

(8)

SYLLABUS

BACHELOR IN INTENSIVE CARE TECHNOLOGY

4 Years (VIII Semesters)

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



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Bachelor in intensive care technology

Learning Objectives

At the end of the B.Sc. in Bachelor in intensive care technology course, the student should be able to:

- 1) Test patients for severe traumatic condition.
- 2) Understand care of patients suffering from severe accidents and post opt trauma.
- 3) Use and maintain medical equipment and machines used in the field.
- 4) Apply basic and advanced life support skills.
- 5) Study emergency invasive procedures that could save an individual's life.
- 6) Assist in intensive care procedure.
- 7) Observe the correct way to perform intensive care before applying practical skills.

Expectations from the future graduate in providing patient care

The goal of B.Sc.in intensive care technology course is to produce a competent intensive care who:

- 1) Are trained to assist surgeons in performing diagnostic and therapeutic invasive in the patients admitted in ICU.
- 2) Are trained to assist clinicians and surgeons during procedures such as coronary imaging including angiography, IVUS, FFR etc., percutaneous coronary interventions (PCI), rotational atherectomy, peripheral angiography, interventions for structural heart disease, ventilators, accidental and trauma conditions.
- 3) Also, be able to interpret basic ECG's and recognize cardiac arrhythmias.
- 4) Understand basic requirements of the patients admitted in ICU.


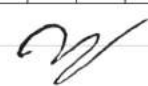
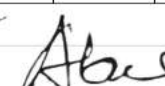


SEMESTER –I

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	Medical Ethics & Computer Skills related to Perfusion Technology	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Skill 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	Basics of ICU Technology	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200




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	Skill Enhancement Course	Medical terminology and Record keeping	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 –III									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Intensive Care Instrument and Maintenance – I	4	3	1	-	20	80	100
	Core	Intensive Care Instrument and Maintenance – II	4	3	1	-	20	80	100
	Core	Infection Control – I	4	3	1	-	20	80	100
	Core	Infectious Diseases – I	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 courses offered by Institute/ College/University.	2	2	-	-	20	80	100
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

SEMESTER –IV									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	ICU Monitoring – I	4	3	1	-	20	80	100
	Core	ICU Monitoring – II	4	3	1	-	20	80	100
	Core	Infection Control – II	4	3	1	-	20	80	100
	Core	Infectious Diseases – II	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- 27			Total Contact Hours- 32						
*Credits of MOOC, SWAYAM and NEPTel will be considered similar to the credits of Open Elective /General Elective									




SEMESTER –V									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Principles of ICU Management – I	4	3	1	-	20	80	100
	Core	Principles of ICU Management – II	4	3	1	-	20	80	100
	Core	Basics of Radiology	4	3	1	-	20	80	100
	Core	Advance ICU Care	2	-	-	4	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Medical psychology/ Biostatics and Research methodology	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- 27			Total Contact Hours- 32						
*Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective									




SEMESTER –VI

SEMESTER –VI									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Life Support in ICU	4	3	1	-	20	80	100
	Core	Advance ICU Technology	4	3	1	-	20	80	100
	Core	Medical Devices	4	3	1	-	20	80	100
	Core	Professionalism and values	4	3	1	-	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 Enhancement Course	BASIC AND ADVANCE LIFE SUPPORT/ ORGANIZATIONAL BEHAVIOUR	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- 23			Total Contact Hours- 27						
*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
	Core	Internship	20	80
	Core	Internship	20	80
Internship is for 12 months,				
SEMESTER	CREDIT			
I	25			
II	25			
III	27			
IV	27			
V	27			
VI	27			

VII	20
VIII	20
TOTALCREDITS	198

Exit: Honor'sICU 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
Analyze the respiratory system with Bronchopulmonary segments & circulatory system: Types of blood vessels, Heart & Pericardium.	analyses
Assess the digestive system, role of digestive juices & enzymes & reproductive system: spermatogenesis & oogenesis.	Evaluate
Formulate the excretory system Pathway of glomerulus filtration rate with structure & structure of nephrons.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> To introduce the students to the concepts related to General anatomy, Muscular, Respiratory, Circulatory, Digestive and Excretory system Demonstrate and understand the basic anatomy of Respiratory and Circulatory system Demonstrate and understand the basic anatomy of Digestive and
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	<p>Excretory system</p> <p>4. Knowledge of basic concept of human body anatomical structure.</p> <p>5. Knowledge of interrelationships, gross, functional and applied anatomy of various structures in the human body.</p>
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UNIT-I

Introduction to Anatomy Anatomical terms, planes, organization of human body- cell, tissue, organ & organ system.

Muscular-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

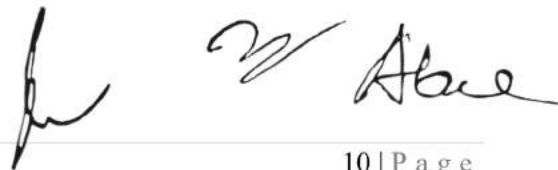
UNIT-V

Name of all endocrine glands their positions

Hormones and their functions- Pituitary, 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.Chaurasia C.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
Publishers, Delhi -7th edition - 2021
5. Gray's Anatomy Susan Standring, Elsevier Churchill Livingstone, Edinburg – 42nd edition-
2021



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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, Analyse, Evaluate, Create

Learning outcomes	<ol style="list-style-type: none"> 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
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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

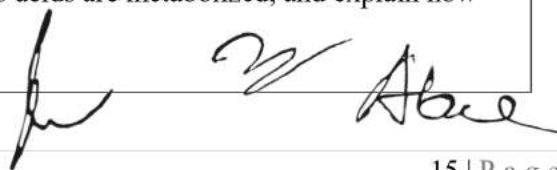
Course Outcomes

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	<ol style="list-style-type: none"> To identify the five classes of polymeric biomolecules and their monomeric building blocks. Explain the specificity of enzymes (biochemical catalysts), and the chemistry involved in enzyme action. Explain how the metabolism of glucose leads ultimately to the generation of large quantities of ATP. Describe how fats and amino acids are metabolized, and explain how they can be used for fuel.
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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, Nucleic acid metabolism.

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
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



Course Code	Course Category	Paper Title	Credits	Contact per week	Evaluation
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				L	T	P	Internal	External	Total
	Core	Medical Ethics & Computer Skills related to ICU Technology	4	3	1	-	20	80	100

MEDICAL ETHICS & COMPUTER SKILLS RELATED TO ICU TECHNOLOGY

Course Outcomes:

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

	CO Statement	Taxonomy
	legal and ethical challenges in healthcare.	Receive
	Students explore the legal, ethical and moral issues in healthcare professionals. Identify issues related to potential legal liability in the workplace.	Respond
	To introduce students to the discipline of public health	Value
	To give an overview of the methods of prevention and health promotion	Organize
	To understand the determinants and measures of disease and health related states	Characterize
	To understand the status of health and disease at global and national levels	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	<ol style="list-style-type: none"> 1. To develop ability to design and implement strategies to enhance public health and strengthen the health systems 2. To develop the critical ability to analyze and understand the impact of public health policies on health status and indicators Medical ethics is a practical application of moral standards that are meant to benefit the patient. 3. Able to understand complex healthcare public policy from all sides of an issue, regardless of your personal beliefs.
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Medical Ethics

1. Medical ethics - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality



4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia
7. Organ transplantation
8. Medico legal aspects of medical records – Medico legal case and type- Records and document related to MLC - ownership of medical records - Confidentiality Privilege communication - Release of medical information - Unauthorized disclosure - retention of medical records - other various aspects.
9. Professional Indemnity insurance policy
10. Development of standardized protocol to avoid near miss or sentinel events
11. Obtaining an informed consent.
12. Ethics in the profession of Medical Laboratory Science

Computer skills

1. Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM– kilobytes, MB, GB their conversions – large computer – Medium, Micro, Minicomputers–Different computer languages–Numbers system–Binary and decimal conversions – Different operating system – MS DOS – Basic commands – MD, CD, DIR, TYPE and COPY CON commands – Networking – LAN, WAN, MAN (only basic ideas)
2. Typing text in MS word–Manipulating text–Formatting the text–using different font sizes, bold, italics–Bullets and numbering–Pictures, file insertion– Aligning the text and justify – choosing paper size – adjusting margins – Header and footer, inserting page No's in a document–Printing a file with options–Using spell check and grammar – Find and replace – Mail merge – inserting tables in a document.
3. Creating table in MS-Excel – Cell editing – Using formulas and functions – Manipulating data with excel–Using sort function to sort numbers and alphabets
 - Drawing graphs and charts using data in excel – Auto formatting – Inserting data from other worksheets.
 - Preparing new slides using MS-POWERPOINT – Inserting slides – slide transition and animation – Using templates – Different text and font sizes – slides with sounds–Inserting cliparts, pictures, tables and graphs–Presentation using wizards.
 - Introduction to Internet – Using search engine – Google search – Exploring the net using Internet Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation – Sending messages – Attaching files in E-mail – Introduction to “C” language – Different variables, declaration, usage – writing small programs using functions and sub-functions.

Reference Books

1. Medical Ethics – CM Francis – 4th edition – 2020
2. Medical Ethics challenges and prospects in India – Subrata Sharma – 2012
3. Medical Ethics – a very short introduction – Michael Dunn & Tony Hope- 2nd edition – 2018




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4.Textbook of medical bioethics attitude and communication for medical students – Motilal C
Tayade – 2020



ENVIRONMENTAL SCIENCE & HEALTH

Course Code	Course Category	Paper Title	Credits	Contact per week	Evaluation
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				L	T	P	Internal	External	Total
	Ability Enhancement Course	Environmental Science and 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 and 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	<ol style="list-style-type: none"> 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 analyses possible disruption of feeding relationship
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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 Health Programme.

UNIT-III

Introduction to AYUSH system of medicine-Introduction to Ayurveda; Yoga and Naturopathy; Unani; Siddha; Homeopathy; Need for integration of various system of medicine.

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 – Samta Soni- 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 microorganisms, 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: <ol style="list-style-type: none">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
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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 – 7th edition -2022
- 2: Text & Practical Microbiology – CP Baveja& 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	<ol style="list-style-type: none"> 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.
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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. Hb 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

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GENERAL PHARMACOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Pharmacology	4	3	-	2	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	<ol style="list-style-type: none"> 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. Also, recent advances in pharmacology will play a key role in research aspect of the students
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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

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

UNIT- III

Central nervous system

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

UNIT- IV

a) Cardiovascular system

Drug therapy of hypertension, shock, angina, cardiac arrhythmias

Diuretics

Coagulants and anticoagulants, antiplatelet drugs

Hypo-lipidemic

- b) Gastrointestinal and respiratory system
- c) Drug treatment of peptic ulcer
- d) Drug therapy of bronchial asthma

UNIT- V

a) Hormones

b) Drug therapy of Diabetes

c) Corticosteroids

d) Chemotherapeutic agents - b- Lactam Antibiotics, fluoroquinolones, aminoglycoside, tetracyclines, chloramphenicol

PRACTICALS

- a) Study of laboratory animals and their handling (a. Frogs, b. Mice, c. Rats, d. Guinea pigs, e. Rabbits).
- b) Study of laboratory appliances used in experimental pharmacology.
- c) Study of use of anesthetics in laboratory animals.
- d) Effects of skeletal muscle relaxants using rota-rod apparatus.
- e) Effect of drugs on locomotor activity using actophotometer.
- f) Anticonvulsant effect of drugs by MES and PTZ method.
- g) Study of local anesthetics by different methods



Reference Books:

- 1: Padmaja Uday Kumar – Pharmacology for Dental & Allied Health Sciences – 4th edition, 2017.
- 2: Joginder Singh Pathania, Rupendra Kumar Bharti, Vikas Sood-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.



BASICS OF ICU TECHNOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Basics of ICU Technology	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 commonly used ICU equipment.	Remember
Understand the functioning and operation of various ICU technologies and equipment.	Understand
Apply knowledge of ICU technology to assess, select, and utilize appropriate equipment for patient monitoring and intervention.	Apply
Analyse and interpret data generated by ICU technology, such as vital signs, waveforms, and laboratory results, to make informed clinical decisions.	Analyse
Evaluate the effectiveness and reliability of ICU technology in monitoring and managing critically ill patients.	Evaluate
Design and implement strategies for the integration and utilization of ICU technology to enhance patient care and safety.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. The student will be able to describe the essential components and features of commonly used ICU technology and equipment. 2. The student will be able to understand the principles and mechanisms underlying the functioning of ICU technology. 3. Apply theoretical knowledge to practical scenarios by effectively operating and troubleshooting ICU equipment, ensuring patient safety and optimal performance. 4. Analyse and interpret data generated by ICU technology. 5. Evaluate the appropriateness and effectiveness of ICU technology.
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1. Mechanical ventilation/ventilator dependence/difficult weaning, Basic Concepts Mechanics of ventilation, Mechanics of exhalation Work of breathing Distribution of ventilation Efficiency and effectiveness of ventilation Indications Mechanical Ventilators How ventilators work Operator interface Types of ventilators

2. Modes of Mechanical Ventilation: Basic and newer modes Ventilator initiation Initial ventilator settings Adjusting ventilatory settings Oxygenation Ventilation Timing – Inspiratory of gas / Expiratory, inspiratory hold Flow Tidal volume Pressure- Peak /Plateau PEEP POP – OFF Pressure support Proximal airway (VS) distal FiO₂

3. Humidification: Humidifier types Advantages & disadvantages

4. Non-Invasive Ventilation, Types of NIV (CPAP, BIPAP) Goals of & indications of NIV Patient selection and exclusion criteria for NIV Equipment used in the application of NIV Instituting and managing NIV Complications of NIV

5. Trouble shooting and alarms

6. Weaning and Extubating Weaning: Definitions Reasons or ventilator dependence Patient evaluation Preparing the patient Methods Newer techniques for facilitating ventilator discontinuance Selecting an approach Monitoring the patient during weaning

Chronically ventilator dependent patients & difficulty in weaning Terminal weaning Estuation Indications Procedure Post estuation care

7.Nebulization and MDI Inhaled drug therapy: Nebulization Different types Advantages & disadvantages MDI with spacer Characteristics of therapeutic aerosols Hazards of aerosols therapy Aerosol drug delivery system Assessment based bronchodilator therapy protocols Special considerations Controlling environmental and contamination

8.Suctioning and chest physiotherapy

9.Incentive Spirometry

10.Inspiratory resistance exercises

11.Care of Patient on Ventilator Ensuring proper placement Cuff pressure Trachea bronchial hygiene & suctioning modification, chest physiotherapy Ventilator settings monitoring ventilatory parameters

12.Care of the chest tube Drainage systems of pleural with fluid

13. Extubating failure

PRACTICAL

- Clinical rotations in selected Medical and Surgical areas
- Patient assignments for patient centered comprehensive care
- Case presentations,
- Drug study discussion

REFERENCE BOOKS

1. Egan's Fundamentals of Respiratory Care – Robert L. Wikins, James K Stoller,
2. The ICU Book – Paul L Marino (Lippincott, Williams & Wilkins)
3. Practical Methods for Respiratory Care – Raymond Sibberson (Mosby)
4. Respiratory Physiology – The Essentials | John B West (Williams & Wilkins)
5. Ventilation / Blood Flow & Gas Exchange – John B West
(Blackwell Scientific Publications).



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	<ol style="list-style-type: none">1. Ensuring successful learning of basic and advance medical terminology2. Student will able to read, write, spell and understand the medical terminology3. Understand the types, importance and role of medical records and its management techniques.
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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 2nd edition New Delhi: Jaypee Brothers.
- The body by Bilbirson Agreed for Occupance



SEMESTER –III

INTENSIVE CARE INSTRUMENTATION AND MAINTENANCE- I

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Intensive care and instrumentation maintenance- I	4	3	1	-	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Recall and memorize the fundamental principles and technical specifications of various intensive care instruments and equipment.	Remember
Understand the underlying principles and functioning of intensive care instruments and equipment.	Understand
Apply knowledge of instrumentation and equipment maintenance to perform setup, calibration, and troubleshooting tasks effectively.	Apply
Analyse and interpret data acquired from intensive care instruments.	Analyse
Evaluate the impact of instrument accuracy, precision, and reliability on patient care and safety in the intensive care unit.	Evaluate
Design and implement protocols and procedures for the proper maintenance, calibration, and periodic testing of intensive care instruments.	Create

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

Learning Outcomes	<ol style="list-style-type: none">1. The principles, technical specifications, and functioning of various intensive care instruments and equipment commonly used in critical care settings.2. Apply knowledge and skills in the setup, calibration, troubleshooting, and maintenance of intensive care instruments to ensure accurate and reliable data acquisition.3. Analyse instrument data, evaluate instrument performance, and implement appropriate maintenance strategies to optimize the accuracy, precision, and longevity of intensive care instruments.
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UNIT I

Airway Assistance

Tracheal intubation (oral, nasal) – Insertion of ICD

Cricothyrotomy

Open/percutaneous tracheostomy

Fiberoptic bronchoscopy Section 1: FOB Intubation Section 1: Therapeutic BAL

Decannulation of tracheostomy

UNIT II

Cardiovascular system

Fluid resuscitation and inotropes

Basic of IABP/ECMO

Pericardiocentesis

UNIT III

Life support

Basic life support AED, Mask ventilation, Chest compression

Advanced cardiac life support Drugs, defibrillation

Trauma life support A – Airway and cervical spine stabilization

B – Breathing

C – Circulation and hemorrhage control

D – Disability

E – Exposure D Manual in line stabilization on Basic care of surgical wounds and fractures

Burns Assessment

Section 1: History and physical assessment

Section 2: Assessment of burns and fluid and electrolyte loss

Section 3: Etiology classification, Pathophysiology, clinical manifestations, Diagnosis, treatment modalities

Reference book



1. Techniques in Bedside haemodynamic Monitoring—
Elaine Kiess Daily & John Speer Schroeder (Mosby)
2. All you really need to know to interpret arterial blood gases—Lawrence Martin (Lea & Febiger)
3. Textbook of Advanced Cardiac Life Support. American Heart Association
4. Mechanical Ventilation—Susan P Pilbeam & JM Cairo (Elsevier)
5. Critical Care Secrets: Parsons, Wiener—Kronish, Jaypee Brothers
6. Washington Manual of Critical Care
7. Smeltzer—Brunner & Suddarth Textbook of Medical Surgical Nursing, 2010, LWW
8. Black—Medical Surgical Nursing, 2009, Elsevier.



INTENSIVE CARE INSTRUMENTATION AND MAINTENANCE- II

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Intensive instrumentation care and maintenance- I	4	3	1	-	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Recall and memorize the fundamental principles and technical specifications of various intensive care instruments and equipment.	Remember
Understand the underlying principles and functioning of intensive care instruments and equipment.	Understand
Apply knowledge of instrumentation and equipment maintenance to perform setup, calibration, and troubleshooting tasks effectively.	Apply
Analyse and interpret data acquired from intensive care instruments.	Analyse
Evaluate the impact of instrument accuracy, precision, and reliability on patient care and safety in the intensive care unit.	Evaluate
Design and implement protocols and procedures for the proper maintenance, calibration, and periodic testing of intensive care instruments.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. The principles, technical specifications, and functioning of various intensive care instruments and equipment commonly used in critical care settings. 2. Apply knowledge and skills in the setup, calibration, troubleshooting, and maintenance of intensive care instruments to ensure accurate and reliable data acquisition. 3. Analyse instrument data, evaluate instrument performance, and implement appropriate maintenance strategies to optimize the accuracy, precision, and longevity of intensive care instruments.
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UNIT I



Renal/Abdomen

Basics of Renal Replacement Therapy, modes of dialysis
Intra-abdominal pressure, abdominal compartment syndrome

UNIT II**Central Nervous system**

Care of Unconscious Patient, Comfort

Section 1: Skin integrity assessment and care

Section 2: Physiotherapy – chest & limbs

Section 3: Nutritional needs & supply

Pain Control, Care of epidural, Patient controlled analgesia

UNIT III**Infection Control**

Hand hygiene

Universal precautions

Isolation

Reference book

1. Netting – Lippincott manual of Nursing Practice, 2013, LWW
2. Lewis – medical Surgical Nursing, 2008, Elsevier
3. Davidson's Principles & Practice of Medicine, 2010, Elsevier
4. Bailey & Love Short Practice of Surgery, 2013, Hodder Arnold
5. Timby – Introductory Medical Surgical Nursing, 2013, WK
6. Das – textbook of Surgery, SD Publishers
7. Woods – Cardiac Nursing, 2010, LWW
Hickey – Neurologic & Neurosurgical Nursing, 2009, LWW

INFECTION CONTROL - I



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

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key principles and concepts related to infection control.	Remember
Understand the importance of infection control in healthcare settings and its impact on patient safety and quality of care.	Understand
Apply infection control practices and protocols in real-world scenarios to prevent the spread of infections.	Apply
Analyse the risk factors and potential sources of infections in healthcare settings, and assess the effectiveness of existing infection control measures.	Analyse
Evaluate the compliance with infection control protocols and guidelines in healthcare settings.	Evaluate
Create infection control policies, protocols, and guidelines for healthcare facilities.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the principles, technical specifications, and functioning of various intensive care instruments and equipment commonly used in critical care settings. 2. Apply knowledge and skills in the setup, calibration, troubleshooting, and maintenance of intensive care instruments to ensure accurate and reliable data acquisition. 3. Analyse instrument data, evaluate instrument performance, and implement appropriate maintenance strategies to optimize the accuracy, precision, and longevity of intensive care instruments.
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UNIT I




INTRODUCTION - Importance of infection in an ICU Agents causing Infection

Spread of infection: Source; host; transmission Bio hazardous materials

UNIT II

Infection control & universal precautions

Sterilization & Disinfection – concepts

Methods of sterilization

Spread of infection

Elimination of source - Cleaning and sterilizing equipment

Interrupting transmission of infection - role of healthcare workers

Disposal of infection wastes

Surveillance; quality control

UNIT III

Specific infections

Nosocomial Infections: Types - Prevention. HIV-AIDS.

Hepatitis A, B, C

Tropical Infections - Tetanus, Malaria, Leptospirosis, Dengue, Rickettsia, Amoebiasis Sepsis

Unit

UNIT IV

Airway Care

Indications for artificial airways

Relieving airway obstruction

Secretion removal

Protecting the airway

Positive Pressure Ventilation

Reference Book

1. "Infection Control and Management of Hazardous Materials for the Dental Team" by Chris H. Miller and Charles John Palenik
2. Principles and Practice of Disinfection, Preservation and Sterilization" by Adam P. Fraiese,



Peter A. Lambert, and Jean-Yves Maillard

3. Infection Prevention and Control at a Glance" by Debbie Weston, Alison Burgess, and Sue Roberts

INFECTIOUS DISEASES - I

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

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key principles and concepts related to infection control.	Remember
Understand the importance of infection control in healthcare settings and its impact on patient safety and quality of care.	Understand
Apply infection control practices and protocols in real-world scenarios to prevent the spread of infections.	Apply
Analyse the risk factors and potential sources of infections in healthcare settings, and assess the effectiveness of existing infection control measures.	Analyse
Evaluate the compliance with infection control protocols and guidelines in healthcare settings.	Evaluate
Create infection control policies, protocols, and guidelines for healthcare facilities.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the principles, technical specifications, and functioning of various intensive care instruments and equipment commonly used in critical care settings. 2. Apply knowledge and skills in the setup, calibration, troubleshooting, and maintenance of intensive care instruments to ensure accurate and reliable data acquisition. 3. Analyse instrument data, evaluate instrument performance, and implement appropriate maintenance strategies to optimize the accuracy, precision, and longevity of intensive care instruments.
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2. Meningitis
3. Respiratory tract infections
4. Gastroenteritis
5. Endocarditis
6. Septicemia

Reference Book

1. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone Publication
2. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange
3. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication

CLINICAL POSTING



Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Clinical Posting	2	-	-	4	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key concepts and principles of intensive care technology.	Remember
Understand the practical application of intensive care technology in a clinical setting.	Understand
Apply theoretical knowledge and technical skills to effectively operate and utilize intensive care technology in the clinical care of critically ill patients.	Apply
Analyse and interpret data generated by intensive care technology.	Analyse
Evaluate the effectiveness and reliability of intensive care technology in monitoring and managing critically ill patients.	Evaluate
Create strategies and protocols for the optimal utilization and integration of intensive care technology in clinical practice.	Create

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

- 45 Days of Clinical posting is mandatory for student.

SEMESTER –IV




ICU MONITORING- I

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

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key principles and concepts related to ICU monitoring.	Remember
Understand the significance of ICU monitoring in assessing and managing critically ill patients.	Understand
Apply knowledge of ICU monitoring to effectively set up and utilize monitoring equipment in clinical practice.	Apply
Analyse and interpret monitoring data to assess patient status, detect changes, and evaluate treatment effectiveness.	Analyse
Evaluate the effectiveness and reliability of ICU monitoring in providing timely and accurate information for clinical decision-making.	Evaluate
Create protocols and guidelines for the proper utilization and documentation of ICU monitoring, ensuring consistency and standardization of practice.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> Understand the principles and significance of ICU monitoring, including the types of monitors used, parameters measured, and interpretation of monitoring data. Apply knowledge of ICU monitoring to effectively set up and utilize monitoring equipment, interpret monitoring data, and make informed clinical decisions for critically ill patients.
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1. RESPIRATORY SYSTEM



Respiratory Failure
Acute Respiratory Distress Syndrome
Pneumonia, Tuberculosis
Opportunistic infections
Bronchial asthma
Chronic obstructive airways disease
Chronic bronchitis
Emphysema
Chronic Suppurative Lung Disease
Bronchiectasis
Lung Abscess
Atelectasis/Collapse
Pleural diseases: pneumothorax, pleural effusions

2. **CARDIOVASCULAR SYSTEM**

Shock-hypovolemic, cardiogenic, obstructive, septic
Congestive cardiac failure; Acute-left ventricle failure
Pulmonary edema
Pulmonary hypertension
Pulmonary embolism
Ischemic heart disease; Myocardial infarction

3. **NERVOUS SYSTEM:**

Cerebrovascular Disease
Neurological Failure:
Coma
Delirium
Neuromuscular disease
Myasthenia gravis
Guillain Barre Syndrome
Cerebrovascular disease, stroke
Brain Death
Persistent Vegetative State
Trauma
Head injury
Unstable spine & protection

4. **GASTROINTESTINAL, HEPATIC, PANCREAS:**

Upper GI Bleed
Hepatic Coma
Pancreatitis

5. **RENAL:**

Renal Failure in ICU
ENDOCRINE & METABOLIC:
Hypoglycemia

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HyperglycemiaHematology:

HematologicalMalignancies

Neutropenia

Coagulopathy

6. MISCELLANEOUS:

Envenomation- snake bite,scorpion sting

Poisoning-generalsupportivecare,commonpoisons

Reference Book

1. Critical Care Medicine: Principles of Diagnosis and Management in the Adult" by Joseph E. Parrillo and R. Phillip Dellinger
2. Manual of Intensive Care Medicine" by Richard S. Irwin, James M. Rippe, and Mitchell P. Fink
3. Textbook of Critical Care" by Jean-Louis Vincent and Edward Abraham
4. Egan's Fundamentals of Respiratory Care – Robert L. Wikins, James K Stoller,
5. The ICU Book – Paul L Marino (Lippincott, Williams & Wilkins)
6. Practical Methods for Respiratory Care – Raymond Sibberson (Mosby)
7. Respiratory Physiology – The Essentials I John B West (Williams & Wilkins)
8. Ventilation / Blood Flow & Gas Exchange – John B West (Blackwell Scientific Publications)
9. Techniques in Bedside haemodynamic Monitoring – Elaine Kiess Daily &Johnspeer Schroeder (Mosby)
10. All you really need to know to interpret arterial blood gases – Lawrence Martin (Lea &Febiger)
11. Text book of Advanced Cardiac Life Support. American Heart Association
12. Mechanical Ventilation – Susan P Pilbeam& J M Cairo (Elsevier)
13. Critical Care Secrets: Parsons, Wiener – Kronish, Jaypee Brothers
14. Washington Manual of Critical Care

ICU MONITORING- II



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

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key principles and concepts related to ICU monitoring.	Remember
Understand the significance of ICU monitoring in assessing and managing critically ill patients.	Understand
Apply knowledge of ICU monitoring to effectively set up and utilize monitoring equipment in clinical practice.	Apply
Analyse and interpret monitoring data to assess patient status, detect changes, and evaluate treatment effectiveness.	Analyse
Evaluate the effectiveness and reliability of ICU monitoring in providing timely and accurate information for clinical decision-making.	Evaluate
Create protocols and guidelines for the proper utilization and documentation of ICU monitoring, ensuring consistency and standardization of practice.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the principles and significance of ICU monitoring, including the types of monitors used, parameters measured, and interpretation of monitoring data. 2. Apply knowledge of ICU monitoring to effectively set up and utilize monitoring equipment, interpret monitoring data, and make informed clinical decisions for critically ill patients.
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UNIT I

Respiratory system

Monitoring lung and chest wall mechanics

Compliance

Resistance

Pressures

AutoPEEP Volumes

Monitoring muscle strength, work of breathing, Maximum

Inspiratory and expiratory pressures

Monitoring patient ventilator system, Graphics monitoring

Bedside PFT

UNIT II

Cardiovascular System

Assessment of Preload responsiveness static and dynamic parameters

Basic Echocardiography in ICU/Ultrasound in Critical Care

Defibrillator and Cardioversion

PICCO

Monitoring tissue perfusion

Pulmonary artery catheters

Temporary pacemaker

UNIT III

CNS

Monitoring brain stem function

Sedation and analgesia scoring

UNIT IV

Nutritional monitoring

Functional nutritional assessment (history and physical examination)

Metabolic assessment

Estimating nutritional requirements

UNIT V

Care & maintenance of ICU equipment Troubleshooting

(Includes quality checks and calibrations of all the equipment)



Mechanical Ventilators & Non-invasive ventilators

Pumps: Infusion, syringe

Monitors: Stand-alone & multi-parameter, Cardiac Output monitors.

ECG machine

ABG machine

Defibrillator

Ultrasound machine Unit 8: Bronchoscope

Dialysis Machine

PRACTICALS

- 1) Logbook and project completion for internal assessment
- 2) Should know the workings of all ICU equipment
- 3) Should know care and maintenance of all ICU equipment
- 4) Should be able to monitor ventilator parameters
- 5) Should be able to assess fluid responsiveness in a patient

REFERENCE BOOKS

1. Egan's Fundamentals of Respiratory Care – Robert L. Wilkins, James K Stoller,
2. The ICU Book – Paul L Marino (Lippincott, Williams & Wilkins)
3. Practical Methods for Respiratory Care – Raymond Sibberson (Mosby)
4. Respiratory Physiology – The Essentials | John B West (Williams & Wilkins)
5. Ventilation / Blood Flow & Gas Exchange – John B West
(Blackwell Scientific Publications)
6. Techniques in Bedside haemodynamic Monitoring –
Elaine Kiess Daily & John Speer Schroeder (Mosby)
7. All you really need to know to interpret arterial blood gases – Lawrence Martin (Lea & Febiger)
8. Textbook of Advanced Cardiac Life Support. American Heart Association
9. Mechanical Ventilation – Susan P Pilbeam & JM Cairo (Elsevier)
10. Critical Care Secrets: Parsons, Wiener – Kronish, Jaypee Brothers
11. Washington Manual of Critical Care

INFECTION CONTROL- II

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

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key principles and concepts related to infection control.	Remember
Understand the importance of infection control in healthcare settings and its impact on patient safety and quality of care.	Understand
Apply infection control practices and protocols in real-world scenarios to prevent the spread of infections.	Apply
Analyse the risk factors and potential sources of infections in healthcare settings, and assess the effectiveness of existing infection control measures.	Analyse
Evaluate the compliance with infection control protocols and guidelines in healthcare settings.	Evaluate
Create infection control policies, protocols, and guidelines for healthcare facilities.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the principles, technical specifications, and functioning of various intensive care instruments and equipment commonly used in critical care settings. 2. Apply knowledge and skills in the setup, calibration, troubleshooting, and maintenance of intensive care instruments to ensure accurate and reliable data acquisition. 3. Analyse instrument data, evaluate instrument performance, and implement appropriate maintenance strategies to optimize the accuracy, precision, and longevity of intensive care instruments.
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UNIT I

Selecting and establishing an artificial airway

Nasal airways

Pharyngeal airways

Tracheal airways

Airway clearance techniques

Airway suctioning

Bronchoscopy

UNIT II

AIRWAY MAINTENANCE

Securing the airway and confirming placement

Providing adequate humidification

Minimizing nosocomial infections

Providing cuff care

Facilitating clearance of secretions

Troubleshooting airway emergencies

EXTUBATION

Indications

Procedure

Postextubation care & complications

UNIT III

Oxygen Therapy

Sources of oxygen for therapy

Storage of oxygen

Oxygen delivery systems

Hazards of oxygen

Modes of O₂ therapy

Monitoring O₂

Delivery systems (in vitro) blood gases in patient (in vitro.)

Pulse oximetry

Economic issues

UNIT IV

CHESTXRAY

NORMALCHESTX-RAY

Normal anatomy

Basic physics of X-ray and assessment of film quality

Cardiac configuration

Lung fields and airway

Optimum position of - ET, NG, Central
Lines ABNORMAL CXR:

Trauma:

Pneumothorax

Hemothorax

Lung contusion

Pulmonary edema

CCF

ARDS

Pneumonia: - Bronchopneumonia, Lobar pneumonia, Aspiration pneumonia

Reference book

1. "Infection Control and Management of Hazardous Materials for the Dental Team" by Chris H. Miller and Charles John Palenik
2. Principles and Practice of Disinfection, Preservation and Sterilization" by Adam P. Fraiese, Peter A. Lambert, and Jean-Yves Maillard
3. Infection Prevention and Control at a Glance" by Debbie Weston, Alison Burgess, and Sue Roberts



INFECTIOUS DISEASES- II

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

Course Outcomes

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

CO Statement	Taxonomy
Recall and remember key principles and concepts related to infection control.	Remember
Understand the importance of infection control in healthcare settings and its impact on patient safety and quality of care.	Understand
Apply infection control practices and protocols in real-world scenarios to prevent the spread of infections.	Apply
Analyse the risk factors and potential sources of infections in healthcare settings, and assess the effectiveness of existing infection control measures.	Analyse
Evaluate the compliance with infection control protocols and guidelines in healthcare settings.	Evaluate
Create infection control policies, protocols, and guidelines for healthcare facilities.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the principles, technical specifications, and functioning of various intensive care instruments and equipment commonly used in critical care settings. 2. Apply knowledge and skills in the setup, calibration, troubleshooting, and maintenance of intensive care instruments to ensure accurate and reliable data acquisition. 3. Analyse instrument data, evaluate instrument performance, and implement appropriate maintenance strategies to optimize the accuracy, precision, and longevity of intensive care instruments.
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- 1) Urinary tract infections
- 1) Protozoal infection- Malaria
- 1) HIV & Opportunistic infections
- 1) Fungal infections
- 1) Viral infections
- 1) Gonorrhea and
- 1) Syphilis

Reference Book

- 1. Clinical Pharmacy and Therapeutics - Roger and Walker, Churchill Livingstone Publication
- 2. Pharmacotherapy: A Pathophysiologic approach - Joseph T. Dipiro et al. Appleton & Lange
- 3. Clinical Pharmacy and Therapeutics - Eric T. Herfindal, Williams and Wilkins Publication

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DISCIPLINE SPECIFIC ELECTIVE

Communication skill for Health care professional/Introduction to national healthcare system

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	Communication skill for Health care professional	3	3	-	-	20	80	100


Course Outcomes

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

CO Statement	Taxonomy
Explain and describe effective and non-effective communication techniques	Receive
Differentiate between verbal and non-verbal communication.	Respond
Identify behaviors that interfere with effective communication	Value
Understand interview techniques and demonstrate or explain appropriate patient education practices	Organize
Characterize relationships among various health care professionals and patients of various educational levels.	Characterize
Follow elements of active listening and benefits of professional communication	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	1. The purpose of this course is to prepare students with basic interpersonal and communication skills needed by the Medical Assistants in the medical office or clinic setting
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UNIT-I

Identify practices for effective verbal communication with patients and other healthcare providers. Develop skills for listening and paraphrasing. Demonstrate methods of questioning the patient

UNIT-II

Explain how low health literacy may impact a patient's health. Describe strategies that will facilitate communication between a healthcare professional and a patient who is visually impaired, hearing impaired, or speaks a different language

UNIT-III

Identify the benefits of patient education. Distinguish the three types of learning styles. Describe the benefits of using visual aids and written materials

UNIT-IV

Explain how telecommunication, fax, and email differ from face-to-face communication. Discuss the guidelines for the effective use of the telephone in the healthcare setting. List the symptoms and conditions that require immediate medical help

UNIT-V

Explain the purposes of the parts of speech and punctuation. Illustrate correct sentence grammar

Reference books:

1. Communication Skills for the Healthcare Professional, First edition
2. McCorry, L., Mason, J, Lippincott Williams & Wilkins, Copyright 2011
3. Textbook of radiological safety- GK Rath – 1st edition – 2010
4. Aids to radiological differential diagnosis- Stephen Davies- Elsevier -6th edition -2013



Introduction to national healthcare system

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	Introduction to national healthcare system	3	3	-	-	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Describes & Orient the students towards the Hospital Personnel Management and Legal Aspects in Hospitals	Receive
Discuss the parameters of Hospital Operations Management	Respond
Demonstrate the Recent Trends in Healthcare Systems	Value
Define the Do's and Don'ts for Occupational Health	Organize
Revise the Role of Planning and Organization of Utility Services in hospital	Characterize
Follow the skills for Inventory and Stores Administration Fundamentals of Financial Management	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Course Objective	1. To familiarise with the healthcare environment → To understand the concepts of management with relevance to hospitals
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UNIT I

Introduction – Theoretical frame work - Environment - Internal and External – Environmental Scanning – Economic Environment – Competitive Environment – Natural Environment – Politico Legal Environment – Socio Cultural Environment - International and Technological Environment.

UNIT II

A Conceptual Approach to Understanding the Health Care Systems – Evolution – Institutional Setting - Out Patient services – Medical Services – Surgical Services – Operating department – Pediatric services – Dental services – Psychiatric services – Casualty & Emergency services – Hospital Laboratory services – Anesthesia services – Obstetrics and Gynecology services – Neuro – Surgery service – Neurology services.

UNIT III

Overview of Health Care Sector in India – Primary care – Secondary care – Tertiary care – Rural Medical care – urban medical care – curative care – Preventive care – General & special Hospitals-Understanding the Hospital Management – Role of Medical, Nursing Staff, Paramedical and Supporting Staff - Health Policy - Population Policy - Drug Policy – Medical Education Policy

UNIT IV

Health Care Regulation – WHO, International Health regulations, IMA, MCI, State Medical Council Bodies, Health universities and Teaching Hospitals and other Health care Delivery Systems

UNIT V

Epidemiology – Aims – Principles – Descriptive, Analytical and Experimental Epidemiology - Methods - Use

Reference books:

1. Seth,M.L. MACROECONOMICS, Laksminarayana Agrawal, Edu, Pub.Agra.1996
3. Peter,Z& Fredrick, B. HEALTH ECONOMICS, Oxford Pub., New York, 1997
4. Shanmugansundaram, Y., HEALTH ECONOMICS, Oxford Pub. New York, 1997



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	<ol style="list-style-type: none"> 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
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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 nonmaleficence 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	<p>The students will develop:</p> <ol style="list-style-type: none"> 1. Clinical ethical Competency. 2. Ethical awareness, Empathy
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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 –V PRINCIPLES OF ICU MANAGEMENT – I

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

Course Outcomes

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

CO Statement	Taxonomy
Understand the fundamental principles and concepts of ICU management, including patient prioritization, resource allocation, and care coordination.	Understanding
Apply evidence-based practices and guidelines in the management of common critical care conditions, such as sepsis, acute respiratory distress syndrome (ARDS), and hemodynamic instability.	Apply
Analyze and interpret clinical data and monitoring parameters to assess patient status, make informed decisions, and optimize patient outcomes.	Analyze
Evaluate the ethical and legal considerations in ICU management, including end-of-life care, patient autonomy, and informed consent.	Evaluate
Create comprehensive care plans, including patient monitoring, medication management, and infection control protocols.	Create

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the fundamental principles and strategies involved in the management of critically ill patients in the ICU, including patient prioritization, resource allocation, and multidisciplinary teamwork. 2. Apply evidence-based practices and guidelines to make informed decisions, optimize patient outcomes, and develop comprehensive care plans for critically ill patients in the ICU setting.
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UNIT I

Introduction to ICU Management

Role and responsibilities of ICU managers

Organization and structure of the ICU

Quality improvement and patient safety in the ICU

UNIT II

Patient Assessment and Prioritization

Patient triage and admission criteria

Initial and ongoing assessment of critically ill patients

Severity scoring systems and prognostic indicators

UNIT III

Common Critical Care Conditions and Management

Sepsis and septic shock management

Acute respiratory failure and mechanical ventilation strategies

Hemodynamic monitoring and management of shock

UNIT IV

ICU Therapeutics

Medication management and pharmacokinetics in the ICU

Sedation, analgesia, and delirium management

Nutritional support in critically ill patients

Reference Book

1. Marino's The ICU Book" by Paul L. Marino
2. Principles of Critical Care" by Jesse B. Hall, Gregory A. Schmidt, and John P. Kress
3. Textbook of Critical Care" by Jean-Louis Vincent and Edward Abraham
4. Intensive Care Medicine" by Jean-Louis Vincent, Jesse B. Hall, Mitchell P. Fink, and Greg S. Martin



PRINCIPLES OF ICU MANAGEMENT – II

Course Outcomes

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

CO Statement	Taxonomy
Understand the fundamental principles and concepts of ICU management, including patient prioritization, resource allocation, and care coordination.	Understanding
Apply evidence-based practices and guidelines in the management of common critical care conditions, such as sepsis, acute respiratory distress syndrome (ARDS), and hemodynamic instability.	Apply
Analyze and interpret clinical data and monitoring parameters to assess patient status, make informed decisions, and optimize patient outcomes.	Analyze
Evaluate the ethical and legal considerations in ICU management, including end-of-life care, patient autonomy, and informed consent.	Evaluate
Create comprehensive care plans, including patient monitoring, medication management, and infection control protocols.	Create

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	<ol style="list-style-type: none"> Understand the fundamental principles and strategies involved in the management of critically ill patients in the ICU. Apply evidence-based practices and guidelines to make informed decisions, optimize patient outcomes, and develop comprehensive care plans for critically ill patients in the ICU setting.
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Course Code	Course Category	Paper Title	Credits	Contact per week	Evaluation
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				L	T	P	Internal	External	Total
	Core	Principles of ICU Management – II	4	3	1	-	20	80	100

UNIT I

Ethical and Legal Considerations in ICU Management
End-of-life care and decision-making
Informed consent and patient autonomy
Legal aspects and documentation in the ICU

UNIT II

Multidisciplinary Teamwork and Communication
Interprofessional collaboration in the ICU
Effective communication strategies with patients and families
Dealing with conflicts and ethical dilemmas in the ICU

UNIT III

Infection Control and Prevention in the ICU
Strategies for infection control in the ICU setting
Antimicrobial stewardship and prevention of healthcare-associated infections
Isolation precautions and management of multidrug-resistant organisms

UNIT IV

ICU Management in Special Populations
Management of trauma patients in the ICU
Care of critically ill pediatric and neonatal patients
Geriatric considerations in ICU management

Reference Book

1. Marino's The ICU Book" by Paul L. Marino
2. Principles of Critical Care" by Jesse B. Hall, Gregory A. Schmidt, and John P. Kress
3. Textbook of Critical Care" by Jean-Louis Vincent and Edward Abraham
4. Intensive Care Medicine" by Jean-Louis Vincent, Jesse B. Hall, Mitchell P. Fink, and Greg S. Martin



BASICS OF RADIOLOGY

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

Course Outcomes

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

CO Statement	Taxonomy
Remember to operate imaging equipments.	Remember
Learn & operate advance radiological tools to diagnose & detect disease.	Understand
Demonstrate clinical competency required of an entry level radiographer	Apply
Analyse the special radiographic equipments.	Analyse
Assess the application of radioisotopes.	Evaluate
Formulate the radiosafety principles.	Create

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

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Critical thinking 2. Problem solving skills 3. Recognize abnormal findings. 4. Understand interventional procedures.
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UNIT-I

X ray - Principles of X-ray

Description and recognition of chest X-rays

MRI – Principles of MRI

Description of MRI

CT Scan – Principles of CT Scan

Description of CT Scan

Different views of chest for identification of cardiopulmonary structures

Ultrasonography: principles

UNIT –II

RADIO DIAGNOSIS

Radiography, Angiography, Fluoroscopy, Image Intensifier, Multi section radiography.

UNIT-III

SPECIAL RADIOLOGICAL EQUIPMENTS

Principle, Plane of Movement, Multi section Radiography, CAT. Principle of NMR, MRI

UNIT-IV

APPLICATION OF RADIOISOTOPES

Alpha, Beta and Gamma emission, Principle of radiation detectors, dot scanners, Nuclear angiogram, Principles of Radiation therapy.

UNIT-V

RADIATION SAFETY

Hazardous effect of Radiation, Radiation protection Techniques, Safety Limits, Radiation Monitoring

Reference books

1. Concise textbook of Basic Radiography- Lalit Agarwal-2019
2. Textbook of Radiology for residents & technicians – Satish K Bhargava & Sumeet Bhargava-6th edition-2023.
3. Radiology of Positioning and Applied Anatomy for students and practitioners –GS Garkal- 4th edition-2015
4. Textbook of Radiology for CT and MRI Technicians – Sachin Khanduri-1st edition-2018.



ADVANCE ICU CARE

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

Course Outcomes

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

CO Statement	Taxonomy
Remember to operate imaging equipments.	Remember
Learn & operate advance radiological tools to diagnose & detect disease.	Understand
Demonstrate clinical competency required of an entry level radiographer	Apply
Analyse the special radiographic equipments.	Analyse
Assess the application of radioisotopes.	Evaluate
Formulate the radio safety principles.	Create

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

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Critical thinking 2. Problem solving skills 3. Recognize abnormal findings. 4. Understand interventional procedures.
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UNIT I

Advanced Principles of Critical Care

Advanced pathophysiology and organ system dysfunction
Complex hemodynamic monitoring and management
Advanced ventilator management strategies

UNIT II

Advanced ICU Therapies and Procedures

Extracorporeal membrane oxygenation (ECMO)
Continuous renal replacement therapy (CRRT)
Intra-aortic balloon pump (IABP) and ventricular assist devices (VAD)

UNIT III

Complex ICU Scenarios and Special Populations

Management of septic shock and multi-organ dysfunction syndrome
Trauma resuscitation and critical care management
ICU care for special populations (pediatric, geriatric, immunocompromised)

UNIT IV

Advanced Cardiac Care in the ICU

Advanced cardiac monitoring and interpretation
Invasive cardiac procedures (e.g., percutaneous coronary intervention, cardiac catheterization)
Management of acute coronary syndromes and heart failure in the ICU

UNIT V

Advanced Neurocritical Care

Intracranial pressure monitoring and management
Advanced neuroimaging interpretation in critical care
Management of traumatic brain injury and stroke in the ICU

UNIT VI

Complex Respiratory Care in the ICU

Advanced mechanical ventilation modes and strategies
Non-invasive ventilation for complex respiratory failure
Management of acute respiratory distress syndrome (ARDS) and refractory hypoxemia

UNIT VII

Interdisciplinary Collaboration and Leadership in the ICU

Team dynamics and communication in critical care
Effective resource allocation and management in the ICU



Leadership skills for managing critical situations in the ICU

Reference Book

1. "Textbook of Critical Care" by Jean-Louis Vincent, Edward Abraham, Patrick Kochanek, and Frederick A. Moore
2. "The Washington Manual of Critical Care" by Marin H. Kollef and Warren Isakow
3. "Current Diagnosis & Treatment: Critical Care" by Frederic S. Bongard, Darryl Y. Sue, and Janine R.E. Vintch
4. "Critical Care Medicine: The Essentials" by John J. Marini and David J. Dries

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ABILITY ENHANCEMENT COURSE

MEDICAL PSYCHOLOGY

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

Course Outcomes

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

CO Statement	Taxonomy
This course covers various aspects of medical psychology.	Receive
Understand different aspects of medical psychology essential in medical professional.	Respond
Apply medical psychology in clinical scenario during clinical 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	<ol style="list-style-type: none"> 1. Cognitive thinking 2. Demonstrate skills in communication. 3. Ethical behaviour
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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



BIostatISTICS & RESEARCH METHODOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	Biostatistics & Research Methodology	3	3	-	-	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	<ol style="list-style-type: none"> To understand the importance & Methodology for research To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.
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1. Introduction to research methods.
2. Sampling methods
3. Identifying research problem
4. Developing a research proposal
5. Ethical issues in research
6. Research design
7. Types of Data
8. Basic Concepts of Biostatistics
9. 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 Methodology and applied statistics – DN Sansanwal - 2020



DISCIPLINE SPECIFIC ELECTIVE
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	<ol style="list-style-type: none"> 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.
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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 Development Author S S Khanka Edition reprint Publisher S. Chand Publishing, 2006
2. Entrepreneurship Development and Business Ethics Paperback – 1 January 2019 by Abhik Kumar Mukherjee and Shaunak Roy Author
3. Margie Lovett Scott, Faith Prather. Global health systems comparing strategies for delivering health services. Joney & Bartlett learning, 2014
4. Taxmann's Entrepreneurship 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
	Discipline specific elective	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.
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UNIT-I

Quality assurance and management – Concepts of Quality of Care, Quality Improvement Approaches, Standards and Norms, Introduction to NABH guidelines

UNIT-II

Basics of emergency care and life support skills - Basic life support (BLS), Vitals 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

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



SEMESTER –VI LIFE SUPPORT IN ICU

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

Course Outcomes

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

CO Statement	Taxonomy
Demonstrate proficiency in assessing and managing critically ill patients requiring life support measures in the ICU.	Remember
Apply evidence-based guidelines and protocols for the initiation and maintenance of different life support modalities.	Understand
Perform advanced procedures related to life support interventions safely and effectively.	Apply
Analyze and interpret physiological data to guide the adjustment of life support interventions.	Analyze
Collaborate effectively with the interdisciplinary team in delivering coordinated and timely life support care.	Collaborate
Evaluate and respond to life-threatening emergencies in the ICU using standardized algorithms and protocols	Evaluate

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	<ol style="list-style-type: none"> 1. Cognitive thinking 2. Demonstrate skills in communication. 3. Ethical behaviour
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UNIT I

Introduction to Life Support in ICU
Overview of critical care and life support systems
Ethical considerations in life support decision-making
Principles of patient assessment and stabilization in life-threatening situations

UNIT II

Basic Life Support
Basic life support techniques (CPR, airway management, defibrillation)
Recognition and management of cardiac arrest and respiratory failure
Team dynamics and communication during resuscitation efforts

UNIT III

Advanced Cardiac Life Support (ACLS)
Advanced cardiac monitoring and interpretation (ECG, hemodynamic monitoring)
ACLS algorithms for the management of cardiac arrest, arrhythmias, and acute coronary syndromes
Advanced airway management techniques (intubation, ventilation)

UNIT IV

Mechanical Ventilation and Respiratory Support
Indications and modes of mechanical ventilation
Ventilator settings and adjustment for different patient populations
Management of complications and weaning from mechanical ventilation

UNIT V

Hemodynamic Support
Invasive and non-invasive hemodynamic monitoring
Inotropes, vasopressors, and vasodilators in the management of shock
Management of fluid balance and sepsis-related hemodynamic instability

UNIT VI

Renal Replacement Therapy
Principles and indications for continuous renal replacement therapy (CRRT)
Techniques and modalities of CRRT
Management of electrolyte and acid-base disturbances in renal failure

UNIT VII

Neurological Life Support



Intracranial pressure monitoring and management
Sedation, analgesia, and neuromuscular blockade in neurologically compromised patients
Targeted temperature management in neurocritical care

UNIT VIII

End-of-Life Care and Palliative Support
Communication and decision-making in end-of-life situations
Symptom management and psychological support for patients and families
Ethical considerations in withdrawing or withholding life support interventions

Reference Book

1. "Textbook of Critical Care" by Jean-Louis Vincent, Edward Abraham, Patrick Kochanek, and Frederick A. Moore
2. "The Washington Manual of Critical Care" by Marin H. Kollef and Warren Isakow
3. "Current Diagnosis & Treatment: Critical Care" by Frederic S. Bongard, Darryl Y. Sue, and Janine R.E. Vintch
4. "Critical Care Medicine: The Essentials" by John J. Marini and David J. Dries



ADVANCE ICU TECHNOLOGY

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

Course Outcomes

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

CO Statement	Taxonomy
Demonstrate an in-depth understanding of advanced ICU technologies and their clinical applications.	Remember
Evaluate and select appropriate advanced technologies for specific patient populations and critical care scenarios.	Understand
Utilize advanced monitoring systems and data analysis tools to guide clinical decision-making.	Utilize
Implement and manage advanced mechanical ventilation modes and therapeutic interventions.	Implement
Analyze and interpret complex patient data to optimize patient care in the ICU.	Analyse
Critically evaluate the benefits, limitations, and potential risks associated with advanced ICU technologies.	Evaluate

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	<ol style="list-style-type: none"> 1. Cognitive thinking 2. Demonstrate skills in communication. 3. Ethical behaviour
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UNIT I

Introduction to Medical Devices in ICU
Overview of medical devices used in the ICU
Principles of medical device safety and management in the ICU
Regulatory considerations and standards for medical devices

UNIT II

Monitoring Devices
Principles and functions of monitoring devices (e.g., ECG, pulse oximetry, invasive pressure monitoring)
Interpretation of monitoring data and clinical application
Troubleshooting and maintenance of monitoring devices

UNIT III

Mechanical Ventilation
Principles of mechanical ventilation
Modes of ventilation and ventilator settings
Ventilator management and troubleshooting

UNIT IV

Hemodynamic Monitoring and Support Devices
Principles and functions of hemodynamic monitoring devices (e.g., arterial lines, pulmonary artery catheters)
Hemodynamic assessment and interpretation of monitoring data
Hemodynamic support devices (e.g., intra-aortic balloon pump, ventricular assist devices)

UNIT V

Renal Replacement Therapy
Principles and functions of renal replacement therapy machines (e.g., hemodialysis, continuous renal replacement therapy)
Indications and contraindications for renal replacement therapy
Management and troubleshooting of renal replacement therapy devices

UNIT VI

Specialty Devices in ICU
Extracorporeal membrane oxygenation (ECMO)
Intracranial pressure monitoring devices
Intra-abdominal pressure monitoring devices

Reference Book

1. "Textbook of Critical Care" by Jean-Louis Vincent, Edward Abraham, Patrick Kochanek, and Frederick A. Moore
2. "The Washington Manual of Critical Care" by Marin H. Kollef and Warren Isakow
3. "Current Diagnosis & Treatment: Critical Care" by Frederic S. Bongard, Darryl Y. Sue, and Janine R.E. Vintch
4. "Critical Care Medicine: The Essentials" by John J. Marini and David J. Dries



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
Understand the principles of operation and functions of medical devices commonly used in the ICU.	Remember
Operate and troubleshoot various medical devices effectively, ensuring patient safety and optimal device performance.	Understand
Apply evidence-based guidelines and best practices in the selection, setup, and maintenance of medical devices in the ICU.	Apply
Interpret data generated by monitoring devices to guide clinical decision-making and assess patient condition.	Analyse
Collaborate with the interdisciplinary team to optimize the use of medical devices and integrate them into patient care plans.	Evaluate
Demonstrate effective communication and documentation skills related to medical device use in the ICU	Create

Learning Outcomes	<ol style="list-style-type: none"> 1. Cognitive thinking 2. Demonstrate skills in communication. 3. Ethical behavior
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UNIT I

Introduction to Medical Devices in the ICU
Overview of medical devices used in the ICU
Principles of medical device safety and management in critical care
Regulatory considerations and standards for medical devices

UNIT II

Patient Monitoring Devices
Principles and functions of monitoring devices (e.g., ECG, pulse oximetry, arterial lines)
Interpretation of monitoring data and clinical application
Troubleshooting and maintenance of monitoring devices

UNIT III

Mechanical Ventilation Devices
Principles of mechanical ventilation
Modes of ventilation and ventilator settings
Ventilator management and troubleshooting

UNIT IV

Infusion Pumps and Intravenous Therapy
Principles and functions of infusion pumps
Safe administration of medications and fluids
Troubleshooting common issues with infusion pumps

UNIT V

Renal Replacement Therapy Devices
Principles and functions of renal replacement therapy machines (e.g., hemodialysis, continuous renal replacement therapy)
Indications and contraindications for renal replacement therapy
Management and troubleshooting of renal replacement therapy devices

UNIT VI

Patient Support Devices
Principles and functions of patient support equipment (e.g., beds, mobility aids)
Safe use and positioning of patient support devices
Preventing complications and ensuring patient comfort

UNIT VII

Equipment Maintenance and Safety
Equipment cleaning and sterilization protocols
Preventive maintenance and calibration of medical devices
Adherence to safety guidelines and infection control practices

UNIT VIII

Communication and Documentation
Effective communication strategies related to medical device use

Documentation of medical device parameters and interventions
Handover and information sharing practices

Reference Book

1. "Textbook of Critical Care" by Jean-Louis Vincent, Edward Abraham, Patrick Kochanek, and Frederick A. Moore
2. "The Washington Manual of Critical Care" by Marin H. Kollef and Warren Isakow
3. "Current Diagnosis & Treatment: Critical Care" by Frederic S. Bongard, Darryl Y. Sue, and Janine R.E. Vintch
4. "Critical Care Medicine: The Essentials" by John J. Marini and David J. Dries

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.

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DISCIPLINE SPECIFIC ELECTIVE

HOSPITAL MANAGEMENT

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Hospital Management	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 the Understanding 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	<ol style="list-style-type: none"> 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.
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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 policies

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 Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	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 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	<ol style="list-style-type: none"> To Understand and the basic ideas on how to check for Vital Signs of the Patient They will also learn on the Basics of Nasal-Gastric Tube. This course the student will learn how to handle the patients and their positioning
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UNIT- I

Measuring vital signs: 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: enteralfeedingng tube: measurement, procedure, care, removal of nasal-gastric tube, nasal-gastric tube feeding, and parenteral nutrition

UNIT- IV

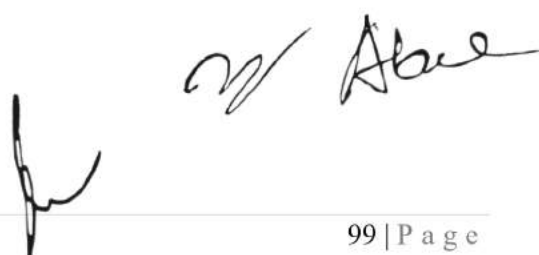
Asepsis: hand wash techniques, (medical, surgical) universal precaution, protecting equipment's: using sterile gloves, opening a sterile package and establishing a sterile field, sterile dressing changes, surgical attire, wound dressing, suture removal, cleaning and application of sterile dressing, wearing and removal of personal protective equipment

UNIT- V

Mobility and support: moving and positioning, range of motion exercises (active & passive) assisting for transfer, application of restraints.

Reference books

- 1.basic surgical skills and techniques – sudhirkumar -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 – krsethuraman- 2nd edition – 2018



SEMESTER - VII

INTERNSHIP

Course Code	Course Category	Paper Title	Evaluation	
			Internal	External
	Core	Internship	20	80

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.

