INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)
PALLAVARAM, THALAMBUR, PERIYAPALAYAM, THIRUVANMIYUR - CHENNAI

**B.Sc. CARDIAC CARE TECHNOLOGY**

# 5th Board of Studies Meeting-Minutes

Effective from the Academic year
2026-2027

## Venue

VISTAS

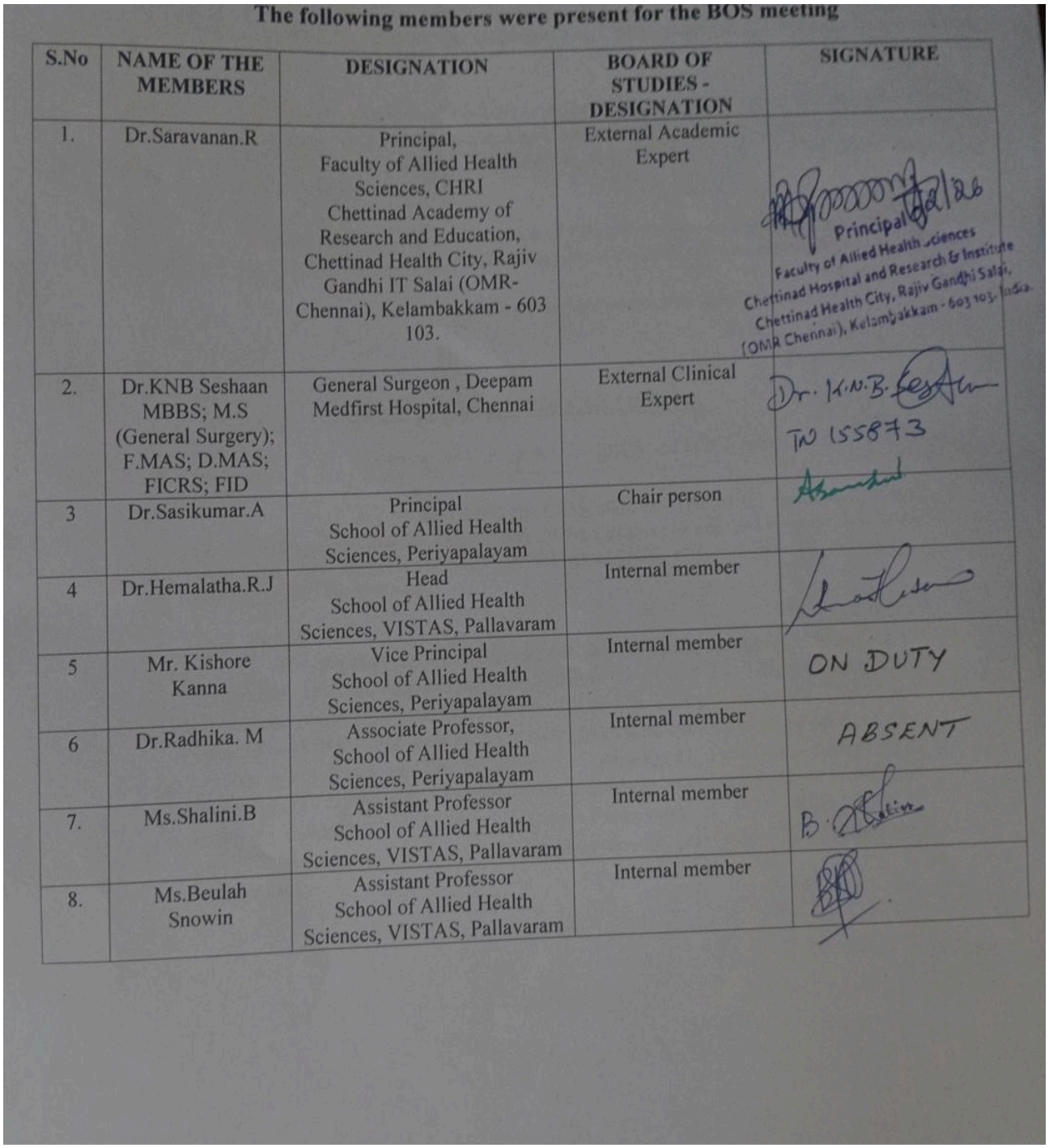
**Date & Time**

06.02.2025 & 11.00 am

## MINUTES OF BOARD OF STUDIES

The meeting of the Board of Studies in School of Allied Health Sciences , VISTAS held on **06-02-2025 at 11 am** to implement **the 3rd to 8th Curriculum & Syllabus** of the following **Program – B.Sc.Cardiac Care Technology** which to be followed from academic year 2026– 2027

**The following members were present for the BOS meeting**



**The following members were present for the BOS meeting**

| S.No | NAME OF THE MEMBERS | DESIGNATION | BOARD OF STUDIES - DESIGNATION | SIGNATURE |
|---|---|---|---|---|
| 1. | Dr.Saravanan.R | Principal, Faculty of Allied Health Sciences, CHRI Chettinad Academy of Research and Education, Chettinad Health City, Rajiv Gandhi IT Salai (OMR-Chennai), Kelambakkam - 603 103. | External Academic Expert | Principal 6/2/26 Faculty of Allied Health Sciences Chettinad Hospital and Research Institute Chettinad Health City, Rajiv Gandhi Salai, (OMR Chennai), Kelambakkam - 603 103. India. |
| 2. | Dr.KNB Seshaan MBBS; M.S (General Surgery); F.MAS; D.MAS; FICRS; FID | General Surgeon , Deepam Medfirst Hospital, Chennai | External Clinical Expert | Dr. K.N.B. TN 155873 |
| 3 | Dr.Sasikumar.A | Principal School of Allied Health Sciences, Periyapalayam | Chair person | |
| 4 | Dr.Hemalatha.R.J | Head School of Allied Health Sciences, VISTAS, Pallavaram | Internal member | |
| 5 | Mr. Kishore Kanna | Vice Principal School of Allied Health Sciences, Periyapalayam | Internal member | ON DUTY |
| 6 | Dr.Radhika. M | Associate Professor, School of Allied Health Sciences, Periyapalayam | Internal member | ABSENT |
| 7. | Ms.Shalini.B | Assistant Professor School of Allied Health Sciences, VISTAS, Pallavaram | Internal member | |
| 8. | Ms.Beulah Snowin | Assistant Professor School of Allied Health Sciences, VISTAS, Pallavaram | Internal member | |

## AGENDA OF THE MEETING

| Item No. | Particulars |
|---|---|
| **BoS / 2025 / CCT/ UG / 1.1** | Develop curriculum based on Learning Outcome Based Curriculum Framework (LOCF) /Choice Based Credit System(CBCS) |
| **BoS / 2025 / CCT / UG / 1.2** | Objective of the Program |
| **BoS / 2025 / CCT / UG / 1.3** | Feedback from Stakeholders to ensure that the syllabus of the courses include the state-of-the-art technologies focusing on skill development, employability,band entrepreneurship |
| **BoS / 2025/ CCT / UG / 1.4** | To review the UGC policy for CBCS and LOCF curriculum |

### Item No:1 BOS / 2024 / CCT / UG / 1.1

Develop curriculum based on Learning Outcome Based Curriculum Framework (LOCF) /Choice Based Credit System(CBCS)

- To develop the curriculum and syllabi based on the guidelines of UGC and the principles of Outcome Based Education (OBE)/Learning Outcome Based Curriculum Framework (LOCF).
- To implement the guidelines and suggestions of the new education policy.
- To consider the Competencies and Performance Indicators of the B.Sc. Cardiac Care Technology programme defined as per the recommendations of the National Model Curriculum.
- To enhance the Course Outcomes (CO) of all the courses by focusing on skill development, employability, and entrepreneurship.

**Minutes are Reviewed and Confirmed**

### Item No : 2 BOS / 2024 / CCT / UG / 1.2

Objective of the Program

- To provide the perfect balance and academic intensity between theoretical and practical learning.
- To design the curriculum focusing on Activities/ Content with direct on Employability/Competency/ Entrepreneurship/ Skill Development / Interdisciplinary
- To demonstrate and adopt technical skill set and in depth of knowledge.
- To aid students to refine their skills.
- To discover various techniques and develop their knowledge through experimental learning.
- To deliver the Program as per UGC norms.

**Item No : 3 BOS / 2024 /CCT / UG /1.3**

Feedback from Stakeholders to ensure that the syllabus of the courses include the state-of-the-art
technologies focusing on skill development, employability, and entrepreneurship

**External Members:** The course is well framed and the curriculum is elaborate and focuses on inculcating the skills and knowledge required for students in the medical world..

**Academic Experts:** The course covers all the basic inputs to provide expertise training in the medical world. The Competencies and Performance Indicators (PI) are well defined for both the programmes. The CO-PO mapping is based on Knowledge Levels and is well justified.

The course explores a wide range of careers in the medical world through internships and enables students to inculcate practical skills for Entrepreneurship.

**Minutes are Reviewed and Confirmed**

**Item No : 4 BOS / 2024 /CCT / UG / 1.4**

To review the UGC policy for CBCS and LOCF curriculum

- Resolved that the Curriculum & Syllabus for the B.Sc.Cardiac Care Technology programme (Regulation 2026), designed as per the Learning outcome-based curriculum framework (LOCF) guidelines of UGC, effective from the Academic Year 2026-2027 be approved.

***Resolution:***

The members of the BOS adopted the following resolutions: Resolved to recommend that the Curriculum and Syllabus developed for B.Sc. Cardiac Care Technology is based on Learning Outcome Based Curriculum Framework (LOCF) and Choice Based Credit System (CBCS). Newly introduced courses focused on Activities Content with direct on Employability / Competency/ Entrepreneurship/ Skill Development / Interdisciplinary during the Academic Year – 2026 – 2027 is designed as per the guidelines and Model Curriculum Framework of UGC. The Board of studies approved the UG curriculum for the academic year 2026 – 2027 is enclosed **Annexures .**










# UNDERGRADUATE DEGREE PROGRAMME

## Bs.c. CARDIAC CARE TECHNOLOGY

### 4Year UG Degree (3+1YEAR -INTERNSHIP)

### CURRICULUM & SYLLABUS

### REGULATION 2026

### COMPETENCY BASED CURRICULUM

### &

### LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (LOCF)

**Effective from the Academic Year**

**2026 -2027**

## Department of CARDIAC CARE TECHNOLOGY

## School of ALLIED HEALTH SCIENCES

VELS
INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)
PALLAVARAM, THALAMBUR, PERIYAPALAYAM, THIRUVANMIYUR - CHENNAI

# DEPARTMENT OF CARDIAC CARE TECHNOLOGY

| VISION OF THE DEPARTMENT |
|---|
| Aims to provide quality education in the field of Cardiac Care Technology with state-of-the-art facilities, and to promote advanced clinical training and research in collaboration with hospitals, healthcare institutions, and universities, in order to produce highly skilled and competent cardiac technologists for the healthcare industry.” |

| MISSION OF THE DEPARTMENT | |
|---|---|
| **M1** | Evolve into a full trained, qualified cardiovascular technologist capable of working independently. . |
| **M2** | To Become well-versed in techniques such as cardiac catheterization, Electrocardiography, Echocardiography and ultrasound instrumentation. |
| **M3** | Integrate knowledge and skills of cardiovascular technology to provide healthcare solutions for the benefit of the society. |
| **M4** | Become well-prepared for working in a team associated with assisting cardiac surgeons and cardiologists in a high-pressure hospital environments. |
| **M5** | Be cognizant and responsive to the cardiovascular care of the community and possess a commitment to continuously improve knowledge and abilities. |

| PROGRAMME OUTCOMES (PO) | |
|---|---|
| **PO1** | Evolve into a full trained, qualified cardiovascular technologist capable of working independently |
| **PO2** | Become well-versed in techniques such as cardiac catheterization, Electrocardiography, Echocardiography and ultrasound instrumentation. |
| **PO3** | Integrate knowledge and skills of cardiovascular technology to provide healthcare solutions for the benefit of the society. |
| **PO4** | Become well-prepared for working in a team associated with assisting cardiac surgeons and cardiologists in a high-pressure hospital environments. |
| **PO5** | Be cognizant and responsive to the cardiovascular care of the community and possess a commitment to continuously improve knowledge and abilities. |
| **PO6** | Demonstrate leadership qualities and entrepreneur skills by working and communicating effectively in interdisciplinary environment, either independently or in a team. |

## CREDIT DISTRIBUTION

### BSC Cardiac Care Technology

### Total credits to be earned: 164

### 4Year UG Degree (3+1YEAR -INTERNSHIP)

| Component | I Sem | II Sem | III Sem | IV Sem | V Sem | V1 Sem | VII & VIII Sem | Total Credits |
|---|---|---|---|---|---|---|---|---|
| Program Core | 18 | 18 | 18 | 18 | 18 | 18 | 40 | 148 |
| Program Elective | 4 | 4 | 2 | 2 | 2 | 2 | | 16 |
| **Total Credits** | 22 | 22 | 20 | 20 | 20 | 20 | 40 | 164 |

# BOARD OF STUDIES
# CURRICULUM STRUCTURE

## FIRST SEMESTER

| Sl.No. | Subject code | Course Titles | Hours/Credits | | | | | Maximum Marks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | | Practical | | Total | IA | | UA | | Total |
| | | | Hours | Credits | Hours | Credits | Credits | Theory | Practical | Theory | Practical | |
| 1.1 | 26CCPT001 | General Anatomy | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 1.2 | 26CCPT002 | General Physiology | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 1.3 | 26CCPT003 | General Biochemistry | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 1.4 | 26CCTT004 | Medical Law & Ethics* | 30 | 2 | - | - | 2 | 100 | - | | - | 100 |
| 1.5 | 26CCTT005 | English & Communicative Skills* | 30 | 2 | - | - | 2 | 100 | - | | - | 100 |
| **Total** | | | | | | | **22** | **Total** | | | | **800** |

## SECOND SEMESTER

| Sl.No. | Subject code | Course Titles | Hours/Credits | | | | | Maximum Marks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | | Practical | | Total Credits | IA | | UA | | Total |
| | | | Hours | Credits | Hours | Credits | | Theory | Practical | Theory | Practical | |
| 2.1 | 26CCPT006 | General Pathology | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 2.2 | 26CCPT007 | General Microbiology | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 2.3 | 26CCPT008 | General Pharmacology | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 2.4 | 26CCTT009 | Medical Terminology & Record Keeping* | 30 | 2 | - | - | 2 | 100 | - | | - | 100 |
| 2.5 | 26CCTT010 | Basic Computers & Information Science* | 30 | 2 | - | - | 2 | 100 | - | | - | 100 |
| **Total** | | | | | | | **22** | **Total** | | | | **800** |

# SEMESTER 3

| Sl. No. | Subject code | Course Titles | Hours/Credits | | | | | Maximum Marks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | | Practical | | Total Credits | IA | | UA | | Total |
| | | | Hours | Credits | Hours | Credits | | | | | Practical | |
| 3.1 | 26CCPT301 | Applied Pathology | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 3.2 | 26CCPT302 | Medicine Relevant to CCT | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 3.3 | 26CCPT303 | Anatomy and physiology related to CCT | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 3.4 | 26CCTT304 | Psychology | 30 | 2 | - | - | 2 | 100 | | - | - | 100 |
| | | | | | | **Total** | **20** | **TOTAL Total** | | | | **700** |

**SEMESTER 4**

| | | | Hours/Credits | | | Maxium Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Practical | Total | | | Total |

| Sl.No. | Subject code | Course Titles | Lecture | | | | Credits | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Hours | Credits | Hours | Credits | | | | | | |
| 4.1 | 26CCPT401 | Physics & medical electronics | 60 | 4 | 40 | 3 | 7 | 25 | 50 | 75 | 50 | 200 |
| 4.2 | 26CCPT402 | Patient care and Basic Nursing | 60 | 4 | - | - | 4 | 25 | - | 75 | - | 100 |
| 4.3 | 26CCPT403 | Basic Intensive Care | 60 | 4 | 40 | 3 | 7 | 25 | 50 | 75 | 50 | 200 |
| 4.4 | 26CCTT404 | Basic and Advance life support* | 30 | 2 | - | - | 2 | 100 | - | - | - | 100 |
| **Total** | | | | | | | **20** | **Total** | | | | **600** |

**SEMESTER 5**

| Sl.No. | Subject code | Course Titles | Hours/Credits | | | | | Maximum Marks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | | Practical | | Total Credits | IA | | UA | | Total |
| | | | Hours | Credits | Hours | Credits | | Theory | Practical | Theory | Practical | |
| 5.1 | 26CCPT501 | Interpretation of Echocardiography | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 5.2 | 26CCPT502 | Cardiac Evalution & Theories I | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 5.3 | 26CCPT503 | Advanced Electrography | 60 | 4 | 40 | 2 | 6 | 25 | 50 | 75 | 50 | 200 |
| 5.4 | 26CCTT504 | CSSD including Sterilization * | 30 | 2 | - | -- | 2 | 100 | - | - | - | 100 |
| **Total** | | | | | | | **20** | **Total** | | | | **700** |

**SEMESTER 6**

| Sl.No. | Subject code | Course Titles | Hours/Credits | | | | Total Credits | Maximum Marks | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lecture | | Practical | | | I A | | | | Total |
| | | | Hours | Credits | Hours | Credits | | | | | | |
| 6.1 | 26CCPT601 | Cardiac Evalution &Theories II | 60 | 4 | 40 | 3 | 7 | 25 | 50 | 75 | 50 | 200 |
| 6.2 | 26CCPT602 | Cardiac catherization laboratory basic &advanced | 60 | 4 | 40 | 3 | 7 | 25 | 50 | 75 | 50- | 200 |
| 6.3 | 26CCTT603 | Bio Medical Statistics &Research Methodology | 45 | 3 | - | - | 3 | 100 | | - | - | 100 |
| 6.4 | 26CCTT604 | Infection control | 45 | 3 | - | - | 3 | 100 | | - | - | 100 |
| **Total** | | | | | | | **20** | **Total** | | | | **500** |

# SEMESTER 7 & 8

| Sl.No. | Subject Code | Course Titles | Credits | Maximum Marks | | | | Total |
|---|---|---|---|---|---|---|---|---|
| | | | Theory/ Practical Total credits | IA | | UA | | |
| | | | | Theory | Practical | Theory | Practical /Viva | |
| 7.1 | 26CCPT701 | Project | 10 | - | 100 | - | - | 100 |
| 7.2 | 26CCPT702 | Internship | 30 | - | 100 | - | - | 100 |
| **Total** | | | **40** | **Total** | | | | **200** |

# SEMESTER 1

**SYLLABUS CORE COURSES**

**GENERAL ANATOMY**

**L T P**

**4 0 2**

## Course objective:

A study of the anatomical structure of the human body

.• Bodystructure will be studied byorgan systems.

● Form-function relationships with emphasison clinically relevant anatomy.

● The laboratory studywill involve observing and learning from human skeletal collections and dissected cadavers and

● Preserved specimens.

**Unit I:**

**12HOURS**

**Organization of the Human Body** Introduction to the human body - Definition and sub divisions of anatomy- Anatomical position and terminology Regions and Systems of the body - Cavities of the body and their contents - Levels of organization of the body. Cell – Definition of a cell, shapes and sizes of cells - Parts of a cell – cell membranes cytoplasm, subcellular organelles and their main functions. Cell Division – Definition and main events that occur in different stages of mitosis and meiosis. Tissues – Tissues of the body - Definition and types of basic tissues - Characteristics, functions and locations of different types of tissues.

**Unit II:**

**12HOURS**

### Systems of Support and Movement

**1. Skeletal system** Skeleton – Definition, axial and appendicular skeleton with names and number of bones, Types of bones. Parts of bones. Functions of bones. Name location and general features of the bones of the body. Joints – Definition and types of joints with examples. Axes and kind of movements possible. Name, location, type, bones forming, movements possible.

**Muscular system** Parts of the skeletal muscle. Definition of origin and insertion. Name and location of the skeletal muscles of the body. Origin, insertion, nerve supply and action of large muscles like sternocleidomastoid, pectoralis major, deltoid, Biceps brachii, Triceps brachii, gluteus, gastronemius and diaphragm.

**Unit III:**

**12HOURS**

## Control Systems of the Body

**1. Nervous system** Sub-divisions of the nervous system , Spinal cord – Location, extent, spinal segments, external features and internal structure. Brain – Sub-divisions, location external features of medulla oblongata, pons, mid-brain, cerebellum and cerebrum. Meninges and spaces around them. Name and location of ventricles of brain and circulation of cerebrospinal fluid. Blood supply of the brain and spinal cord. Autonomic Nervous system – definition and functions

**2. Sense organs** Location and features of the nose, tongue, eye, ear and skin

**3. Endocrine system** Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced byeach gland.

**Unit IV:**

**12 HOURS**

## Maintenance of the Human Body

**1. Cardio-vascular system** Types and general structure of blood vessels. Structure and types of arteries and veins. Structure of capillaries. Shape, size, location, coverings, external and internal features of heart. Structure of heart wall, conducting system of the heart. Blood supply of the heart. The systemic arteries and veins. Name, location, branches and main-distribution of principal arteries and veins.

**2. Lymphatic system** Lymph, lymphatic vessels, name, location and features of the lymphatic organs.

**3. Respiratory system** Names of organs of respiration, Location and features of nose, pharynx, larynx, trachea, bronchi, lungs and pleura.

**Unit V:**

**12HOURS**

**1. Digestive system** Names of organs of digestion. Parts of alimentary canal and accessory organs. Location and features of mouth, pharynx, esophagus, stomach, small and large intestines. Location and features of salivary glands, pancreas, liver and gall bladder.

**2. Urinary system** Names of urinary organs, location and features of kidney, ureter, urinary bladder and urethra.

**3. Reproductive system** Names of male and female organs of reproduction. Location and features of scrotum, testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, prostate gland, penis and spermatic cord. Location and features of uterus and its supports, uterine tube, ovary vagina vulva and breast

**Anatomical Regions** Simple ideas about scalp, triangles of neck, axilla, cubital fossa, mediastinum, inguinal canal, femoral triangle, popliteal fossa.

**COURSE OUTCOME-**

At the end of the course the student should be able to:

1. Describe the structure and functions of the organ systems of the human body.
2. Describe how the organ systems function and interrelate.
3. Learn basic technical terminology and language associated with anatomy.
4. Develop a self- identityof what it means to be "human".

**Practicals and Demonstrations**

1. Demonstration of dissected specimens.

**Recommended books:**

1. **Richard L. Drake, A. Wayne Vogl & Adam W.M. Mitchell** — *Gray's Anatomy for Students* — Elsevier/Churchill Livingstone, **5th Edition (2023)**
2. **B.D. Chaurasia** — *Human Anatomy (Vol. I–III)* — CBS Publishers & Distributors, **latest Indian edition**
3. **Vishram Singh** — *Textbook of Anatomy* — Elsevier/Academic Publishers, **latest edition**
4. **Inderbir Singh** — *Textbook of Human Histology* — Jaypee Brothers Medical Publishers, **7th Edition (2021)**

## GENERAL PHYSIOLOGY

**L T P**
**4 0 2**

## COURSE OBJECTIVES

1. To understand the fundamental principles of human physiology, including homeostasis, cell functions, and membrane transport mechanisms.

2. To explain the structure and functions of major organ systems such as nervous, muscular, cardiovascular, respiratory, digestive, excretory, and endocrine systems.

3. To describe the physiological mechanisms involved in nerve conduction, muscle contraction, blood circulation, respiration, digestion, and urine formation.

4. To comprehend hormonal regulation, reproductive physiology, and the role of feedback mechanisms in maintaining internal balance.

5. To develop an integrated understanding of how different body systems coordinate to

maintain normal health and physiological functions.

**UNIT I-**

**12 HOURS**

**Ia. GENERAL PHYSIOLOGY** Concept of Homeostasis - Cell structure and functions - Transport across membranes

**Ib. NERVE & MUSCLE** Nerve structure, classification of nerve fibres, Muscles-classification, structure, Neuro-Muscular junction (NMJ), Muscle contraction – mechanism, types.

**Ic. BLOOD AND BODY FLUIDS** Body fluid volumes, compartments, and composition - Blood composition and functions - Plasma proteins – Erythrocytes – Morphology and functions , Leucocytes – Morphology and functions, Platelets-Morphology and functions Blood groups.

**UNIT II**

**12 HOURS**

**IIa. DIGESTIVE SYSTEM** Salivary glands- Nerve supply, functions of saliva, Gastric juice-composition & functions of gastric juice. Pancreatic juice – composition, functions and regulation of Pancreatic juice, Bile – composition, functions of bile & bile salts. Succusentericus and small intestinal movements, Deglutition, vomiting, functions of large intestine

**IIb.SKIN** Structure of sweat glands; temperature regulation

**IIc. EXCRETORY SYSTEM** Structure of Nephron and its blood supply, Juxta Glomerular Apparatus (JGA) Formation of urine- Filtration, Reabsorption & Secretion, Counter-Current mechanism, Micturition

**UNIT III**

**12HOURS**

**IIIa. ENDOCRINE SYSTEM** Hypothalamohypophyseal inter relationship - Anterior pituitary hormones and their functions - Posterior pituitary hormones and their actions - Thyroid hormones, biosynthesis and functions - Parathyroid hormones, functions Insulin, Glucagons, actions and Diabetes mellitus - Adrenal cortex hormones and their functions. Adrenal medullary hormones and their actions

**IIIb. REPRODUCTION**: Male reproductive organs - Spermatogenesis and Testosterone actions, Female reproductive organs - Menstrual cycle

**UNIT IV**

**12HOURS**

**RESPIRATORY SYSTEM** Structure of upper and lower respiratory tract. Muscles of respiration and Mechanism of respiration. Lung volumes and capacities – definitions, normal values, intra

Pulmonary and intra pleural pressures, surfactant Oxygen transport, Carbon-dioxide transport - Neural and chemical regulation of respiration - Hypoxia, cyanosis

**UNIT V**

**12HOURS**

**CARDIOVASCULAR SYSTEM** Cardiac muscle, action potential &conducting system of the heart, Cardiac cycle, ECG, heart sounds Cardiac output-Definition, factors regulating cardiac output and measurement of cardiac output. Blood pressure – Definition, measurement, factors maintaining B.P, Regulation of B.P, Regional circulation – Coronary and Cerebral

**NERVOUS SYSTEM** Structure & Properties of Neuron - Nerve – Classification, injury - Types and properties of Receptors Synapse and synaptic transmission, Reflex and its properties , Spinal cord – Ascending & Descending tracts Thalamus, Basal ganglia, Cerebellum, Cerebral cortex, Hypothalamus & Cerebrospinal fluid - Autonomic nervous system.

**SPECIAL SENSES** Vision, Audition, Olfaction, Gustation

**COURSE OUTCOMES :**

After successful completion of the course, the student will be able to:

1. Explain the concepts of homeostasis, cellular physiology, nerve and muscle functions, and blood components with their physiological significance.
2. Describe the mechanisms of digestion, absorption, excretion, temperature regulation, and maintenance of body fluid balance.
3. Analyze the role of hormones, endocrine glands, and reproductive processes in growth, metabolism, and reproduction.
4. Interpret the physiological basis of respiration, circulation, blood pressure regulation, cardiac output, and neural control mechanisms.
5. Demonstrate an understanding of sensory physiology, reflex actions, and higher functions of the nervous system relevant to health and disease.

**Practical:**

1. Recording of Arterial Blood Pressure (BP)

**Practical Demonstration:**

1. Determination of RBC count
2. Determination of WBC count
3. Differential leucocyte count (DLC)
4. Determination of Hb, PCV & ESR.
5. Determination of Blood groups, Bleeding and clotting time.
6. Charts & Instruments - Spotters

**Recommended Book**


1. **Arthur C. Guyton & John E. Hall** — *Guyton and Hall Textbook of Medical Physiology* — Elsevier, **15th Edition (2021)**
2. **K. Sembulingam & Prema Sembulingam** — *Essentials of Medical Physiology* — Jaypee Brothers Medical Publishers, **latest edition**
3. **A.K. Jain** — *Textbook of Physiology* — Avichal Publishing Company, **latest edition**
4. **W.F. Boron & E.L. Boulpaep** — *Medical Physiology* — Elsevier, **3rd Edition** (excellent detailed reference — widely used in allied health
5. **D. Venkatesh/ H.H. Sudhakar** -Basics of Medical Physiology (Third edition)

**GENERAL BIOCHEMISTRY**

**L T P**
**4 0 2**

## COURSE OBJECTIVES

1. To understand the chemical composition of carbohydrates, lipids, proteins, nucleic acids, enzymes, vitamins, and minerals present in the human body.

2. To explain the digestion, absorption, metabolism, and regulation of carbohydrates, lipids, and proteins under normal and diseased conditions.

3. To study the biochemical pathways involved in energy production, bioenergetics, and the role of ATP and respiratory chain in metabolism.

4. To familiarize students with clinically important biochemical disorders such as diabetes mellitus, galactosemia, phenylketonuria, and hypercholesterolemia.

5. To develop knowledge of nutrition, vitamins, minerals, and biochemical function tests relevant to health, disease, and clinical diagnosis.

**Unit – I:**

**12 hours**

**Carbohydrates** – Classification of carbohydrates and their biological importance, reducing property of sugars.

**Metabolism of Carbohydrates** : Digestion and Absorption of carbohydrates, steps of Glycolysis and energetics,steps of TCA cycle and energetics, steps of Glycogen synthesis and breakdown, significance of HMP shunt pathway, definition and steps of Gluconeogenesis,Galactose metabolism , Diabetes mellitus , Galactosemia.

**Bioenergetics:** Importance of ATP, outline of respiratory chain

**Unit – II:**

**12 hours**

**Lipids** – Classification of lipids, essential fatty acids, functions of cholesterol, triglycerides, and phospholipids

**Metabolism of Lipids** : Digestion and Absorption of lipids, steps of β oxidation of fatty acids, types and functions of lipoprotein, Lipid profile, hyper cholesterolemia

**Haemoglobin**: Structure and functions of Haemoglobin.

**Unit – III:**

**12 hours**

**Proteins** – Classification of amino acids, structure of proteins, plasma proteins, immunoglobulins.

**Metabolism of Proteins**: Digestion and absorption of proteins, transamination, deamination,

steps of urea cycle, Phenylketonuria, Alkaptonuria, Transmethylation, products derived from Glycine and tyrosine

**Nucleic acids:** Structure and function of DNA & RNA, Types of RNA

**Unit – IV:**

**12 hours**

**Enzymes:** Definition, classification, coenzymes, factors affecting enzyme activity, Types and examples of enzyme inhibition.

**Function Tests:** Liver function tests, Renal function tests

**Vitamins :** Classification, Fat soluble vitamins: Functions, source, deficiency manifestations of vitamin A, D E and K, Functions and deficiency manifestations of vitamin C, co-enzymic forms and deficiency manifestations of B-complex vitamins.

**Unit – V:**

**12 hours**

**Nutrition:** Basal metabolic rate (BMR), Specific Dynamic Action (SDA), Glycemic index, Dietary fiber, Balanced diet, Protein Energy Malnutrition (PEM).

**Minerals:** Calcium, Phosphorus, Iron, iodine. Outline of PH homeostasis

**COURSE OUTCOMES**

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

1. Classify and describe the structure, functions, and biological importance of carbohydrates, lipids, proteins, nucleic acids, enzymes, vitamins, and minerals.
2. Explain the major metabolic pathways of carbohydrates, lipids, and proteins, including glycolysis, TCA cycle, β-oxidation, urea cycle, and gluconeogenesis.
3. Interpret the biochemical basis of energy metabolism, ATP generation, and the role of the respiratory chain in cellular functions.
4. Correlate biochemical abnormalities with clinical conditions such as diabetes mellitus, lipid disorders, inborn errors of metabolism, and nutritional deficiencies.
5. Apply biochemical knowledge to understand laboratory investigations including liver and renal function tests, lipid profile, and acid–base balance.

**Practical**

1. Benedict's reagent
2. Barfoeds reagent
3. Foulgers reagent
4. Seliwanoff reagent

5. Fouchets reagent

**Text books Recommended:**

1. **Harper, Murray, et al.** — *Harper's Illustrated Biochemistry* — McGraw-Hill Education, **31st Edition (2023)**
2. **U. Satyanarayana & U. Chakrapani** — *Textbook of Biochemistry* — Elsevier/Books & Allied, **latest Indian edition**
3. **D.M. Vasudevan, Sreekumari & Kannan** — *Textbook of Biochemistry for Medical Students* — Jaypee Brothers Medical Publishers, **latest edition**
4. **Lippincott Williams & Wilkins (Ferrier)** — *Lippincott Illustrated Reviews: Biochemistry* — Wolters Kluwer, **latest edition**

**MEDICAL LAW AND ETHICS**

| L | T | P |
|---|---|---|
| 2 | - | - |

## COURSE OBJECTIVES

1. To introduce the fundamental concepts, goals, and scope of medical ethics and the professional code of conduct in healthcare practice.
2. To understand the basic ethical principles guiding medical decision-making and patient care.
3. To emphasize the importance of confidentiality, patient autonomy, informed consent, and patients' rights in clinical practice.
4. To familiarize students with ethical and legal issues related to malpractice, negligence, rational drug therapy, and sentinel events.
5. To create awareness about ethical considerations in special situations such as terminal care, euthanasia, and organ transplantation.

**TOPICS:**

**UNIT - I** **6 hours**

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

Basic principles of medical ethics

**UNIT - II** **6 hours**

Confidentiality

Malpractice and negligence

**UNIT - III** **6 hours**

Rational and irrational drug therapy

Autonomy and informed consent

**UNIT - IV** **6 hours**

Right of patients

Care of the terminally ill and Euthanasia

**UNIT - V** **6 hours**

Organ transplantation

Sentinel events

**COURSE OUTCOMES**

After completion of the course, the student will be able to:

1. Define medical ethics and explain its goals, scope, and relevance in professional healthcare practice.
2. Apply the basic principles of medical ethics while making clinical and professional decisions.
3. Maintain patient confidentiality and respect autonomy, informed consent, and patients' rights.
4. Identify ethical and legal issues related to malpractice, negligence, irrational drug use, and sentinel events.
5. Demonstrate ethical reasoning in complex situations such as end-of-life care, euthanasia, and organ transplantation.

**RECOMMENDED BOOKS**

- Medical ethics by C.M. Francis

## COMMUNICATION AND SOFT SKILLS

**L T P**
**2 - -**

**COURSE OBJECTIVES**

1. To develop basic language skills with emphasis on correct grammar, usage, and vocabulary for professional communication.
2. To enhance speaking skills through conversations, discussions, dialogues, short presentations, and correct pronunciation.
3. To train students in effective written communication including letters, e-mails, reports, case studies, journals, and patient data documentation.
4. To introduce the basic concepts, principles, and processes of effective communication in personal and professional contexts.
5. To familiarize students with health communication, its special characteristics, barriers, and strategies to overcome communication challenges.

**TOPICS:**

**UNIT - I** **6 hours**

Basic Language Skills: Grammar and Usage.

**UNIT - II** **6 hours**

Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.

**UNIT - III** **6 hours**

Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.

**UNIT - IV** **6 hours**

Basic concepts & principles of good communication

Special characteristics of health communication

**UNIT - V** **6 hours**

Types & process of communication

Barriers of communication & how to overcome

**COURSE OUTCOMES**

After completion of the course, the student will be able to:

1. Use appropriate grammar and language skills for clear and effective oral and written communication.
2. Communicate confidently in professional settings through discussions, presentations, and interpersonal interactions.
3. Prepare structured written documents such as letters, e-mails, reports, case studies, and patient records.
4. Apply principles and processes of effective communication in healthcare and workplace environments.
5. Identify barriers to communication and implement suitable strategies to overcome them, especially in health-related interactions.

# SEMESTER 2

# PATHOLOGY

**L T P**
**4 0 2**

**COURSE OBJECTIVES**

1. To introduce the basic concepts of disease, including cellular adaptation, inflammation, repair, and disturbances in circulation.
2. To understand the pathological basis of infections, deficiency diseases, and hematological disorders such as anaemias.
3. To explain the principles of tumor pathology, including terminology, etiology, pathogenesis, and mechanisms of tumor spread.
4. To study the pathological features of systemic disorders affecting major organs and systems of the body.
5. To develop a foundational understanding of disease processes to aid in clinical correlation and healthcare practice.

**Unit I:**

**12 HOURS**

**Introduction** Concept of diseases, classification of lesions - Inflammation and repair - Cellular adaption, Cell injury, necrosis and gangrene

Haemodynamic disorders including haemorrhage, shock, embolism and thrombosis.

**Unit II:**

**12 HOURS**

Infections Tuberculosis - Leprosyand Typhoid.

**Unit III:**

**12 HOURS**

Deficiency diseases Anaemias

**Unit IV:**

**12 HOURS**

Tumour Pathology Tumors – Terminologies, Nomenclature. Differences between benign and malignant tumors Tumors – Etiology, pathogenesis and spread of tumors.

**Unit V:**

**12 HOURS**

**Systemic Disorders**

**Heart:** Coronary Heart Disease (Ischemic Heart Disease) including atherosclerosis Congenital and Valvular Heart Diseases

**Respiratory System-** Bronchial Asthma, Emphysema, Bronchiectasis

**Bone and Joints** – Autoimmune diseases, septic arthritis, osteomyelitis, rheumatoid arthritis

**Diseases of the Kidney** - Diseases of other parts of the Urinary System

**Central Nervous System** CNS infections

**Muscle** - Diseases of muscle including poliomyelitis, myopathies

**Gastrointestinal System** Diseases of Esophagus, Stomach and Intestine, Diseases of Liver and Pancreas.

**Reproductive system**-Diseases of uterus, cervix, ovaries and testis.

## COURSE OUTCOMES

After completion of the course, the student will be able to:

1. Describe the mechanisms of cell injury, inflammation, repair, haemodynamic disorders, necrosis, and gangrene.
2. Explain the etiology, pathology, and clinical significance of infectious and deficiency diseases.
3. Differentiate between benign and malignant tumors and describe the pathogenesis and spread of neoplasms.
4. Identify pathological changes in systemic diseases affecting the cardiovascular, respiratory, renal, nervous, musculoskeletal, gastrointestinal, and reproductive systems.
5. Apply pathological knowledge to understand disease progression and support diagnosis and patient management in healthcare settings.

**Recommended Textbook:**

1. **Vinay Kumar, Abul K. Abbas & Jon C. Aster** — *Robbins & Cotran Pathologic Basis of Disease* — Elsevier, **11th Edition** (standard comprehensive text)
2. **Harsh Mohan** — *Textbook of Pathology* — Jaypee Brothers Medical Publishers, **latest Indian edition**
3. **Barbara Young, John W. Heath, Alan Stevens & D. James** — *Wheater's Functional Histology: A Text and Colour Atlas* — Elsevier, **6th Edition** (focused on morphological pathology)
4. **Edward C. Klatt & Vinay Kumar** — *Robbins Basic Pathology* — Elsevier, **11th Edition** (simplified student-friendly version)

## Pathology Lab

### Learning Objective

The Gross specimens and instruments relevant to the disease processes and diseases taught will be shown and explained.

### Unit I: Gross Specimens

1. Gangrene Bowel
2. Tuberculosis of Lung
3. Lipoma
4. Squamous cell Carcinoma of Foot

5. Infective Endocarditis
6. Left Ventricular Hypertrophy
7. Osteoclastoma
8. Osteogenic Sarcoma
9. Osteomyelitis
10. Chronic Pyelonephritis-Kidney

**Unit II: Haematology Instruments**:

1. Sahli`sHaemoglobinometer
2. Sahli`s pipette
3. Westergren`s tube
4. Wintrobe`s tube
5. Neubauer`s Chamber
6. RBC pipette
7. WBC pipette

**Recommended reading:** Harsh Mohan- Practical Pathology

## MICROBIOLOGY

**L T P**
**4 0 2**

### COURSE OBJECTIVES

1. To introduce the history, scope, and basic principles of microbiology and the structure and functions of microbial cells.
2. To understand the concepts of infection, routes of transmission, host immunity, and preventive measures in healthcare settings.
3. To familiarize students with principles and applications of sterilization, disinfection, biomedical waste management, and standard precautions.
4. To study common bacterial, viral, fungal, and parasitic pathogens along with the diseases they cause and their prevention and treatment.
5. To apply microbiological knowledge to clinical and hospital settings, including control of hospital-acquired and community infections.

### TOPICS:

**Unit I-**

**12 HOURS**

History and introduction to microbiology, study the morphology of bacterial cell and theirfunctions.

**Unit II-**

**12 HOURS**

Basic concepts about infection, (Source, portal of entry & spread) immunity, biomedical waste management and standard precautions

**Unit III-**

**12 HOURS**

Sterilization and disinfection procedures and their application.

**Unit IV-**

**12 HOURS**

Common bacterial, viral, fungal and parasitic pathogens and the diseases caused by them with preventive and treatment measures.

**Unit V-**

**12 HOURS**

Applied microbiology- Sexually transmitted diseases, hospital acquired infections, urinary tract infections, skin and soft tissue infections and anaerobic infections.

**COURSE OUTCOMES**

After completion of the course, the student will be able to:

1. Describe the morphology, classification, and functions of microorganisms and explain the basic concepts of microbiology.
2. Explain the sources, modes of transmission, and spread of infections and the role of immunity in disease prevention.
3. Apply principles of sterilization, disinfection, biomedical waste management, and standard precautions in healthcare practice.
4. Identify common microbial pathogens and relate them to the diseases they cause, along with preventive and therapeutic measures.
5. Demonstrate understanding of applied microbiology in managing sexually transmitted diseases, hospital-acquired infections, and other common infections.

**Recommended books**

1. **Apurba Sastry** — *Textbook of Microbiology* — Elsevier/Academic Publishers, **latest edition** (popular and easy-to-read)
2. **R. Ananthanarayan & C.K.J. Paniker** — *Textbook of Microbiology* — Universities Press, **latest edition** (classic Indian reference)
3. **Joel G. Holt et al.** — *Bergey's Manual of Systematic Bacteriology* — Springer, **2nd Edition** (detailed microbial taxonomy)
4. **Geo F. Brooks, Karen C. Carroll, Janet S. Butel & Stephen A. Morse** — *Jawetz, Melnick & Adelberg's Medical Microbiology* — McGraw-Hill Education, **latest edition**

## Microbiology Lab

**Learning Objective**

This module aims at providing practical knowledge in the recognition of common pathogenic organisms, infectious diseases and their lab diagnosis.

**1. Spotters**

a) Disposable syringe

b) Sterile cotton swab

c) Bacterial filters

d) Anaerobic jars

e) Gram stained smears showing grampositive cocci and gram negative bacilli

f) Gram stained smears showing Candida

g) Culture growth of Aspergillus and dermatophytes

h) Bacterial culture media plates (Blood agar, chocolate agar and MacConkey's agar)

i) Antibiotic susceptibility test

j) Ascaris lumbricoides

k) Taenia

**2. Clinical case discussion with charts**

a) Skin and soft tissue infections

b) Clostridial infections

c) Ring worm/ Tinea infections

d) Food poisoning

e) Gastroenteritis

**Learning outcomes:**

At the end of the module, the student must be able to have brief practical knowledge on infectious disorders.

**Recommended reading**

Practical Microbiology - Prof. C.P.Baveja

## PHARMACOLOGY

**L T P**

**4 0 2**

**COURSE OBJECTIVES**

1. To introduce the basic principles of pharmacology including routes of drug administration, pharmacokinetics, pharmacodynamics, and adverse drug reactions.

2. To understand the classification, mechanisms of action, therapeutic uses, and side effects of drugs acting on the autonomic, peripheral, and central nervous systems.

3. To study drugs used in the management of cardiovascular, respiratory, and hematological disorders.

4. To familiarize students with antimicrobial agents, cancer chemotherapy, antiseptics, and disinfectants along with their rational use.

5. To develop knowledge of hormones, gastrointestinal drugs, vitamins, vaccines, and miscellaneous agents used in clinical practice.

**TOPICS:**

**UNIT 1: Introduction**

**12hours**

General pharmacological principles-Definition-Routes of drug administration-Pharmacokinetics- Pharmacodynamics-Adverse drug effects

**UNIT 2: Drugs acting on Autonomic Nervous System, Peripheral Nervous System and Drugs acting on Central Nervous system**

**12hours**

General considerations-Cholinergic system & drugs-Anticholinergic drugs-Adrenergic drugs- antiadrenergic drugs-Drugs acting on autonomic ganglia.

Skeletal muscle relaxants-Local anaesthetics, General anaesthetics-Ethyl & Methyl alcohol- Sedatives, Hypnotics

Antiepileptic's-Antiparkinsonian drugs-Drugs used in mental illness-Opioid analgesics and Non opioid Analgesics

Nonsteroidal Anti-inflammatory drugs

**UNIT 3: Cardiovascular drugs, Drugs affecting Blood & Blood formation and Drugs onRespiratory system**

**12hours**

Cardiac glycosides, Antiarrhythmic drugs, Antianginal drugs, Antihypertensives and Diuretics, Haematinics, Erythropoietin,,Drugs affecting-coagulation,Fibrinolytic and Antiplatelet drugs,Treatment of cough and antiasthma tic drugs

**UNIT 4: Antimicrobial drugs**

**12hours**

General consideration-Antibiotics-Antibacterial agents-Ant tubercular drugs-Antifungal- Antileprotic-Antiviral-AntimalarialAntiamoebic-Antiprotozoal drugs-Cancer Chemotherapy, Antiseptic-Disinfectant-others.

**UNIT 5: Hormones & related Drugs, Drugs used in Gastrointestinal diseases &Miscellaneous drugs**

**12hours**

Corticosteroids,Antithyroid drugs and Drugs for Diabetes Mellitus,Treatment of Vomiting,Constipation,Diarrhoea and Treatment of peptic ulcer Vitamins,Vaccines,Sera and chelating agents.

**OURSE OUTCOMES**

After completion of the course, the student will be able to:

1. Explain general pharmacological principles and describe drug absorption, distribution, metabolism, excretion, and adverse effects.

2. Classify and explain the actions, uses, and side effects of drugs acting on the nervous system and skeletal muscles.

3. Describe the pharmacological management of cardiovascular, respiratory, and blood-related disorders.

4. Identify major antimicrobial and anticancer drugs and apply principles of rational drug therapy.

5. Demonstrate understanding of hormonal, gastrointestinal, and miscellaneous drugs including vitamins, vaccines, sera, and chelating agents.

**Recommended books:**

1. **K. D. Tripathi** — *Essentials of Medical Pharmacology* — Jaypee Brothers Medical Publishers, **latest edition** (standard Indian text)
2. **Bertram G. Katzung & Anthony J. Trevor** — *Basic and Clinical Pharmacology* — McGraw-Hill Education, **15th Edition** (widely used global text)
3. **Lippincott Williams & Wilkins** — *Lippincott Illustrated Reviews: Pharmacology* — Wolters Kluwer, **latest edition**
4. **Lauren B. Strom & Bryan Craig** — *Rang & Dale's Pharmacology* — Elsevier, **9th Edition** (strong mechanistic and clinical focus)

**Pharmacology Lab**

**Learning Objective**

This module is intended to discuss the various modalities of drug delivery and instrumentsrelevant to it.

**Instruments:**

**Needles** Intravenous, Intrathecal , Spinal, Intra arterial

**Students Discussion** Syringes: Tuberculin, Insulin, I.V cannula, Scalp. Vein set

**Students Discussion** Enema can, Inhalers, Spacers, Nebulizers

**Students Discussion** Tablets – Enteric coated, Sustained release, Sub-lingual

**Students Discussion** Capsules, Spansules, Pessary, Suppository

**Students Discussion** Topical Preparation, Ointment, Lotion, Powder, Drops – eye / ear

**Charts:**

Mechanism of action of drugs, adverse effects, toxicology

**Spotters:** drugs

**Text books suggested for reading:**


1. Text book of pharmacology for Dental &Allied Health Science 2rd edition PadmajaUdaykumar
2. Pharmacology for dental students Tara V Shanbhag, SmitaShenoy, VeenaNayak
3. Principles of pharmacology 2rd edition H.L.Sharma& KK Sharma


## MEDICAL TERMINOLOGIES AND RECORD KEEPING

| L | T | P |
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**COURSE OBJECTIVES**

1. To introduce the principles of medical terminology, including derivation of medical terms and their structural components.
2. To develop understanding of word roots, prefixes, suffixes, combining forms, and rules for plural formation.
3. To enable students to correctly construct and interpret medical terms related to various body systems.
4. To familiarize students with commonly used medical abbreviations, symbols, and clinical terminology used in healthcare settings.
5. To train students in interpreting medical orders, reports, and performing accurate data entry in electronic health record (EHR) systems

**TOPICS:**

**UNIT-I** **6 hours**

Derivation of medical terms.

Define word roots, prefixes, and suffixes.

**UNIT-II** **6 hours**

Conventions for combined morphemes and the formation of plurals

Form medical terms utilizing roots,suffixes,prefixes,and combining roots.

**UNIT-III** **6 hours**

Interpret basic medical abbreviations/symbols.

**UNIT-IV** **6 hours**

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

**UNIT-V** **6 hours**

Interpret medical orders/reports.

Data entry and management on electronic health record system.

Reference textbooks:

1. **Peter Norton** — *Introduction to Computers* — McGraw-Hill Education, **latest edition** (classic foundational text)
2. **Alex Leon & Mathew Leon** — *Fundamentals of Information Technology* — Leon Techworld, **latest edition**

**COURSE OUTCOMES:**

After completion of the course, the student will be able to:

1. Explain the derivation and structure of medical terms using roots, prefixes, suffixes, and combining forms.
2. Form and analyze medical terminology accurately, following accepted conventions and pluralization rules.
3. Interpret medical abbreviations, symbols, and terminology related to major body systems.
4. Read and understand medical orders, diagnostic reports, and procedural documentation.
5. Demonstrate basic competency in data entry, documentation, and management of patient information in electronic health record systems.

## BASIC COMPUTERS AND INFORMATION SCIENCE

**L T P**

**2 - -**

**COURSE OBJECTIVES**

**UNIT-I** **6 hours**

To introduce the basic concepts, characteristics, components, and generations of computers and computer languages.

**UNIT-II** **6 hours**

To familiarize students with computer hardware including input, output, processing, memory, and storage devices.

**UNIT-III** **6 hours**

To provide hands-on knowledge of operating systems, Windows environment, and common system operations.

**UNIT-IV** **6 hours**

To develop practical skills in using application software such as MS Word, MS Excel, and MS PowerPoint.

**UNIT-V** **6 hours**

To create awareness of computer networks, internet applications, and the role of computers in clinical and healthcare settings.

The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing,Excel data work sheet and Power Point presentation.Topics to be covered under the subject areas follows:

1. Introduction to computer:Introduction, characteristics of computer, block diagram ofcomputer,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:TheCentralProcessingUnit(CPU),main memory.

4. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk,optical disk,masss to rage devices.
5. Introduction of windows: History, features, desktop, taskbar, icons on the desktop,operation with folder, creating shortcuts, operation with windows (opening, closing,moving,resizing,minimizingand maximizing,etc.).
6. Introduction to MS-Word: introduction, components of a word window, creating,opening and inserting files,editing document file,page setting and formatting the text,saving the document,spell checking,printing the document file,creating and editing of table,mail merge.
7. Introduction to Excel: introduction, about worksheet, entering information, saving work books and formatting,printing the worksheet,creating graphs.
8. Introduction to power-point: introduction,creating and manipulatingpresentation,views,formatting and enhancing text,slide with graphs.
9. Introduction of Operating System: introduction, operating system concepts, types of operating system.
10. Computer networks: introduction, types of network (LAN, MAN, WAN, Internet,Intranet), network topologies (star, ring, bus,mesh, tree, hybrid),components of network.
11. Internet and its Applications: definition, brief history, basic services (E- Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.
12. Application of Computers in clinical settings.

Practical on fundamentals of computers- Learning to use MS office: MS word,MS Power Point,MS Excel.To install different software.

**COURSE OUTCOMES :**

After completion of the course, the student will be able to:

1. Explain the basic structure, functioning, and types of computers and operating systems.
2. Identify and use various input, output, memory, and storage devices effectively.
3. Operate the Windows operating system and manage files, folders, and system utilities.
4. Create, edit, format, and present documents, spreadsheets, graphs, and presentations using MS Office tools.
5. Apply computer and internet skills in clinical practice, data management, communication, and healthcare applications.