

(7)

## **SYLLABUS**

### **BACHELOR IN EMERGENCY AND TRAUMA CARE TECHNOLOGY**

**4 Years (VIII Semesters)**

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



*W. Abu*

## **Bachelor in Emergency and Trauma Care**

### **Learning Objective**

At the end of the B.Sc. in Cath Lab Technology course, the student should be able to:

- 1) Understand the principles of Emergency and Trauma Care.
- 2) Develop Knowledge of Emergency procedures and protocols.
- 3) Acquire skills in emergency patient assessment and management techniques.
- 4) Enhance skills in medical intervention.
- 5) Comprehend emergency and trauma diagnostics.

### **Expectations from the future graduate in providing patient care**

The goal of the B.Sc. in emergency and trauma care course is to produce a competent emergency and trauma care technician who:

1. Emergency Medical Services include emergency response protocols, communication systems, and the role of emergency care technicians within the system.
2. Performing basic life-saving techniques, such as cardiopulmonary resuscitation (CPR), airway management, and automated external defibrillation (AED). They also learn about advanced interventions like intravenous (IV) therapy, advanced airway management, and administration of medications.
3. The assessment and management of trauma patients, including understanding the mechanism of injury, conducting a systematic primary and secondary survey and providing appropriate care for various types of traumatic injuries.
4. Provided the recognition and management of common medical emergencies, such as heart attacks, strokes, respiratory distress, allergic reactions, and diabetic emergencies. Students learn to recognize signs and symptoms, perform appropriate interventions, and provide initial stabilization.
5. Commonly used medications in emergency care, including their indications, contraindications, dosages, and administration routes.
6. Various emergency procedures, such as wound care and suturing, splinting and immobilization, burn management, obstetric emergencies, and managing environmental emergencies.
7. Systematic approaches to patient assessment, including taking a comprehensive patient history, conducting a physical examination, and interpreting vital signs and diagnostic tests.



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	Introduction to Emergency Medicine - I	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Ability Enhancement Course	Environmental Science and Health	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt for any one of the open elective courses offered the by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 25			Total Contact Hours- 30						
*Credits of MOOC, SWAYAM, and NEPTEL will be considered similar to the credits of Open Elective /General Elective									

SEMESTER –II									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Microbiology	4	3	1	-	20	80	100
	Core	General Pathology	4	3	1	-	20	80	100
	Core	General Pharmacology	4	3	1	-	20	80	100
	Core	Introduction to Emergency Medical Services – I	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Skill Enhancement Course	Medical terminology and Record keeping	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt for any one of the open elective courses	2	2	-	-	20	80	100

		offered theby Institute/ College/University.							
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	Blood Banking Techniques	2	2	-	-	20	80	100
	Core	Patient Examination and Nursing in Emergency and Trauma	2	2	-	-	20	80	100
	Core	Introduction to Emergency Medicine - II	2	2	-	-	20	80	100
	Core	Introduction to Emergency Medical Services – II	2	2	-	-	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 for any one of the open elective courses offered the by Institute/ College/University.	2	2	-	-	20	80	100
<b>Total Credit- 27</b>			<b>Total Contact Hours- 32</b>						

**\*Credits of MOOC, SWAYAM, and NEPTel will be considered similar to the credits of Open Elective /General Elective**

### SEMESTER –IV

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



	Core	Surgical Emergencies – II	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Communication skills for Health care professionals/ introduction the to national healthcare system	3	3	-		20	80	100
	Skill Enhancement Course	Medical law/ Ethics in public health	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 28			Total Contact Hours- 33						
*Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective									

#### SEMESTER –V

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Clinical Procedures and Instrumentations in Emergency Services – I	4	3	1	-	20	80	100
	Core	Clinical Procedures and Instrumentations in Emergency Services – II	4	3	1	-	20	80	100
	Core	Biostatistics	4	3	1	-	20	80	100
	Core	Immunology	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Medical Psychology/ Biostatistics 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 for any one of the open elective courses offered the by Institute/	2	2	-	2	20	80	100

		College/University.						
Total Credit- 28			Total Contact Hours- 33					
*Credits of MOOC, SWAYAM, and NEPTEL will be considered similar to the credits of Open Elective /General Elective								

SEMESTER –VI									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Medical Devices	4	3	1	-	20	80	100
	Core	Advances in Trauma Care	4	3	1	-	20	80	100
	Core	Basics of Radiology	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 for any one of the open elective courses offered theby Institute/ College/University.	2	2			20	80	100
Total Credit- 28			Total Contact Hours- 33						
*Credits of MOOC, SWAYAM, and NEPTel will be considered similar to the credits of Open Elective /General Elective									

<b>SEMESTER – VII&amp; VIII INTERNSHIP</b>				
Subject Code	Course category	Course title	Evaluation	
			Internal	External
	Core	Internship	20	80
	Core	Internship	20	80
<b>The internship is for 12 months,</b>				
SEMESTER	CREDIT			
I	25			
II	25			
III	27			
IV	28			
V	28			
VI	28			
VII	20			
VIII	20			
<b>TOTALCREDITS</b>	<b>201</b>			

**Exit: Honors'EMERGENCY AND TRAUMA CARE TECHNOLOGY**



6 | Page

## 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.	Analyze
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, Analyze, Evaluate, Create

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

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

Musculo-skeletal system:

Types of bones, structure & divisions of the skeleton system, name of all the bones and their parts, joints- classification. Structure and types of muscles

Anatomy of the Nervous system

Central nervous system & Peripheral nervous system- different components

## UNIT-II

Anatomy of Circulatory system:

General plan of circulatory system and its components-

Heart- size, location, coverings, chambers, blood supply, nerve supply, the blood vessels

General plan of circulation, pulmonary circulation

Name of arteries and veins and their positions Lymphatic system - general plan Anatomy of the

Respiratory system:

Organs of Respiratory System (Brief knowledge of parts and position)

## UNIT-III

Anatomy of the Digestive system:

Anatomy of alimentary tract; Parts of the tract

Accessory glands of digestion; Pancreas, Liver, Gall Bladder

Anatomy of Excretory system Kidneys- location, gross structure, excretory ducts, ureters, urinary bladder, urethra

## UNIT-IV

Reproductive system

Male Reproductive System

Female Reproductive System Anatomy of the endocrine system

## UNIT-V

Name of all endocrine glands their positions

Hormones and their functions- Pituitary, 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- 9<sup>th</sup> edition -2022
2. Hand Book of General Anatomy B.D.Chaurasia, C.B.S. Publishers, New Delhi-9<sup>th</sup> edition -2022
3. Text Book of Human Histology Inderbir Singh, Jaypee Brothers, Medical Publishers, Delhi -7<sup>th</sup> edition - 2021
5. Gray's Anatomy Susan Standing, Elsevier Churchill Livingstone, Edinburg – 42<sup>nd</sup> edition- 2021

## HUMAN PHYSIOLOGY

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

### Course Outcomes

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

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

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

### Learning outcomes

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



## **UNIT-I**

General Physiology

Cell, Transport across cell membrane, homeostasis, resting membrane potential, action potential

Blood

Composition and functions of Blood

RBC, WBC, Platelet count, Hemoglobin

Blood Groups - ABO and RH grouping

Hemostasis & Anticoagulants

## **UNIT-II**

Cardio vascular system

Cardiac muscle, Pacemaker & conducting tissue

Cardiac Cycle

Cardiac output, Heart rate, ECG

Arterial blood pressure

Respiratory System

Functions of Respiratory system

Mechanism of respiration, lung volumes & capacities

## **UNIT-III**

Nerve & Muscle physiology

Neuron structure & properties

Neuromuscular junction

Skeletal muscle structure mechanism of contraction

Cerebrospinal Fluid (CSF): Composition, functions & Circulation.

Central & autonomic Nervous system Organization of CNS

Functions of various parts of Brain, in brief

Composition, functions and circulation of CSF

Differences between sympathetic and parasympathetic division

## **UNIT-IV**

Digestive system

Functional Anatomy, organization & innervations

Composition and functions of all Digestive juices

Digestion & Absorption of carbohydrates, proteins and fats



## UNIT-V

Excretory System

Kidneys: Functions, Nephron, Juxta-glomerular Apparatus

Renal circulation

Mechanism of Urine formation

GFR

Endocrine and Reproductive systems Endocrine glands & hormones secreted

Functions of Reproductive system

Male Reproductive System: spermatogenesis, Testosterone.

Female reproductive system: Ovulation, Menstrual cycle.

Pregnancy test

### PRACTICALS

1. Estimation of Hemoglobin Concentration

2. Determination of Bleeding Time and Clotting Time

3. Determination of Blood Groups

4. Recording of normal Blood Pressure

5. Determination of Vital Capacity

### Reference Books:

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

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

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

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## GENERAL BIOCHEMISTRY

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

### Course Outcomes

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

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

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

### Learning outcome

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





## UNIT-I

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

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

## UNIT-II

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

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

## UNIT-III

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

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

## UNIT-IV

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

## UNIT-V

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

## PRACTICALS

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

## Reference Books:

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



## Introduction to Emergency Medicine and EMS-I

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

### Course Outcomes

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

CO Statement	Taxonomy
Recall key principles and concepts of emergency medicine, including the ABCs (airway, breathing, circulation), triage, and emergency response protocols.	Remember
Demonstrate an understanding of the fundamental principles and theories underlying emergency medicine, such as the pathophysiology of common emergencies, the roles of different healthcare professionals in the emergency department, and the importance of timely interventions.	Understand
Apply the acquired knowledge and skills to assess and manage common emergency medical conditions, such as cardiac arrest, respiratory distress, trauma, and allergic reactions	Apply
Analyze complex emergency scenarios, interpret patient signs and symptoms, and make informed decisions regarding appropriate diagnostic tests and interventions	Analyze
Evaluate the effectiveness of emergency medical interventions and procedures, considering patient outcomes, complications, and potential risks.	Evaluate
Apply critical thinking and problem-solving skills to create comprehensive emergency management plans, including strategies for disaster preparedness, mass casualty incidents, and public health emergencies.	Create

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

### Learning outcome

1. Understanding the fundamentals: Gain a comprehensive understanding of the key principles and concepts in emergency medicine.
2. Clinical skills development: Acquire essential skills for assessing and managing emergency medical conditions in a timely and effective manner.
3. Critical thinking and decision-making: Enhance the ability to think critically and make quick, informed decisions in high-pressure emergency situations.
4. Interdisciplinary collaboration: Develop teamwork and communication skills to effectively collaborate with healthcare professionals from various disciplines in emergency care settings.

## UNIT 1

### 1. INTRODUCTION TO EM

- History of Emergency Medicine
- Understanding Emergency Medicine (the specialty, its pros & cons)
- Training in Emergency Medicine
- Scope of the emergency ambulance service
- Definition and nature of emergency call and urgent calls
- Standards of performance for emergency calls and urgent calls
- Arrangements for dealing with major incidents
- Contracts and purchasing arrangements for patient transport services
- Responding to the call
  - Communications and dispatching
  - Rescue and extrication
- Mobility of patients
- Non-emergency patient categories
- Arrangements for conveying costs
- Quality standards typically applied to Patient Transport Services
- National and local patient charters
- Function of ambulance control
- Ambulance communications system
- Patient transport requests are received, planned and allocated and ambulance vehicles are deployed
- Importance of cooperation and network between control staff and ambulance crews

## UNIT II

### 2. HOSPITALS & PATIENTS: ORIENTATION

- History
- Classification
- Organization & structure

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- Departments & Team
- Paramedical Staff
- Ancillary departments
  - o Lab
  - o Pharmacy
  - o Imaging
  - o Physio/speech/
  - o Patient support services
  - o Admission
  - o Medical insurance
  - o Dietary
- Health information management
  - o Medical records
  - o Electronic Medical Records
  - o Medico-legal issues

### **UNIT III**

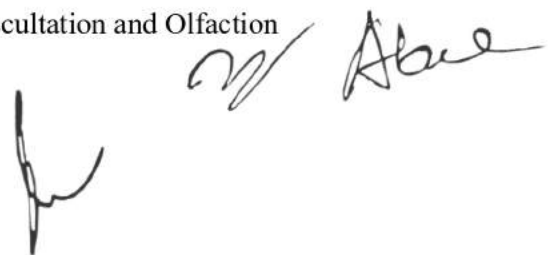
#### **3. EMERGENCY MEDICAL SERVICES (EMS)**

- History and current trends
- Pre-hospital transport
- Roles & responsibilities
- Legal issues
- Principles of life support

### **UNIT IV**

#### **4. HEALTH ASSESSMENT**

- Purposes
- Process of Health assessment
  - o Health History
  - o Physical examination:
    - o Methods-inspection, Palpation, Percussion auscultation and Olfaction
- Preparation for examination: patient and unit
- General assessment
- Assessment of each body System
- Recording of health assessment



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## 5. UNIT V

### 6. FIRST AID AND EMERGENCIES

- Wounds, hemorrhage, shock
- Fracture, dislocations, muscle injuries
- Respiratory emergencies, unconsciousness
- Burs, scalds, foreign bodies in the skin, eye, ear, nose, throat, stomach
- Frostbite, effects of heat, cramps, bites and stings
- Poisoning
- Lifting and transporting injured persons
- Bandaging

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## ENVIRONMENTAL SCIENCE & HEALTH

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

### Course Outcomes:

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

### Learning Outcome

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



## UNIT-I

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

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

## UNIT-II

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

## UNIT-III

**Introduction to AYUSH system of medicine**–Introduction to Ayurveda; Yoga and Naturopathy; Unani; Siddha; Homeopathy; Need for integration of various systems 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- 5<sup>th</sup> 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 immunology& perform serological tests or microbiological laboratory procedures.	Apply
Analyze the etiological agents of global infectious diseases, causative agents, transmission methods, investigation, prevention & control.	Analyze
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, Analyze, Evaluate, Create

Learning Outcome Upon completion, students should be able to demonstrate:

1. Knowledge of microorganisms and the disease process as well as aseptic and sterile techniques.
2. Perform microbiological laboratory procedures according to appropriate safety standards





## UNIT-I

### Microorganisms

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

## UNIT-II

### Sterilization

- (a) Definition.
- (b) Different methods of sterilization including – Gaseous sterilization Plasma sterilization
- (c) Advantage and disadvantage of various methods and their controls
- (d) Sterilization of different instruments used in patients
- (e) Preparation of materials for Autoclaving: packing, loading, holding time, unloading

### Disinfection

- (a) Definition
- (b) Different type of methods including High level disinfectants
- (c) Disinfection of patient care unit and rooms (O.T., Wards, ICUs & Laboratories)
- (d) Central supply department Areas and floor plan for instrument cleaning high level disinfection & sterilizing area

## UNIT-III

### Asepsis

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

## UNIT-IV

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

## UNIT-V

### Immunity – Non-specific

- Natural & Acquired
- Allergy and Anaphylaxis

### PRACTICALS:

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

### Reference books:

- 1: Complete Microbiology – 7 th edition -2022
- 2: Text & Practical Microbiology – CP Baveja & V Baveja – 3<sup>rd</sup> edition - 2022
- 3: Essentials of Medical Microbiology- Apurba S Sastry & Sandhya Bhat – 3<sup>rd</sup> edition-2021
- 4: Textbook of Microbiology – 12<sup>th</sup> 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
	Analyze the general principles of clinical pathology techniques, autopsy & museum.	Analyze
	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, Analyze, Evaluate, Create

### Learning Outcomes

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



## UNIT: I

Cell injury, cellular adaptation and cell death

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

## UNIT-II

Inflammation and Repair

- Definition and type of inflammation
- Granulomatous inflammation with examples
- Chemical mediators of inflammation.
- Wound healing by 1<sup>st</sup> & 2<sup>nd</sup> 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.

- Anemias-classification, morphological and Etiological, effects of anemia on body.

## PRACTICALS

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

## Reference Books:

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



## PHARMACOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Pharmacology	4	3	-	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
Analyze the anti-thrombotic agents, lipid lowering agents & anti-atherosclerotic agents.	Analyze
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, Analyze, Evaluate, Create

### Learning Outcomes

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




## UNIT- I

### General Pharmacology

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

## UNIT- II

### Autonomic nervous system & Peripheral nervous system

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

## UNIT- III

### Central nervous system

- b) Drug therapy of various CNS disorders like epilepsy, depression.
- c) Non-steroidal anti-inflammatory drugs
- d) General anesthetics

### AUTOCIDS

- a) Histamine and antihistaminic

## UNIT- IV

### (E) Cardiovascular system

- a) Drug therapy of hypertension, shock, angina, cardiac arrhythmias
- c) Diuretics
- d) Coagulants and anticoagulants, antiplatelet drugs
- e) Hypo-lipidemic

### (F) Gastrointestinal and respiratory system

- c) Drug treatment of peptic ulcer
- d) Drug therapy of bronchial asthma

## UNIT- V

### (G) Hormones

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

## PRACTICALS

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

## Reference Books:

- 1: Padmaja Udaykumar – Pharmacology for Dental & Allied Health Sciences – 4<sup>th</sup> edition, 2017.
- 2: Joginder Singh Pathania, Rupendra Kumar Bharti, Vikas Sood-Textbook of Pharmacology for Paramedical Students 2019

3: KD Tripathi- Essentials of Pharmacology – 8<sup>th</sup> edition, 2018.

4: HL Sharma & KK Sharma – Principles of Pharmacology – 3<sup>rd</sup> edition, 2017

## Emergency Medicine and Emergency Medical Services–II

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

### Course Outcomes

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

CO Statement	Taxonomy
Remember the key principles and protocols of emergency medicine and emergency medical services.	Remember
Understand the various diagnostic and treatment methods used in emergency medicine.	Understand
Apply critical thinking skills to analyze and assess emergency situations effectively.	Apply
Analyze patient symptoms and prioritize care in emergency medical situations.	Analyze
Evaluate the effectiveness of emergency medical interventions and make necessary adjustments.	Evaluate
Create comprehensive emergency response plans and protocols to improve patient outcomes and system efficiency.	Create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning outcome

1. Improved ability to assess and manage critical medical conditions in emergency situations, including trauma, cardiac arrest, and respiratory distress.
2. Enhanced skills in performing life-saving procedures such as advanced cardiac life support (ACLS) and advanced trauma life support (ATLS).
3. Increased knowledge of triage systems and effective communication within emergency medical teams to optimize patient care.
4. Strengthened understanding of legal and ethical considerations in emergency medicine and the importance of patient advocacy and confidentiality.



## Unit I

- **TRIAGE AND GENERAL EMERGENCIES**

Concepts and principles of Disaster Nursing, Causes and Types of Disaster: Natural and Man-made, Earthquakes, Floods, Epidemics, Cyclones, Fire, Explosion, Accidents, Violence, Terrorism, Bio-chemical, War, Policies related to emergency/disaster management; International, national, and state institutional, Disaster preparedness: Team, Guidelines, protocols, Equipment's, Resources, Coordination and involvement of Community, various govt. departments, non-Government Organizations and International agencies, Legal Aspects of Disaster, Impact on Health and after effects; Post Traumatic Stress Disorder, Rehabilitation; physical, psychosocial, Financial, Relocation, Concept, priorities, principles, and Scope of emergency care, Organization of emergency services: physical setup, staffing, equipment and supplies, protocols, Concepts of triage, and role of triage person, Coordination and involvement of different departments and facilities, Principles of emergency management, Hospital infection, Shock/Dehydration, Hypoglycemia/hyperglycemia, Anaphylaxis/Allergy.

## Unit II

- **LIFE SUPPORT & RESUSCITATION**

Basic life support in perspective, Cardiopulmonary function and actions for survival, Adult Basic life support, Pediatric Basic Life support, Special resuscitation situations, Safety during CPR training and actual rescue, Risk factors and prudent heart living.

## Unit III

- **BASIC PRINCIPLES OF TRAUMA CARE**

The principles of kinetic energy Mechanism, Primary survey and priorities patient management as necessary, Secondary survey as appropriate, Re-assessment, Revised trauma score, Glasgow Coma Score, The upper airway, Chest injuries, Hypovolemic shock, Head injuries, Maxillofacial injuries, Spine and spinal cord, Abdomen, The urinary tract, Limb injuries, Handling distressed relatives breaking bad news, Trauma in pregnancy, Pediatric trauma, Trauma in elderly, Pre hospital care, Transportation to hospital, Management of severe burns, Chemical incidents, Blast and gunshot injuries, Trauma in hostile environments, Major incidents, Chest trauma, Abdominal trauma.

## Unit IV

- **COMMUNITY MEDICINE**





Importance of Community Medicine; Definitions of various terms, Modes of transmission of diseases, Principles of prevention and control of diseases, Hospital infections, disinfection, disinfestations, & Sterilization, Disposal of hospital wastes, Important communicable diseases- Respiratory, Intestinal, contact -STD/AIDS.

## 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
Recall and understand key medical terms and record-keeping practices.	Remember
Comprehend the importance of accurate medical terminology and efficient record management.	Understand
Apply medical terminology skills to document patient information accurately and consistently.	Apply
Analyze medical records to extract relevant information for diagnoses and treatment planning.	Analyze
Evaluate the quality and completeness of medical records for compliance with regulatory standards.	Evaluate
Create well-organized and precise medical records using appropriate terminology for effective healthcare communication.	Create

Taxonomy: remember, understand, apply, analyze, evaluate, create

Learning outcome

1. Understanding medical terminology enables accurate communication among healthcare professionals.
2. Proficiency in medical record keeping ensures organized patient information and efficient healthcare delivery.
3. Knowledge of medical terminology and record keeping enhances patient safety and reduces errors.
4. Mastery of medical terminology and record keeping improves documentation for billing and insurance purposes.



# **Medical terminology and Record keeping**

## **UNIT I**

- Derivation of medical terms.
- Define word roots, prefixes, and suffixes.

## **UNIT II**

- Conventions for combined morphemes and the formation of plurals.
- Basic medical terms.

## **UNIT III**

- Form medical terms utilizing roots, suffixes, prefixes, and combining roots.
- Interpret basic medical abbreviations/symbols.

## **UNIT IV**

- Utilize diagnostic, surgical, and procedural terms and abbreviations related to the integumentary system, musculoskeletal system, respiratory system, cardiovascular system, nervous system, and endocrine system.

## **UNIT V**

- Interpret medical orders/reports.
- Data entry and management on electronic health record system.

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## SEMESTER –III

### Blood Banking Techniques

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

#### Course Outcomes

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

CO Statement	Taxonomy
Recall the basic principles and procedures of blood banking techniques.	Remember
Comprehend the theory behind blood grouping, cross-matching, and blood component preparation.	Understand
Demonstrate the practical skills necessary for performing blood banking techniques accurately and safely.	Apply
Analyze blood samples to determine compatibility and identify potential risks or complications.	Analyze
Assess the quality and safety of blood products and evaluate the effectiveness of blood banking protocols.	Evaluate
Develop innovative strategies to enhance the efficiency and reliability of blood banking techniques.	Create

Taxonomy: remember, understand, apply, analyze, evaluate, create

#### Learning outcome

1. Understand the process of blood collection, storage, and transfusion.
2. Learn the importance of blood typing and cross-matching for safe transfusions.
3. Gain knowledge of blood component separation techniques for different medical needs.
4. Develop skills in maintaining the quality and safety of blood products during storage and distribution.



## **UNIT I Introduction to Hematology**

Introduction of hematology Blood and composition, hematopoiesis, RBC count MCV MCH, MCHC, ESR, PCV, WBC Count, DLC, PLT Count, and Hemoglobin. Anticoagulants used in hematology and mode of action, Steps in hematology investigation

## **UNIT II Erythrocyte disorders and laboratory diagnosis**

Anemia: Anemia, Introduction, Classification, Microcytic hypochromic anemia, Macrocytic anemia, Normocytic normochromic anemia. LE- Cell Phenomenon, Reticulocyte Sickling tests, Osmotic fragility test, Investigation of G6PD deficiency, Hemoglobinopathies

## **UNIT III Leukocyte disorders and laboratory diagnosis**

Leukemia- Definition, types, cause & laboratory diagnosis of leukemias, Chromosomal studies in various hematological disorders and their significance Lymphomas and multiple myelomas- their causes, identification, and clinical features.

## **UNIT IV Homeostasis and Hemorrhage Disorders**

Normal homeostasis, mechanism of coagulation, coagulation regulation, hypercoagulable states, Role of platelets in homeostasis, platelets function test, Platelets disorders Introduction Causes of bleeding disorders, Vascular defect Platelet defect, Factor deficiency, Inhibitors, Hyperfibrinolysis, Types of bleeding disorders, Inherited bleeding disorders, Acquired bleeding disorders, Thrombosis, Introduction, Causes of thrombosis Hemophilia A, B & Von Willebrand disease, DIC, Platelet disorder (Qualitative and quantitative) Laboratory approach for investigating thrombosis.

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## Patient Examination and Nursing in Emergency and Trauma

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Patient Examination and Nursing in Emergency and Trauma	4	3	1	-	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
Remember key assessment techniques and protocols for patient examination in emergency and trauma situations.	Remember
Understand the physiological and psychological responses of patients during emergency and trauma scenarios.	Understand
Apply nursing skills and interventions to provide immediate care and stabilize patients in emergency and trauma cases.	Apply
Analyze patient data and prioritize interventions based on the severity of injuries and conditions.	Analyze
Evaluate the effectiveness of nursing interventions and modify care plans as needed in emergency and trauma settings.	Evaluate
Create comprehensive nursing strategies to ensure the well-being and recovery of patients in emergency and trauma situations.	Create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning outcome

1. Comprehensive assessment of patients in emergency and trauma situations to determine their condition and prioritize care.
2. Implementation of appropriate nursing interventions based on assessment findings to stabilize and manage patients effectively.
3. Collaboration with multidisciplinary teams to provide timely and coordinated care for patients in critical conditions.
4. Continual evaluation of patients' responses to treatment and interventions, adjusting care plans accordingly to optimize outcomes.

**Unit-1**

Airway assessment, ventilation methods, recognition assessment of airway & ventilation compromise nasotracheal intubation, surgical cricothyrotomy, needle cricothyrotomy pharmacological assisted intubation tension pneumothorax

**Unit-2**

Aortic transection, trauma brain injury, solid organ injury, hemorrhage, pelvic trauma.

**Practical**

1. To provide primary airway assessment for emergency patients
2. To provide ventilation support for emergency patients.
3. To assist with surgical cricothyrotomy.
4. To assist patients with brain injury.
5. To assist patients with pelvic trauma.

### Introduction to Emergency Medicine - II

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

**Course Outcomes**

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

CO Statement	Taxonomy
Recall key principles and concepts of emergency medicine, including the ABCs (airway, breathing, circulation), triage, and emergency response protocols.	Remember
Demonstrate an understanding of the fundamental principles and theories underlying emergency medicine, such as the pathophysiology of common emergencies, the roles of different healthcare professionals in the emergency department, and the importance of timely interventions.	Understand
Apply the acquired knowledge and skills to assess and manage common emergency medical conditions, such as cardiac arrest, respiratory distress,	Apply

	trauma, and allergic reactions	
	Analyze complex emergency scenarios, interpret patient signs and symptoms, and make informed decisions regarding appropriate diagnostic tests and interventions	Analyze
	Evaluate the effectiveness of emergency medical interventions and procedures, considering patient outcomes, complications, and potential risks.	Evaluate
	Apply critical thinking and problem-solving skills to create comprehensive emergency management plans, including strategies for disaster preparedness, mass casualty incidents, and public health emergencies.	Create

Taxonomy: remember, understand, apply, analyze, evaluate, create

- Learning outcome
1. Understanding key emergency medicine principles and practices.
  2. Enhancing skills in assessing and managing critically ill and injured patients.
  3. Developing proficiency in emergency procedures and resuscitation techniques.
  4. Gaining knowledge on effective communication and teamwork in emergency medicine settings.

## UNIT I

### 1. Pediatric Emergencies

- A. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  1. Stridor in children
  2. Wheezing
- B. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  1. Cyanosis in infants and neonates
  2. Diphtheria
  3. Pneumonia
- C. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  1. Fever, febrile convulsions
  2. Diarrhea and dehydration
- D. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  1. Status asthmaticus in children

2. Status epilepticus in children
- E. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  1. Septic Shock in children
  2. Child abuse

## **2. Gastrointestinal Emergencies**

Presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

1. Acute gastroenteritis
2. Upper GI bleed
3. Lower GI Bleed
4. Acute pancreatitis

## **3. Endocrine and Metabolic Emergencies**

Presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

1. Hypoglycemia
2. Hyperosmolar hyperglycemic state
3. Diabetic ketoacidosis
4. Adrenal crisis
5. Myxedema coma
6. Thyroid storm

## **4. Renal Emergencies** Presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

1. Urinary tract infections
2. Acute renal failure
3. Acute pulmonary edema in renal failure

## **5. Bites and Stings**

1. Snake bites- common Indian venomous snakes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
2. Animal bites - dog bites, wild animal bites, early management and rabies prophylaxis
3. Bee, wasp, spider, scorpion, and other stings - initial management

## **6. Other Medical Emergencies**

1. Fever - assessment of the patient, early identification of warning signs of sepsis, early management
2. Poisoning and drug overdose - Decontamination, common poisons encountered, basic initial management

3. Purpura, Urticaria, Fixed drug eruptions, Toxic epiderma necrolysis, Steven Johnson's syndrome

**Practical:**

Preparing an ambulance for medical emergency

Responding to a call and scene management of medical emergency

Receiving and resuscitating a patient with a medical emergency in the emergency department

**Recommended Books**

1. Handbook of Emergency Care - Suresh David
2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchil
5. Fundamentals of Respiratory Care- Egan's - Craig I. Scanlon
6. Handbook of Emergency Care - Suresh David
7. Introduction to Clinical Emergency Medicine
8. Guide for practitioners in ED 9.
9. Medicine Preparation Manual- George Mathew, KBI Churchil
10. Fundamentals of Respiratory

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## Introduction to Emergency Medical Services – II

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Introduction to Emergency Medical Services – II	4	3	1	-	20	80	100

### Course Outcomes

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

	CO Statement	Taxonomy
	Remember key concepts and principles of emergency medical services in providing patient care and safety.	Remember
	Understand the roles and responsibilities of emergency medical personnel in various medical scenarios.	Understand
	Apply appropriate medical techniques and protocols to administer emergency care effectively.	Apply
	Analyze and assess patient conditions to make informed decisions and prioritize treatments.	Analyze
	Evaluate the effectiveness of emergency medical interventions and identify areas for improvement.	Evaluate
	Create comprehensive emergency response plans and strategies to enhance emergency medical services.	Create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning outcome

1. Proficiency in advanced life support techniques, including airway management and cardiac resuscitation.
2. Enhanced skills in assessing and treating various medical emergencies, such as trauma, respiratory distress, and cardiac conditions.
3. Knowledge of medical legal and ethical considerations in emergency medical services.
4. Improved ability to work effectively in a team and communicate with other healthcare professionals during high-stress situations.

## UNIT I

### 1. TRIAGE AND GENERAL EMERGENCIES

- ☐ Concepts and principles of Disaster Nursing
- ☐ Causes and Types of Disaster:
  - ☐ Natural and Man-made
    - Earthquakes, Floods, Epidemics, Cyclones Fire, Explosion, Accidents Violence, Terrorism
    - Bio-chemical, War
- ☐ Policies related to emergency/disaster management; International, national, and state institutional
- ☐ Disaster preparedness:
- ☐ Team, Guidelines, protocols, Equipment's Resources
- ☐ Coordination and involvement of; Community, various govt. departments, non-Government.
- ☐ Organizations and International agencies
- ☐ Legal Aspects of Disaster
- ☐ Impact on Health and after effects; Post Traumatic Stress Disorder
- ☐ Rehabilitation; physical, psychosocial, Financial, Relocation
- ☐ Concept, priorities, principles, and Scope of emergency care
- ☐ Organization of emergency services: physical setup, staffing, equipment and supplies, protocols, Concepts of triage, and role of triage person
- ☐ Coordination and involvement of different departments and facilities
- ☐ Principles of emergency management
- ☐ Hospital infection
- ☐ Shock/Dehydration
- ☐ Hypoglycemia/hyperglycemia
- ☐ Anaphylaxis/Allergy

## UNIT II

### 2. LIFE SUPPORT & RESUSCITATION

- ☐ Basic life support in perspective
- ☐ Cardiopulmonary function and actions for survival
- ☐ Adult Basic life support
- ☐ Pediatric Basic Life support
- ☐ Special resuscitation situations

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- ☐ Safety during CPR training and actual rescue
- ☐ Risk factors and prudent heart living

## UNIT III

### 3. BASIC PRINCIPLES OF TRAUMA CARE

- ☐ The principles of kinetic energy Mechanism.
- ☐ Primary survey and priorities patient management as necessary
- ☐ Secondary survey as appropriate
- ☐ Re-assessment
- ☐ Revised trauma score, Glasgow Coma Score
- ☐ The upper airway
- ☐ Chest injuries
- ☐ Hypovolemic shock
- ☐ Head injuries
- ☐ Maxillofacial injuries
- ☐ Spine and spinal cord
- ☐ Abdomen
- ☐ The urinary tract
- ☐ Limb injuries
- ☐ Handling distressed relatives breaking bad news
- ☐ Trauma in pregnancy
- ☐ Pediatric trauma
- ☐ Trauma in elderly
- ☐ Pre-hospital care
- ☐ Transportation to hospital
- ☐ Management of severe burns
- ☐ Chemical incidents
- ☐ Blast and gunshot injuries
- ☐ Trauma in hostile environments
- ☐ Major incidents
- ☐ Chest trauma
- ☐ Abdominal trauma

## UNIT IV



#### 4. COMMUNITY MEDICINE

- ☐ Importance of Community Medicine; Definitions of various terms
- ☐ Modes of transmission of diseases
- ☐ Principles of prevention and control of diseases
- ☐ Hospital infections, disinfection, disinfestations, & Sterilization
- ☐ Disposal of hospital wastes
- ☐ Important communicable diseases-Respiratory; Intestinal; contact -STD/AIDS

#### PRACTICAL'S

- 1. Spine Immobilization**, scoop board, Splinting and Sling using of cervical collar procedure for using spine board with strapping

Procedure to perform log roll and what is the use of performing a log roll Method of using:

Wooden splints

Triangular bandage (including as sling)

Uses and complications of splint

- 2. Use of Roller Bandage** Elbow and knee bandage Hand and Foot bandage Eye bandage Ear bandage Jaw bandage Neck bandage Shoulder Spica Thumb Spica Reef Knots)

- 3. Management of a Trauma Victim (Primary survey and Secondary survey)**

#### Clinical posting

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

45 days training is compulsory



### Discipline Specific Elective

#### General Principles and Practices of Public Health

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	General Principles and Practices of Public Health	3	3	-	-	20	80	100

#### Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome

1. To acquire understanding of the functions of management and administration of the healthcare business.

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

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## UNIT-I

### Introduction to Patient Care:

- a) Principles of patient care
- b) Types of patients (gender, age, diseases, severity of illness, triage)
- c) Communication:
- d) Communication with doctors, colleagues and other staffs.
- e) Non-verbal communication, Inter-personnel relationships.
- f) patient contact techniques, communication with patients and their relatives
- g) Documentation:
- h) Importance of documentation, b. initial and follow up notes; c. documentation of therapy, procedures and communication.

## UNIT-II

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

## UNIT-III

### Medication Administration:

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

## UNIT-IV

### Bedside care:

- a) Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
- b) Recording of pulse, blood pressure, respiration, saturation and temperature.
- c) Bedside management: giving and taking bed pan, urine container.
- d) Observation of stools, urine, sputum, drains
- e) Use and care of catheters and rubber goods.
- f) Care of immobile/bed ridden patients, bed sore and aspiration prevention
- g) Monitoring of Patient:
- h) Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure, Respiration
- i) Multi parameter monitors, Capnography and End Tidal CO<sub>2</sub> (ETCO<sub>2</sub>)
- j) Hydration, intake and output monitoring Monitoring ventilator parameters: Respiratory Rate, Volumes, Pressures, Compliance, Resistance

## UNIT-V

### Dressing and wound care:

- a) Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
- b) Surgical dressing: observation of dressing procedures.
- c) Suture materials and suturing techniques
- d) Splinting Basic care of patient with burns.

### Reference books:

1. Hospital and patient care management – Dr. Vidhya Srinivasan & Dr. Akshay Ch. Deka-2022
2. Principles of hospital practice and patient care – P Srinivasulu Reddy – 1<sup>st</sup> edition -2019

3.Principles & Practice of Critical Care – P.K Verma – 3<sup>rd</sup> edition- 2019.

4.Standard treatment guidelines – a manual of medical therapeutics- Sangeeta Sharma & GR Sethi – 6<sup>th</sup> edition – 2021.

## Forensic Psychology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	Forensic Psychology	3	3	-	-	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
Develop understanding about the interplay of various psychological factors.	Receive
Respond & familiarize with basics of psychology.	Respond
Understand the psychology of offenders & defenders.	Value
Apply psychological knowledge to the legal system.	Organize
Learn the psychology of eyewitness testimony.	Characterize
Receive complex ethical issues and resolve ethically.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

### Learning Outcome

On completion of this course, the students will be able to do the following:

1. Cognitive Thinking.
2. Analyze complex & diverse concepts
3. Think critically.



#### **UNIT-I**

The Psychology of Criminal Conduct  
Offender Profiling

#### **UNIT-II**

Eyewitness Testimony and Identification  
Investigative Interviewing of Children

#### **UNIT-III**

Investigative Interviewing of Suspects  
The Psychology of Lying and the Detection of Deception

#### **UNIT-IV**

The Psychology of False Confessions  
Famous Miscarriages of Justice

#### **UNIT-V**

Jury and Decision-Making  
Juvenile Delinquency and Underage Crimes  
The Psychologist as Expert Witness: Practical and Ethical Issues

#### **Reference books:**

- 1.The Forensic Psychology of Criminal Minds- Katherine Ramsland – 1<sup>st</sup> edition -2010
- 2.Forensic Psychology Workbook- Connor Whiteley – 2018
- 3.Forensic Psychology- Avery short introduction-David Canter – 2010.
- 4.Forensic Psychology-Dr Lakshmaeshwar Thakur-2019.

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## Ability Enhancement Course

### COMPUTER

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

### Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

### Learning Outcome

On completion of this course, the students will be able to do the following:

1. Systems Thinking.
2. Problem-Solving.
3. Communication.
4. Teamwork.
5. Context Awareness.



## UNIT-I

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

## UNIT-II

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

## UNIT-III

**MS Word:** Starting MS WORD, Creating and formatting a document, changing fonts and point size, Table Creation and operations, Autocorrect, Auto text, spell Check, Word Art, Inserting objects, Page setup, Page Preview, Printing a document, Mail Merge.

## UNIT-IV

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

## UNIT-V

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

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## BASIC EMERGENCY MANAGEMENT

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

### Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome      On completion of this course, the students will be able to do the following:

1. Emergency planning
2. Prevent fatalities & injuries
3. Complex medical and surgical emergencies management.

### UNIT-I

#### Emergency Equipment

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

### UNIT-II

#### Introductions to Emergency Services

Principles of resuscitation

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

### UNIT –III

Specific resuscitative procedures

1. Airway management
2. Breathing and ventilation management
3. Venous and intraosseous access
4. Defibrillation and cardioversion
5. Fluid and blood resuscitation
6. Vasoactive agents in resuscitation
7. Arrhythmias

### UNIT-IV

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

### UNIT-V

**Emergency Drugs** - Drug introduction, indication, contra-indications, side – effects and routes of administration with doses of following drugs:

Toxicology

Emergencies due to venomous bites and stings:

Industrial Hazards

Obstetrical emergencies

Mental Health Emergencies

Pediatrics emergencies

#### Reference books:

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



## Semester IV

### Medical Emergencies – I

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

#### Course Outcomes

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

CO Statement	Taxonomy
Remember key emergency management principles and protocols for effective response and mitigation.	Remember
Understand the role of different stakeholders and their responsibilities in emergency management situations.	Understand
Apply emergency management techniques and strategies to real-world scenarios for effective decision-making.	Apply
Analyze the impact of emergencies and disasters on communities and assess their vulnerability and resilience.	Analyze
Evaluate emergency management plans and procedures for their effectiveness and identify areas for improvement.	Evaluate
Create comprehensive emergency management plans and protocols tailored to specific hazards and community needs.	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 emergency preparedness measures and develop emergency response plans.
2. Identify potential hazards and assess risks in order to mitigate and respond effectively.
3. Coordinate and communicate with stakeholders during emergency situations.
4. Evaluate and learn from emergency events to improve future response capabilities.



## UNIT I

### 1. Cardiovascular Emergencies

1. Approach to Chest pain - possible differential diagnosis, clinical assessment and point of care investigations in the emergency department
2. Acute coronary syndrome - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, emergency management, ACLS protocols
3. Acute decompensated heart failure - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
4. Bradyarrhythmia - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocols
5. Tachyarrhythmia - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocols
6. Aortic dissection - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
7. Deep vein thrombosis- presenting symptoms, clinical assessment and point of care investigations in the emergency department, basic initial management
8. Pulmonary thrombi embolism- presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management

## UNIT II

### 2. Pulmonary Emergencies

Approach to the patient with breathlessness and possible differential diagnosis; presenting symptoms, clinical assessment and point of care investigations in the emergency department of

1. Respiratory failure
2. Upper airway obstruction
3. Pneumothorax
4. Acute asthma
5. Acute exacerbation of COPD
6. Hemoptysis
7. Pleural effusion and empyema
8. Pneumonia

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## UNIT III

### 3. Fluid and Electrolyte Disturbances

Fluid compartments; possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

1. Hypovolemia
2. Fluid overload states
3. Hyperkalemia
4. Hypokalemia
5. Hypernatremia
6. Hyponatremia
7. Hypocalcemia

## UNIT IV

### 4. Neurological Emergencies

1. Approach to the unconscious patient
2. Seizure disorder and Status epilepticus - possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
3. Ischemic stroke -presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocol
4. Intracerebral hemorrhage - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, ACLS protocol
5. Meningoencephalitis - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management.

## UNIT V

### 5. Shock and Sepsis

1. Definition and types of shock
2. Cardiogenic shock - possible causes, investigations, and emergency management
3. Anaphylaxis and anaphylactic shock - possible causes, investigations, and emergency management
4. Sepsis - presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management

### Practical: Medical Emergencies

Preparing an ambulance for a medical emergency

Responding to a call and scene management of a medical emergency

Receiving and resuscitating a patient with a medical emergency in the emergency department

### Recommended Books

1. Handbook of Emergency Care - Suresh David





2. Introduction to Clinical Emergency Medicine
3. Guide for practitioners in ED
4. Medicine Preparation Manual- George Mathew, KBI Churchill
5. Fundamentals of Respiratory Care- Egan's - Craig I. Scanlon.

## Medical Emergencies – II

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

### Course Outcomes

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

CO Statement	Taxonomy
Remember key emergency management principles and protocols for effective response and mitigation.	Remember
Understand the role of different stakeholders and their responsibilities in emergency management situations.	Understand
Apply emergency management techniques and strategies to real-world scenarios for effective decision-making.	Apply
Analyze the impact of emergencies and disasters on communities and assess their vulnerability and resilience.	Analyze
Evaluate emergency management plans and procedures for their effectiveness and identify areas for improvement.	Evaluate
Create comprehensive emergency management plans and protocols tailored to specific hazards and community needs.	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 emergency preparedness measures and develop emergency response plans.
2. Identify potential hazards and assess risks in order to mitigate and respond effectively.
3. Coordinate and communicate with stakeholders during emergency situations.
4. Evaluate and learn from emergency events to improve future response capabilities.



## UNIT I

### 3. Pediatric Emergencies

- C. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  - 3. Stridor in children
  - 4. Wheezing
- D. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  - 4. Cyanosis in infants and neonates
  - 5. Diphtheria
  - 6. Pneumonia
- D. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  - 3. Fever, febrile convulsions
  - 4. Diarrhea and dehydration
- E. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  - 3. Status asthmaticus in children
  - 4. Status epilepticus in children
- F. Possible causes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of
  - 3. Septic Shock in children
  - 4. Child abuse

## UNIT II

### 4. Gastrointestinal Emergencies

Presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

- 5. Acute gastroenteritis
- 6. Upper GI bleed
- 7. Lower GI Bleed
- 8. Acute pancreatitis

## UNIT III

### 5. Endocrine and Metabolic Emergencies

Presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

7. Hypoglycemia
8. Hyperosmolar hyperglycemic state
9. Diabetic ketoacidosis
10. Adrenal crisis
11. Myxedema coma
12. Thyroid storm

## UNIT IV

**6. Renal Emergencies** Presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management of

4. Urinary tract infections
5. Acute renal failure
6. Acute pulmonary edema in renal failure

## UNIT V

### 7. Bites and Stings

4. Snake bites- common Indian venomous snakes, presenting symptoms, clinical assessment and point of care investigations in the field and emergency department, basic initial management
5. Animal bites - dog bites, wild animal bites, early management, and rabies prophylaxis
6. Bee, wasp, spider, scorpion, and other stings - initial management

## UNIT VI

### 8. Other Medical Emergencies

4. Fever - assessment of the patient, early identification of warning signs of sepsis, early management
5. Poisoning and drug overdose - Decontamination, common poisons encountered, basic initial management
6. Purpura, Urticaria, Fixed drug eruptions, Toxic epidermal necrolysis, Steven Johnson's syndrome

### Practical :

Preparing an ambulance for a medical emergency

Responding to a call and scene management of a medical emergency

Receiving and resuscitating a patient with a medical emergency in the emergency department

### Recommended Books

10. Handbook of Emergency Care - Suresh David
11. Introduction to Clinical Emergency Medicine

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12. Guide for practitioners in ED
13. Medicine Preparation Manual- George Mathew, KBI Churchil
14. Fundamentals of Respiratory Care- Egan's - Craig I. Scanlon
15. Handbook of Emergency Care - Suresh David
16. Introduction to Clinical Emergency Medicine
17. Guide for practitioners in ED 9.
18. Medicine Preparation Manual- George Mathew, KBI Churchil 10. Fundamentals of Respiratory Care- Egan's - Craig I. Scanlon

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## Surgery emergency I

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

### Course Outcomes

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

CO Statement	Taxonomy
Remember common surgical emergencies and their clinical presentations.	Remember
Understand the principles of immediate management and resuscitation in surgical emergencies	Understand
Apply appropriate diagnostic techniques and investigations to assess and diagnose surgical emergencies.	Apply
Analyze the differential diagnosis of surgical emergencies and develop a systematic approach to patient evaluation.	Analyze
Evaluate the effectiveness of different treatment options and prioritize interventions in surgical emergencies.	Evaluate
Create comprehensive management plans for surgical emergencies, incorporating surgical techniques and postoperative care.	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. Identify common surgical emergencies.
2. Apply appropriate diagnostic and management strategies.
3. Demonstrate knowledge of potential complications and their management.
4. Develop skills in communication and teamwork during surgical emergencies



## UNIT I

- **PRINCIPLES OF ANAESTHESIA**

- General Anesthesia
- Local Anesthesia
- Regional anesthesia

- **WOUNDS AND SUTURING**

- Types of common wounds
- Treatment
- Cleansing the wound
- Wound healing
- Principles of incision and closure (including suturing)

- **BURNS**

- Classification of Burn
- Special Burn considerations

- **ACUTE ABDOMINAL PAIN**

- **ESOPHAGEAL OBSTRUCTION AND FOREIGN BODIES**

- Site
- Radiographic consideration
- Esophageal pharmacologic Maneuvers
- Foley catheter manipulation of Esophageal Foreign Bodies
- Special situations: Fish Bones in the Throat
  - Button Battery ingestion
  - Childhood coin ingestion

### **PRACTICAL'S**

Assisting in various procedures like:

- Central Venous Access
  - Suturing of Wounds

### **RECOMMENDED BOOKS:**

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- 1) A manual on clinical surgery, 7th edition S Das-Dr. S. Das
- 2) Manipal manual of Surgery, 2nd edition, K. Rajgopal Shenoy-CBS Publishers

#### **POSTINGS DURING ONE YEAR INTERNSHIP**

1. 3 months – Medicine (MICU/0 delay/ Triage/Lab)
2. 3 months – Surgery (Operation Theatre/ CSSD/Laundry/Speciality ICU)
3. 3 months – Emergency Medicine
4. 3 months – Obstetrics 1 ½ months – Pediatric Emergency and ICU – 1 ½ month

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## Surgery emergency II

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

### Course Outcomes

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

CO Statement	Taxonomy
Remember common surgical emergencies and their clinical presentations.	Remember
Understand the principles of immediate management and resuscitation in surgical emergencies	Understand
Apply appropriate diagnostic techniques and investigations to assess and diagnose surgical emergencies.	Apply
Analyze the differential diagnosis of surgical emergencies and develop a systematic approach to patient evaluation.	Analyze
Evaluate the effectiveness of different treatment options and prioritize interventions in surgical emergencies.	Evaluate
Create comprehensive management plans for surgical emergencies, incorporating surgical techniques and postoperative care.	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. Identify common surgical emergencies.
2. Apply appropriate diagnostic and management strategies.
3. Demonstrate knowledge of potential complications and their management.
4. Develop skills in communication and teamwork during surgical emergencies






## UNIT I

- **GASTROINTESTINAL BLEEDING**

- Upper GI Bleed
- Lower GI Bleed

- **STOMACH**

- **CHOLECYSTITIS**

- **PANCREAS**

- Acute Pancreatitis
- Chronic Pancreatitis

- **GASTROINTESTINAL TRACT**

- **APPENDIX**

- Acute Appendicitis

- **INTESTINAL OBSTRUCTION**

- **ABDOMINAL TRAUMA**

- Solidviscus injuries (Liver, Spleen, Kidney)
- Hollowviscus injuries (Intestines, Urinary bladder)
- Vascular injuries in the abdomen
- Diaphragmaticrupture
- Evisceration
- Mesentericavulsion, Hematoma

- **ANORECTAL DISORDERS**

- **RENAL COLIC**

- **TORSION TESTIS**

- **SPECIAL EMERGENCY SURGICAL PROCEDURES**

### PRACTICAL'S



Assisting in various procedures like:

- Tracheotomy
  - Inter costal Drainage
  - Needle Thoraco centesis
  - Cricothyrotomy

**RECOMMENDED BOOKS:**

3) A manual on clinical surgery, 7<sup>th</sup> edition S Das-Dr. S. Das

4) Manipal manual of Surgery, 2<sup>nd</sup> edition, K. Rajgopal Shenoy-CBS Publishers

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### Clinical posting

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

45 days training is compulsory




## DISCIPLINE-SPECIFIC ELECTIVE

Communication skills for Health care professionals

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



## 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:

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

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## 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 familiarize with the healthcare environment → To understand the concepts of management with relevance to hospitals



## 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, Lakshminarayana Agrawal, Edu, Pub. Agra. 1996
2. Peter, Z & Fredrick, B. HEALTH ECONOMICS, Oxford Pub., New York, 1997
3. 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

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 Analyze the conflicts of interest and legal problems that are relevant in different areas of medical law





## **UNIT-I**

Medical ethics - Definition - Goal – Scope  
Introduction to Code of conduct

## **UNIT-II**

Basic principles of medical ethics –Confidentiality  
Malpractice and negligence - Rational and irrational drug therapy

## **UNIT-III**

Autonomy and informed consent - Right of patients  
Care of the terminally ill- Euthanasia

## **UNIT-IV**


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

## **UNIT-V**

Professional Indemnity insurance policy  
Development of standardized protocol to avoid near miss or sentinel events  
Obtaining an informed consent

### **Reference books:**

- 1.Law relating to medical negligence and compensation- Dr.K.P.D.A. Prabakar & Dr.J.Paulraj Joseph – 2023
- 2.A textbook of medical jurisprudence and toxicology – Justice K Kannan -25<sup>th</sup> edition – 1<sup>st</sup> edition – 2016
- 3.Law the doctor must know- Hitesh J Bhatt & Geetebdra Sharma – 2017
- 4.Law on medical negligence and legal remedies – Dr.Annu Bahl Mehra & 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

The students will develop:

1. Clinical ethical Competency.
2. Ethical awareness, Empathy



## **UNIT-I**

Introduction to Public Health Ethics

Theories of Justice and Distribution of Public Health Resources

Principle for Public Health Ethics

## **UNIT-II**

Priority-Setting and Resource Allocation at the Macro Level

Priority-Setting and Resource Allocation at the Micro Level

## **UNIT-III**

Medical Ethics, Legal Aspects and Medical Terminology

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

2) Medical terminology

3) Medical waste Management

## **UNIT-IV**

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

Balancing Individual and Community Interests

Ethics and Health Promotion

## **UNIT-V**

Role of Human Rights in Public Health

Ethics of Health Promotion and Disease Prevention

### **Reference books:**

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

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

3.Nursing and healthcare ethics-Robinson & Doody-6<sup>th</sup> edition -2022

SEMESTER –V

**Clinical Procedures and Instrumentations in Emergency Services – I**

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Clinical Procedures and Instrumentations in Emergency Services – I	4	3	1	-	20	80	100

**Course Outcomes**

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

CO Statement	Taxonomy
Recall essential clinical procedures and instruments used in emergency services.	Remember
Demonstrate understanding of the proper application of clinical procedures in emergency situations.	Understand
Apply acquired knowledge to perform clinical procedures accurately and efficiently in emergency settings	Apply
Analyze potential complications and adapt clinical procedures accordingly in emergency scenarios.	Analyze
Evaluate the effectiveness of different clinical procedures and instruments in emergency care.	Evaluate
Develop new approaches and techniques for clinical procedures and instrumentations in emergency services	create

Taxonomy: remember, understand, apply, analyze, evaluate, create

## Learning Outcomes

The students will develop:

1. Proficiency in performing essential clinical procedures and instrumentations in emergency settings.
2. Enhanced understanding of emergency equipment and their appropriate usage.
3. Improved knowledge of safety protocols and infection control measures during clinical procedures.
4. Increased ability to respond effectively to emergency situations and provide optimal patient care.

## UNIT I

### 1. INSTRUMENTATION IN EMERGENCY SERVICES

- Introduction to Biomedical engineering (Man-machine relationship)
- ECG
- DC Defibrillator
- Intravenous pumps
- Laryngoscope, ambu bag, suction machine
- SPO2 monitoring, Temperature monitoring
- BP apparatus, BP monitoring-NIBP, IBP
- Ventilators-Intensive care, portable
- Power generation, transmission & distribution
- Manual resuscitator
- Radiology equipment & radiation hazards
- Suction machine
- Nebulizer
- Medical gases
- Ambulance and its power supply
- Dialysis machine
- Infant warmer & incubator

## UNIT II

### 2. CLINICAL PROCEDURES IN EMERGENCY ROOM

**Measurement:**

Vital Sign  



- Pulse assessment
- Respiratory assessment
- Temperature assessment
- Blood pressure assessment

### **Respiratory procedures**

- Endotracheal intubation and extubation
- Drugs through ET tube
- Tracheotomy insertion and management
- Suction in ganartificial airway
- Nasotracheal suctioning
- Insertion of nasopharyngeal and oropharyngeal airway
- Mechanical ventilation
- Intercostal drainage
- Thoracentesis

### **Intermediate Airways**

- Esophageal Obturator Airway
- Laryngeal Mask Airway
- Esophageal–Tracheal Combitube

### **Noninvasive Assessment and Support of Oxygenation and Ventilation**

- Pulseoximetry
- Carbon dioxide Monitoring-->Capnometry
- Oxygen therapy
- Delivery systems for Inhaled Medication
  - a. Nebulizers
  - b. Metered Dose Inhaler

### **Cardio vascular procedures**

- Cardiac Monitoring
- Central venous pressure monitoring
- Insertion of Arterial line:



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- Central venous cannulation
- Transcutaneous cardiac pacing
- Transvenous cardiac pacing
- Pericardiocentesis
- Cardioversion
- Defibrillation

### **Intraosseous Infusion**

- Indication
- Procedure
- Drugs through umbilical vein
- Complication

### **Gastrointestinal procedures**

- Insertion of nasogastric tube
- Insertion of enteral feed in tube and initiation of feedings.
- Gastric lavage
- Upper gastrointestinal endoscopy
- Insertion of rectal tube
- Paracentesis
- Peritoneal lavage

### **Poison decontamination**

- Ipecac-induced emesis
- Activated charcoal
- Whole bowel irrigation

### **Genitourinary procedures**

- Urethral catheterization
- Peritoneal dialysis
- Placement and Management of external Arteriovenous shunt.
- Continuous Arteriovenous hemofiltration



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### **Intravenous Therapy**

- Insertion of intravenous catheter
- Administration of parenteral nutrition
- Blood administration

### **Neurologic Procedures**

- Lumbar Puncture

### **PRACTICAL'S**

- Power supply testing
- Fuses testing
- Spot identification
- Thermometer
- BP apparatus
- Stethoscope

### **RECOMMENDED BOOKS**

1. Paramedic practice today above and beyond- Barbara-Mosby Elsevier
2. Mosby's paramedic textbook, 3rd edition, Mosby's Mick J. Sanders –Mosby Elsevier
3. Rosen's emergency medicine-7th edition Marx, Hockberger, Walls, Adams Mosby Elsevier
4. Essentials of Medical Pharmacology, 6th edition, K.D. Tripathi-Jaypee
5. Clinical Procedure in Emergency Medicine by "Robert & Hedges"-Saunders
6. Nancy Caroline's emergency care in the streets 6th edition, Editor Andrew N. Pollak Jones and Bartlett publishers

Three handwritten signatures in black ink are located in the bottom right area of the page. The signatures are stylized and cursive, appearing to be initials or names of individuals.



## Clinical Procedures and Instrumentations in Emergency Services – II

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Clinical Procedures and Instrumentations in Emergency Services – II	4	3	1	-	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
Recall essential clinical procedures and instruments used in emergency services.	Remember
Demonstrate understanding of the proper application of clinical procedures in emergency situations.	Understand
Apply acquired knowledge to perform clinical procedures accurately and efficiently in emergency settings	Apply
Analyze potential complications and adapt clinical procedures accordingly in emergency scenarios.	Analyze
Evaluate the effectiveness of different clinical procedures and instruments in emergency care.	Evaluate
Develop new approaches and techniques for clinical procedures and instrumentations in emergency services	create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning Outcomes

The students will develop:

5. Proficiency in performing essential clinical procedures and instrumentations in emergency settings.
6. Enhanced understanding of emergency equipment and their appropriate usage.
7. Improved knowledge of safety protocols and infection control measures during clinical procedures.
8. Increased ability to respond effectively to emergency situations and provide optimal patient care.

## UNIT I

### DIGESTIVE SYSTEM

- Acute abdominal problems



- Pathophysiology
- Management
- Abdominal trauma

## UNIT II

### RESPIRATORY SYSTEM

- Respiratory arrest
- Respiratory diseases
- Patho physiology
- Management
- Chest trauma

### UNIT III CIRCULATORY SYSTEM

- Structure of heart(Including function)
- Blood vessels
- Arterial and venous distribution in body
- Patho physiology
- Heart sound
- Blood pressure and cardiac output
- Cardiac cycle
- Electrocardiograph(ECG)
- Electrical conducting system
- Cardiac diseases
- Shock
- Cardiac arrest
- Management



## Practical

- Gluco meter
- Intraosseous infusion
- LMA
- Combitube
- ET intubation
- Nebulizer
- Ventilator
- Capnography
- Pulse oximeter

## RECOMMENDED BOOKS

7. Paramedic practice today above and beyond- Barbara-Mosby Elsevier
8. Mosbysparamedictextbook,3rdedition,MosbysMickJ.Sanders –Mosby Elsevier
9. Rosensemergencymedicine-7thedition Marx ,Hock berger Walls, Adams Mosby Elsevier
10. Essentials of Medical Pharmacology,6thedition,K.D.Tripathi-Jaypee
11. Clinical Procedure in Emergency Medicine by“ Robert & Hedges”-Saunders
12. Nancy Caroline’s emergency care in streets6thedition, Editor Andrew N.Pollak Jones and Bartlett publishers

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## Biostatistics

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

### Course Outcomes

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

CO Statement	Taxonomy
Recall basic concepts and principles of biostatistics, including measures of central tendency and variability.	Remember
Comprehend the use of statistical techniques in analyzing health data and interpreting research findings.	Understand
Apply statistical methods to analyze health-related data and draw valid conclusions.	Apply
Analyze and interpret epidemiological data using appropriate statistical tests and graphical representations.	Analyze
Critically evaluate research studies and their statistical Analyses for validity and reliability.	Evaluate
Design and execute research studies by selecting appropriate study designs and statistical techniques in biostatistics.	create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning Objectives

1. To have a basic knowledge of biostatistics and its applications in medicine
2. To know various types of data presentation and data summarization in Medical field
3. To have overview of data analysis and sampling techniques
4. To understand various study designs in Medical field
5. To know applications of various study designs in Medical Research

### Unit I

Introduction and Presentation of data

Meaning, Branches of Statistics, Uses of statistics in medicine, Basic concepts, Scales of measurement, Collection of data, Presentation of data; Tabulation, Frequency Distribution, Diagrammatic and Graphical Representation of Data.

### Unit II

Measure of central tendency and Measures of Variation

Arithmetic Mean (Mean), Median, Mode, Partition values, Range, Interquartile range, Mean Deviation, Standard Deviation, Coefficient of Variation.

### **Unit III**

Probability and standard distributions

Definition of some terms commonly encountered in probability, Probability distributions; Binomial distribution, Poisson distribution, Normal distribution, Divergence from normality; Skewness and kurtosis

### **Unit IV**

Census and Sampling Methods Census and sample survey, Common terms used in sampling theory, Non-probability

(Nonrandom) Sampling Methods; Convenience sampling, Consecutive Sampling, Quota sampling, Snowball sampling, Judgmental sampling or Purposive sampling, Volunteer sampling, Probability (Random) Sampling methods; Simple random sampling, Systematic Sampling, Stratified Sampling, Cluster sampling, Multi-stage sampling, Sampling error, Non-sampling error.

### **Unit V**

Inferential Statistics

Parameter and statistic, Estimation of parameters; Point estimation, Interval Estimation, Testing of hypothesis; Null and alternative hypotheses, Type-I and Type-II Errors.

### **Research Methodology**

#### **Unit VI -**

Introduction to research methodology

Types of research; Descriptive vs. Analytical, Applied vs. Fundamental, Quantitative vs. Qualitative, Conceptual vs. Empirical, Some Other Types of Research

#### **Unit VII -**

Study Designs-Observational Studies

Epidemiological study designs; Observational studies, Descriptive studies; Case Reports, Case series, Analytical studies; Case control studies, Cohort studies, Cross Sectional

#### **Unit VIII**

Experimental Studies Experimental studies (Interventional studies); Randomized control Trials (Clinical Trials), Field trials, Community trials, Non-Randomized Trials

#### **Unit IX**

Uses of Epidemiology

#### **Unit X**

Application of study Designs in Medical Research

### **References**

Two handwritten signatures in black ink. The signature on the left is a stylized 'f' or 'K' shape. The signature on the right is more complex, starting with a large 'W' or 'M' and followed by a cursive name that appears to be 'Abu'.

1. K.R.Sundaram, S.N.Dwivedi and V Sreenivas (2010), Medical statistics, principles and methods, BI Publications Pvt Ltd, New Delhi
2. NSN Rao and NS Murthy (2008), Applied Statistics in Health Sciences, Second Edition, Jaypee Brothers Medical Publishers (P) Ltd.
3. J.V.Dixit and L.B.Suryavanshi (1996), Principles and practice of biostatistics, First Edition, M/S BanarsidasBhanot Publishers.
4. GetuDegu and FasilTessema (2005), Biostatistics, Ethiopia Public Health Training Initiative.
5. Essentials of Community Medicine for Allied Health Sciences, JSS University Publications, 20.
6. Park K. Park's Textbook of Preventive and Social Medicine. 23rd ed. Jabalpur: BanarsidasBhanot Publishers, 2015.p.135-141.
7. Suryakantha. Textbook of Community medicine with recent advances.4th edition.
8. Bhalwar R. Textbook of Public Health and Community Medicine.2nd Edition. Pune, Department of Community Medicine AFMC, 2012.

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## Immunology

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

### Course Outcomes

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

CO Statement	Taxonomy
Recall the fundamental concepts and components of the immune system.	Remember
Explain the principles and mechanisms of immune responses against pathogens and diseases.	Understand
Apply immunological knowledge to diagnose and treat immune-related disorders.	Apply
Analyze experimental data to understand immunological processes and interpret research findings.	Analyze
Critically evaluate the efficacy and limitations of immunological techniques and therapies.	Evaluate
Develop innovative approaches and strategies for immunological research and therapeutic interventions.	create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning Objectives

1. Understand the basic principles of immunology, including the immune system's components and their functions.
2. Explain the mechanisms of immune responses and how they protect the body against pathogens.
3. Describe the types of immunity, including innate and adaptive immunity, and their roles in disease prevention.
4. Recognize the importance of immunization and its impact on public health.



1. History and introduction to immunology
2. Immunity
  - 2.1 Innate
  - 2.2 Acquired immunity
  - 2.3 Basic concepts about their mechanisms
3. Definition, types of antigens and determinants of antigenicity
4. Definition, types, structure and properties of immunoglobulin
5. Antigen-Antibody reactions
  - 5.1 Definition
  - 5.2 Classification
  - 5.3 General features and mechanisms
  - 5.4 Applications of various antigen antibody reactions
6. Principle, procedure and applications of under mentioned in Medical Microbiology:
  - 6.1 Complement fixation test
  - 6.2 Immuno- fluorescence
  - 6.3 ELISA
  - 6.4 SDS-PAGE
  - 6.5 Western blotting
7. Principle, procedure and interpretation of various serological tests:
  - 7.1 Widal
  - 7.2 VDRL
  - 7.3 ASO
  - 7.4 CRP
  - 7.5 Brucella tube agglutination
  - 7.6 Rose-Waaler
8. Complement system:
  - 8.1 Definition
  - 8.2 Basic concepts about its components
  - 8.3 Complement activation pathways
9. Immune response:





9.1 Introduction

9.2 Basic concepts of Humoral and Cellular immune responses

10. Hypersensitivity:

10.1 Definition

10.2 Types of hypersensitivity reactions

11. Basic concepts of autoimmunity and brief knowledge about autoimmune diseases

12. Automation in diagnostic serology

13. Vaccines:

13.1 Definition

13.2 Types

13.3 Vaccination schedule

13.4 Brief knowledge about 'Extended programme of immunization' (EPI) in India

**Suggested Readings:**

1. Practical Medical Microbiology by Mackie & McCartney Volume 1 and 2

2. Text book of Microbiology by Ananthanarayanan

3. Medical Microbiology by Paniker & Satish Gupte

4. Medical laboratory Technology Vol. I, II, III by Mukherjee

5. Medical Laboratory manual for tropical countries Vol II Microbiology by Monica

Cheesbrough

6. Immunology by Riot

7. Basic & Clinical Immunology by P. Daniel Fudenberg. H. Hugh and Stites

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### Clinical posting

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

45 days training is compulsory




**Discipline Specific Elective**  
**MEDICAL PSYCHOLOGY**

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

**Course Outcomes**

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

CO Statement	Taxonomy
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 scenarios 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

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



## UNIT-I

Introduction to psychology

Intelligence, Learning, Memory, Personality, Motivation

## UNIT-II

Body integrity- one's body image

Patient in his Milan

## UNIT-III

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

Illness and its impact on the patients.

## UNIT-IV

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

## UNIT-V

Adapting changes in vision

Why Medical Psychology needs / demands commitment?

### Reference book:

- 1.Fundamentals of Psychology for graduate nurses- P Prakash-1<sup>st</sup> edition- 2016
- 2.Modern clinical psychology-Sheldon J.Korchin-2004
- 3.Psychology – Robert A .Baron & Girishwar Misra-5<sup>th</sup> edition – 2000
- 4.Applied psychology for nurses – R Sreevani– 4<sup>th</sup> edition- 2021



## INTRODUCTION TO QUALITY & PATIENT SAFETY

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

### Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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




## UNIT-I

**Quality assurance and management** – Concepts of Quality of Care, 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 – 2<sup>nd</sup> 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- 1<sup>st</sup> edition – 2013
4. Patient safety and healthcare improvement Willey Blackwell- 1<sup>st</sup> edition - 2014





## 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

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



## UNIT-I

### **Introduction to Entrepreneurship**

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

## UNIT-II

### **The Entrepreneur**

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

## UNIT-III

### **E-Cell**

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

## UNIT-IV

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

## UNIT V

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

### **Reference Books:**

- 1: Title Entrepreneurial 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.



## SEMESTER –VI

### 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 Number	CO Statement	Taxonomy
	Recall the different types of medical devices and their intended uses.	Remember
	Comprehend the principles behind the functioning and regulations of medical devices.	Understand
	Apply knowledge to select and use appropriate medical devices for specific clinical scenarios.	Apply
	Analyze the safety and efficacy of medical devices through testing and assessment.	Analyze
	Evaluate the benefits, risks, and ethical implications of using medical devices in patient care.	Evaluate
	Design innovative medical devices that address unmet needs and improve healthcare outcomes.	create

Taxonomy: remember, understand, apply, analyze, evaluate, create

#### Learning Outcomes

1. Improved patient outcomes: Medical devices enhance diagnosis, treatment, and monitoring, leading to better health outcomes for patients.
2. Increased accuracy and precision: Advanced medical devices enable precise measurements, reducing errors and improving medical procedures' effectiveness.
3. Enhanced efficiency and productivity: Medical devices streamline processes, automate tasks, and facilitate healthcare professionals' work, saving time and resources.
4. Expanded treatment options: Medical devices offer innovative solutions, expanding the range of available treatments and improving patient care and quality of life.



## UNIT I

- Introduction to Biomedical engineering (Man – machine relationship)
- ECG
- DC Defibrillator
- Intravenous pumps
- Laryngoscope, ambubag, suction machine
- SPO2 monitoring, Temperature monitoring
- BP apparatus, BP monitoring-NIBP, IBP
- Ventilators-Intensive care, portable
- Power generation, transmission & distribution

## UNIT II

- Manual resuscitator
- Radiology equipment & radiation hazards
- Suction machine
- Nebuliser
- Medical gases
- Ambulance and its power supply
- Dialysis machine
- Infant warmer & incubator

## UNIT III

### CLINICAL PROCEDURES IN EMERGENCY ROOM

- Vital Sign Measurement:
- Pulse assessment
- Respiratory assessment
- Temperature assessment
- Blood pressure assessment
- Respiratory procedures:
- Endotracheal intubation and extubation
- Drugs through ET tube
- Tracheostomy insertion and management
- Suctioning an artificial airway:
- Naso tracheal suctioning
- Insertion of nasopharyngeal and oropharyngeal airway
- Mechanical ventilation
- Intercostal drain
- age
- Thoracocentesis
- Intermediate Airways
- Laryngeal Mask Airway
- Esophageal – Tracheal Combitube
- Noninvasive Assessment and Support of Oxygenation and Ventilation
- Pulse oximetry
- Carbon dioxide Monitoring -->Capnometry

- Oxygen therapy
- Delivery systems for Inhaled Medication
- ☐☐Nebulizers
- ☐☐Metered Dose Inhaler
- Cardiovascular procedures
- Cardiac Monitoring
- Central venous pressure monitoring
- Insertion of Arterial line:
- Central venous cannulation
- Transcutaneous cardiac pacing
- Transvenous cardiac pacing
- Pericardiocentesis
- Cardioversion
- Defibrillation
- Cannulating Umbilical Vein
- Indication
- Procedure
- Drugs through umbilical vein
- Complication
- Intraosseous Infusion
- Indication
- Procedure
- Drugs through intraosseous line
- Complication
- Gastrointestinal procedures
- Insertion of nasogastric tube
- Insertion of enteral feeding tube and initiation of feedings.
- Gastric lavage
- Upper gastrointestinal endoscopy
- Insertion of rectal tube
- Paracentesis
- Peritoneal lavage
- Poison decontamination
- Activated charcoal
- Whole bowel irrigation
- Genitourinary procedures
- Urethral catheterization
- Peritoneal dialysis
- Placement and Management of external Arteriovenous shunt.
- Continuous Arteriovenous hemofiltration
- Intravenous Therapy
- Insertion of intravenous catheter
- Administration of parenteral nutrition
- Blood administration
- Neurologic Procedures
- Lumbar Puncture




#### REFERENCE BOOKS

1. Waugh – Ross & Wilson Anatomy & Physiology, 2008, Elsevier.
2. Biochemistry for Nurses- Raju. S.M, MaddaliBindu
3. Biochemistry for Nurses – Jacob Anthikad ,2nd edition
4. Emergency care in the streets- Nancy Caroline
5. Selva Rose. 1997, Career English for Nurses. Published by: Orient Blackswan Ltd
6. Oxford advanced Learners Dictionary, 1996
7. Quirk Randolph and Greenbaum Sidney, 1987. A University Grammar of English, Hong Kong: Longman group (FE) Ltd/ Pearson.
8. Fundamentals of computers- V. Rajaraman-2004
9. Absolute beginners guide to computer basics-Michael Miller. Que Publisher, September 1, 2009.
10. Networking concepts and technology – by Deepak Kalkadia, Francesco DiMambro, Prentice hall publisher, May 25, 2007
11. Operation system concepts (8th edition) by Abraham Silberschatz, Peter Baer Galvin, Greg Gangne, Wiley Publisher, Feb 13, 2009.
12. Microsoft office 2013 for Dummies – by Wallace Wang, July 31, 2013.
13. Pocket companion to Robbins & Cotran pathological Basis of disease
14. Microbiology for dental students – Bhaveja
15. Concise textbook of Pharmacology – Dr. N. Muruges
16. First Aid – L.C.Gupta

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## Advances in Trauma Care

SEMESTER –VI									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Advances in Trauma Care	4	3	1	-	20	80	100

### Course Outcomes

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

CO Number	CO Statement	Taxonomy
	Remember key principles of trauma care.	Remember
	Understand advanced techniques and interventions in trauma management.	Understand
	Apply evidence-based practices in the treatment of traumatic injuries.	Apply
	Analyze complex trauma cases and develop appropriate care plans.	Analyze
	Evaluate the effectiveness of different trauma care strategies.	Evaluate
	Create innovative approaches to improve outcomes in trauma patients	create

Taxonomy: remember, understand, apply, analyze, evaluate, create

### Learning Outcomes

1. Improved understanding of trauma management strategies to enhance patient outcomes.
2. Increased proficiency in utilizing advanced technologies and techniques in trauma care.
3. Enhanced ability to assess and prioritize critical injuries in trauma patients.
4. Strengthened collaboration among multidisciplinary teams for comprehensive trauma care delivery.



## UNIT I

- Basics of trauma assessment, triage and goals, primary survey (airway protection of spinal cord, ventilation, circulation, disabilities, environment control)
- Airway management, principle of spinal cord protection, CPR, identification of life threatening injuries, tension, pneumothorax, baseline neurological examination for disabilities
- Primary survey (vital signs, ECG, ABCac, POX1Co2, gastric catheters, C- spine, DP2, ultrasound, CXR)
- Allergies, medications, pregnancy, surrounding injuries in trauma assessment, physical care.

### Practical-

1. Performance of CPR in laboratory
2. Vital examination
3. Airway management of trauma patients
4. Protection of spinal cord before procedure

**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 equipment.	Remember
Learn & operate advance radiological tools to diagnose & detect disease.	Understand
Demonstrate clinical competency required of an entry level radiographer	Apply
Analyze the special radiographic equipment.	Analyze
Assess the application of radioisotopes.	Evaluate
Formulate the radiosafety principles.	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. Critical thinking
2. Problem solving skills
3. Recognize abnormal findings.
4. Understand interventional procedures.



## **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

### **Practical-**

1. Radiographic Techniques
  - Exposure techniques and positioning for different body regions
  - Image acquisition and quality control
2. Image Interpretation
  - Interpretation of radiographic images
  - Recognition of normal anatomy and identification of abnormalities
3. Radiology Procedures
  - Assisting and performing radiographic procedures
  - Contrast media administration and monitoring



4. Imaging Modalities
  - Hands-on training in various imaging modalities, such as X-ray, CT, MRI, Ultrasound, etc.
  - Image acquisition, manipulation, and post-processing
5. Interventional Radiology
  - Introduction to interventional radiology procedures
  - Observing and assisting in interventional procedures
6. Radiology Reporting
  - Training in writing clear and concise radiology reports
  - Communication and consultation skills

**Reference books:**

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

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## 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.

## DISCIPLINE SPECIFIC ELECTIVE

### HOSPITAL MANAGEMENT

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	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

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

build capacity for independent learning.

### UNIT-I

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

### UNIT-II

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

### UNIT-III

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

### UNIT-IV

**Operations management:** Hospital equipment repair and maintenance, types of maintenance, job orders, equipment maintenance log books, AMCS, outsourcing of maintenance services, quality and reliability, concept of failure, equipment history and documents, replacement policy, calibration tests, spare parts stocking techniques and 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 – 1<sup>st</sup> edition - 2018



## BASICS OF CLINICAL SKILL LEARNING

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	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 the students will learn about Asepsis and the Cleanliness related to asepsis and on mobility of the patients.	Value
	Define the They will also learn on the Basics of Nasal-Gastric Tube	Organize
	Revise the Also they will know about clean lines in the Asepsis	Characterize
	Follow the skills required for They will also learn on the Basics of Nasal-Gastric Tube.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome

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





## **UNIT- I**

**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: ENTRAL FEEDING NG 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 – Sudhir Kumar - 3<sup>rd</sup> edition – 2018
2. Essentials of clinical diagnosis – Sunil K Sen - 9<sup>th</sup> edition – 2019
3. Manual of clinical methods – P.S. Shankar – 4<sup>th</sup> edition – 2017
4. Communication skills in clinical practice – KR Sethuraman - 2<sup>nd</sup> edition - 2018



## SKILL ENHANCEMENT COURSE

### BASIC AND ADVANCE LIFE SUPPORT

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Skill Enhancement Course	Basic and Advance Life Support	2	2	-	-	20	80	100

#### Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

#### Course Objective

1. Demonstrate how to open a casualty's airway and check for breathing
2. Demonstrate how to place an unresponsive casualty in the recovery position
3. Perform Cardiopulmonary Resuscitation using a manikin
4. Identify safety considerations when using an automated external defibrillator (AED)
5. Be able to safely use an automated external defibrillator

#### Learning Outcomes

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



## UNIT- I

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

## UNIT- II

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

## UNIT- III

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

Drugs used in treatment of blood and cardio vascular disorders

## UNIT- IV

### Basic Life Support

- Airway Management
- Anaphylaxis
- Approach to Shock

Initial Management of Shock

## UNIT- V

### Basic Life Support

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

### Reference books:

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



## ORGANIZATIONAL BEHAVIOUR

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

### Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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



## UNIT-I

Organizational Behavior-Definition-Importance -Historical Background-Fundamental concepts of OB- 21st Century corporate-Different models of OB i.e. autocratic, custodial, Supportive

## UNIT-II

**Organization Structure and Design**- Authority and Responsibility Relationships - Delegation of Authority and Decentralization-Interdepartmental Coordination-Emerging Trends in Corporate Structure, Strategy and Culture - Impact of Technology on Organizational design- Mechanistic vs Adoptive Structures – Formal and Informal Organization

## UNIT-III

**Perception Process** - Nature & Importance - Perceptual Selectivity - Perceptual Organization - Social Perception - Impression Management. Learning-Process of Learning-Principles of Learning- Organizational Reward Systems – Behavioral Management

## UNIT-IV

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

## UNIT V

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

### **Reference Books:**

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

## 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.

