

(1)

## **SYLLABUS**

### **BACHELOR IN CARDIAC PERFUSION TECHNOLOGY**

**4 Years (VIII Semesters)**

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



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### SEMESTER –I

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

### SEMESTER –II

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Microbiology	4	3	1	-	20	80	100
	Core	General Pathology	4	3	1	-	20	80	100
	Core	General Pharmacology	4	3	1	-	20	80	100
	Core	Physics for perfusionists	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Skill Enhancement	Medical terminology and Record keeping	2	2			20	80	100

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

### SEMESTER –III

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Equipment's used in Perfusion Technology	4	3	1	-	20	80	100
	Core	Hematology – I	4	3	1	-	20	80	100
	Core	Principles of Perfusion Technology – I	4	3	1	-	20	80	100
	Core	Hemovigilance	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	General Principles and Practices of Public Health/ Forensic Psychology	2	2	-	-	20	80	100
	Ability Enhancement Course	Computer/basic emergency management	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
<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	Clinical Diagnostics – I	4	3	1	-	20	80	100
	Core	Hematology – II	4	3	1	-	20	80	100
	Core	Principles of Perfusion Technology – II	4	3	1	-	20	80	100
	Core	Clinical applications of Cardiac Perfusion Technology	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Communication skill for Health care professional/ introduction to national healthcare system	3	3	-	-	20	80	100
	Skill Enhancement Course	MEDICAL LAW/ Ethics in public health	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
<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 –V

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Clinical Diagnostics – II	4	3	1	-	20	80	100
	Core	Introduction to Surgery & CSSD	4	3	1	-	20	80	100
	Core	Perfusion for special procedures	4	3	1	-	20	80	100
	Core	Immunology	4	3	1	-	20	80	100
	Practical	Practical for all subjects	5	-	-	10	50	150	200



		/ Clinical Posting							
	Discipline Specific Elective	Medical psychology/ Biostatics and Research methodology	3	-	-	3	20	80	100
	Ability Enhancement	Entrepreneurship development/ Introduction to quality and patient safety	2	-	-	2	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	2	20	80	100
Total Credit- 27			Total Contact Hours- 32						
*Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective									

SEMESTER –VI									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Advance Perfusion Techniques	4	3	1	-	20	80	100
	Core	Patient Care and Basic Nursing	4	3	1	-	20	80	100
	Core	Medical Devices	4	3	1	-	20	80	100
	Core	Professionalism and values	4	3	1	-	20	80	100
	Practical	Practical for all subjects / Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	HOSPITAL MANAGEMENT/ Basics of clinical Skill Learning	3	3	-		20	80	100
	Skill Enhancement Course	BASIC AND ADVANCE LIFE SUPPORT/ ORGANIZATIONAL BEHAVIOUR	2	2			20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2			20	80	100
Total Credit- 27			Total Contact Hours- 32						
*Credits of MOOC, SWAYAM and NEPTEL will be considered similar to the credits of Open Elective /General Elective									

SEMESTER – VII& VIII INTERNSHIP				
Subject Code	Course category	Course title	Evaluation	
			Internal	External
	Core	Internship	20	80
	Core	Internship	20	80
Internship is for 12 months,				
SEMESTER	CREDIT			
I	25			
II	25			
III	27			
IV	27			
V	27			
VI	27			
VII	20			
VIII	20			
<b>TOTALCREDITS</b>	<b>198</b>			

**Exit: Honors'Cardiac Perfusion Technology**




## SEMESTER-1

### HUMAN ANATOMY

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

#### Course Outcomes

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

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

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

Learning Outcomes	<ol style="list-style-type: none"> <li>1. To introduce the students to the concepts related to General anatomy, Muscular, Respiratory, Circulatory, Digestive and Excretory system</li> <li>2. Demonstrate and understand the basic anatomy of Respiratory and Circulatory system</li> <li>3. Demonstrate and understand the basic anatomy of Digestive and Excretory system</li> <li>4. Knowledge of basic concept of human body anatomical structure.</li> <li>5. 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, 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:

1. Human Anatomy Regional and Applied Vol. 1, Vol.2 & Vol.3, B.D. Chourasia C.B.S. Publishers, New Delhi- 9<sup>th</sup> edition -2022
2. Hand Book of General Anatomy B.D. Chourasia, C.B.S. Publishers, New Delhi-9<sup>th</sup> edition -2022
3. Text Book of Human Histology Inderbir Singh, Jaypee Brothers, Medical

4. 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.

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

### UNIT-III

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

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

### UNIT- IV

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

### UNIT-V

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

### PRACTICALS

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

### Reference Books:

- 1: Essentials of Biochemistry – U.Satyanarayana, 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, Sukkahs Mukherjee – 2<sup>nd</sup>edition. -2021
- 4: Essentials of Biochemistry - Pankaj Naik -6<sup>th</sup>edition. -2022



## Medical Ethics & Computer Skills related to Perfusion Technology

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

### Course Outcomes:

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

CO Statement	Taxonomy
Legal and ethical challenges in healthcare.	Remember
Students explore the legal, ethical and moral issues in healthcare professionals. Identify issues related to potential legal liability in the workplace.	Understand
To introduce students to the discipline of public health	Apply
To give an overview of the methods of prevention and health promotion	Analyze
To understand the determinants and measures of disease and health related states	Evaluate
To understand the status of health and disease at global and national levels	Create

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

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

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

#### UNIT-II

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

#### UNIT- III

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

#### UNIT- IV

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

#### UNIT- V

Concept of computers,Hardware and Software,Introduction to DOS,MSWord/Excel/Power point , Multimedia, Use of internet and E-mail, Hospital Management system

#### Reference books:

- 1.Medical Ethics – CM Francis – 4<sup>th</sup> edition – 2020
- 2.Medical Ethics challenges and prospects in India –Subrata Sharma– 2012
- 3.Medical Ethics – a very short introduction – Michael Dunn & Tony Hope- 2<sup>nd</sup> edition – 2018
- 4.Textbook of medical bioethics attitude and communication for medical students – Motilal C Tayade – 2020



**ENVIRONMENTAL SCIENCE & HEALTH**

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				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.	Remember
Discuss the Global environment problems, bio-diversity loss, deforestation & desertification.	Understand
Demonstrate the environmental pollution with impact & control strategies of pollution in urban, rural & industrial areas.	Apply
Define the environmental management, concept of health sanitation, environmental disease.	Analyze
Revise the Environmental Protection Act, Environmental laws, National movements, environmental ethics.	Evaluate
Follow the IUCN – role in environmental protection, aims & objectives of human right policies.	Create

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

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

### 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 Program & 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 the immunology & perform serological tests or microbiological laboratory procedures.	Apply
Analyse the etiological agents of global infectious diseases, causative agents, transmission methods, investigation, prevention & control.	Analyse
Assess the clinical relevance of bacteriology, parasitology mycology & virology.	Evaluate
Formulate the causative agents & guidelines to stop the spread of infection in healthcare system.	Create

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

Learning Outcome	Upon completion, students should be able to demonstrate:
	<ol style="list-style-type: none"> <li>1. Knowledge of microorganisms and the disease process as well as aseptic and sterile techniques.</li> <li>2. Perform microbiological laboratory procedures according to appropriate safety standards</li> </ol>




## 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, MacConkey medium, L J media.
4. Grams staining.
5. Acid fast staining

### Reference books:

- 1: Complete Microbiology – 7<sup>th</sup> edition -2022
- 2: Text & Practical Microbiology – CP Baveja & V Baveja – 3<sup>rd</sup> edition - 2022
- 3: Essentials of Medical Microbiology- Apurva 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
	Analyse the general principles of clinical pathology techniques, autopsy & museum.	Analyse
	Assess the clinical information of accurate pathology diagnosis.	Evaluate
	Formulate the pathological laboratory procedures according needed for final pathologic report.	Create

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

### Learning Outcomes

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





## UNIT: I

Cell injury, cellular adaptation and cell death

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

## UNIT-II

Inflammation and Repair

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

## UNIT-III

Fluid and Hemodynamic disturbances

- Edema (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
Analyse the anti-thrombotic agents, lipid lowering agents & anti-atherosclerotic agents.	Analyse
Assess the antibacterial drugs & Narcotics with indications & contraindication in day to day life	Evaluate
Formulate the types of anesthesia and mechanism of action of local & general anesthetic drugs.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> <li>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.</li> <li>Also, recent advances in pharmacology will play a key role in research aspect of the students</li> </ol>
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## UNIT- I

### General Pharmacology

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

## UNIT- II

### Autonomic nervous system & Peripheral nervous system

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

## UNIT- III

### Central nervous system

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

### AUTOCOIDS

- a) Histamine and antihistaminic

## UNIT- IV

### (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

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

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## Physics for perfusionists

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

### Course Outcomes

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

CO Number	CO Statement	Taxonomy
	Basics of physics used in cardiac perfusion	Remember
	Requirement of fundamental physics for instrument assessment in cardiac perfusion	Understand
	Basic fundamentals for handling instrumentation in OT for cardiac perfusion.	Apply
	Thermodynamics and outcomes of instruments used in cardiac perfusion	Analyse
	Access clinical information in cardiac issues	Evaluate
	Formulate easy handling of different equipment and instrument calibration.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> <li>1. The student will be able to handle the instrumentation in Cath lab by understanding the basic principles of these instruments.</li> <li>2. The students will be able to calibrate the instruments with proficiency, by learning the basic physics</li> </ol>
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### UNIT- I

1. Introduction to thermal sciences, review of calculus
2. Pressure hydrostatics, and introconcepts in thermo dynamics
3. Conservation of mass
4. The first law of thermo dynamics and mechanical energy balance

### UNIT- II

1. Introduction to thermal sciences, review of calculus
2. Pressure hydrostatics, and introconcepts in thermo dynamics
3. Conservation of mass
4. The first law of thermo dynamics and mechanical energy balance

### UNIT- III

1. Applications of conservation of energy
2. Integral conservation of linear momentum
3. Concepts in cardiovascular fluid mechanics Flow through tubes
4. Intro to differential analysis and the continuity equation
5. The Navier- Stokes equations

### UNIT- IV

1. The Navier- Stokes equations
2. Transport application in cardio pulmonary by pass: oxygenation and ultra-filtration
3. Mass transfer and the differential component mass balance
4. Gas laws, solubility of gases
5. Volume, pressure, flow

### UNIT- V

1. Mass, density, viscosity
2. Heat units, temperature scales, heat transfer
3. Diffusion/osmosis
4. Molarity, concentrations



**Reference Books:**

- Cardiac perfusion and pumping engineering by Nathan Spitz.
- Perfusion of cardiac surgery by Gregory S Matte.

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## SKILL ENHANCEMENT COURSE

### MEDICAL TERMINOLOGY AND RECORD KEEPING

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

#### Course Outcomes

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

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

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

#### Learning Outcomes:

After completion of the course, students would be able to:

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





## **UNIT-I**

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

## **UNIT-II**

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

## **UNIT-III**

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

## **UNIT-IV**

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

## **UNIT-V**

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

### **Reference Books:**

- Davies, Juanita. Essentials of Medical Terminology. 3rd edition. New York. Delmar. 2008.
- Mogli. J.D. Medical Records: Organization & Management 2nd edition New Delhi: Jaypee Brothers.
- The body by Bilbirson Agreed for Occupancy

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## SEMESTER –III

### Equipment's used in Perfusion Technology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Equipment's used in Perfusion Technology	4	3	1	-	20	80	100

#### Course Outcomes

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

CO Statement	Taxonomy
Requirement of perfusion techniques in emergency conditions	Remember
Equipment and there updation	Understand
Principles of equipment's used in cardiac perfusion	Apply
Basic equipment their uses for specific cases	Analyze
formulation of new equipment on the basis of treatment requirements	Evaluate
Learning outcome	
Follow the values and skills required in medical audit	Create

Taxonomy: Remember, understand, apply, analyze, evaluate, create.

Learning Outcomes:

After completion of the course, students would be able to:

1. The student will study about the equipment, their calibration methods with their principle.
2. The basics and use of equipment will work as skill enhancement for cardiac perfusion

## UNIT-I

1. ECMO
2. Counter pulsation and Ventricular assist devices (Vad)
3. Minimally Invasive Cardiac Surgery (MICS)
4. Perfusion for Non-cardiac Procedures
  - Liver transplant
  - Isolated Limb Perfusion
5. Recent advances in Perfusion Techniques

## UNIT-II

### Pediatric Perfusion

1. Preparation for CPB: Equipment Preparation of the Patient for CPB
2. Blood Flow, ECC component and circuit selection Cannulation

## UNIT-III

1. Priming Conduct of Bypass CO2 management & Choice of Acid Base management Fluid Management and Drug management during CPB Myocardial Protection
2. ECMO for Neonates, Infants and Children–Components Circulatory assist devices for Infants and children

## UNIT-IV

3. Blood Conservation Techniques
  1. Preparation for CPB: Equipment Preparation of the Patient for CPB
  2. Blood Flow, ECC component and circuit selection Cannulation
  3. Priming Conduct of Bypass CO2 management & Choice of Acid Base management Fluid Management and Drug management during CPB Myocardial Protection ECMO for Neonates, Infants and Children–IABP and ECMO, Medico-legal Considerations and Record Keeping

## PRACTICALS

1. To provide ventricular assist to the patients.
2. Perfusion assistance in non- cardiac patients.
3. CPB preparation in patients require cardiac perfusion.
4. To check vital of the patients require cardiac perfusions.
5. To provide bypass management to the patients.

## Reference Books:

- Cardiac perfusion and pumping engineering by Nathan Spitz.
- Perfusion of cardiac surgery by Gregory S Matte.



## Hematology – I

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

### Course Outcomes

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

CO Statement	Taxonomy
Different hematological techniques	Remember
The blood profile and its analysis	Understand
Hematology techniques and primary analysis before transfusion	Apply
The types of anemia and leukemias	Analyze
The patient's requirements before transfusion	Evaluate
To formulate new required techniques on the basis of new case variance	Create

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

Learning Outcomes:

After completion of the course:

- Students will be able to know the basic concepts of Hematology & routine clinical investigations of Hematology laboratory.
- It also deals with the study of preparation of different types of anticoagulants and their mode of action.

## UNIT-I

### Introduction of 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

### Leukocytes 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 Hemorrhagic disorders

Normal homeostasis, mechanism of coagulation, coagulation regulation, hyper coagulable states, Role of platelets in hemostatic, platelets function test, Platelets disorders Introduction Causes of bleeding disorders, Vascular defect Platelet defect, Factor deficiency, Inhibitors, Hyper fibrinolysis, 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.

## Practical

1. Determination of Hemophilia A and B
2. Study the morphology of Sickling tests
3. Determination of RBC count.
4. Determination of WBC count.
5. Determination of DLC.
6. Determination of Hb by CMG method.
7. Determination of PCV
8. Determination of ESR by Westergren method and Win Trobe method.

9. Determination of BT and CT
10. Determination of PT and APTT

**Reference Books:**

HarshMohan, TextBookofPathology.P.Godkar

- Practical pathology P.Chakraborty
- PracticalHematologybyJBDacie

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## Principles of Perfusion Technology – I

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

### Course Outcomes

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

CO Statement	Taxonomy
Basic principles of treatment and instruments.	Remember
Analyze and spell words correctly.	Understand
Requirement of disease based specific equipment in cardiac perfusion.	Apply
Technique of perfusion and required treatment.	Analyze
Formulate new technique on the basis of case variations and requirements.	Evaluate
Follow the values and skills required in medical audit	Create

Taxonomy: Remember, Understand, apply, analyze, evaluate, create

Learning Outcomes:

After completion of the course, students would be able to:

1. The students will be able to learn the basic principles of cardiac perfusion
2. The students will be able to understand the case requirements and can provide easy assistance to the surgeon



### UNIT-I

1. Physiology of extra- corporeal circulation
2. Assessment of patients before bypass; going on & coming off bypass.
3. Hemodilution and priming solutions

### UNIT-II

1. Principles of extra corporeal sex change
2. Analyzing & correction of ABG, VBG and other blood investigations
3. Perfusion Equipment-Hardware:

..

### UNIT-III

1. Heart-lung machines/centrifugal pumps
2. Pressure and low-level alarm devices
3. Heart-lung heater/coolers

#### Practical:

1. Patient assessment before going for bypass.
2. To use oxygen analyzer for patients.
3. ABG investigation of the patients.
4. VBG investigation of the patients.
5. Use of mechanical flow meter.
6. Use of electronic flow meter.
7. Use of inline blood gas device in OT.

#### **Reference Books:**

- Cardiac perfusion and pumping engineering by Nathan Spitz.
- Perfusion of cardiac surgery by Gregory S Matte.





## Hemovigilance

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

### Course Outcomes

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

CO Statement	Taxonomy
Monitoring of the patient to study the possible adverse effect of transfusion...	Remember
The outcome of transfusion for treatment upgradation.	Understand
Formulate new constraints to overcome adverse effects on transfusions.	Apply
The basic requirement of hemovigilance	Analyze
Revise to compose records in hospitals	Evaluate
Existing transfusions techniques and available treatment.	Create

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

Learning Outcomes:

After completion of the course, students would be able to:

1The student will learn the transfusion technique with the aspect of hemovigilance.




### **UNIT-I**

History of hemovigilance, hemovigilance system of different countries, hemovigilance program in India.

### **UNIT-II**

Objectives of hemovigilance programs in India, objectives, enrollment centers

### **UNIT-III**

Softwares used for hemovigilance data privacy and security, documentation and reporting

### **UNIT-IV**

Responsibility of medical and nursing staff of HPVI centers, departmental responsibilities.

### **UNIT-V**

Custodian record keeping, CDSCO responsibilities.

### **Practical**

- 1.Assisting clinician for transfusion.
- 2.Blood group analysis.
- 3.Study of Rh factor of the patients.
4. Follow-up and monitoring of patients after transfusion.
5. Maintaining medical record of the patients gone for transfusion.

### **Reference Books:**

- Cardiac perfusion and pumping engineering by Nathan Spitz.
- Perfusion of cardiac surgery by Gregory S Matte.



## Clinical Postings

45 DAYS OF HOSPITAL POSTING IS MANDATORY.

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	core	Clinical Postings	2	2	-	-	40	60	100

## Discipline Specific Elective

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

### Course Outcomes

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

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

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

### Learning Outcome

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




## UNIT-I

Introduction to Patient Care:

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

Communication:

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

Documentation:

a.Importance of documentation,b. Initial and follow up notes.documentation of therapy, procedures and communication.

## UNIT-II

Universal Precautions and Infection Control:

a) Hand washing and hygiene. b) Injuries and Personal protection, Insulation and safety procedures.

c)Aseptic techniques, sterilization and disinfection. d)Disinfection and Sterilization of devices and

equipment e) Central sterilization and supply department f) Biomedical Medical waste management.

## UNIT-III

Medication Administration:

a) Oral / Parenteral route

b) Parenteral medication administration: Intra venous, intra muscular, sub-cutaneous, intra dermal routes, Intra venous Infusion

c) Aerosol medication administration, Oxygen therapy

d) Intravenous fluids

e) Blood and blood component transfusion.

Position and Transport of patient:

a) Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.

b) Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.

c) Transport of ill patients (inotropes, intubated /ventilated patients)

## UNIT-IV

Bedside care:

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

Monitoring of Patient:

a) Pulse, ECG (Cardiac Monitor), Oxygen Saturation, Blood Pressure, Respiration) Multi parameter monitors, Capnography and End Tidal CO<sub>2</sub> (ETCO<sub>2</sub>)c)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) Suture materials and suturing techniques) Splinting) Basic care of patient with burns.

### Reference books:

1.Hospital and patient care management – Dr. Vidhya Srinivasan &Dr. AkshayCh. Deka-2022

- 2.Principles of hospital practice and patient care – P Srinivas ulu 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.

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## 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.	Remember
	Respond & familiarize with basics of psychology.	Understand
	Understand the psychology of offenders & defenders.	Apply
	Apply psychological knowledge to the legal system.	Analyze
	Learn the psychology of eyewitness testimony.	Evaluate
	Receive complex ethical issues and resolve ethically.	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. 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 Rams land – 1<sup>st</sup> edition -2010
- 2.Forensic Psychology Workbook- Connor Whitely – 2018
- 3.Forensic Psychology- Avery short introduction-David Canter – 2010.
- 4.Forensic Psychology-Dr Laxmeshwar 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/ Basic emergency management	2	2	-	-	20	80	100

#### Course Outcomes

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

CO Statement	Taxonomy
Aim at imparting a basic level appreciation program for the common man. Able to 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.	Remember
Make digitally literate.	Understand
Understand to aid the PC penetration program.	Apply
Helps the small business communities, housewives to maintain their small account using the computers and enjoy in the world of Information Technology.	Analyze
Characterize Cultural and Global Awareness.	Evaluate
Receive knowledge of Professional Practice.	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. 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 an E-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.



## 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.	Remember
	Emergency plan specifies procedures for handling sudden or unexpected situations.	Understand
	Recognize common, urgent and emergent problems	Apply
	Organize planning of special resuscitative procedures.	Analyze
	Characterize medical & surgical emergencies.	Evaluate
	Receive knowledge of emergency drugs or medicines.	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. 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



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## Generic Elective

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




## SEMESTER –IV

### Clinical Diagnostics – I

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

#### Course Outcomes

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

CO Statement	Taxonomy
Diagnostic methods for disease assessment in patients.	Remember
Different analysis techniques for disease diagnosis.	Understand
The disease and its pattern before treatment	Apply
The diseases in patients	Analyze
Formulation of new techniques for disease diagnosis	Evaluate
Follow the values and skills required in medical audit	Create

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

#### Learning Outcomes:

After completion of the course, students would be able to:

1. The student will learn different disease and its diagnostic techniques for patient assessment



## UNIT-I

1. Basics of diagnostic techniques-
  - A. Laboratory investigations in relation to perfusion technology
  - B. Chest of X-ray,
  - C. ECG,
  - D. ABG
  - E. Angiography,
  - F. 2DEcho
  - G. TEE

## UNIT-II

1. Monitoring and instrumentation-
  - A. Instrumentation technology of ECG machine, pressure transducers, syringe and
  - B. Peristaltic pumps, monitors, ventilators, pulse oximeters, temperature probes

## UNIT-III

- A. And thermoregulatory monitoring, defibrillators.
- B. Hemodynamic monitoring, Hemostatic monitoring.

## UNIT-IV

- A. Maintenance of oxygen, carbon dioxide and acid base status and their monitoring

## UNIT-V

### Coagulation Monitoring

- ☐ Coronary artery and graft flow measurement
- ☐ Resuscitation and support
- ☐ Catheterization
- ☐ Angiography
- ☐ Angioplasty
- ☐ EPS Studies
- ☐ Valvuloplasty
- ☐ Intra-aortic balloon

### Practical:

1. To perform Electrocardiogram (ECG or EKG)
2. Imaging test uses ultrasound waves to create real-time images of the heart by echocardiogram.
3. Stress test performance in patients
4. Cardiac catheterization in patients
5. Nuclear stress test in patients
6. CT angiography in patients

### Reference Books:

Cardiovascular perfusion by Nathan Spitz.



## Hematology – II

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

### Course Outcomes

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

CO Statement	Taxonomy
Different hematological techniques	Remember
The blood profile and its analysis	Understand
Hematology techniques and primary analysis before transfusion.	Apply
The types of anemia and leukemias	Analyze
The patient's requirements before transfusion	Evaluate
To formulate new required techniques on the basis of new case variance	Create

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

### Learning Outcomes:

After completion of the course:

- Students will be able to know the basic concepts of Hematology & routine clinical investigations of Hematology laboratory.
- It also deals with the study of preparation of different types of anticoagulants and their mode of action.




## UNIT-I

- Blood collection
- Anticoagulants used in Hematology
- Normal values in Hematology

## UNIT-II

- Basic Hematological Techniques: RBC count, Hemoglobin estimation, Packed cell volume.
- Calculation of absolute indices: WBC counts - Total and differential, Absolute eosinophil count, Platelet count, Erythrocyte sedimentation rate, Reticulocyte count
- Preparation of blood films
- Stains used in Hematology

## UNIT-III



- Morphology of blood cells
- Classification of Anemia (Morphological & etiological), Definition, causes, classification & lab findings of Iron Deficiency Anemia, Megaloblastic Anemia, Hemolytic Anemia
- Bone Marrow: Cell composition of normal adult Bone marrow

## UNIT-IV

- Leukemia: Classification
- Urine examination: Physical, Chemical & Microscopic
- Examination of body fluids, cell counts

### Practical:

- Study the collection of blood
- Study of hemocytometer, Hemoglobinometry white blood cell count, red blood cell count,
- Determination of blood groups.
- Leishman's staining and differentiate WBC counts.
- Determination of packed cell value
- Calculation of blood indices, fragility test for R.B.C.
- Blood pressure recording auscultation for heart sounds, artificial respiration determination of vital capacity.
- Preparation of LE cells



- HbElectrophoresis

**Reference books:**

- HarshMohan,TextBookofPathology.P.Godkar
- Practical pathology PChakraborty
- PracticalHematologybyJBDacie

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## Principles of Perfusion Technology – II

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	core	Principles of Perfusion Technology – II	4	3	1	-	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
Basic principles of treatment and instruments.	Remember
Analyze and spell words correctly.	Understand
Requirement of disease based specific equipment in cardiac perfusion.	Apply
Technique of perfusion and required treatment.	Analyze
Formulate new technique on the basis of case variations and requirements	Evaluate
Follow the values and skills required in medical audit	Create

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

### Learning Outcomes:

After completion of the course, students would be able to:

- 1.The students will be able to learn the basic principles of cardiac perfusion.
- 2.The students will be able to understand the case requirements and can provide easy assistance of the surgeon.



### UNIT-I

1. Physiology of extra- corporeal circulation
2. Assessment of patients before bypass; going on & coming off bypass.
3. Hemodilution and priming solutions

### UNIT-II

1. Principles of extra corporeal sex change
2. Analyzing & correction of ABG, VBG and other blood investigations
3. Perfusion Equipment-Hardware:

### UNIT-III

1. Heart-lung machines/centrifugal pumps
2. Pressure and low-level alarm devices
3. Heart-lung heater/coolers

### UNIT-IV

1. Mechanical/electronic flow meters, blenders
2. Perfusion data's recording, storekeeping
3. In-line oxygensaturation devices
4. In-line blood gas devices

### UNIT-V

1. Oxygen analyzers
2. Cell savers
3. Intra-aortic balloon pump

### Practical

1. Patient assessment before going for bypass.
2. To use oxygen analyzer for patients.
3. ABG investigation of the patients.
4. VBG investigation of the patients.
5. Use of mechanical flow meter.
6. Use of electronic flow meter.
7. Use of inline blood gas device in OT.

### Reference Books

Cardiovascular perfusion by Nathan Spitz.



## Clinical applications of Cardiac Perfusion Technology

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	core	Clinical applications of Cardiac Perfusion Technology	4	3	1	-	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
To teach and demonstrate student's anatomy of heart, lung, kidney and brain	Remember
To introduce students about physiology of above organs	Understand
To teach students Pathophysiology, clinical presentation and surgical approach to manage various diseases of heart and lung	Apply
Understand the importance and types of medical records along with its management	Analyze
Revise to compose records in hospitals	Evaluate
Follow the values and skills required in medical audit	Create

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

### Learning Outcomes:

After completion of the course, students would be able to:

1. To define Health and understand various concepts of Health
2. To know the Health care delivery system in India
3. To know various National Health Programs of India
4. To have overview of First Aid Principles and guidelines



## **Unit I**

### **1a Concepts of Health**

Definition of health; evolution in concepts of public health; public health events-sanitary awakening, germ theory of disease, rise of public health in various countries, changing concepts of health- biomedical concept, ecological concept, psycho-social concept and holistic concept.

### **1b. Dimensions of Health**

Physical dimension, mental dimension, Social dimension etc.; Common health problems in India-Communicable diseases, Non-communicable diseases, MCH problems, Nutritional problems, Environmental sanitation, Glance over National Health profile.

## **Unit 2 Introduction to Health**

- a. Definition of health, determinants of health, health indicators of India, health team concept.
- b. National health policy.
- c. National health programmer (briefly objectives and scope).
- d. Population of India and family welfare programme in India.

## **Unit 3 Introduction to Nursing**

- a. What is nursing? Nursing principles, inter-personnel relationships.
- b. Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
- c. Nursing position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
- d. Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.
- e. Bed side management: giving and taking bed pan, urinal.
- f. Observation of stools, urine, sputum.
- g. Use and care of catheters, enema giving.
- h. Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
- i. Care of rubber goods.
- j. Recording of body temperature, respiration and pulse.
- k. Simple aseptic techniques, sterilization and disinfection.
- l. Surgical dressing: observation of dressing procedures.

## **Unit 04**

### **4a Primary healthcare-Current status in India**

Status of healthcare infrastructure; Health team concept; Health insurance; Social security and social assistance in health; AYUSH.

### **4b National Health Programs**

Introduction; National Vector Borne Disease Control Program; National Leprosy Eradication Program; Revised National Tuberculosis Control Program; National AIDS Control Program; Universal Immunization Program; National Rural Health Mission.

## **Unit 5**

### **5a National Health Program**

Reproductive and Child Health Program; Integrated Management of Neonatal and Childhood Illnesses; National Nutritional Anemia Prophylaxis Program; National Program for Control of Blindness; National Cancer Control Program; Nat



ionalMentalHealthProgram.

### 5b Firstaid

Basic terminologies; general guidelines; first aid in specific situations;  
Wound,bleeding, fracture, choking, burns, epistaxis, strains and sprain, animal  
bites(classification,causesandfirstaid),Cardio-pulmonaryresuscitation

### PRACTICAL

- Definition of health, determinants of health, health indicators of India, health team concept.
- National health policy.
- National health programmer (briefly objectives and scope).
- Population of India and family welfare program me in India.
- **Introduction to Nursing**
- What is nursing? Nursing principles, inter-personnel relationships.
- Bandaging: basic turns, bandaging extremities, triangular bandages and their application.
- Nursing position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
- Lifting and transporting patients: lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.
- Bed side management: giving and taking bed pan, urinal.
- Observation of stools, urine, sputum.
- Use and care of catheters, enema giving.
- Methods of giving nourishment: feeding, tube feeding, drips, transfusion.
- Care of rubber goods.
- Recording of body temperature, respiration and pulse.
- Simple aseptic techniques, sterilization and disinfection.
- Surgical dressing: observation of dressing procedures.

### Reference books:

1. Preventive and Social Medicine by J. Park.





## Clinical Posting

45 days of hospital training is mandatory.

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



## Discipline Specific Elective

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	core	Communication skill for Health care professional/ 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
Explain and describe effective and non-effective communication techniques	Remember
Differentiate between verbal and non-verbal communication.	Understand
Identify behaviors that interfere with effective communication	Apply
Understand interview techniques and demonstrate or explain appropriate patient education practices	Analyze
Characterize relationships among various health care professionals and patients of various educational levels.	Evaluate
Follow elements of active listening and benefits of professional communication	Create

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

### 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

1. Introduction to healthcare delivery system
  - 1.1. Healthcare delivery system in India at primary, secondary and tertiary care
  - 1.2. Community participation in healthcare delivery system
  - 1.3. Health system in developed countries.
  - 1.4. Private Sector
  - 1.5. National Health Mission
  - 1.6. National Health Policy
  - 1.7. Issues in Health Care Delivery System in India

## UNIT-II

2. National Health Program- Background objectives, action plan, targets, operations, achievements and constraints in various National Health Program.
3. Introduction to AYUSH system of medicine
  - 3.1. Introduction to Ayurveda.
  - 3.2. Yoga and Naturopathy
  - 3.3. Unani
  - 3.4. Siddha
  - 3.5. Homeopathy
  - 3.6. Need for integration of various system of medicine

## UNIT-III

4. Health scenario of India – past, present and future, Public health – India (epidemiology and demography)

## UNIT-IV

5. Demography & Vital Statistics
  - 5.1. Demography – its concept
  - 5.2. Vital events of life & its impact on demography
  - 5.3. Significance and recording of vital statistics
  - 5.4. Census & its impact on health policy



## UNIT-V

### 6. Epidemiology

#### 6.1. Principles of Epidemiology

#### 6.2. Natural History of disease

#### 6.3. Methods of Epidemiological studies

#### 6.4. Epidemiology of communicable & non-communicable diseases, disease transmission, host defense immunizing agents, cold chain, immunization, disease monitoring and surveillance.

### **Reference Books:**

Communication skills by James Williams 7<sup>th</sup> edition.

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## Skill Enhancement Course

### MEDICAL LAW

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

#### Course Outcomes

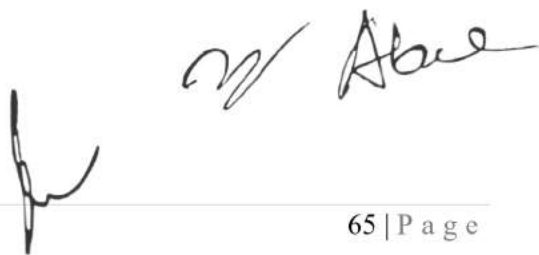
After completing this course, the student will be able to:

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

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

#### 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 normal efficient apply to the delivery of health care	Remember
Use a foundation in moral philosophy to make and support ethical decisions as a health care leader	Understand
Apply an ethical decision-making process to various contemporary and complex health care issues	Apply
Influence decision-making among peers; use and model self-reflection, listening, empathy, and awareness as an ethical leader	Analyze
Recognize the importance of and bring to bear ethical principles, virtues, values and theory in professional discourse.	Evaluate
Receive of human rights in ethics.	Create

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

### 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

4.Ethics- William K. Frankena – 2<sup>nd</sup> edition-2015





**SEMESTER –V****Clinical Diagnostics – II**

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	core	Clinical Diagnostics – II	2	2	-	-	20	80	100

**Course Outcomes**

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


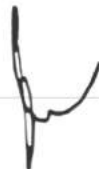
CO Statement	Taxonomy
Diagnostic methods for disease assessment in patients.	Remember
Different analysis techniques for disease diagnosis.	Understand
The disease and its pattern before treatment	Apply
The diseases in patients	Analyze
Formulation of new techniques for disease diagnosis	Evaluate
Follow the values and skills required in medical audit	Create

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

**Learning Outcomes:**

After completion of the course, students would be able to:

1. The student will learn different disease and its diagnostic techniques for patient assessment



## UNIT 1

### Coagulation Monitoring

- ☐ Coronary artery and graft flow measurement
- ☐ Resuscitation and support
- ☐ Catheterization
- ☐ Angiography
- ☐ Angioplasty
- ☐ EPS Studies
- ☐ Valvuloplasty
- ☐ Intra-aorticballoon

### Practical:

1. To perform Electrocardiogram (ECG or EKG)
2. Imaging test uses ultrasound waves to create real-time images of the heart by echocardiogram.
3. Stress test performance in patients
4. Cardiac catheterization in patients
5. Nuclear stress test in patients
6. CT angiography in patients

### Reference books:

- "Perfusion for Congenital Heart Surgery: Notes on Cardiopulmonary Bypass for a Complex Patient Population" by Christopher A. Calderone and Dean B. Andropoulos
- "Perfusion for Congenital Heart Surgery: Pathophysiology, Equipment, and Physiology" by Venkatraman Srinivasan
- "Cardiopulmonary Bypass: Principles and Practice" by Glenn P. Gravlee, Richard F. Davis, and Alfred H. Stammers
- "Principles of Extracorporeal Circulation: The Physiology, Technique, and Management of Circulatory Assistance" by Robert H. Bartlett and Glenn P. Gravlee
- "Cardiopulmonary Bypass: Principles and Techniques of Extracorporeal Circulation" by John W. Hamman
- "Extracorporeal Life Support: The ELSO Red Book" by Thomas V. Brogan, Robert L. Bartlett, and Jeffrey J. Flieler
- "Principles of Cardiopulmonary Bypass and Myocardial Protection" by Victor G. Davila-Roman, Joseph S. Coselli, and Joseph S. Lamelas
- "Principles of Perioperative Transesophageal Echocardiography" by Robert M. Savage, Solomon Aronson, and Stanton K. Sherman
- "Manual of Perioperative Care in Adult Cardiac Surgery" by Robert M. Bojar
- "ECMO in the Adult Patient (Core Critical Care)" by Alain Vuylsteke



## Introduction to Surgery & CSSD

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	core	Introduction to Surgery & CSSD	2	2	-	-	40	60	100

### Course Outcomes

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

CO Statement	Taxonomy
Requirement of basic surgical equipment's and OT preparation before Procedure	Remember
Surgical procedures and equipment preparation before the procedure	Understand
The surgical procedure	Apply
Result of surgery and effect of hygiene.	Analyze
Characterize medical & surgical emergencies.	Evaluate
Receive knowledge of emergency drugs or medicines.	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. Emergency planning
2. Prevent fatalities & injuries
3. Complex medical and surgical emergencies management.




## UNIT-I

Ulcer, Fistula, Sinus

Varicose veins and DVT

Burns

## UNIT-II

Acute and Chronic infections

Hemorrhage, Shock and Blood Transfusion

## UNIT-III

Acid-Base Balance, Fluid and Electrolytes

Esophagus, Stomach and Duodenum

## UNIT-IV

Liver, GB and Pancreas

Small and Large Intestine

## UNIT-V

Rectum and Anal canal

Appendix and Hernia

### ➤ **Reference Books:**

- Text book of surgery by John Willey, 4<sup>th</sup> edition.
- Introduction of surgery by R Morrison, 4<sup>th</sup> edition.

### **Practical:**

1. Patient Preparation for surgical procedure
2. Insertion of the Endoscope under the supervision of clinician
3. Visualization and Navigation of the patients throughout the procedure
4. Diagnostic or Therapeutic Procedures in OT
5. Removal of the Endoscope after the procedure.



## Perfusion for special procedures

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Perfusion for special procedures	2	2	-	-	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
Basic principles of treatment and instruments.	Remember
Analyze and spell words correctly.	Understand
Requirement of disease based specific equipment in cardiac perfusion.	Apply
Technique of perfusion and required treatment.	Analyze
Formulate new technique on the basis of case variations and requirements	Evaluate
Follow the values and skills required in medical audit	Create

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

### Learning Outcomes:

After completion of the course, students would be able to:

- 1.The students will be able to learn the basic principles of cardiac perfusion.
- 2.The students will be able to understand the case requirements and can provide easy assistance of the surgeon.

### UNIT 1


Cardiac surgery, organ transplantation

Circulatory support device

Use of devices such as ventricular assistance device (VAD) and total artificial hearts (TAHs).

### UNIT 2

- 1.Mechanical/electronic flow meters, blenders
- 2.Perfusion data's recording, storekeeping



- 3. In-line oxygen saturation devices
- 4. In-line blood gas devices

### UNIT-3

- 1. Oxygen analyzers
- 2. Cell savers
- 3. Intra-aortic balloon pump

#### References:

Cardiovascular perfusion by Nathan Spitz.

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## IMMUNOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Immunology	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.




## **UNIT-I**

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

## **UNIT-II**

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

## **UNIT-III**

### **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

## **UNIT-IV**





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

### **UNIT-V**

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

### **Reference books**

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 Stite



## Clinical Posting

45 days of hospital training is mandatory.

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



## Discipline Specific Elective

### MEDICAL PSYCHOLOGY

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

#### Course Outcomes


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

CO Statement	Taxonomy
This course covers various aspects of medical psychology.	Remember
Understand different aspects of medical psychology essential in medical professional.	Understand
Apply medical psychology in clinical scenarios during clinical postings.	Apply
Use of scientific methods for assessment.	Analyze
Identify behaviors & experiences that promote health	Evaluate
Follow the skills adapting changes in vision	Create

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

#### Learning Outcomes

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



## 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



## BIostatISTICS & RESEARCH METHODOLOGY

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

### Course Outcomes

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

CO Statement	Taxonomy
To enable students to present, analyze and interpret data.	Remember
To enable students to use concepts of probability in business situations.	Understand
To enable students to make inferences from samples drawn from large datasets.	Apply
To enable students to apply univariate and multivariate statistical techniques	Analyze
Revise the issues in ethical research	Evaluate
Follow the basic concepts of biostatistics.	Create

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

### Learning Outcome

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




## UNIT-I

Introduction to research methods.  
Sampling methods

## UNIT-II

Identifying research problem  
Developing a research proposal

## UNIT-III

Ethical issues in research

## UNIT-IV

Research design  
Types of Data

## UNIT-V

Basic Concepts of Biostatistics  
Research tools and Data collection methods

### Reference books:

1. Research methodology- CR K othari & Gaurav Garg – 4<sup>th</sup> edition – 2019
2. Introduction to research methodology – Bhanwar Lal Garg, RenuKavdia, Sulochana Agarwal & Umesh kumar Agarwal – 2019
3. Research methodology for health professionals – RC Goyal – 2<sup>nd</sup> edition – 2023
4. Research Methodology and applied statistics – DN Sansanwal - 2020



## Ability Enhancement

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Ability Enhancement	Entrepreneurship development/ Introduction to quality and patient safety	2	2	-	-	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.	Remember
	Respond entrepreneurship impacted the world and their country.	Understand
	Introduced to key traits and the DNA of an entrepreneur	Apply
	Organize the opportunity to assess their own strengths	Analyze
	Understand the DNA of an entrepreneur and assess their strengths and weaknesses from an	Evaluate
	Receive knowledge of Entrepreneurial perspective	Create

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

### 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 Khanka Edition reprint Publisher S. Chand Publishing, 2006
- 2: Entrepreneurship Development and Business Ethics Paperback – 1 January 2019 by Abhik Kumar Mukherjee and Shaunak Roy Author
- 3: Margie Lovett Scott, Faith Prather. Global health systems comparing strategies for delivering health services. Joney& Bartlett learning, 2014
- 4: Taxmann's Entrepreneurship development – CA(Dr.) Abha Mathur- 2021.





## INTRODUCTION TO QUALITY & PATIENT SAFETY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	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	Remember
Discuss the Basics of emergency care and life support skills	Understand
Demonstrate the processes used in developing communication & Impact of communication skills on Organizational design	Apply
Define the Infection prevention and control	Analyze
Revise the Antibiotic Resistance	Evaluate
Follow the skills required for Disaster preparedness and management - Fundamentals of emergency management,	Create

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

**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

### Generic Elective

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



## SEMESTER –VI

### Advance Perfusion Techniques

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

#### Course Outcomes

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

CO Statement	Taxonomy
Basic principles of treatment and instruments.	Remember
Analyze and spell words correctly.	Understand
Requirement of disease based specific equipment in cardiac perfusion.	Apply
Technique of perfusion and required treatment.	Analyze
Formulate new technique on the basis of case variations and requirements	Evaluate
Follow the values and skills required in medical audit	Create

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

Learning Outcomes:

After completion of the course, students would be able to:

- 1.The students will be able to learn the basic principles of cardiac perfusion.
- 2.The students will be able to understand the case requirements and can provide easy assistance of the surgeon.



## UNIT-I

Minimally invasive perfusion techniques:

Off-pump coronary artery bypass grafting (OPCAB)

## UNIT-II

Blood conservation strategies: Cell salvage systems, Antifibrinolytic medications, autotransfusion, and advanced coagulation management techniques.

## UNIT-III

Normothermic perfusion: Hypothermia on organ function, enhance coagulation.

Hemodynamic optimization: transesophageal echocardiography (TEE), pulmonary artery catheters, or minimally invasive cardiac output monitors.

Enhanced oxygenation strategies

### **Practical's**

- Cannulation techniques: Practice different cannulation techniques, including peripheral cannulation, minimally invasive cannulation, and central cannulation, using simulation models or mannequins. Focus on achieving optimal cannula placement, avoiding complications, and ensuring adequate blood flow during cardiopulmonary bypass.
- Minimally invasive perfusion: Learn and practice the techniques for performing minimally invasive perfusion, such as using smaller incisions, percutaneous cannulation, or robotic-assisted cannulation. Develop proficiency in accessing and managing the extracorporeal circuit through these less invasive approaches.
- Off-pump coronary artery bypass grafting (OPCAB): Participate in simulated OPCAB procedures, including exposure of coronary vessels, stabilization techniques, and grafting. Practice the techniques for maintaining hemodynamic stability and perfusion without the use of cardiopulmonary bypass.
- Blood conservation strategies: Explore different blood conservation strategies, such as cell salvage techniques, antifibrinolytic medications, autotransfusion, and advanced coagulation management. Practice the implementation of these strategies to minimize blood loss and reduce the need for transfusions during surgery.
- Normothermic perfusion: Simulate normothermic perfusion scenarios, where the patient's body temperature is maintained at normal levels during cardiopulmonary bypass. Learn the techniques for monitoring and managing patient temperature, as well as the impact on perfusion and patient outcomes.
- Hemodynamic optimization: Use simulation models or advanced hemodynamic monitoring systems to practice real-time assessment and optimization of hemodynamic parameters during surgery. Learn to interpret monitoring data, make appropriate interventions to maintain

hemodynamic stability, and optimize tissue perfusion.

- Perfusion imaging and monitoring: Familiarize yourself with the use of near-infrared spectroscopy (NIRS) or other perfusion imaging techniques to assess tissue oxygenation and

Reference book:

- "Perfusion for Congenital Heart Surgery: Notes on Cardiopulmonary Bypass for a Complex Patient Population" by Christopher A. Calderone and Dean B. Andropoulos
- "Perfusion for Congenital Heart Surgery: Pathophysiology, Equipment, and Physiology" by Venkatraman Srinivasan
- "Cardiopulmonary Bypass: Principles and Practice" by Glenn P. Gravlee, Richard F. Davis, and Alfred H. Stammers
- "Principles of Extracorporeal Circulation: The Physiology, Technique, and Management of Circulatory Assistance" by Robert H. Bartlett and Glenn P. Gravlee
- "Cardiopulmonary Bypass: Principles and Techniques of Extracorporeal Circulation" by John W. Hammon
- "Extracorporeal Life Support: The ELSO Red Book" by Thomas V. Brogan, Robert L. Bartlett, and Jeffrey J. Flieler
- "Principles of Cardiopulmonary Bypass and Myocardial Protection" by Victor G. Davila-Roman, Joseph S. Coselli, and Joseph S. Lamelas
- "Principles of Perioperative Transesophageal Echocardiography" by Robert M. Savage, Solomon Aronson, and Stanton K. Sherman
- "Manual of Perioperative Care in Adult Cardiac Surgery" by Robert M. Bojar
- "ECMO in the Adult Patient (Core Critical Care)" by Alain Vuylsteke

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## Patient Care and Basic Nursing

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

### Course Outcomes

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

CO Statement	Taxonomy
Basic principles of treatment and instruments.	Remember
Analyze the patients and maintaining hygiene	Understand
Requirement of disease based specific equipment in cardiac perfusion.	Apply
Technique of perfusion and required treatment.	Analyze
Formulate new technique on the basis of case variations and requirements	Evaluate
Follow the values and skills required in medical audit	Create

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

Learning Outcomes:

After completion of the course, students would be able to:

- 1.The students will be able to learn the basic principles of cardiac perfusion.
- 2.The students will be able to understand the case requirements and can provide easy assistance of the surgeon.

## UNIT 1

**Nursing fundamentals:** This includes an overview of the nursing profession, the nursing process, legal and ethical considerations, communication skills, and documentation principles.

**Patient assessment:** Learn how to perform a comprehensive assessment of patients, including physical examinations, vital signs monitoring, and gathering health histories. Understand the importance of observing and documenting changes in a patient's condition.

**Infection control:** Study principles of infection control, including hand hygiene, standard precautions, and isolation techniques. Learn about preventing healthcare-associated infections and the proper use of personal protective equipment (PPE).

## UNIT 2

**Medication administration:** Understand the process of safe medication administration, including dosage calculations, medication storage, and the five rights of medication administration. Learn about different routes of administration and potential adverse reactions.

**Basic nursing skills:** Develop proficiency in basic nursing skills such as patient hygiene, bed bathing, positioning, and assisting with activities of daily living (ADLs). Practice skills related to patient mobility, transferring, and maintaining proper body mechanics.

**Patient safety:** Study principles of patient safety, including fall prevention, infection prevention, and promoting a safe environment. Learn how to identify and report potential safety risks and implement appropriate interventions.

## UNIT 3

**Nutrition and hydration:** Understand the importance of proper nutrition and hydration in patient care. Learn about different diets, dietary restrictions, and how to assist patients with feeding and maintaining adequate fluid intake.

**Pain management:** Gain knowledge about pain assessment, pain scales, and various pain management techniques, including pharmacological and non-pharmacological interventions. Understand the importance of advocating for patients' comfort and pain relief.

**Wound care:** Learn about wound assessment, different types of wounds, wound dressing techniques.

### References:

Mosby's textbook for nursing assistance. 10<sup>th</sup> Edition

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## Medical Devices

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

### Course Outcomes

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

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

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

### Learning Outcomes:

After completion of the course, students would be able to:

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



## Unit 1

### Introduction to Medical Devices:

Overview of medical devices and their importance in healthcare  
Regulatory framework and standards governing medical devices  
Classification of medical devices based on risk and intended use  
Medical Device Design and Development:

Design process and product development life cycle  
User-centered design principles and human factors engineering  
Risk management and mitigation strategies  
Prototyping and testing methods  
Quality management systems for medical device development  
Medical Device Manufacturing and Quality Assurance:

Manufacturing processes for medical devices  
Good Manufacturing Practices (GMP) and quality control  
Quality assurance and quality control methods  
Validation and verification of medical devices  
Post-market surveillance and adverse event reporting  
Medical Device Regulations and Standards:

## Unit 2

Overview of global medical device regulations (e.g., FDA, EU MDR, MDSAP)  
Compliance with regulatory requirements and documentation  
Conformity assessment procedures and product registration  
Post-market surveillance and vigilance reporting  
Labeling and packaging requirements for medical devices  
Medical Device Safety and Risk Management:

Risk assessment and risk management principles  
Hazard analysis and risk mitigation strategies  
Usability engineering and human factors considerations  
Safety testing and evaluation of medical devices  
Incident investigation and corrective actions  
Clinical Evaluation and Performance Testing:

## Unit 3

Clinical evaluation of medical devices  
Clinical trial design and data collection  
Performance testing and evaluation methods  
Biocompatibility testing and safety assessments  
Clinical evidence generation and post-market clinical follow-up  
Medical Device Integration and Connectivity:

Integration of medical devices into healthcare systems  
Interoperability and connectivity standards (e.g., HL7, DICOM)

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Cybersecurity considerations for medical devices  
Wireless communication and data management  
Remote monitoring and telehealth applications  
Emerging Technologies and Trends

### Clinical Posting

45 days of hospital training is mandatory.

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Clinical Posting	2	2	-	-	40	60	100

## Blood Banking Documentation & Quality Control

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Blood Banking Documentation & Quality Control	1	-	-	2	20	80	100

### Course Outcomes

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

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

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

### Learning Outcomes:

After completion of the course, students would be able to:

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

  
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### UNIT-I

- Bloodserology: Variousreagents&Kitsordering,specifications &Documentation
- TTIkitordering,specificationsanddocumentation
- Qualitycontrol,assuranceandmanagement systems.

### UNIT-II

- Qualitycontrolofemptybloodbags.QualitycontrolofdifferentbloodbankComponents, sterilitytest on the component.
- Quality control of blood bags, Quality assurance of Hb & PCV, Quality control of bloodgrouping reagents, QC of anti-human globulin reagent, bovine albumin, Normal saline,Antiseraetc.,QC of TTI test kits– ELISA, CLIA&Rapid
- Quality control of all equipment, Calibration, validation and maintenance of blood bankequipment.

### UNIT-III

- QCofbloodbanktechniquesQualityAssurance-TemperatureRecords,SterilityTesting.Internal QC andExternal QC
- Quality parameters of various blood components, Quality Assurance blood components – redcells,FFP, cryoprecipitate,platelets, RedCell andWBC contamination.
- Calibration, validation and maintenance of blood bank equipment, QC of blood banktechnique.

### UNIT-IV

- Documents,Registers,Records&Formatstobekept.Licensing,Drugauthorities’inspectionand compliance.
- Registersforms,DocumentationandStandardoperatingprocedures(SOPorGMP),Bloodbankman agementsystem,Regulationsforbloodbankoperation,Drugsandcosmetics Law, National blood policy, standards in Blood Banking, licensing procedures,ethicalaspects of blood transfusion.
- Hospital Transfusion Committee. Blood Bank Accreditation-. ISBT, NABL, NABHstandardsandaccreditation.
- Legal and ethical aspects, Regulatory Acts, Biohazard Waste Disposal Act, Nationalbloodpolicy.

#### Practical:

1. Documentation preparations, Practice accurately documenting donor information, collection details, and processing steps in simulated or real-world scenarios.
2. Learn proper record-keeping techniques, including data entry, timestamping, and maintaining

- confidentiality and security of sensitive information.
3. Familiarize yourself with the use of electronic documentation systems and software commonly used in blood banking.
  4. Standard Operating Procedures (SOPs) preparations
  5. Quality control function of pH meter.
  6. Centrifugation of samples.
  7. Calibration of instruments.

Reference book:

- "Technical Manual" by AABB (formerly known as the American Association of Blood Banks)
- "Transfusion Medicine and Hemostasis: Clinical and Laboratory Aspects" by Christopher D. Hillyer, Leslie E. Silberstein, et al.
- "Handbook of Transfusion Medicine" by Christopher Hillyer, Beth H. Shaz, et al.
- "Practical Guide to Transfusion Medicine" by Michael F. Murphy and Derwood H. Pamphilon
- "Essentials of Blood Banking: A Handbook for Students of Blood Banking and Clinical Residents" by John D. Roback, Edward L. Snyder, et al.
- "Blood Banking and Transfusion Medicine: Basic Principles and Practice" by Christopher D. Hillyer, Beth H. Shaz, et al.

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## Apheresis Technique & Therapeutic Procedures

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Apheresis Technique & Therapeutic Procedures	1	-	-	2	20	80	100

### Course Outcomes

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

CO Statement	Taxonomy
Describes the basic importance of medical terms into their component parts.	Remember
Analyze and spell words correctly.	Understand
Identify combining forms, prefixes, suffixes and terminology associated with each of the body systems and blood banking.	Apply
Understand the importance and types of medical records along with its management	Analyze
Revise to compose records in hospitals	Evaluate
Follow the values and skills required in apheresis	Create

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

### Learning Outcomes:

After completion of the course, students would be able to:

1. Ensuring successful learning of basic and advance medical terminology
2. Student will able to read, write, spell and understand the medical terminology
3. Understand the types, apheresis techniques



## UNIT-I

- Apheresis procedures,
- Apheresis products
- Maintenance of cell separator equipment.
- Plateletpheresis

## UNIT-II

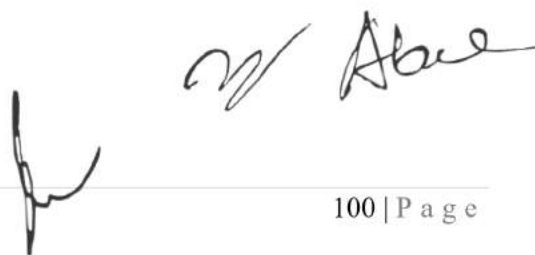
- Leukapheresis
- Granulocyte concentrates
- Peripheral hematopoietic blood stem
- Therapeutic Procedures
- Venous access for therapeutic plasma exchange

### Practical:

- Familiarization with the different components of the apheresis machine and their functions.
- Hands-on practice in setting up and calibrating the apheresis machine.
- Training on operating the machine, including adjusting flow rates, monitoring parameters, and troubleshooting technical issues.
- Venous Access and Catheter Placement:
- Practical experience in performing different types of apheresis procedures, such as plasmapheresis, plateletpheresis, leukapheresis, and red blood cell exchange.
- Hands-on training in proper patient positioning, aseptic technique, and patient monitoring during the procedure.

### Reference book:

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





## 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:

- 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

### **Reference books**

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

## **CLINICAL POSTING**

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Practical	Clinical Posting	5	-	-	10	20	80	100

**Hospital Training:** 45 days mandatory.



## DISCIPLINE SPECIFIC ELECTIVE

### HOSPITAL MANAGEMENT

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

#### Course Outcomes

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

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

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

#### 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, Color 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
	Core	Basics of clinical Skill Learning	3	3	-	-	20	80	100

### Course Outcomes


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

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

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

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	Remember
Demonstrate how to place an unresponsive casualty in the recovery position	Understand
Perform Cardiopulmonary Resuscitation using a manikin	Apply
Identify safety considerations when using an automated external defibrillator (AED)	Analyze
Be able to safely use an automated external defibrillator	Evaluate
Follow the skills need to commence Cardiopulmonary Resuscitation (CPR).	Create

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

**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 – Girish 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	Remember
Discuss the individual behavior related to motivation and rewards & Characteristics of motives.	Understand
Demonstrate the processes used in developing communication & Impact of communication skills on Organizational design	Apply
Define the management of resolving destructive conflicts & Strategies for encouraging constructive conflict.	Analyze
Revise the group dynamics, Models and theories of Leadership Styles.	Evaluate
Follow the skills required for working in groups (team building) & Importance of Leadership Styles.	Create

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

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

## UNIT-I

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 Behaviour at Work - Keith Davis 2004

## SEMESTER – VII& VIII

### INTERNSHIP

Course Code	Course Category	Paper Title	Evaluation	
			Internal	External
	Core	INTERNSHIP	20	80
	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.

