
g. Concepts of balanced diet for dialysis patients.
h. Recommended dietary intake for dialysis patients.
i. Planning diet for dialysis patients.
j. Steps in planning balanced diet for dialysis patients.

Applied Dialysis Therapy Technology – Part I

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – Part I	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the basic principles and concepts of dialysis therapy.	Receive
	Comprehend the mechanisms and factors influencing solute and fluid removal during dialysis.	Respond
	Apply the knowledge of dialysis principles to set up and operate dialysis machines.	Value
	Analyse dialysis treatment parameters and data to ensure optimal therapy delivery.	Analyze
	Evaluate the effectiveness of dialysis treatment in achieving desired clinical outcomes	Evaluate
	Develop protocols and guidelines for the proper use and maintenance of dialysis machines.	Create

Taxonomy: Receive, Respond, Analyze, Evaluate, Create

Learning Outcome	1. Understand the principles and components of dialysis therapy equipment and machines. 2. Apply the techniques for setting up and operating dialysis machines effectively and safely. 3. Analyze dialysis treatment parameters to ensure optimal therapy delivery and patient outcomes. 4. Evaluate the effectiveness and adequacy of dialysis treatment based on clinical and laboratory parameters. 5. Create strategies for improving the efficiency and safety of dialysis therapy through protocols and guidelines.

UNIT-I

- Indications of dialysis.
- History & types of dialysis.

UNIT-II

- Theory of hemodialysis: diffusion, osmosis, ultra-filtration & solvent drag.
- Hemodialysis apparatus: types of dialyzer & membrane, dialysate.
-

UNIT –III

- Dialysis Membrane:
- Structure,Characteristics [molecular weight cut off; Ultrafilterationcoefficient(Kuf); Mass transfer coefficient (KoA) and efficiency; Low and high flux; Clearance(K)]

UNIT-IV

- Biocompactibility
- Newer membranes.

Applied Dialysis Therapy Technology – Part II

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – Part II	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the basic principles and concepts of dialysis therapy.	Receive
	Comprehend the mechanisms and factors influencing solute and fluid removal during dialysis.	Respond
	Apply the knowledge of dialysis principles to set up and operate dialysis machines.	Value
	Analyse dialysis treatment parameters and data to ensure optimal therapy delivery.	Analyze
	Evaluate the effectiveness of dialysis treatment in achieving desired clinical outcomes	Evaluate
	Develop protocols and guidelines for the proper use and maintenance of dialysis machines.	Create

Taxonomy: Receive, Respond, Analyze, Evaluate, Create

Learning Outcome	6. Understand the principles and components of dialysis therapy equipment and machines. 7. Apply the techniques for setting up and operating dialysis machines effectively and safely. 8. Analyze dialysis treatment parameters to ensure optimal therapy delivery and patient outcomes. 9. Evaluate the effectiveness and adequacy of dialysis treatment based on clinical and laboratory parameters. 10. Create strategies for improving the efficiency and safety of dialysis therapy through protocols and guidelines.

UNIT-I

- High performance membranes.
- Physiology of peritoneal dialysis.

UNIT-2

- Dialysis machines:
- Latest Hemodialysis machine:
  - Conventional and Portable Machines

UNIT-3

- Wearable artificial Kidney
- The Bioartificial Kidney

UNIT-4

- Home dialysis machines and patient training

Mechanism of functioning & management:

- Hemodialysis machine.
- Peritoneal dialysis machine.

DIALYSIS INSTRUMENT AND MENTAINANCE

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	DIALYSIS INSTRUMENT AND MENTAINANCE	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the key components and features of dialysis machines.	Remember
	Understand the principles and mechanisms of operation of dialysis instrument	Understand
	Apply the knowledge of dialysis principles to set up and operate dialysis machines.	Apply
	Analyze instrument readings and data to assess the performance and functionality of dialysis machines.	Analyze
	Evaluate the effectiveness of maintenance protocols and practices in ensuring the reliability and safety of dialysis instruments.	Evaluate
	Create comprehensive maintenance plans and schedules for dialysis instruments.	Create

Taxonomy: Receive, Understand, Apply, Analyze, Evaluate, Create

Learning Outcome	1. Understand the function and operation of dialysis instruments and equipment. 2. Apply maintenance procedures to ensure the proper functioning and safety of dialysis machines. 3. Analyze instrument readings and troubleshoot issues in dialysis equipment. 4. Evaluate the quality and performance of dialysis instruments through routine maintenance checks. 5. Create protocols and guidelines for the effective maintenance and calibration of dialysis instruments.

UNIT-I

- **Introduction to Dialysis Instruments**
- Types of dialysis instruments and their functions
- Components and features of dialysis machines
- Principles and mechanisms of operation
- **Maintenance and Calibration Procedures**
- Maintenance requirements and schedules for dialysis instruments
- Cleaning and disinfection protocols
- Calibration techniques for accurate readings and measurements

UNIT-II

- **Troubleshooting and Problem Solving**
- Common issues and malfunctions in dialysis instruments
- Troubleshooting techniques and strategies
- Resolving errors and ensuring proper functioning

UNIT –III

- **Instrument Readings and Data Analysis**
- Interpreting instrument readings and measurements
- Analyzing data for quality control and performance evaluation
- Identifying trends and patterns in instrument performance

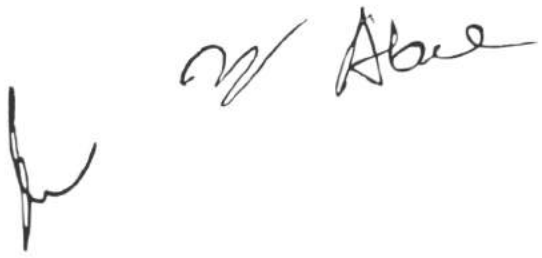
UNIT-IV

- **Maintenance Documentation and Record Keeping**
- Importance of proper documentation in instrument maintenance
- Maintenance logs and records
- Compliance with regulatory requirements and quality standards

UNIT-V

- **Safety and Risk Management**
- Safety precautions and guidelines in handling dialysis instruments
- Risk assessment and mitigation strategies
- Emergency procedures and protocols
- Quality Assurance and Continuous Improvement

- **Quality control measures in dialysis instrument maintenance**
- Evaluation of instrument performance and reliability
- Implementing improvements and best practices



SKILL ENHANCEMENT COURSE

MEDICAL LAW

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Skill Enhancement Course	Medical Law	2	2	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Introduces learners to the linkages between the fields of law and health in order to assist them in taking informed	Receive
	Contextualizes the constitutional dimension to 'right to health'	Respond
	Relevant for doctors	Value
	Identify and value legal sources and norms in the field of medical law at both a national, and international, level	Organize
	Characterize the rules of medical law in a qualified manner and to identify possible solutions to biomedical legal problems	Characterize
	Receive the interplay and differences between different types of legal responsibilities and sanctions in medical law	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	1. The students are expected after the conclusion of the course to be able to: 2. Understand the interplay between ethics and law in the field of biomedicine 3. To identify and analyse the conflicts of interest and legal problems that are relevant in different areas of medical law

UNIT-I

Medical ethics - Definition - Goal – Scope

Introduction to Code of conduct

UNIT-II

Basic principles of medical ethics –Confidentiality

Malpractice and negligence - Rational and irrational drug therapy

UNIT-III

Autonomy and informed consent - Right of patients

Care of the terminally ill- Euthanasia

UNIT-IV

Organ transplantation

Medico legal aspects of medical records –Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.

UNIT-V

Professional Indemnity insurance policy

Development of standardized protocol to avoid near miss or sentinel events

Obtaining an informed consent

Reference books:

1.Law relating to medical negligence and compensation- Dr.K.P.D.A. Prabakar &Dr.J.Paulraj Joseph – 2023

2.A textbook of medical jurisprudence and toxicology – Justice K Kannan -25th edition – 1st edition – 2016

3.Law the doctor must know- Hitesh J Bhatt &Geetebdra Sharma – 2017

4.Law on medical negligence and legal remedies – Dr.AnnuBahlMehra& Harshit Kiran-2022

Ethics in Public Health

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Skill Enhancement Course	Ethics in public health	2	2	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describe how the ethical principles/virtues of autonomy, justice, trust, caring beneficence, and normal eficence apply to the delivery of health care	Receive
	Use a foundation in moral philosophy to make and support ethical decisions as a health care leader	Respond
	Apply an ethical decision-making process to various contemporary and complex health care issues	Value
	Influence decision-making among peers; use and model self-reflection, listening, empathy, and awareness as an ethical leader	Organize
	Recognize the importance of and bring to bear ethical principles, virtues, values and theory in professional discourse.	Characterize
	Receive of human rights in ethics.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	The students will develop: 1. Clinical ethical Competency. 2. Ethical awareness, Empathy

UNIT-I

Introduction to Public Health Ethics

Theories of Justice and Distribution of Public Health Resources

Principle for Public Health Ethics

UNIT-II

Priority-Setting and Resource Allocation at the Macro Level

Priority-Setting and Resource Allocation at the Micro Level

UNIT-III

Medical Ethics, Legal Aspects and Medical Terminology

1) Role Definition and Interaction, Ethical, Moral, and Legal Responsibilities

2) Medical terminology

3) Medical waste Management

UNIT-IV

Contemporary Ethical and Legal Issues In Health Care: Legal regulation of a standalone diagnostic center, medico-legal cases and medical negligence, ethical aspects of health care.

Balancing Individual and Community Interests

Ethics and Health Promotion

UNIT-V

Role of Human Rights in Public Health

Ethics of Health Promotion and Disease Prevention

Reference books:

1.Ethics and Public Health – Archana Rani Sahoo &Patitapaban Das -2017

2.Public Health,Ethics and Equity-Sudhir Anand, Fabienne Peter and Amartya Sen – 2006

3.Nursing and healthcare ethics-Robinson & Doody-6th edition -2022

4.Ethics- William K.Frankena – 2nd edition-2015

Semester 5

Applied Dialysis Therapy Technology – Part I

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – Part III	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the basic principles and concepts of dialysis therapy.	Receive
	Comprehend the mechanisms and factors influencing solute and fluid removal during dialysis.	Respond
	Apply the knowledge of dialysis principles to set up and operate dialysis machines.	Value
	Analyse dialysis treatment parameters and data to ensure optimal therapy delivery.	Analyze
	Evaluate the effectiveness of dialysis treatment in achieving desired clinical outcomes	Evaluate
	Develop protocols and guidelines for the proper use and maintenance of dialysis machines.	Create

Taxonomy: Receive, Respond, Analyze, Evaluate, Create

Learning Outcome	11. Understand the principles and components of dialysis therapy equipment and machines. 12. Apply the techniques for setting up and operating dialysis machines effectively and safely. 13. Analyze dialysis treatment parameters to ensure optimal therapy delivery and patient outcomes. 14. Evaluate the effectiveness and adequacy of dialysis treatment based on clinical and laboratory parameters. 15. Create strategies for improving the efficiency and safety of dialysis therapy through protocols and guidelines.

UNIT-I

- Biochemical investigations required for renal dialysis.

UNIT-II

- Adequacy of dialysis:
- Hemodialysis.
- Peritoneal dialysis.

UNIT –III

- Peritoneal equilibration test (PET).

Applied Dialysis Therapy Technology – Part III

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – Part III	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the basic principles and concepts of dialysis therapy.	Receive
	Comprehend the mechanisms and factors influencing solute and fluid removal during dialysis.	Respond
	Apply the knowledge of dialysis principles to set up and operate dialysis machines.	Value
	Analyse dialysis treatment parameters and data to ensure optimal therapy delivery.	Analyze
	Evaluate the effectiveness of dialysis treatment in achieving desired clinical outcomes	Evaluate
	Develop protocols and guidelines for the proper use and maintenance of dialysis machines.	Create

Taxonomy: Receive, Respond, Analyze, Evaluate, Create

Learning Outcome	1. Understand the principles and components of dialysis therapy equipment and machines. 2. Apply the techniques for setting up and operating dialysis machines effectively and safely. 3. Analyze dialysis treatment parameters to ensure optimal therapy delivery and patient outcomes. 4. Evaluate the effectiveness and adequacy of dialysis treatment based on clinical and laboratory parameters. 5. Create strategies for improving the efficiency and safety of dialysis therapy through protocols and guidelines.

UNIT-I

- Biochemical investigations required for renal dialysis.

UNIT-II

- Adequacy of dialysis:
- Hemodialysis.
- Peritoneal dialysis.

UNIT –III

- Peritoneal equilibration test (PET).

Biostatics & Research Methodology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Biostatics & Research Methodology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	To enable students to present, analyze and interpret data.	Receive
	To enable students to use concepts of probability in business situations.	Respond
	To enable students to make inferences from samples drawn from large datasets.	Value
	To enable students to apply univariate and multivariate statistical techniques	Organize
	Revise the issues in ethical research	Characterize
	Follow the basic concepts of biostatistics.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	1. To understand the importance & Methodology for research 2. To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.

UNIT-I

Introduction to research methods.

Sampling methods

UNIT-II

Identifying research problem

Developing a research proposal

UNIT-III

Ethical issues in research

UNIT-IV

Research design

Types of Data

UNIT-V

Basic Concepts of Biostatistics

Research tools and Data collection methods

Reference books:

1.Research methodology- CR K othari& Gaurav Garg – 4th edition – 2019

2.Introduction to research methodology – Bhanwar Lal Garg, RenuKavdia, Sulochana Agarwal & Umesh kumar Agarwal – 2019

3.Research methodology for health professionals – RC Goyal – 2nd edition – 2023

4.Research Methodlogy and applied statistics – DN Sansanwal - 2020

Renal Disease Therapeutics

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Renal Disease Therapeutics	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the pathophysiology of renal diseases and their impact on kidney function.	Receive
	Understand the principles and techniques of dialysis therapy.	Respond
	Apply medical management strategies for renal diseases, including appropriate medication selection and dosage.	Value
	Analyze the complications associated with renal diseases and dialysis therapy, and implement appropriate management strategies.	Organize
	Evaluate the effectiveness of medical management and dialysis therapy in improving patient outcomes.	Characterize
	Create comprehensive treatment plans for renal disease patients, considering medical, dialysis, and nutritional interventions.	Create

Taxonomy: Receive, Respond, Value, Organize, Characterize, Create.

Learning Outcome	1. Understand the pathophysiology and clinical manifestations of different types of renal diseases. 2. Apply appropriate medical management strategies and dialysis therapy techniques for renal disease patients. 3. Analyze and manage complications associated with renal diseases and dialysis therapy. 4. Evaluate the effectiveness of nutritional interventions in supporting renal disease management. 5. Assess and address the psychosocial and ethical considerations in the care of renal disease patients.

UNIT-I

- **Introduction to Renal Diseases**
- Overview of common renal diseases and their etiology
- Pathophysiology of renal diseases and their impact on kidney function
- Clinical manifestations and diagnostic methods for renal diseases
- **Medical Management of Renal Diseases**
- Pharmacological treatment options for different types of renal diseases
- Medications used to manage symptoms and complications of renal diseases
- Adverse effects and precautions associated with renal disease therapeutics

UNIT-II

- **Dialysis Therapy**
- Principles and techniques of dialysis therapy
- Different modalities of dialysis (hemodialysis, peritoneal dialysis) and their indications
- Dialysis prescription and treatment planning
- **Complications of Renal Disease and Dialysis Therapy**
- Identification and management of common complications in renal disease patients
- Complications associated with dialysis therapy and their prevention
- Emergency situations and response during dialysis treatment

UNIT-III

- **Nutritional Management in Renal Diseases**
- Nutritional requirements and challenges in renal disease patients
- Dietary modifications for different stages of renal disease and dialysis therapy
- Role of dieticians in the management of renal disease patients

UNIT-IV

- **Psychosocial Aspects of Renal Disease**
- Psychological and emotional impact of renal diseases on patients and their families
- Coping strategies and support systems for renal disease patients
- Communication and patient education in renal disease management
- **Renal Transplantation**
- Overview of renal transplantation as a treatment option for end-stage renal disease
- Pre- and post-transplant care and management
- Role of dialysis technology professionals in the care of transplant recipients

UNIT-V

- **Ethical and Legal Considerations**
- Ethical issues and dilemmas in renal disease therapeutics
- Legal aspects and regulations related to renal disease management and dialysis therapy
- Patient rights and responsibilities in the context of renal disease treatment

Lab Management

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Lab Management	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the standard operating procedures for various laboratory tests and procedures.	Receive
	Understand the role and significance of laboratory management in healthcare settings.	Understand
	Apply laboratory safety guidelines and protocols to ensure a safe working environment.	Apply
	Analyse laboratory processes and identify areas for improvement to enhance quality and efficiency.	Analyze
	Evaluate the effectiveness of laboratory quality improvement initiatives.	Evaluate
	Create and implement laboratory safety protocols and guidelines.	Create

Taxonomy: Receive, Understand, Apply, Analyze, Evaluate, Create.

Learning Outcome	1. Understand the pathophysiology of renal diseases and their impact on kidney function and overall health. 2. Apply appropriate pharmacological interventions and treatment modalities for managing renal diseases. 3. Analyze laboratory and diagnostic test results to monitor renal function and assess treatment effectiveness. 4. Evaluate nutritional requirements and develop individualized dietary plans for patients with renal diseases. 5. Assess and manage complications associated with renal diseases, including electrolyte imbalances and fluid overload.

UNIT-I

- Introduction to Laboratory Management
- Role and importance of laboratory management in healthcare settings
- Laboratory safety guidelines and protocols
- Quality control and assurance in laboratory operations
- Laboratory Equipment and Instrumentation
- Understanding laboratory equipment and their functions
- Maintenance and calibration of laboratory instruments
- Troubleshooting common issues with laboratory equipment

UNIT-II

- Laboratory Procedures and Protocols
- Standard operating procedures for laboratory tests and procedures
- Specimen collection, handling, and processing techniques
- Documentation and record-keeping in the laboratory
- Quality Assurance and Quality Control
- Implementing quality control measures in the laboratory
- Evaluating and monitoring the accuracy and precision of laboratory results
- Participating in external proficiency testing programs

UNIT-III

- Laboratory Safety and Biohazard Management
- Ensuring a safe working environment in the laboratory
- Handling and disposal of hazardous materials and biohazardous waste
- Emergency response procedures in case of laboratory accidents or incidents
- Inventory Management and Supplies
- Managing laboratory inventory and supplies
- Ordering and storage of reagents, chemicals, and consumables
- Managing stock levels and minimizing wastage

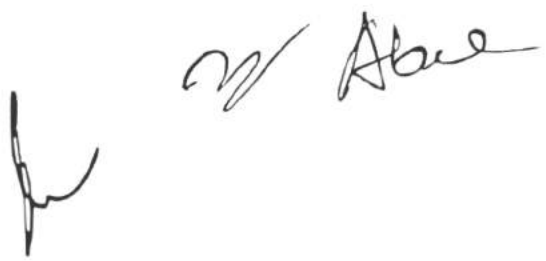
UNIT-IV

- Laboratory Information Systems and Data Management
- Introduction to laboratory information systems (LIS)
- Data entry, retrieval, and interpretation in the laboratory
- Maintaining confidentiality and data security in the laboratory

UNIT-V

- Continuous Quality Improvement

- Identifying areas for improvement in laboratory processes
- Implementing quality improvement initiatives
- Monitoring and evaluating the effectiveness of quality improvement measures



Discipline specific elective

MEDICAL PSYCHOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline specific elective	Medical Psychology	2	2	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Thiscoursecoversvariousaspectsofmedicalpsychology.	Receive
	Understand different aspectsofmedicalpsychologyessentialin medical professional.	Respond
	Applymedical psychology in clinicalscenarioduringclinical postings.	Value
	Use of scientific methods for assessment.	Organize
	Identify behaviors & experiences that promote health	Characterize
	Follow the skills adapting changes in vision	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	1. Cognitive thinking 2. Demonstrate skills in communication. 3. Ethical behaviour

UNIT-I

Introduction to psychology

Intelligence, Learning, Memory, Personality, Motivation

UNIT-II

Body integrity- one's body image

Patient in his Milan

UNIT-III

Self-concept of the therapist, Therapist patient relationship-some guidelines

Illness and its impact on the patients.

UNIT-IV

Maladies of the age and their impact on the patient's own and others concept of his body image.

UNIT-V

Adapting changes in vision

Why Medical Psychology needs / demands commitment?

Reference book:

1.Fundamentals of Psychology for graduate nurses- P Prakash-1st edition- 2016

2.Modern clinical psychology-Sheldon J.Korchin-2004

3.Psychology – Robert A .Baron&Girishwar Misra-5th edition – 2000

4.Applied psychology for nurses – R Sreevani– 4th edition- 2021

Ability Enhancement Course

ENTERPRENEURSHIP DEVELOPMENT

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Ability Enhancement Course	Entrepreneurship Development	3	3	-	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

CO Number	CO Statement	Taxonomy
	Inspire students and help them imbibe an entrepreneurial mind-set.	Receive
	Respond entrepreneurship impacted the world and their country.	Respond
	Introduced to key traits and the DNA of an entrepreneur	Value
	Organize the opportunity to assess their own strengths	Organize
	Understand the DNA of an entrepreneur and assess their strengths and weaknesses from an	Characterize
	Receive knowledge of Entrepreneurial perspective	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	1. Develop awareness about entrepreneurship and successful entrepreneurs. 2. Develop an entrepreneurial mind-set by learning key skills such as design, personal selling, and communication. 3. Understand the DNA of an entrepreneur and assess their strengths and weaknesses from an 4. Entrepreneurial perspective.

UNIT-I

Introduction to Entrepreneurship

Meaning and concept of entrepreneurship, the history of entrepreneurship development, role of entrepreneurship in economic development, Myths about entrepreneurs, agencies in entrepreneurship management and future of entrepreneurship types of entrepreneurs.

UNIT-II

The Entrepreneur

Why to become entrepreneur, the skills/ traits required to be an entrepreneur, Creative and Design Thinking, the entrepreneurial decision process, skill gap analysis, and role models, mentors and support system, entrepreneurial success stories.

UNIT-III

E-Cell

Meaning and concept of E-cells, advantages to join E-cell, significance of E-cell, various activities conducted by E-cell

UNIT-IV

Communication Importance of communication, barriers and gateways to communication, listening to people, the power of talk, personal selling, risk taking & resilience, negotiation.

UNIT V

Introduction to various forms of business organization (sole proprietorship, partnership, corporations, Limited Liability Company), mission, vision and strategy formulation.

Reference Books:

1:Title Entrepreneurial DevelopmentAuthor S S Khanka Edition reprint Publisher S. Chand Publishing, 2006

2: Entrepreneurship Development and Business Ethics Paperback – 1 January 2019by Abhik Kumar Mukherjee and Shaunak Roy Author

3: Margie Lovett Scott, Faith Prather. Global health systems comparing strategies for deliveringhealth services. Joney& Bartlett learning, 2014

4:Taxmann'sEnterpreneurship development – CA(Dr.)Abha Mathur- 2021.

INTRODUCTION TO QUALITY & PATIENT SAFETY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Ability Enhancement Course	Introduction to Quality & Patient Safety	2	2	-	-	20	80	100

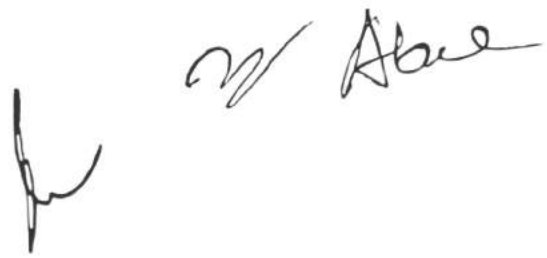
Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the Quality assurance and management	Receive
	Discuss the Basics of emergency care and life support skills	Respond
	Demonstrate the processes used in developing communication &Impact of communication skills on Organizational design	Value
	Define the Infection prevention and control	Organize
	Revise the Antibiotic Resistance	Characterize
	Follow the skills required for Disaster preparedness and management - Fundamentals of emergency management,	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	Use healthcare data and analytics to measure healthcare quality and patient safety and plan improvement measures. Participate in research projects that can lead to quality improvement, risk reduction and enhanced patient safety within the healthcare system.



UNIT-I

Quality assurance and management – Concepts of Quality of Care, QualityImprovement Approaches,StandardsandNorms,IntroductiontoNABHguidelines

UNIT-II

Basics of emergency care and life support skills- Basic life support (BLS), Vitalsignsandprimaryassessment,Basicemergencycare–firstaidandtriage,Ventilations Including use of bag-valve-masks (BVMs), Choking, rescue breathing methods, One-andTwo-rescuerCPR

UNIT-III

Bio medical waste management and environment safety -Definition of Biomedical Waste, Waste minimization, BMW – Segregation, collection, transportation, treatment and disposal (including color coding), Liquid BMW, Radioactive waste, Metals/ Chemicals / Drug waste, BMW Management & methods of disinfection, Modern Technology for handling BMW, Use of Personal protective equipment (PPE), Monitoring & controlling of cross infection (Protective devices)

UNIT-IV

Infection prevention and control -Evidence-based infection control principles and practices [such as sterilization, disinfection, effective hand hygiene and use of Personal protective equipment (PPE)], Prevention & control of common healthcare associated Infections, Components of an effective infection control program, Guidelines (NABH and JCI) for Hospital Infection Control

UNIT V

Antibiotic Resistance - History of Antibiotics, How Resistance Happens and Spreads, Types of resistance- Intrinsic, Acquired, Passive, Trends in Drug Resistance, Actions to Fight Resistance, Bacterial persistence, Antibiotic sensitivity, Consequences of antibiotic resistance.
Disaster preparedness and management - Fundamentals of emergency management, Psychological impact management, Resource management, Preparedness and risk reduction, information management, incident command and institutional mechanisms.

Reference books:

1.Handbook of healthcare quality & patient safety- Girdhar J Gyani& Alexander Thomas – 2nd edition- 2017
2.Total quality management in the healthcare industry:An efficient guide for healthcare management- Balasubramanian Mahadevan – 2022
3.Step by step Quality Hospital Care- Farooq Jan- 1st edition – 2013
4.Patient safety and healthcare improvement Willey Blackwell- 1st edition - 2014

SEMESTER 6
Applied Dialysis Therapy Technology – Part IV

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Applied Dialysis Therapy Technology – Part IV	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Recall the basic principles and concepts of dialysis therapy.	Receive
	Comprehend the mechanisms and factors influencing solute and fluid removal during dialysis.	Respond
	Apply the knowledge of dialysis principles to set up and operate dialysis machines.	Value
	Analyse dialysis treatment parameters and data to ensure optimal therapy delivery.	Analyze
	Evaluate the effectiveness of dialysis treatment in achieving desired clinical outcomes	Evaluate
	Develop protocols and guidelines for the proper use and maintenance of dialysis machines.	Create

Taxonomy: Receive, Respond, Analyze, Evaluate, Create

Learning Outcome	6. Understand the principles and components of dialysis therapy equipment and machines. 7. Apply the techniques for setting up and operating dialysis machines effectively and safely. 8. Analyze dialysis treatment parameters to ensure optimal therapy delivery and patient outcomes. 9. Evaluate the effectiveness and adequacy of dialysis treatment based on clinical and laboratory parameters. 10. Create strategies for improving the efficiency and safety of dialysis therapy through protocols and guidelines.

UNIT-I

- Anti-coagulation.
- Withdrawal of dialysis criteria:

UNIT-II

- Acute dialysis.
- Chronic dialysis.

UNIT –III

- Dialyzer reuse.
- Water treatment system.

Advances in Dialysis Technology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Advances in Dialysis Technology	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the different types of dialysis equipment, access devices, and dialyzers.	Remember
	Understand the advancements and current trends in dialysis technology.	Understand
	Apply knowledge of dialysis equipment and techniques for safe and effective treatment delivery.	Apply
	Analyse dialysis adequacy and clearance measurements to assess treatment effectiveness.	Analyze
	Evaluate the efficacy and safety of dialysis treatment based on patient-specific needs	Evaluate
	Design and implement protocols for managing complications and emergencies in dialysis.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create.

Learning Outcome	1. Understand the advancements and trends in dialysis technology. 2. Apply advanced dialysis techniques and equipment for effective patient treatment. 3. Analyze and evaluate dialysis adequacy and treatment outcomes. 4. Assess and manage complications associated with advanced dialysis technology. 5. Incorporate innovation and create strategies for optimizing dialysis therapy delivery.

UNIT-I

- **Introduction to Advances in Dialysis Technology**
- Overview of the evolution of dialysis technology
- Current trends and advancements in dialysis equipment and techniques
- Ethical considerations in the use of advanced dialysis technology
- **Hemodialysis Machines and Equipment**
- In-depth study of modern hemodialysis machines and their features
- Principles of operation and functionality of dialysis equipment
- Troubleshooting and maintenance of hemodialysis machines

UNIT-II

- **Hemodialysis Access Devices**
- Types of vascular access for hemodialysis (arteriovenous fistulas, grafts, and catheters)
- Techniques for placement, assessment, and maintenance of vascular access devices
- Complications associated with vascular access and their management
- **Peritoneal Dialysis Techniques**
- Introduction to peritoneal dialysis and its different modalities
- Peritoneal dialysis catheters: placement, care, and troubleshooting
- Prescription and management of peritoneal dialysis solutions

UNIT-III

- **Dialyzer Technology and Membrane Materials**
- Types of dialyzers and their functional characteristics
- Structure and properties of dialysis membranes
- Advances in membrane technology and their impact on dialysis efficiency
- **Water Treatment Systems for Dialysis**
- Importance of water quality in dialysis treatment
- Principles and components of dialysis water treatment systems
- Monitoring and maintenance of water treatment systems

UNIT-IV

- **Dialysis Adequacy and Prescription**
- Assessment of dialysis adequacy and clearance measurements
- Individualizing dialysis prescription based on patient needs
- Optimal timing and duration of dialysis sessions
- **Dialysis Complications and Management**

- Common complications in dialysis and their prevention strategies
- Identification and management of dialysis-related infections and vascular complications
- Emergency situations in dialysis and appropriate response protocols

Medical Devices

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Medical Devices	4	3	1	-	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the regulatory frameworks and standards for medical device safety and efficacy.	Remember
	Understand the role and significance of medical devices in healthcare.	Understand
	Apply knowledge of medical devices to select and use appropriate devices in clinical settings.	Apply
	Analyse the functionality and operation of dialysis machines and other medical devices	Analyze
	Evaluate the quality control measures and adherence to regulatory standards in medical device use.	Evaluate
	Create strategies for quality assurance and continuous improvement in medical device utilization.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create.

Learning Outcome	1. Understand the classification and regulatory requirements of medical devices. 2. Apply knowledge of medical devices to select appropriate devices for specific healthcare needs. 3. Analyze the functionality and performance of medical devices for optimal patient care. 4. Evaluate the safety and effectiveness of medical devices in clinical practice. 5. Create strategies for quality assurance and continuous improvement in medical device utilization.

UNIT-I

- **Introduction to Medical Devices**
- Overview of medical devices and their role in healthcare
- Classification of medical devices based on risk and purpose
- Regulatory frameworks and standards for medical device safety and efficacy
- **Principles of Dialysis Equipment**
- Study of the principles and components of dialysis machines
- Functionality and operation of dialysis equipment used in hemodialysis and peritoneal dialysis
- Troubleshooting and maintenance of dialysis machines

UNIT-II

- **Vascular Access Devices**
- Types of vascular access devices used in dialysis (fistulas, grafts, catheters)
- Placement techniques, assessment, and care of vascular access devices
- Complications associated with vascular access and their management
- **Dialyzers and Dialysis Membranes**
- Study of dialyzers and their components
- Types of dialysis membranes and their characteristics
- Advances in dialyzer technology and their impact on dialysis efficiency

UNIT-III

- **Emerging Technologies in Dialysis**
- Exploration of emerging technologies in the field of dialysis
- Introduction to wearable and portable dialysis devices
- Evaluation of the potential benefits and challenges of emerging dialysis technologies
- **Ethical and Legal Considerations in Medical Device Use**
- Ethical issues related to medical device use and patient care
- Legal considerations, regulations, and documentation requirements in medical device use
- Patient rights, consent, and privacy in the context of medical device utilization

Regulatory Guidelines related to renal transplants

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Regulatory Guidelines related to renal transplants	2	-	-	4	20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Remember the regulatory frameworks and standards for medical device safety and efficacy.	Remember
	Understand the role and significance of medical devices in healthcare.	Understand
	Apply knowledge of medical devices to select and use appropriate devices in clinical settings.	Apply
	Analyse the functionality and operation of dialysis machines and other medical devices	Analyze
	Evaluate the quality control measures and adherence to regulatory standards in medical device use.	Evaluate
	Create strategies for quality assurance and continuous improvement in medical device utilization.	Create

Taxonomy: Remember, Understand, Apply, Analyze, Evaluate, Create.

Learning Outcome	6. Understand the classification and regulatory requirements of medical devices. 7. Apply knowledge of medical devices to select appropriate devices for specific healthcare needs. 8. Analyze the functionality and performance of medical devices for optimal patient care. 9. Evaluate the safety and effectiveness of medical devices in clinical practice. 10. Create strategies for quality assurance and continuous improvement in medical device utilization.

UNIT-I

- **Introduction to Renal Transplants**
- Overview of renal transplantation as a treatment option for end-stage renal disease
- Ethical considerations and legal frameworks surrounding renal transplants
- Importance of regulatory guidelines in ensuring safety and efficacy of renal transplant procedures
- **Organ Donation and Transplantation Laws**
- Study of national and international laws governing organ donation and transplantation
- Understanding the process of organ allocation and transplant waiting lists
- Ethical considerations and consent requirements for organ donation and transplantation

UNIT-II

- **Regulatory Bodies and Guidelines**
- Introduction to regulatory bodies and organizations involved in overseeing renal transplants
- Overview of guidelines and standards set by regulatory bodies for renal transplant programs
- Compliance with regulatory guidelines for ensuring quality and safety in renal transplant procedures
- **Donor Evaluation and Selection**
- Criteria for donor eligibility and evaluation in renal transplantation
- Immunological testing and cross-matching procedures for donor-recipient compatibility
- Preoperative assessment and workup of potential kidney donors

UNIT-III

- **Surgical Techniques and Postoperative Care**
- Study of surgical procedures and techniques in renal transplantation
- Postoperative care and management of renal transplant recipients
- Monitoring and prevention of complications in the immediate post-transplant period
- **Immunosuppression and Rejection**
- Understanding the role of immunosuppressive medications in preventing organ rejection
- Monitoring and management of rejection episodes in renal transplant recipients
- Adherence to medication regimens and long-term immunosuppression considerations

UNIT-IV

- **Follow-up and Long-term Care**
- Importance of long-term follow-up care for renal transplant recipients
- Monitoring graft function and management of complications post-transplantation
- Patient education and support for promoting graft survival and overall well-being
- **Quality Assurance and Compliance**
- Implementing quality assurance measures in renal transplant programs
- Compliance with regulatory guidelines and accreditation requirements for renal transplantation
- Continuous quality improvement and evaluation of renal transplant outcomes

HOSPITAL MANAGEMENT/ Basics of clinical Skill Learning

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	HOSPITAL MANAGEMENT/ Basics of clinical Skill Learning	3	3	-		20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the Ability to use disciplines and concepts required in formulating, implementing and evaluating strategic choices in health care	Receive
	Discuss the Knowledge of key options in the policy, planning and financing of health care services	Respond
	Demonstrate theUnderstanding of the diversity of international health policies	Value
	Define International and comparative views on solutions and best practices	Organize
	Revise the Practical experience in managerial issues	Characterize
	Follow the skills required for Long-run orientation in problem analysis and solving	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Objective	1. To provide an environment that enables students to benefit and learn nuances of Hospital Management from their collective learning experiences. 2. To offer opportunities to develop the ability to think analytically and build capacity for independent learning.

UNIT-I

Quality Concepts: Definition of Quality, Dimensions of Quality, Basic concepts of Total Quality Management, Quality Awards. Accreditations for hospitals: Understanding the process of getting started on the road to accreditation, National and International Accreditation bodies, overview of standards- ISO (9000 & 14000 environmental standards), NABH, NABL, JCI, JACHO.

UNIT-II

Hospital Information System: Hospital Information System Management and software applications in registration, billing, investigations, reporting, ward management and bed distribution, medical records management, materials management and inventory control, pharmacy management, dietary services, management, information processing. Security and ethical challenges.

UNIT-III

Inventory Control: Concept, various costs of inventory, Inventory techniques-
ABC, SDE/VED Analysis, EOQ models. Storage: Importance and functions of storage. Location and layout of stores. Management of receipts and issue of materials from stores, Warehousing costs, Stock verification.

UNIT-IV

Operations management: Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS, outsourcing of maintenance services, quality and reliability, concept of failure, equipment history and documents, replacement policy, calibration tests, spare parts stocking techniques and polices

UNIT-V

Biomedical Waste Management: Meaning, Categories of Biomedical Wastes, Colour code practices, Segregation, Treatment of biomedical waste-Incineration and its importance. Standards for waste autoclaving, microwaving. Packaging, Transportation & Disposal of biomedical wastes.

Reference books:

1.Hospital and patient care management – Dr Vidhya Srinivasan & Dr Akshay Ch. Deka – 2022
2.Hospital management & administration – BV Subrahmanyam – 2018
3.Hospital management- Manisha Saxena – volume 3 – 2018
4.Hospital management – Ashvini Arun Vora – 1st edition - 2018

BASICS OF CLINICAL SKILL LEARNING

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the After successful accomplishment of the course, the students would be able to Measure Vital Signs	Receive
	Discuss the Do basic physical Examination of the patients, NG tube basics, Administration of Medicines	Respond
	Demonstrate theThe students will learn about Asepsis and the Cleanliness related to asepsis and on mobility of the patients.	Value
	Define the They will also learn on the Basics of Nasal-Gastric Tube	Organize
	Revise the Also they will know about clean lines in the Asepsis	Characterize
	Follow the skills required for They will also learn on the Basics of Nasal-Gastric Tube.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	1. To Understand and the basic ideas on how to check for Vital Signs of the Patient 2. They will also learn on the Basics of Nasal-Gastric Tube. 3. This course the student will learn how to handle the patients and their positioning

UNIT- I

MEASURINGVITALSIGNS: Temperature: Axillaries Temperature, Pulse: Sites of pulse, Measurement, Respiratory, Blood Pressure, Pain: Pain Scale

UNIT-II

PHYSICAL EXAMINATION: Observation, Auscultation (Chest), Palpation, Percussion, History Taking.

UNIT- III

FEEDING: ENTRAL FEEDINGNG TUBE: Measurement, Procedure, Care, Removal of Nasal-Gastric Tube, Nasal-Gastric Tube Feeding, and Parenteral Nutrition

UNIT- IV

ASEPSIS: Hand wash Techniques, (Medical, Surgical) Universal Precaution, Protecting Equipment's: Using Sterile Gloves, opening a Sterile package and Establishing a Sterile Field, Sterile Dressing Changes, Surgical Attire, Wound Dressing, Suture Removal, Cleaning and Application of Sterile Dressing, Wearing and Removal of personal protective Equipment

UNIT- V

MOBILITYANDSUPPORT: Moving and positioning, range of Motion exercises (Active & Passive) Assisting for Transfer, Application of Restraints.

Reference books:

1.Basic surgical skills and techniques – Sudhir Kumar -3rd edition – 2018

2.Essentials of clinical diagnosis – Sunil K Sen-9th edition – 2019

3.Manual of clinical methods – P.S.Shankar – 4th edition – 2017

4.Communication skills in clinical practice – KR Sethuraman- 2nd edition - 2018

BASIC AND ADVANCE LIFE SUPPORT/ ORGANIZATIONAL BEHAVIOUR

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Skill Enhancement Course	BASIC AND ADVANCE LIFE SUPPORT/ ORGANIZATIONAL BEHAVIOUR	2	2			20	80	100

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Demonstrate how to open a casualty's airway and check for breathing	Receive
	Demonstrate how to place an unresponsive casualty in the recovery position	Respond
	Perform Cardiopulmonary Resuscitation using a manikin	Value
	Identify safety considerations when using an automated external defibrillator (AED)	Organize
	Be able to safely use an automated external defibrillator	Characterize
	Follow the skills need to commence Cardiopulmonary Resuscitation (CPR).	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	1. Recognize the need to commence Cardiopulmonary Resuscitation (CPR) 2. Assess a casualty's level of consciousness

UNIT- I

Review of anatomy and physiology of blood and cardio vascular system,
Assessment-History and Physical assessment • Etiology, Path physiology, clinical manifestations,

UNIT- II

- **Diagnosis, treatment modalities of:**
  - Vascular system
  - Heart Congenital and acquired - Rheumatic Heart diseases

UNIT- III

- **Diagnosis, treatment modalities of:**
  - Infective Endocarditic, congenital heart Diseases
  - Cardiac emergencies and arrest
  - Cardio Pulmonary Resuscitation (CPR)

Drugs used in treatment of blood and cardio vascular disorders

UNIT- IV

Basic Life Support

- Airway Management
- Anaphylaxis
- Approach to Shock

Initial Management of Shock

UNIT- V

Basic Life Support

- Approach to Syncope
- Approach to Restless Patient
- Approach to Pediatric Patients
- Safe transfer of patients to definitive care areas
- Approach to Trauma Patients

Reference books:

1.Basic Life Support-Manual – AHA- 2016
2.Advance Emergency Life Support Protocols – Gireesh Kumar KP – 1st edition – 2015
3.First aid for nurses – TK Indrani- 2nd edition – 2018
4.ACLS Study Guide – Barbara Aehlert – 6th edition - 2022

ORGANIZATIONAL BEHAVIOUR

Course Outcomes

After completing this course, the student will be able to:

	CO Statement	Taxonomy
	Describes the organizational behavior,types, importance& Fundamental concepts of OB	Receive
	Discuss the individual behavior related to motivation and rewards &Characteristics of motives.	Respond
	Demonstrate the processes used in developing communication &Impact of communication skills on Organizational design	Value
	Define the management of resolving destructive conflicts &Strategies for encouraging constructive conflict.	Organize
	Revise the group dynamics, Models and theories of Leadership Styles.	Characterize
	Follow the skills required for working in groups (team building) &Importance of Leadership Styles.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	**1.** To analyze and compare different models used to explain individual behavior related to motivation and rewards. **2.** To identify the processes used in developing communication and resolving conflicts. to explain group dynamics and demonstrate skills required for working in groups (team building)

UNIT-I

OrganizationalBehavior-Definition-Importance -HistoricalBackground-FundamentalconceptsofOB-21stCenturycorporate-DifferentmodelsofOBi.e.autocratic,custodial, Supportive

UNIT-II

Organization Structure and Design- Authority and Responsibility Relationships - DelegationofAuthorityandDecentralization-InterdepartmentalCoordination-Emerging Trends in Corporate Structure, Strategy and Culture - Impact of TechnologyonOrganizationaldesign-Mechanisticvs AdoptiveStructures –FormalandInformalOrganization

UNIT-III

Perception Process - Nature & Importance - Perceptual Selectivity - Perceptual Organization - Social Perception - Impression Management. Learning-ProcessofLearning-PrinciplesofLearning-OrganizationalRewardSystems –Behavioral Management

UNIT-IV

Motivation - Motives - Characteristics - Classification of motives - Primary Motives - Secondary motives - Morale - Definition and relationship with productivity – Morale Indicators

UNIT V

Leadership - Definition - Importance -Leadership Styles - Models and Theories ofLeadership Styles.
Conflict Management -Traditional vis-a-vis Modern view of conflict - Constructive and Destructive conflict - Conflict Process - Strategies for encouraging constructive conflict - Strategies for resolving destructive conflict

Reference Books:

1:Human Relations & Organizational Behaviour - R.S.Dwivedi 2007
2:Organizational Behaviour - Uma Sekaran 2005
3:Margie Lovett Scott, Faith Prather. Global health systems comparing strategies for delivering health services.Joney& Bartlett learning, 2014
4:HumanBehaviour at Work - Keith Davis 2004

Generic Elective

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2			20	80	100

Semester 7 & 8

SEMESTER – VII & VIII INTERNSHIP				
Subject Code	**Course category**	**Course title**	Evaluation	
			Internal	External
VII Sem	Core	Internship	20	80
VIII Sem	Core	Internship	20	80
Internship is for 12 months,				
SEMESTER	CREDIT			
I	25			
II	25			
III	27			
IV	28			
V	28			
VI	28			
VII	20			
VIII	20			
TOTALCREDITS	201			

Guidelines:

1. The internship shall commence after the student has completed and passed all subjects up to VI semesters.
2. The internship is compulsory.
3. The duration of the internship shall be one year.
4. The degree of Bachelor in Allied Health Sciences shall be awarded after the satisfactory completion of the internship.

Evaluation of Internees:

Formative Evaluation: Day to day assessment of the internees during their internship postings should be done by the Head of the Department/Faculty assigned.

The objective is that all the interns must acquire necessary minimum skills required for carrying out day to day professional work competently. This can be achieved by maintaining Records /Log Book by all internees. This will not only provide a demonstrable evidence of the processes of training but more importantly of the internee's own acquisition of competence as related to performance.

Summative Evaluation: It shall be based on the observation of the Sr. Technical staff / Faculty of the department concerned and Record / Log book maintained by the interns.

Based on these two evaluations, the Head of the Department shall issue certificate of satisfactory completion of training, following which the university shall award the degree or declare him/her eligible for it. To implement the project work uniformly for all the specialties in view of the curriculum and training to be acceptable internationally and the students to get opportunity for higher studies and employment.