

(4)

SYLLABUS

BACHELOR IN ECG TECHNOLOGY

4 Years (VIII Semesters)

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



W. Abul
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Bachelor of ECG Technology

Learning Objectives:

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

- 1) Understand the principles of electrocardiography.
- 2) Develop skills in ECG electrode application.
- 3) Acquire knowledge of ECG waveforms & measurements.
- 4) Understand cardiac arrhythmias & ECG pattern.
- 5) Learn about ECG monitoring & interpretation.
- 6) Comprehend the significance of ECG changes in cardiac disorder.

Expectations from the future graduate in providing patient care

The goal of B.Sc. in ECG Technology course is to produce

- 1) Demonstrate competence in clinical skills and procedures required for providing patient care.
- 2) Apply evidence-based practices and protocols to deliver safe and effective patient care.
- 3) Communicate effectively with patients, families, and the interdisciplinary healthcare team.
- 4) Exhibit critical thinking and problem-solving abilities to assess and manage patient conditions.
- 5) Practice ethical and professional behavior in all aspects of patient care.
- 6) Continuously engage in professional development to stay updated with advancements in healthcare and enhance patient care delivery.

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

SEMESTER –II									
Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	General Microbiology	4	3	1	-	20	80	100
	Core	General Pathology	4	3	1	-	20	80	100
	Core	General Pharmacology	4	3	1	-	20	80	100
	Core	Computer Application & ECG Basics	4	3	1	-	20	80	100
	Practical	Practical of all subject/Clinical	5	-	-	10	20	80	100

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

SEMESTER –III

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Basics of Cardiac Technology & ECG Technology	4	3	1	-	20	80	100
	Core	Cardiac Medicine	4	3	1	-	20	80	100
	Core	Medical Ethics & Hospital Practice	4	3	1	-	20	80	100
	Core	Echocardiography	4	3	1	-	20	80	100
	Practical	Practical of all subject/Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	General Principles and Practices of Public Health/ Forensic Psychology	2	2	-	-	20	80	100
	Ability Enhancement Course	Computer/BASIC EMERGENCY MANAGEMENT	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100
Total Credit- 27			Total Contact Hours- 32						

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

SEMESTER –IV

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Diseases of Heart – I	4	3	1	-	20	80	100
	Core	ECG Interpretation	4	3	1	-	20	80	100
	Core	Treadmill Test & Holter	4	3	1	-	20	80	100
	Core	Environmental & Biomedical Waste Management; entrepreneurship and professional management	4	3	1	-	20	80	100
	Practical	Practical of all subject/Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Communication skill for Health care professional/ introduction to national healthcare system	3	3	-		20	80	100
	Skill Enhancement Course	MEDICAL LAW/ Ethics in public health	2	2	-	-	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	-	20	80	100

Total Credit- 28

Total Contact Hours- 33

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

SEMESTER-V

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Diseases of Heart – II	4	3	1	-	20	80	100
	Core	Advance Technologies in Cardiology - I	4	3	1	-	20	80	100
	Core	Hospital Practice &	4	3	1	-	20	80	100

		Patient Care							
	Core	Immunology	4	3	1	-	20	80	100
	Practical	Practical of all subject/Clinical Posting	5	-	-	10	50	150	200
	Discipline Specific Elective	Medical psychology/ Biostatistics and Research methodology	3	-	-	3	20	80	100
	Ability Enhancement	Entrepreneurship development/ Introduction to quality and patient safety	2	-	-	2	20	80	100
	*Generic Elective	*Students have to opt any one of the open elective courses offered by Institute/ College/University.	2	2	-	2	20	80	100
Total Credit- 28			Total Contact Hours- 35						
*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	Diseases of Heart – III	4	3	1	-	20	80	100
	Core	Advance Technologies in Cardiology - II	4	3	1	-	20	80	100
	Core	Biostatistics	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	2	2	-	-	20	80	100

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

SEMESTER – 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	28			
V	28			
VI	28			
VII	20			
VIII	20			
TOTALCREDITS	201			

Exit: Honour's ECG 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"> 1. To introduce the students to the concepts related to General anatomy, Muscular, Respiratory, Circulatory, Digestive and Excretory system 2. Demonstrate and understand the basic anatomy of Respiratory and Circulatory system 3. Demonstrate and understand the basic anatomy of Digestive and Excretory system 4. Knowledge of basic concept of human body anatomical structure. 5. Knowledge of interrelationships, gross, functional and applied anatomy of various structures in the human body.
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UNIT-I

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

Musculo-skeletal system:

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

Anatomy of the Nervous system

Central nervous system & Peripheral nervous system- different components

UNIT-II

Anatomy of Circulatory system:

General plan of circulatory system and its components-

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

General plan of circulation, pulmonary circulation

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

Respiratory system:

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

UNIT-III

Anatomy of the Digestive system:

Anatomy of alimentary tract; Parts of the tract

Accessory glands of digestion; Pancreas, Liver, Gall Bladder

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

UNIT-IV

Reproductive system

Male Reproductive System

Female Reproductive System Anatomy of the endocrine system

UNIT-V

Name of all endocrine glands their positions

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

PRACTICALS

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

Reference Books:

- a. Human Anatomy Regional and Applied Vol. 1, Vol.2 & Vol.3, B.D.Chaurasia C.B.S.Publishers, New Delhi- 9th edition -2022
2. Hand Book of General Anatomy B.D.Chaurasia, C.B.S.Publishers, New Delhi-9th edition -2022

3. Text Book of Human Histology Inderbir Singh, Jaypee Brothers, Medical
4. Publishers, Delhi -7th edition - 2021
5. Gray's Anatomy Susan Standring, Elsevier Churchill Livingstone, Edinburg – 42nd edition- 2021

HUMAN PHYSIOLOGY

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

Course Outcomes

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

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

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

Learning outcomes	<ol style="list-style-type: none"> 1. To understand the basic physiological concepts of General physiology 2. To understand the basic physiological concepts of Hematology 3. To understand the basic physiological concepts of Nerve-Muscle physiology. 4. To understand the basic physiological concepts of Respiratory physiology. 5. To understand the basic physiological concepts of Cardiovascular physiology
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UNIT-I

General Physiology

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

Blood

Composition and functions of Blood

RBC, WBC, Platelet count, Hemoglobin

Blood Groups - ABO and RH grouping

Hemostasis & Anticoagulants

UNIT-II

Cardio vascular system

Cardiac muscle, Pacemaker & conducting tissue

Cardiac Cycle

Cardiac output, Heart rate, ECG

Arterial blood pressure

Respiratory System

Functions of Respiratory system

Mechanism of respiration, lung volumes & capacities

UNIT-III

Nerve & Muscle physiology

Neuron structure & properties

Neuromuscular junction

Skeletal muscle structure mechanism of contraction

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

Central & autonomic Nervous system Organization of CNS

Functions of various parts of Brain, in brief

Composition, functions and circulation of CSF

Differences between sympathetic and parasympathetic division

UNIT-IV

Digestive system

Functional Anatomy, organization & innervations

Composition and functions of all Digestive juices

Digestion & Absorption of carbohydrates, proteins and fats

UNIT-V

Excretory System

Kidneys: Functions, Nephron, Juxta-glomerular Apparatus

Renal circulation

Mechanism of Urine formation

GFR

Endocrine and Reproductive systems Endocrine glands & hormones secreted

Functions of Reproductive system

Male Reproductive System: spermatogenesis, Testosterone.

Female reproductive system: Ovulation, Menstrual cycle.

Pregnancy test

PRACTICALS

1.Estimation of Hemoglobin Concentration

2.Determination of Bleeding Time and Clotting Time

3.Determination of Blood Groups

4.Recording of normal Blood Pressure

5.Determination of Vital Capacity

Reference Books:

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

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

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

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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	<ol style="list-style-type: none"> 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.
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UNIT-I

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

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

UNIT-II

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

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

UNIT-III

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

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

UNIT- IV

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

UNIT-V

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

PRACTICALS

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

Reference Books:

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

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MEDICAL ETHICS & COMPUTER SKILLS RELATED TO ECG 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 ECG 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.	Receive
Students explore the legal, ethical and moral issues in healthcare professionals. Identify issues related to potential legal liability in the workplace.	Respond
To introduce students to the discipline of public health	Value
To give an overview of the methods of prevention and health promotion	Organize
To understand the determinants and measures of disease and health related states	Characterize
To understand the status of health and disease at global and national levels	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

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

1. Medical ethics - Definition - Goal - Scope
2. Introduction to Code of conduct
3. Basic principles of medical ethics – Confidentiality
4. Malpractice and negligence - Rational and irrational drug therapy
5. Autonomy and informed consent - Right of patients
6. Care of the terminally ill- Euthanasia
7. Organ transplantation

UNIT-II

1. 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.
2. Professional Indemnity insurance policy
3. Development of standardized protocol to avoid near miss or sentinel events
4. Obtaining an informed consent.
5. Ethics in the profession of Medical Laboratory Science

UNIT-III

1. Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.
2. Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).
3. Processor and memory: The Central Processing Unit (CPU), main memory.
4. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.

UNIT-IV

1. Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).
2. Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.

3. Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
4. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.

UNIT-V

1. Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.

Reference books:

1. Medical Law and Ethics by Bonnie F Fremgen
2. Medical Law and Ethics by Jonathan Herring
3. Handbook of Computer Fundamentals by Dr. Nasib Singh Gill

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ENVIRONMENTAL SCIENCE & HEALTH

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

Course Outcomes:

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	<ol style="list-style-type: none"> 1. Current environmental issues and highlights the importance of adopting an interdisciplinary approach. 2. Sample an ecosystem to determine population density and distribution. 3. Create food webs and analyse possible disruption of feeding relationship
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UNIT-I

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

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Reference books:

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



SEMESTER –II

GENERAL MICROBIOLOGY

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

Course Outcomes

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

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

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

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

Microorganisms

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

UNIT-II

Sterilization

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

UNIT-III

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-IV

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-V

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

UNIT-VI

Immunity – Non-specific

- Natural & Acquired
- Allergy and Anaphylaxis

PRACTICALS:

1. Compound microscope and its application in microbiology.
2. Demonstration of sterilization equipments: hot air oven, autoclave.
3. Demonstration of commonly used culture media, nutrient broth, nutrient agar, blood agar,

chocolate agar, Mac conkey medium, L J media.

4. Grams staining.
5. Acid fast staining

Reference books:

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

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GENERAL PATHOLOGY

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

Course Outcomes

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

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

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

Learning Outcomes	<ol style="list-style-type: none"> 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. To aid hematology in the reference ranges for hemoglobin, hematocrit, erythrocytes, and leukocytes in infants, children and adult.
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UNIT I

Cell injury, cellular adaptation and cell death

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

UNITII

Inflammation and Repair

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

UNITIII

Fluid and Haemodynamic disturbances

- Oedema (Pathogenesis)
- Shock (Definition, Types)
- Thrombosis (Definition & Pathogenesis)
- Embolism (Definition & Pathogenesis)
- Infarction (Definition & Pathogenesis)

UNITIV

Neoplasia

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

UNITV

Blood, Blood groups-ABO system, Rh system, Blood transfusion- Indication, transfusion reactions.

- Anaemia-classification, morphological and Etiological, effects of anaemia on body.

PRACTICALS

1. Collection of blood Samples
2. Various instruments used in Haematology
3. H b estimation.
4. Blood grouping



5. Urine complete examination

Reference Books:

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

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GENERAL PHARMACOLOGY

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

Course Outcomes

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

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

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

Learning Outcomes	<ol style="list-style-type: none"> Students will be proficient in Pharmacology with proficient knowledge about the different drugs / medicines to be given in various cardiovascular diseases, dose calculation and mode of administration. Also, recent advances in pharmacology will play a key role in research aspect of the students
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UNIT- I

General Pharmacology

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

UNIT- II

Autonomic nervous system & Peripheral nervous system

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

UNIT- III

Central nervous system

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

AUTOCOIDS

- a) Histamine and antihistaminic

UNIT- IV

Cardiovascular system

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

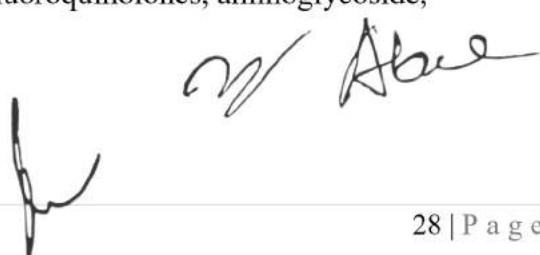
Gastrointestinal and respiratory system

- a) Drug treatment of peptic ulcer
- b) Drug therapy of bronchial asthma

UNIT- V

Hormones

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



PRACTICALS

- 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 – 4th edition, 2017.
- 2: Joginder Singh Pathania, Rupendra Kumar Bharti, Vikas Sood-Textbook of Pharmacology for Paramedical Students 2019
- 3: KD Tripathi- Essentials of Pharmacology – 8th edition, 2018.
- 4: HL Sharma & KK Sharma – Principles of Pharmacology – 3rd edition, 2017.

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COMPUTER APPLICATION & ECG BASICS

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Computer Application & ECG Basics	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 of computer applications and their significance in various fields.	Remember
Understand the principles and operations of computer software and hardware.	Understand
Apply computer software applications, such as word processing and spreadsheet tools, to create and manage documents and data.	Apply
Evaluate the effectiveness and efficiency of computer applications in enhancing productivity and streamlining processes.	Evaluate
Analyze different computer applications and their suitability for specific tasks and industries.	Analyse
Create professional documents and presentations using computer software applications.	Create

Learning Outcomes	<ol style="list-style-type: none"> 1. Proficiency in Computer Applications 2. Understanding of ECG Basics and Interpretation 3. Application of Computer Technology in ECG Analysis
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• UNIT I

- Introduction to Computers
- Overview of computer technology and its applications
- Hardware components and peripherals
- Operating systems and software applications

- Spreadsheets and Data Analysis
- Introduction to spreadsheet software
- Entering and managing data
- Formulas, functions, and data analysis tools

UNIT II

- Presentations and Visuals
- Creating effective presentations using presentation software
- Design principles for slides and visual elements
- Incorporating multimedia and animations

- Database Management Systems
- Introduction to database management systems
- Creating and managing databases
- Querying and reporting data

Week 6: Introduction to Electrocardiography (ECG)

UNIT III

- Anatomy and physiology of the heart
- Introduction to ECG and its clinical applications
- ECG leads and waveforms

UNIT IV

- ECG Interpretation - Normal Readings
 - Normal sinus rhythm and its characteristics
 - Determining heart rate and intervals
 - Analyzing ECG segments and intervals
-
- ECG Interpretation - Abnormalities and Arrhythmias
 - Common ECG abnormalities: atrial and ventricular abnormalities
 - Arrhythmias: atrial fibrillation, ventricular tachycardia, etc.
 - Identifying ECG abnormalities and their clinical significance

UNIT V

- ECG in Clinical Practice

- ECG in diagnosing cardiovascular diseases
- ECG changes in myocardial infarction, ischemia, and other conditions
- Limitations and challenges in ECG interpretation

- Computer Applications in ECG Analysis
- Introduction to ECG software and tools
- Importing and analyzing ECG data
- Interpreting and reporting ECG findings using computer applications

Reference books:

1. Handbook of Computer Fundamentals by Dr. Nasib Singh Gill
2. Basics of ECG by Dr. Gajraj Kaushik
3. Computer Basics Absolute Beginner's Guide by Michael Miller
4. ECGs Made Easy by Barbara Aehlert

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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	Evaluate
Revise to compose records in hospitals	Analyse
Follow the values and skills required in medical audit	Create

Taxonomy: Receive, Respond, Value, Organize, Characterize

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

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Reference Books:

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

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SEMESTER III

BASICS OF CARDIAC TECHNOLOGY & ECG TECHNOLOGY

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Basics of Cardiac technology & ECG Technology	4	3	1	-	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Recall key terminologies and concepts related to cardiac technology and ECG technology.	Remember
Understand the principles and techniques of cardiac technology, including ECG recording and monitoring.	Understand
Apply knowledge of ECG technology to perform accurate and reliable ECG recordings.	Apply
Analyze ECG waveforms to identify normal and abnormal patterns.	Analyse
Evaluate the quality and accuracy of ECG recordings and troubleshoot technical issues.	Evaluate
Create comprehensive ECG reports and documentation based on the analysis of ECG waveforms.	Create

Learning Outcomes	1. Knowledge of Cardiac Technology and ECG Basics 2. Proficiency in ECG Recording and Interpretation 3. Application of ECG Technology in Clinical Settings
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UNIT I

Cardiac Technology:

Basics of electricity & functioning of electromedical equipments, earthing & care of apparatus, Static electricity.

UNIT II

Cardiac Technology:

- Intensive coronary unit & recovery room concepts
- Cardiac life support

UNIT III

Cardiac Technology: Management of Cardiac arrest- definition, causes, external cardiac massage, artificial

UNIT IV

Cardiac Technology:

- Cardiac monitoring—definition, purpose of cardiac monitoring, how to recognize various

UNIT V

ECG Technology

- Technique of ECG recording
- Normal ECG

PRACTICALS:

Practical based on the topics mentioned in the theory syllabus

Reference books:

- Textbook of Cardiovascular Technology by Bronson, Lynn
- Basics of ECG by Dr. Gajraj Kaushik
- The Complete Guide to ECGs by James H. O'Keefe Jr. (Author), Stephen C. Hammill



CARDIAC MEDICINE

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Basics of Cardiac technology & ECG Technology	4	3	1	-	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Describes the cardiovascular system, cardiovascular diseases, pathophysiology, etiology & management.	Remember
Explain the laboratory test to diagnose blood diseases & bleeding disorders.	Understand
Determine the Pulmonary Function Test & its interpretation to diagnose respiratory disease.	Apply
Analyse renal system, role of dialysis & renal transplantation.	Analyse
Assess Autonomic Nervous System, CNS disorders & their etiology.	Evaluate
Formulate disease/disorders affecting cardiac system & medicine relevant to it.	Create

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

Learning Outcomes	<ol style="list-style-type: none"> 1. Develop and strengthen professional skills, adhere to ethical principles, and demonstrate sensitivity to a diverse patient population. 2. Develop an awareness of and responsiveness to the larger context and system of health care and demonstrate the ability to effectively call on system resources to provide care that is of optimal value. 3. Develop the ability to investigate and evaluate their patient care practices, and appraise and assimilate scientific evidence to improve their patient care practices.
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UNIT-I

- Ischemic heart diseases
- Rheumatic heart disease
- Congenital heart disease
- Hypertension
- Aortic Aneurysms

UNIT-II

- Cardiomyopathy
- Peripheral vascular disease
- Pulmonary edema and LV failure
- Bleeding disorders
- Laboratory tests used to diagnose bleeding disorders

UNIT-III

- Chronic obstructive airway diseases (COPD)
- Concept of obstructive versus restrictive pulmonary disease
- PFT and its interpretation

UNIT-IV

- Acute Renal Failure & Chronic Renal Failure
- End stage renal disease
- Role of dialysis and renal transplantation in its management
- CNS disorders

UNIT-V

- Diabetes Mellitus
- Obesity
- Pregnancy
- Pediatric Patient (neonate/Infant)
- Elderly patient

PRACTICALS:

Practical's based on above syllabus

Reference Books:

- 1: Clinical Cardiology & Examination – Dr Rajesh S. Roy - 2021
- 2: Joginder Singh Pathania, Rupendra Kumar Bharti, Vikas Sood-Textbook of Pharmacology for Paramedical Students 2019
- 3: KD Tripathi- Essentials of Pharmacology – 8th edition, 2018.
- 4: Manual of Cardiovascular Medicine – Sanjay Kumar Chugh – 5th edition - 2022



MEDICAL ETHICS & HOSPITAL PRACTICE

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

Course Outcomes

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

CO Statement	Taxonomy
Recall key ethical principles and theories relevant to medical practice, such as autonomy, beneficence, non-maleficence, and justice.	Remember
Understand the fundamental principles and concepts of medical ethics and their application in healthcare settings.	Understand
Apply ethical principles and guidelines to resolve ethical dilemmas in clinical practice and healthcare decision-making.	Apply
Analyze complex ethical situations and conflicts in healthcare, identifying stakeholders, perspectives, and potential ethical implications.	Analyse
Evaluate the ethical implications and consequences of medical interventions, policies, and practices.	Evaluate
Create strategies and protocols for ethical decision-making and the resolution of ethical dilemmas in healthcare.	Create

Learning Outcomes	<ol style="list-style-type: none"> 1. Ethical Knowledge and Understanding 2. Ethical Decision-Making and Application 3. Ethical Evaluation and Analysis 4. Ethical Practice and Professionalism
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UNIT I

Medical Ethics, Legal Aspects and Medical Terminology

- Role Definition and Interaction, Ethical, Moral, and Legal Responsibilities

UNIT II

Medical Ethics, Legal Aspects and Medical Terminology

- Medical terminology
- Medical waste Management

UNIT III

Hospital Practice and Patient Care: Care of patient

UNIT IV

Hospital Practice and Patient Care:

- First-aid
- Hospital procedure

UNIT V

Hospital Practice and Patient Care:

- Infection
- Sterilization

PRACTICALS:

Practical based on the topics mentioned in the theory syllabus

Reference books:

1. Principles of Biomedical Ethics by Tom L. Beauchamp and James F. Childress
2. Ethics in Health Administration: A Practical Approach for Decision Makers by Eileen E. Morrison
3. The Cambridge Textbook of Bioethics edited by Peter A. Singer and A. M. Viens
4. Ethics, Law, and Medical Practice by Kerry J. Breen, Loretta M. Byrnes, and Andrew D. Hercus



ECHOCARDIOGRAPHY

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

Course Outcomes

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

CO Statement	Taxonomy
Describes the basic principles of echocardiography, ECG deflection & basic action of electrocardiograph.	Remember
Explain the normal ECG, rate & rhythm the electrical axis, pattern of ECG, general principles of right, left & hemi block.	Understand
Determine the principles of echocardiography & instrumentation.	Apply
Analyse the echocardiographic examination.	Analyse
Assess the Doppler echocardiography, principles, clinical applications & Doppler effect.	Evaluate
Formulate the contrast ECHO, echo measurements – ASE recommendation.	Create

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

Learning Outcome	<ol style="list-style-type: none"> To develop an understanding regarding Echocardiography. To train students to perform Echocardiography examinations by explaining the position of transducers. To make students aware of recent advances in Echocardiography. To understand the role of Cardiac Care technician while assisting the Cardiologist as well as when performing individually.
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UNIT-I

Echocardiography- Basic principles of ultrasound, M-Mode Echocardiography, Two-dimensional Echocardiography, Doppler Echocardiography, colour flow, Echocardiography Instrumentation: Basic pulse Echo system, Transducer, Pulse generation, Echo detection, Echo displays, A mode, B mode, M-mode, Display & recording

UNIT-II

Echo-cardiographic Examination: Selecting transducers, Position of the patient, Placement of the transducer, setting control, M-Mode labeling, 2 D Echo, Normal variants, Terminology, Identification of segments, Doppler Echocardiography

UNIT-III

Echo in rheumatic heart disease-Echo in mitral stenosis, mitral incompetence, aortic stenosis, aortic incompetence, pulmonary hypertension, post MVR, Post AVR. Prosthetic valve Malfunction, LA clot.

UNIT-IV

Echo in congenital heart disease- Echo in ASD, VSD, PDA, pulmonary stenosis, aortic stenosis, Coarctation of aorta, TOF, Dextrocardia.

Echo in ischemic heart disease- Echo in acute myocardial infarction, old myocardial infarction & other ischemic heart disease related conditions, LV aneurysm.

UNIT-V

Echo in other cardiovascular disease-



Echo in various types of Cardiomyopathy, infective endocarditis, diseases of aorta, Mitral valve prolapse, Myxoma & other cardiovascular diseases

PRACTICALS:

Practical based on the topics mentioned in the theory syllabus

Reference Books:

- 1: Textbook of Echocardiography – V Amuthan – Satish K Parashar – 2nd edition – 2022.
- 2: ECG Made Easy – Atul Luthra - 6th edition - 2020
- 3: Leoschamroth: An introduction to Electrocardiography – CalamburN. , Johnson Francis – 8th edition-2018
- 4: Navin C Nanda – Comprehensive Text book of Echocardiography – 2nd edition-2020



Discipline Specific Elective

General Principles and Practices of Public Health

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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

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

Documentation:

- a) Importance of documentation,
- b) Initial and follow up notes
- c) Documentation of therapy, procedures and communication.

UNIT-II

Universal Precautions and Infection Control:

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

UNIT-III

Medication Administration:

- a) Oral / Parenteral route
- b) Parenteral medication administration: Intra venous, intra muscular, sub-cutaneous, intra dermal routes, Intra venous Infusion
- c) Aerosol medication administration, Oxygen therapy
- d) Intravenous fluids,
- e) Blood and blood component transfusion Position and Transport of patient:
 - a) Patient position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
 - b) Lifting and transporting patients: lifting patients up in the bed, 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.
- b) Recording of pulse, blood pressure, respiration, saturation and temperature.

- c) Bedside management: giving and taking bed pan, urine container.
- d) Observation of stools, urine, sputum, drains
- e) Use and care of catheters and rubber goods.
- f) Care of immobile/bed ridden patients, bed sore and aspiration prevention

Monitoring of Patient:

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

UNIT-V

Dressing and wound care:

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

Reference books:

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



Forensic Psychology

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	On completion of this course, the students will be able to do the following: 1. Cognitive Thinking. 2. Analyze complex & diverse concepts 3. Think critically.
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UNIT-I

The Psychology of Criminal Conduct
Offender Profiling

UNIT-II

Eyewitness Testimony and Identification
Investigative Interviewing of Children

UNIT-III

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

UNIT-IV

The Psychology of False Confessions
Famous Miscarriages of Justice

UNIT-V

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

Reference books:

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



Ability Enhancement Course

COMPUTER

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

Course Outcomes

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

CO Statement	Taxonomy
Aim at imparting a basic level appreciation programme 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.	Receive
Make digitally literate.	Respond
Understand to aid the PC penetration program.	Value
Helps the small business communities, housewives to maintain their small account using the computers and enjoy in the world of Information Technology.	Organize
Characterize Cultural and Global Awareness.	Characterize
Receive knowledge of Professional Practice.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome

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

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



UNIT-I

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

UNIT-II

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

UNIT-III

MS Word: Starting MS WORD, Creating and formatting a document, changing fonts and pointsize, Table Creation and operations, Autocorrect, Auto text, spell Check, Word Art, 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, Textwrapping, Sorting data, Auto Sum, Use of functions, Cell Referencing form, Generating graphs, Worksheet data and charts with WORD, Creating Hyperlink to a WORD document, Page set up, Print Preview, Printing Worksheets. **MS Power Point:** Starting MS–Power Point,, Creating a presentation using auto content Wizard, Blank Presentation, creating, saving and printing a presentation, Adding a slide to presentation, Navigating through a presentation, slide sorter, slide show, editing slides, Using Clipart, Word art gallery, Adding Transition and Animation effects, setting timings for slide show, preparing notepages, 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's.	Receive
Emergency plan specifies procedures for handling sudden or unexpected situations.	Respond
Recognize common, urgent and emergent problems	Value
Organize planning of special resuscitative procedures.	Organize
Characterize medical & surgical emergencies.	Characterize
Receive knowledge of emergency drugs or medicines.	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

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

Emergency Equipment

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

UNIT-II

Introductions to Emergency Services

Principles of resuscitation

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

UNIT -III

Specific resuscitative procedures

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

UNIT-IV

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

UNIT-V

Emergency Drugs

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

1. Toxicology

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2. Emergencies due to venomous bites and stings
3. Industrial Hazards
4. Obstetrical emergencies
5. Mental Health Emergencies
6. Pediatric emergencies

Reference books:

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

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SEMESTER IV
DISEASES OF HEART -I

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

Course Outcomes

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

	CO Statement	Taxonomy
	Define cardiovascular Diseases, Pericardial Diseases, Pericardial effusion, Constrictive pericarditis & Cardiac tamponade	Remember
	Explain the normal cardiac, cardiovascular, pericardial diseases anatomy & disease associated with it.	Understand
	Determine the electrical disturbances of heart: Sinus node dysfunction Arrhythmias and conduction disturbances.	Apply
	Classify the normal & abnormal range of blood pressure, pulmonary hypertension, Primary pulmonary hypertension.	Analyse
	Justify normal peripheral vascular anatomy & Atherosclerotic peripheral vascular disease, Aortic aneurysms, Aortic dissection.	Evaluate
	Formulate the congenital heart diseases & Congenital valvular disease, A cyanotic heart disease, Atrial & Ventricular septal defect.	Create

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

Learning Outcomes	This course will cover common Cardiovascular Diseases, their related pathology and microbiology. Along with outline of clinical presentation and management of these conditions it also includes Medical and Surgical interventions
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UNIT-I

Heart failure

Causes, Types, symptoms and signs, diagnosis, management, prevention. Arrhythmias

Brady and Tachyarrhythmias, causes, diagnosis and management.

UNIT-II

Atherosclerosis. Brady and Tachyarrhythmias, causes, diagnosis and management

Atherosclerosis. Definition, risk factors, pathogenesis, Clinical significance and prevention.

UNIT-III

Coronary artery disease Types, Causes, Symptoms and signs, diagnosis, investigations, management, complications. VI. Hypertension

Definition, causes, signs and symptoms, diagnosis, evaluation, management.

UNIT-IV

Pulmonary Hypertension

Definition, Causes, diagnosis and treatment.

Rheumatic fever, Rheumatic Heart disease, Mitral valve and aortic valve disease. Infective endocarditis.

PRACTICALS:

Practicals based on above syllabus

Reference Books:

1: P Syamasundar Rao, Reema Chugh – A Comprehensive Approach to Congenital Heart Diseases – 1st edition – 2018

2: Barry London, Knu Chatterjee, Donald Heistad, Richard E Kerber – Kanu Chatterjee's Cardiology an illustrated textbook – 2nd edition-2021

3: A Text book of Cardiovascular Medicine. Dr. Bruanwald's. -2007

4: A Text book of Medicine. Davidsons-2018



ECG INTERPRETATION

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

Course Outcomes

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

CO Statement	Taxonomy
Recall the anatomy and physiology of the heart, as well as the electrical conduction system.	Remember
Understand the principles and techniques of ECG interpretation	Understand
Apply the skills and knowledge of ECG interpretation to analyze and interpret ECG waveforms.	Apply
Analyze ECG waveforms to identify normal and abnormal findings.	Analyse
Evaluate the accuracy and reliability of ECG interpretations based on waveform analysis.	Evaluate
Create comprehensive ECG reports and documentation based on the interpretation of ECG waveforms.	Create

Learning Outcomes	<ol style="list-style-type: none"> 1. ECG Knowledge and Understanding 2. ECG Analysis and Interpretation 3. Clinical Application of ECG Interpretation
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UNIT I

- Theabnormalelectrocardiogram,Leftatrialabnormality,Rightatrialabnormality
- Leftventricularhypertrophyandenlargement,Rightventricularhypertrophyandenlargement,

UNIT II

- Intra ventricularconductiondelays
- Leftanteriorfascicularblock,Leftposteriorfascicularblock

UNIT III

- Leftbundlebranchblock,Rightbundle branch block
- Myocardialischemiaandinfarction,Repolarization(ST-Twave)abnormalities,QRSchanges

UNIT IV

- ECG in patients with Pacemakers and otherdevices.
- Pacemakerprogramming

UNIT V

- Traditional and Advance Instruments used for Blood pressure recording, Pressuretransducers,Defibrillators,Cathoderaytubesandphysiologicalmonitors,plethysmographyPulse oximetryEtc.

PRACTICALS:

Practical based on the topics mentioned in the theory syllabus

Reference books:

- A Visual Guide to ECG Interpretation by Jennifer L Martindale and David F. M. Brown.
- Rapid Interpretation of EKG's by Dale Dubin
- ECG Interpretation Made Incredibly Easy! by Lippincott Williams & Wilkins
- ECGs Made Easy by Barbara J. Aehlert

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TREADMILL TEST & HOLTER

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

Course Outcomes

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

	CO Statement	Taxonomy
	Recall the principles, indications, and contraindications of treadmill testing and Holter monitoring.	Remember
	Understand the physiological responses during treadmill testing and the role of exercise stress testing in evaluating cardiac function.	Understand
	Apply the technical skills required to perform treadmill tests, including patient preparation, exercise protocol administration, and ECG monitoring.	Apply
	Analyze treadmill test results, including ECG changes, exercise capacity, and cardiovascular responses.	Analyse
	Evaluate the quality and accuracy of treadmill test and Holter monitoring data, including calibration, documentation, and signal artifacts.	Evaluate
	Create comprehensive reports of treadmill test and Holter monitoring results, including accurate documentation of findings and recommendations.	Create

Learning Outcomes	<ol style="list-style-type: none"> 1. Knowledge and Understanding 2. Technical Proficiency 3. Data Analysis and Interpretation 4. Reporting and Communication
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UNIT I

- Introduction to Treadmill Test and Holter Monitoring
- Overview of Treadmill Test and Holter Monitoring
- Importance of Treadmill Test and Holter Monitoring in ECG testing
- Clinical indications and objectives of Treadmill Test and Holter Monitoring
- Treadmill Test

UNIT II

- Principles and physiological basis of Treadmill Test
- Equipment and setup for Treadmill Test
- Test protocols and stages of exercise
- Monitoring and interpretation of ECG during Treadmill Test
- Exercise-induced symptoms and their significance
- Safety considerations and emergency procedures
- Holter Monitoring

UNIT III

- Principles and purpose of Holter Monitoring
- Holter Monitor setup and application
- Patient preparation and placement of electrodes
- Recording and storage of Holter ECG data
- Analysis and interpretation of Holter ECG recordings
- Identification of arrhythmias and abnormal ECG patterns
- Report generation and documentation
- ECG Analysis and Interpretation in Treadmill Test and Holter Monitoring

UNIT IV

- ECG waveform characteristics and normal variants
- Identification of common ECG abnormalities during Treadmill Test and Holter Monitoring
- Recognition of arrhythmias, ST segment changes, and other ECG abnormalities
- Clinical significance and implications of abnormal findings
- Correlation of ECG findings with patient symptoms and medical history
- Quality control measures in Treadmill Test and Holter Monitoring



PRACTICALS:

Practical should be performed as per theory topics.

Reference books:

1. Exercise Testing and Interpretation: A Practical Approach by Christopher B. Cooper and Victor F. Froelicher
2. Clinical Exercise Testing by Andrew P. Selwyn and Victor F. Froelicher
3. ECG Interpretation: From Pathophysiology to Clinical Application by Fred M. Kusumoto, Pam Bernath, and Fred Kusumoto
4. Holter Monitor Electrocardiography by James P. Daubert and George J. Klein

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ENVIRONMENTAL & BIOMEDICAL WASTE MANAGEMENT; ENTREPRENEURSHIP AND PROFESSIONAL MANAGEMENT

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Environmental & Biomedical Waste Management Entrepreneurship and Professional Management	4	3	1	-	20	80	100

Course Outcomes

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

CO Statement	Taxonomy
Recall the environmental and health hazards associated with improper management of biomedical waste.	Remember
Understand the importance of proper environmental and biomedical waste management for public health and environmental protection.	Understand
Apply the techniques and methods for effective segregation, packaging, and labeling of biomedical waste.	Apply
Analyze the environmental and health risks associated with improper biomedical waste management practices	Analyse
Evaluate the effectiveness and compliance of waste management practices with applicable regulations and standards.	Evaluate
Create comprehensive waste management plans and strategies that address the specific needs and challenges of different settings	Create

Learning Outcomes	<ol style="list-style-type: none"> 1. Develop a comprehensive understanding of the environmental and health risks associated with improper management of environmental and biomedical waste. 2. Entrepreneurial and Professional Skills 3. Waste Management Strategies and Technologies
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UNIT I

Bio Medical Waste Management

- a. Introduction to bio-medical Waste
- b. Types of bio-medical waste
- c. Collection of bio-medical waste
- d. Treatment and safe disposal of bio-medical waste

UNIT II

- Ethics of Bio-Safety.
- Code of good and safe laboratory practice for support staff and responsibilities of the workers regarding Bio-safety.
- Rules for laboratory medicine.
- Set up of a laboratory on the basis of safety priority and Laboratory Bio-safety Guidelines.

UNIT III

- Laboratory Biosafety Level Criteria (BSL-1-4).
- Handling, transfer and shipment of specimen. Decontamination and disposal. Treatment and disposal technologies for health-care waste.
- Wastes management, life cycle of bio-medical wastes.
- Reduce recycle and reuse of wasters, technology used for bio-medical wastes treatment and disposal.

UNIT IV

- Chemical, electrical, fire and radiation safety. Safety organization.
- General safety checklist.
- Hazardous properties of instruments and Laboratory chemicals. Laboratory first-aid measures and Kit.
- Safety equipment's. Safety signs.

UNIT V

Entrepreneurship:

- a. Definition, basic concept, need, scope and characteristics of entrepreneurship.
- b. Woman entrepreneurship.
- c. Assistance to small scale from enterprises national level organizations like SIDO, NSIC, NRDC, KVIC.

- d. Assistance to small scale enterprises from State level organizations like DOL, DIG, RFC, SISI, RHDC, Pollution Control Board, Rajasthan khadi & Village Industries Board, banks etc.
- e. Facilities to women entrepreneurs.

Reference books:

- A Handbook on Biomedical Waste by Dr. Shahnawaz Hamid
- Handbook of Research on Entrepreneurship in Professional Services
- Environmental Management of Hospitals and Healthcare Facilities" by Anil Kumar
- Biomedical Waste Management: Principles, Techniques, and Challenges" by Ram Chandra Pandey

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DISCIPLINE SPECIFIC ELECTIVE

COMMUNICATION SKILL FOR HEALTH CARE PROFESSIONAL

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Reference books:

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



INTRODUCTION TO NATIONAL HEALTHCARE SYSTEM

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Discipline Specific Elective	INTRODUCTION TO NATIONAL HEALTHCARE SYSTEM	3	3	-	-	20	80	100

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	1. To familiarize with the healthcare environment → To understand the concepts of management with relevance to hospitals
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UNIT I

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

UNIT II

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

UNIT III

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

UNIT IV

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

UNIT V

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

Reference books:

- Seth, M.L. MACROECONOMICS, Lakshminarayana Agrawal, Edu, Pub. Agra. 1996
- Peter, Z & Fredrick, B. HEALTH ECONOMICS, Oxford Pub., New York, 1997
- Shanmugasundaram, Y., HEALTH ECONOMICS, Oxford Pub. New York, 1997



SKILL ENHANCEMENT COURSE

MEDICAL LAW

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	<ol style="list-style-type: none"> 1. The students are expected after the conclusion of the course to be able to: 2. Understand the interplay between ethics and law in the field of biomedicine 3. To identify and analyse the conflicts of interest and legal problems that are relevant in different areas of medical law
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UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Reference books:

- 1.Law relating to medical negligence and compensation- Dr.K.P.D.A. Prabakar &Dr.J.Paulraj Joseph – 2023
- 2.A textbook of medical jurisprudence and toxicology – Justice K Kannan -25th edition – 1st edition – 2016
- 3.Law the doctor must know- Hitesh J Bhatt &Geetebdra Sharma – 2017
- 4.Law on medical negligence and legal remedies – Dr.AnnuBahlMehra& Harshit Kiran-2022



Ethics in Public Health

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	<p>The students will develop:</p> <ol style="list-style-type: none"> 1. Clinical ethical Competency. 2. Ethical awareness, Empathy
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UNIT-I

- Introduction to Public Health Ethics
- Theories of Justice and Distribution of Public Health Resources
- Principle for Public Health Ethics

UNIT-II

- Priority-Setting and Resource Allocation at the Macro Level
- Priority-Setting and Resource Allocation at the Micro Level

UNIT-III

- Medical Ethics, Legal Aspects and Medical Terminology
 - Role Definition and Interaction, Ethical, Moral, and Legal Responsibilities
 - Medical terminology
 - Medical waste Management

UNIT-IV

- Contemporary Ethical and Legal Issues in Health Care: Legal regulation of a standalone diagnostic center, medico-legal cases and medical negligence, ethical aspects of health care.
- Balancing Individual and Community Interests
- Ethics and Health Promotion

UNIT-V

- Role of Human Rights in Public Health
- Ethics of Health Promotion and Disease Prevention

Reference books:

- 1.Ethics and Public Health – Archana Rani Sahoo &Patitapaban Das -2017
- 2.Public Health,Ethics and Equity-Sudhir Anand, Fabienne Peter and Amartya Sen – 2006
- 3.Nursing and healthcare ethics-Robinson & Doody-6th edition -2022
- 4.Ethics- William K.Frankena – 2nd edition-2015



SEMESTER V

DISEASES OF HEART -II

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

Course Outcomes

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

CO Statement	Taxonomy
Define cardiovascular Diseases, Pericardial Diseases, Pericardialeffusion, Constrictive pericarditis & Cardiactamponade	Remember
Explain the normal cardiac, cardiovascular, pericardial diseases anatomy & disease associated with it.	Understand
Determine the electrical disturbances of heart: Sinus node dysfunction Arrhythmias and conduction disturbances.	Apply
Classify the normal & abnormal range of blood pressure, pulmonary hypertension, Primary pulmonary hypertension.	Analyse
Justify normal peripheral vascular anatomy & Atherosclerotic peripheral vascular disease, Aortic aneurysms, Aortic dissection.	Evaluate
Formulate the congenital heart diseases & Congenital valvular disease, A cyanotic heart disease, Atrial & Ventricular septal defect.	Create

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

Learning Outcome	<ol style="list-style-type: none"> 1. Knowledge of the structural development of the cardiovascular system Knowledge of developmental anomalies in Cardiovascular System. 2. Knowledge of medical and surgical interventions of cardiac diseases.
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UNIT-I

- Anemia
- Hemophilia
- Hemostasis
- Wound healing

UNIT-II

- Angina
- Pericardial diseases-
- Acute Pericarditis, Pericardial effusion, Pericardial tamponade. Chronic
- constrictive pericarditis.

• UNIT-III

- Peripheral vascular diseases
- Stroke
- Heart Failure
- Dyslipidemia

UNIT-IV

- Myocardial Infarction
- Heart Valve Complications
- Infective Endocarditis

PRACTICALS:

Based on the topics mentioned in the theory syllabus

Reference books:

- 1.Taylor's cardiovascular diseases:A handbook –Robert B.Tsylvor – 2005
- 2.Manual of Cardiovascular Medicine-Brian P.Griffin-4th edition-2013
- 3.Cariac Functioning Diorders Challenges and Therapies –Mahira Parveen-1st edition-2013
- 4.The new heart disease handbook-Christopher P.Cannon& Elizabeth Vierck-2009.



ADVANCE TECHNOLOGIES IN CARDIOLOGY - I

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

Course Outcomes

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

CO Statement	Taxonomy
Define Echocardiography & electromagnetic equipment.	Remember
Differentiate the Transesophageal echocardiography, Stress echocardiography, pharmacological 3D echocardiography.	Understand
Apply the common Cardiovascular disorders and its management.	Apply
Analyze the use of defibrillators & its mechanism.	Analyse
Justify the Congenital heart diseases, ASD, VSD, PDA, Coarctation of aorta & Pulmonary and aortic stenosis.	Evaluate
Formulate the objectives of Management of vasovagal attack, Management of coronary perforation.	Create

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

Learning Outcome	<ol style="list-style-type: none"> 1. Knowledge of common Cardiovascular Diseases 2. Knowledge of pathology and microbiology of CVS disorders 3. Knowledge of clinical presentation and management of CVS diseases. 4. Knowledge of Medical and Surgical interventions
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UNIT-I

- Electricity & electro medical equipment & their safe guards
- Basics of electricity & functioning of electro medical equipment
- Earthing & care of apparatus, Static electricity

UNIT-II

- Intensive coronary unit & recovery room concepts
- Trans-esophageal Cardiopulmonary resuscitation –Basic cardiac life support
- Advanced cardiac life support

UNIT-III

- Management of Cardiac arrest- definition, causes, external cardiac massage
- Artificial respiration & other drugs
- Procedures used in the management of cardiac arrest.

UNIT-IV

- Cardiac monitoring –definition, purpose of cardiac monitoring,
- How to recognize various arrhythmias

UNIT - V

- Use of Defibrillator-Indications, how to use the defibrillator
- Complications during the procedure & its management
- Radiation Hazard & safety

PRACTICALS:

Based on the topics mentioned in the theory syllabus

Reference books:

- 1.Essentials of clinical cardiology – dithya Udupa K-1st edition-2017
- 2.Textbook of cardiac nursing-Reena George-1st edition-2017
- 3.Clinical Cardiology and examination-Dr.Rajesh S. Roy-2021
- 4.Handbook on cardiac critical care-Santanu Guha-1st edition-2016



HOSPITAL PRACTICE & PATIENT CARE

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

Course Outcomes

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

CO Statement	Taxonomy
Primary patient care post procedure.	Remember
Requirement of line of treatment and prioritizing patient care.	Understand
Sanitization techniques for infection control.	Apply
The hospital procedure for patient welfare.	Analyse
Patients requirement and type of required care.	Evaluate
Formulate the new techniques for safety measure of patients as well as hospital staff.	Create

Learning Outcomes	1. The student will learn the techniques with the aspect of patient care and hospital management.
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Hospital Practice and Patient Care

- 1) Care of patient
- 2) First-aid
- 3) Hospital procedure
- 4) Infection
- 5) Sterilization

PRACTICALS:

1. To disinfect the equipment's used in OT.
2. Sterilization of room before operation.
3. Providing first aid to the patients according to the requirements.
4. Providing patient care to post operation patients.

Reference books:

- Handbook for the Patient Care Management (Hospital and Community Pharmacist) by A.K. Mohiuddin.
- Principles of Hospital Practice and Patient Care by P Srinivasulu Reddy.

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

DISCIPLINE SPECIFIC ELECTIVE

MEDICAL PSYCHOLOGY

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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

- Introduction to psychology
- Intelligence, Learning, Memory, Personality, Motivation

UNIT-II

- Body integrity- one's body image
- Patient in his Milan

UNIT-III

- Self-concept of the therapist, Therapist patient relationship-some guidelines
- Illness and its impact on the patients.

UNIT-IV

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

UNIT-V

Adapting changes in vision

Why Medical Psychology needs / demands commitment?

Reference book:

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



Biostatistics & Research Methodology

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome	<ol style="list-style-type: none"> To understand the importance & Methodology for research To learn in detail about sampling, probability and sampling distribution, significance tests correlation and regression, sample size determination, study design and multivariate analysis.
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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 Kothari & Gaurav Garg – 4th edition – 2019
2. Introduction to research methodology – Bhanwar Lal Garg, RenuKavdia, Sulochana Agarwal & Umesh kumar Agarwal – 2019
3. Research methodology for health professionals – RC Goyal – 2nd edition – 2023
4. Research Methodology and applied statistics – DN Sansanwal - 2020



ABILITY ENHANCEMENT COURSE

Entrepreneurship Development

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Ability Enhancement c	Entrepreneurship Development	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.	Receive
	Respond entrepreneurship impacted the world and their country.	Respond
	Introduced to key traits and the DNA of an entrepreneur	Value
	Organize the opportunity to assess their own strengths	Organize
	Understand the DNA of an entrepreneur and assess their strengths and weaknesses from an	Characterize
	Receive knowledge of Entrepreneurial perspective	Receive

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcomes	<ol style="list-style-type: none"> 1. Develop awareness about entrepreneurship and successful entrepreneurs. 2. Develop an entrepreneurial mind-set by learning key skills such as design, personal selling, and communication. 3. Understand the DNA of an entrepreneur and assess their strengths and weaknesses from an 4. Entrepreneurial perspective.
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UNIT-I

Introduction to Entrepreneurship

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

UNIT-II

The Entrepreneur

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

UNIT-III

E-Cell

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

UNIT-IV

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

UNIT V

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

Reference Books:

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



Introduction to Quality & Patient Safety

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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



UNIT-I

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

UNIT-II

Basics of emergency care and life support skills- Basic life support (BLS), Vitals signs and primary assessment, Basic emergency care – first aid and triage. Ventilations Including use of bag-valve-masks (BVMs), Choking, rescue breathing methods, One- and Two-rescuer CPR

UNIT-III

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

UNIT-IV

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

UNIT V

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

Reference books:

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

SEMESTER VI

DISEASES OF HEART -III

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

Course Outcomes

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

CO Statement	Taxonomy
Define cardiovascular Diseases, Pericardial Diseases ,Pericardial effusion, Constrictive pericarditis &Cardiactamponade	Remember
Explain the normal cardiac, cardiovascular, pericardial diseases anatomy & disease associated with it.	Understand
Determine the electrical disturbances of heart: Sinus node dysfunction Arrhythmias and conduction disturbances.	Apply
Classify the normal & abnormal range of blood pressure, pulmonary hypertension, Primary pulmonary hypertension.	Analyse
Justify normal peripheral vascular anatomy & Atherosclerotic peripheral vascular disease, Aortic aneurysms, Aortic dissection.	Evaluate
Formulate the congenital heart diseases & Congenital valvular disease, A cyanotic heart disease, Atrial & Ventricular septal defect.	Create

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

Learning Outcomes This course will cover common Cardiovascular Diseases, their related pathology and microbiology. •Along with outline of clinical presentation and management of these conditions it also includes Medical and Surgical interventions



UNIT-I

Congenital Heart Diseases
Common CHD,
Diagnosis and management ASD, VSD, PDA, PS, AS,

UNIT-II

Coarctation of aorta, Dextrocardia.
Cardiomyopathies
Dilated Cardiomyopathy, Hypertrophic Cardiomyopathy, Restrictive
Cardiomyopathy

UNIT-III

Fluid therapy, Central venous lines.
Transfusion, Cryotherapy
Interpretation of Investigation reports.

Reference Books:

- 1: P Syamasundar Rao, Reema Chugh – A Comprehensive Approach to Congenital Heart Diseases – 1st edition – 2018
- 2: Barry London, KnuChatterjee, DonaldHeistad, Richard E Kerber – Kanu Chatterjee's Cardiology an illustrated textbook – 2nd edition-2021
- 3: A Text book of Cardiovascular Medicine. Dr. Bruanwald's. -2007
- 4: A Text book of Medicine. Davidsons.-2018

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ADVANCE TECHNOLOGIES IN CARDIOLOGY - II

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

Course Outcomes

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

CO Statement	Taxonomy
Define Echocardiography & electromagnetic equipments .	Remember
Differentiate the Transesophageal echocardiography, Stress echocardiography, pharmacological 3D echocardiography.	Understand
Apply the common Cardiovascular disorders and its management.	Apply
Analyse the use of defibrillators & its mechanism.	Analyse
Justify the Congenital heart diseases, ASD, VSD, PDA, Coarctation of aorta & Pulmonary and aortic stenosis.	Evaluate
Formulate the objectives of Management of vasovagal attack ,Management of coronary perforation.	Create

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

Learning Outcome

1. Knowledge of common Cardiovascular Diseases
2. Knowledge of pathology and microbiology of CVS disorders
3. Knowledge of clinical presentation and management of CVS diseases.
4. Knowledge of Medical and Surgical interventions



1. Advanced Imaging Techniques in Cardiology
 - Principles and applications of advanced cardiac imaging techniques
 - CT angiography, MRI, and PET imaging in cardiology
 - Image interpretation and diagnostic utility of advanced imaging modalities
 - Integration of imaging data with other diagnostic tools
2. Interventional Cardiology Procedures
 - Principles and indications of interventional cardiology procedures
 - Coronary angiography and angioplasty
 - Percutaneous coronary interventions (PCI) and stent placement
 - Structural heart interventions (e.g., TAVR, MitraClip)
 - Role of advanced technologies (e.g., robotic-assisted interventions, optical coherence tomography) in interventional cardiology
3. Cardiac Electrophysiology
 - Principles of cardiac electrophysiology
 - Electrophysiological studies (EPS) and mapping techniques
 - Catheter ablation for arrhythmia management
 - Implantable cardioverter-defibrillators (ICDs) and pacemakers
 - Role of advanced technologies (e.g., remote monitoring, leadless devices) in cardiac electrophysiology
4. Emerging Technologies in Cardiology
 - Overview of emerging technologies in cardiology
 - Artificial intelligence (AI) and machine learning applications
 - Wearable devices and remote monitoring
 - Telecardiology and telemedicine
 - 3D printing and personalized medicine in cardiology
5. Future Directions and Innovations in Cardiology
 - Exploration of emerging trends and future directions in cardiology technologies
 - Potential impact of precision medicine, genomics, and gene therapy
 - Novel device technologies and minimally invasive procedures
 - Role of big data and analytics in advancing cardiology practice

Reference books:

1. Essentials of clinical cardiology – dithya Udupa K-1st edition-2017
2. Textbook of cardiac nursing-Reena George-1st edition-2017
3. Clinical Cardiology and examination-Dr.Rajesh S. Roy-2021
4. Handbook on cardiac critical care-Santanu Guha-1st edition-2016

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BIOSTATISTICS

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome

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



Biostatistics:

1. Need of biostatistics
2. What is biostatistics: beyond definition
3. Understanding of data in biostatistics
4. How & where to get relevant data
5. Relation between data & variables
6. Type of variables: defining data set
7. Collection of relevant data: sampling methods
8. Construction of study: population, sample, normality and its beyond (not design of study, perhaps)
9. Summarizing data on the pretext of underlined study
10. Understanding of statistical analysis (not methods)

Reference:

1. Statistical Methods by S.P. Gupta
2. Methods in biostatistics for medical students by B.K.Mahajan
3. RPG Biostatistics by HimanshuTyagi

A handwritten signature in black ink, appearing to read 'W. Abue', is located in the bottom right area of the page.

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



CARDIAC CATHETERIZATION-I

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Practical	Cardiac Catheterization-I	1	-	-	2	20	80	100

Course Outcomes

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

	CO Statement	Taxonomy
	Define the hemodynamics, pascal's law & normal pressures of the chambers of the heart.	Remember
	Explain the diagnostic catheterization & asepsis in the cardiovascular catheterization in laboratory.	Understand
	Determine the application and mechanism of Defibrillator, Holter Monitoring in Cardiac Emergencies.	Apply
	Classify the Basic Life Support technique in Airway Management, approach to Shock & Anaphylaxis.	Analyse
	Justify the history taking - ECG: Arrhythmias, recent MI - Echo: RWMA, LV function, A pressure.	Evaluate
	Formulate the assessment Urine Output -Blood pressure Late: -Patency of puncture -Renal Function -ECG & 2D Echo.	Create

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

- Learning Outcomes
1. Knowledge about coronary angiography.
 2. Knowledge about cardiac catheterization
 3. The occurrence and management of various complications

UNIT-I

Preparation for Cath procedure and post procedure care
Cardiac Catheterization laboratory- General details of Cardiac Catheterization equipment, how to handle the machine, common problems, one may come across and how to overcome it

UNIT-II

Radiation hazards
Materials used in the Cath Lab- All catheters, balloons, guidewires, pacemakers, contrast materials & other materials used in the Cardiac Catheterization Laboratory and Sterilization of all these materials.

UNIT-III

Right heart Catheterization- procedure, cath position, Oximetry at various levels, angios done & its interpretation
Left heart catheterization- procedure, cath position, Oximetry at various levels, angios done & its interpretation

UNIT-IV

Introduction to coronary angiogram
History of coronary angiography
Instrumentation in coronary angiography
Indications for coronary angiography
Contraindications for coronary angiography

UNIT-V

Procedure of Coronary Angiography
Approach
Seldingers technique
Catheters for coronary angiography
Views for coronary angiography
Evaluation of a coronary lesion
Reporting of coronary angiography
Decision making on management
Revascularization PTCA or CABG
Planning review of protocol
Complications and management

Reference Books:

- 1:A textbook of Cardiac Catheterization & Interventions. Dr. W. Grossman's D. Baim -9th edition-2021
- 2: Kern's Cardiac Catheterization Handbook – 7th edition - 2019
- 3:Introductory guide to cardiac catheterization-Arman T.Askari, Mehdi H.Shishehbor- 2nd edition-2012
- 4: Essential cardiac catheterization-Rob Butler -1st edition-2007



CARDIAC CARE TECHNOLOGY – CLINICAL

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Practical	Cardiac Care Technology-Clinical	1	-	-	2	20	80	100

Course Outcomes

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

	CO Statement	Taxonomy
	Describes the Documentation and Assessment for Cardiac care	Remember
	Explain the Electrocardiography A review	Understand
	Determine Ambulatory cardiac technologies	Apply
	Analyse the Coronary angiogram for performing angioplasty	Analyse
	Assess the vascular & coronary artery access & 24 hours ambulatory monitoring.	Evaluate
	Formulate the techniques of coronary arteriography, angiography & video imaging system., medications & complications of PCI.	Create

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

Learning Outcome

1. Knowledge of interventional procedures
2. Knowledge of ambulatory cardiac technologies
3. Knowledge of coronary angiogram.



UNIT I

Documentation and Assessment for Cardiac care

1.Documentation in Non-Invasive technology

- a) ECG
- b) ECHO
- c) TMT

2.Documentation in Invasive technology

- a) Angiography
- b) Interventional procedures

UNIT II

Electrocardiography A review

- a) Chamber hypertrophy
- b) Acute coronary syndromes
- c) Bradyarrhythmias
- d) Tachyarrhythmias
- e) Pericardial diseases

UNIT III

Ambulatory cardiac technologies

- a) Holter monitoring
- b) Loop recorders
- c) Ambulatory blood pressure recording
- d) Newer technologies for monitoring the patients with heart diseases

UNIT IV

Invasive technologies

- a) Coronary angiogram for performing angioplasty
- b) PTCA
- c) Coronary Stents
- d) Optimizing the results of PTCA

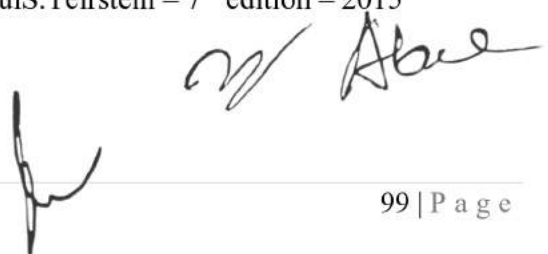
UNIT V

Invasive technologies

- a) Intra-aortic balloon pump
- b) Fractional flow reserve
- c) Rotational atherectomy
- d) Intra vascular ultrasound
- e) Optical coherence tomography

Reference books:

- 1.Advanced cardiovascular life support Provider Manual- AHA- 16th edition 216
- 2.Bedside approach to clinical cardiology –Chandan Kumar Das- 2021
- 3.Textbook of interventional cardiology – Eric J.Topol&PaulS.Teirstein – 7th edition – 2015
- 4.Cardiology pearls- Adithya Udupa K – 1st edition - 201



DISCIPLINE SPECIFIC ELECTIVE

HOSPITAL MANAGEMENT

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Objective

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



UNIT-I

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

UNIT-II

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

UNIT-III

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

UNIT-IV

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

UNIT-V

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

Reference books:

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



BASICS OF CLINICAL SKILL LEARNING

Course Code	Course Category	Paper Title	Credits	Contact per week			Evaluation		
				L	T	P	Internal	External	Total
	Core	Basics of clinical Skill Learning	3	3	-	-	20	80	100

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

Learning Outcome

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



UNIT- I

MEASURING VITAL SIGNS: Temperature: Axillaries Temperature, Pulse: Sites of pulse, Measurement, Respiratory, Blood Pressure, Pain: Pain Scale

UNIT- II

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

UNIT- III

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

UNIT- IV

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

UNIT- V

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

Reference books:

1. Basic surgical skills and techniques – Sudhir Kumar -3rd edition – 2018
2. Essentials of clinical diagnosis – Sunil K Sen-9th edition – 2019
3. Manual of clinical methods – P.S. Shankar – 4th edition – 2017
4. Communication skills in clinical practice – KR Sethuraman- 2nd edition - 2018



SKILL ENHANCEMENT COURSE

BASIC AND ADVANCE LIFE SUPPORT

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

Course Outcomes

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

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

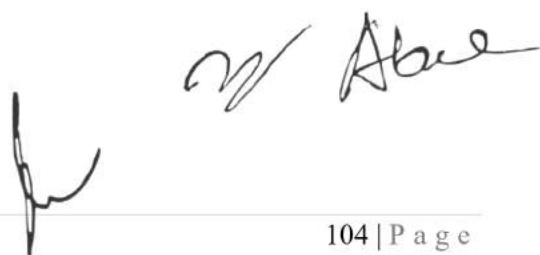
Taxonomy: Receive, Respond, Value, Organize, Characterize

Course Objective

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

Learning Outcomes

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



UNIT- I

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

UNIT- II

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

UNIT- III

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

Drugs used in treatment of blood and cardio vascular disorders

UNIT- IV

Basic Life Support

- Airway Management
- Anaphylaxis
- Approach to Shock

Initial Management of Shock

UNIT- V

Basic Life Support

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

Reference books:

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



ORGANIZATIONAL BEHAVIOUR

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

Course Outcomes

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

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

Taxonomy: Receive, Respond, Value, Organize, Characterize

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




UNIT-I

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

UNIT-II

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

UNIT-III

Perception Process - Nature & Importance - Perceptual Selectivity - Perceptual Organization - Social Perception - Impression Management. Learning-Processes 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 Behaviour - R.S. Dwivedi 2007
- 2: Organizational Behaviour - Uma Sekaran 2005
- 3: Margie Lovett Scott, Faith Prather. Global health systems comparing strategies for delivering health services. Joney & Bartlett learning, 2014
- 4: Human Behaviour at Work - Keith Davis 2004



SEMESTER – VII& VIII

INTERNSHIP

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

Guidelines:

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

Evaluation of Internees:

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

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

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

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

