# SUNRISE UNIVERSITY ALWAR
# COURSE CURRICULUMFOR
# BACHELOR OF SCIENCE
# EMERGENCY AND TRAUMA CARE

**B. Sc Semester I, II (2025-26)**

**B. Sc Semester III, IV (2026-27)**

**B. Sc Semester V and VI (2027-28)**

## FIRST SEMESTER

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC101 | Anatomy | 40 | 60 | 100 | 4 |
| BSETC102 | Physiology | 40 | 60 | 100 | 4 |
| BSETC103 | Biochemistry | 40 | 60 | 100 | 2 |
| BSETC104 | English | 40 | 60 | 100 | 2 |
| BSETC105 | Basics of Computers | 40 | 60 | 100 | 2 |
| **PRACTICAL** | | | | | |
| BSETC106 | Anatomy Practical | 60 | 40 | 100 | 2 |
| BSETC107 | Physiology Practical | 60 | 40 | 100 | 2 |
| BSETC108 | Biochemistry Practical | 60 | 40 | 100 | 2 |
| BSETC109 | Basics of Computers Practical | 60 | 40 | 100 | 2 |
| **Total** | | **420** | **480** | **900** | **22** |

## SECOND SEMESTER

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC201 | Microbiology | 40 | 60 | 100 | 4 |
| BSETC202 | Pathology | 40 | 60 | 100 | 4 |
| BSETC203 | Pharmacology | 40 | 60 | 100 | 2 |
| BSETC204 | Basics of Nursing | 40 | 60 | 100 | 2 |
| BSETC205 | Environmental Science | 40 | 60 | 100 | 2 |
| BSETC206 | Hindi | 40 | 60 | 100 | 2 |
| **PRACTICAL** | | | | | |
| BSETC207 | Microbiology Practical | 60 | 40 | 100 | 2 |
| BSETC208 | Pathology Practical | 60 | 40 | 100 | 2 |
| BSETC209 | Pharmacology Practical | 60 | 40 | 100 | 2 |
| **Total** | | **420** | **480** | **900** | **22** |

## THIRD SEMESTER

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC301 | Emergency Medicine and Emergency Medical Services I(Part-I) | 40 | 60 | 100 | 6 |
| BSETC302 | Emergency Medicine and Emergency Medical Services II(Part-I) | 40 | 60 | 100 | 6 |
| BSETC303 | Basic Principles of Hospital Management | 40 | 60 | 100 | 4 |
| **PRACTICAL** | | | | | |
| BSETC304 | Emergency Medicine and Emergency Medical Services I(Part–I)Practical | 60 | 40 | 100 | 2 |
| BSETC305 | Emergency Medicine and Emergency Medical Services II(Part-I)Practical | 60 | 40 | 100 | 2 |
| BSETC306 | Basic Principles of Hospital Management Lab | 60 | 40 | 100 | 2 |
| **Total** | | **500** | **500** | **1000** | **22** |

## FOURTH SEMESTER

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC401 | Emergency Medicine and Emergency Medical Services I(Part-II) | 40 | 60 | 100 | 6 |
| BSETC402 | Emergency Medicine and Emergency Medical Services II(Part-II) | 40 | 60 | 100 | 4 |
| BSETC403 | Patient Care | 40 | 60 | 100 | 4 |
| **PRACTICL** | | | | | |
| BSETC404 | Emergency Medicine and Emergency Medical Services I(Part-II) Practical | 60 | 40 | 100 | 2 |
| BSETC405 | Emergency Medicine and Emergency Medical Services II (Part-II)Practical | 60 | 40 | 100 | 2 |
| BSETC406 | Patient Care Practical | 60 | 40 | 100 | 2 |
| **Total** | | **500** | **500** | **1000** | **20** |

## FIFTH SEMESTER

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | credits |
|---|---|---|---|---|---|
| BSETC501 | Emergency Surgery and Emergency Surgical Services | 40 | 60 | 100 | 4 |
| BSETC502 | Clinical Procedures And Instruments Emergency Services | 40 | 60 | 100 | 4 |
| BSETC503 | Toxicology | 40 | 60 | 100 | 4 |
| BSETC504 | Emergency Drugs I | 40 | 60 | 100 | 4 |
| **PRACTICAL** | | | | | |
| BSETC505 | Clinical –Emergency Surgery and Emergency Surgical Services Practical | 60 | 40 | 100 | 2 |
| BSETC506 | Clinical Procedures And Instruments Emergency Services Practical | 60 | 40 | 100 | 2 |
| **Total** | | **500** | **500** | **1000** | **20** |

## SIXTH SEMESTER

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC601 | Trauma Life &Cardiac Life Support | 40 | 60 | 100 | 4 |
| BSETC602 | Sociology | 40 | 60 | 100 | 4 |
| BSETC603 | Emergency Drugs II | 40 | 60 | 100 | 4 |
| **PRACTICAL** | | | | | |
| BSETC604 | Trauma Life & Cardiac Life Support Practical Cancer Biology Practical | 60 | 40 | 100 | 2 |
| BSETC605 | Comprehensive Viva | | | 100 | 2 |
| BSETC606 | Project | | | 100 | 4 |
| **Total** | | **500** | **500** | **1000** | **20** |

SEMESTER–1

## 1. ANATOMY

### ORGANIZATIONOFTHEHUMANBODY

1. **INTRODUCTION**
   - Introduction to human body
   - Definition and subdivision of anatomy
   - Anatomical position and terminology
   - Region and systems of the body
   - Cavities of the body and their contents
   - Levels of organization of the body

2. **CELLANDGENETICS**
   - Partsofcell–cellmembrane,cytoplasm,organelles,inclusionbodies,nucleus
   - Structure of chromosome, DNA, RNA.
   - Basics & fundamental soft Genetics, Kayo typing, Chromosome a disorders, prenatal diagnosis, genetic counseling and gene therapy.
   - Cell division– Definition and main events that occurring different stages of mitosis and meiosis.
   - Tissues–Definition, characteristic features and types with example.
   - Types of glands with example

### UNIT II:

### SYSTEMS OF SUPPORT AND MOVEMENT

1. **SKELETALSYSTEM**
   - Cartilage: Type and basic histological feature.
   - Bones: definition, classification based on location, name and number of bones with general feature of important bones, function of bone, histological feature of a compact bone.

## JOINTS – DEFINITION AND TYPES WITH EXAMPLE, AXIS AND MOVEMENTS

- Shoulder, elbow, hip, knee joints – type, bones, and ligaments involved, possible movements.

## MUSCULAR SYSTEM

- Types of muscle with basic histological features
- Parts of skeletal muscle
- Definition of origin and insertion
- Origin, insertion, nerve supply, action of **sternocleido mastoid**, **pectorals major**, **deltoid**, **gluteus maxim us**, and **diaphragm**

## UNIT III: CONTROL SYSTEMS OF THE BODY

### *NERVOUS SYSTEM*

- Subdivisions of the nervous system
- Spinal cord – location, extent, external features, and blood supply
- Brain – subdivision, location, external features of **medulla oblongata**, **pons**, **midbrain**, **cerebellum**, **cerebrum**, **thalamus**, and **hypothalamus**; location and subdivision of ventricles of brain; **Circle of Willis**
- Cranial nerves – name, number, attachment, area of distribution
- Spinal nerves – typical spinal nerve; name and location of plexuses; location and distribution of **brachial** and **lumbar plexus**
- Autonomic nervous system – sympathetic and parasympathetic nervous system; location of pre-ganglionic and post-ganglionic neurons

### *SENSE ORGANS*

- Location and features of **nose**, **tongue**, **eye**, **ear**, and **skin**

### *ENDOCRINE SYSTEM*

- Names of endocrine glands; location and features of **pituitary**, **thyroid**, **parathyroid**, **suprarenal**, **pancreas**, **ovaries**, and **testes**; names of hormones produced by each gland
- Microscopic features of **thyroid** and **pancreas**

**UNIT IV:**

**MAINTENANCE OF THE HUMAN BODY.**

1. **CARDIOVASCULARSYSTEM**
    - Types and general features of blood vessels. Structure and types of arteries and veins. Shape, size, location, covering, external and internal features of Heart. Conducting systemofheart.Bloodsupplyoftheheart.Name,location,branchesandmaindistribution ofprincipal arteries and veins

2. **LYMPHATICSYSTEM**
    - General features of Lymph node and lymphatic vessels. Name, location, external features, microscopic feature of to snip land spleen.

3. **RESPIRATORYSYSTEM**
    - Name the organs of respiration. Location and features of Nasal cavity, pharynx, larynx, trachea, lung & pleura. Mention the microscopic feature of lung.

4. **DIGESTIVESYSTEM**
    - Name the parts of the alimentary canal and accessory organs. Location & features of esophagus, stomach, small and large intestine. Location and feature of tongue, salivary glands, pancreas, liver and gallbladder. Microscope disfeature of liver.

5. **URINARYSYSTEM**
    - Names of urinary organs. Location and features of kidney, urethra, urinary bladder &urethra. Microscopic feature of kidney.

6. **REPRODUCTIVESYSTEM**
    - Names of male and female organs of reproduction. Location and features of testis, elided miss vas deferens, prostate gland and spermatic cord. Location & features of uterus, uterine tube, ovary and breast.

7. **EMBRYOLOGY**

Structure of gametes & Gametogenesis. Fertilization to development of embryo till 3rdweek.Derivativesofgermlayers.Teratogens, Structure and Functions of placenta.

## UNIT V: ANATOMICAL REGIONS

- Simple ideas about:
  - Scalp
  - Triangles of neck
  - Axilla
  - Cubital fossa
  - Carpal tunnel
  - Mediastinum
  - Umbilicus
  - Inguinal canal
  - Femoral triangle
- Sub sartorial canal
- Popliteal fossa

## PRACTICALS / DEMONSTRATIONS

1. Demonstrations of dissected specimens
2. Viewing projections of microscopic slides of:
   - Muscle
   - Bone
   - Cartilage
   - Spleen
   - Tonsil
   - Lung
   - Liver
   - Kidney
   - Thyroid
   - Pancreas

## REFERENCE BOOKS


1. *Maniple Manual for AHS* by Dr. Sampath Madhya Shad (Second Edition), CBS Publishers
2. *Handbook of Anatomy for Nurses* by Dr. P. Saraswathi
3. Ross and Wilson – *Anatomy and Physiology in Health & Illness*

## 2. PHYSIOLOGY

**UNIT – I**

### 1. GENERAL PHYSIOLOGY:

- Concept of homeostasis
- Cell structure and functions
- Transport across membranes

### 2. BODY AND BODY FLUIDS:

- Body fluid volumes, compartments and composition
- Blood composition and functions
- Plasma proteins – Types and functions
- Erythrocytes – functions, erythropoietin, anemia's
- Leucocytes – classification and functions
- Platelets – morphology and functions
- Blood coagulation – mechanism and name of anticoagulants
- Blood groups – basis of ABO & Rh grouping, erythrism blast sis foxtails

### 3. MUSCLE PHYSIOLOGY:

- Muscles – classification & structure of striated, non-striated & cardiac muscle
- Neuromuscular junction
- Mechanism of skeletal muscle contraction

### 4. DIGESTIVE SYSTEM:

- Salivary glands, functions of saliva
- Parts of stomach, composition & functions of gastric juice
- Pancreatic juice – composition and functions
- Bile – composition & functions of bile and bile salts
- Functions of small intestine & large intestine

**UNIT – II**

### 1. SKIN:

- Structure & functions

### 2. EXCRETORY SYSTEM:
**RENAL SYSTEM**

- Kidney: basic physiological anatomy (including juxtaglomerular apparatus – JGA)
- Formation of urine – glomerular filtration rate (GFR)
- Formation of urine – reabsorption & secretion
- Micturition reflex
- Dialysis – principle and types
- Renal function tests

**UNIT III: ENDOCRINE SYSTEM**

- Hypothalamo-hypophyseal interrelationship
- Posterior pituitary hormones and their actions
- Anterior pituitary hormones; growth hormone – actions
- Disorders: dwarfism, gigantism, acromegaly
- Thyroid hormones – actions
- Disorders: cretinism, myxoedema, Graves' disease (clinical features)
- Parathyroid hormones – functions, hyperparathyroidism
- Insulin and glucagon – actions, diabetes mellitus
- Adrenal medullary hormones & their actions
- Adrenal cortex hormones & their actions

**UNIT III: REPRODUCTIVE SYSTEM**

- Male reproductive organs – spermatogenesis, testosterone actions
- Female reproductive organs – menstrual cycle (endometrial and ovarian cycles) and its hormonal control
- Contraceptive methods – male and female

**UNIT IV: RESPIRATORY SYSTEM**

- Basic physiological anatomy
- Surfactant
- Mechanics of respiration
- Lung volumes and capacities
- Oxygen transport, carbon dioxide transport
- Nervous and chemical regulation of respiration
- Pulmonary function tests

## CARDIOVASCULAR SYSTEM

- Basic physiological anatomy, innervations of the heart
- ECG – normal waves, intervals, and their significance
- Cardiac cycle – mechanical events, heart sounds
- Blood pressure – definition, measurement, normal values, factors maintaining BP, regulation

## UNIT V

### *NERVOUS SYSTEM*

- Structure of neuron, neuroglial cells, synapse, and transmission across it
- Reflex – components of reflex arc, examples
- Functions of ascending tracts – anterior and lateral spinothalamic tracts, dorsal column
- Functions of corticospinal (pyramidal) tract – descending tract
- Functional areas of cerebral cortex
- Functions of basal ganglia, thalamus, hypothalamus, limbic system, and cerebellum

### *SPECIAL SENSES*

- Receptors for various special senses

## PRACTICAL DEMONSTRATION – HAEMATOLOGY

a. Enumeration of RBC count
b. Enumeration of WBC count
c. Differential count
d. Estimation of hemoglobin
e. Determination of blood group
f. Determination of bleeding time and clotting time

## CLINICAL PHYSIOLOGY

a. Measurement of blood pressure
b. Determination of radial pulse

## REFERENCE BOOK

1. *Human Physiology for BDS* by A.K. Jain, 4th Edition, Avichal Publishing Co.

## 3. BIO CHEMISTRY

**UNITI**

**CELLANDITSMOLECULES**

- **Cell –** Cell organelles, Fluid Mosaic Model, functions of cell membrane, Brief description oftransportacrossthecellmembrane.
- **Carbohydrates–** Definition,Classificationwithexamples,Sources,physiologicalsignificanceand HbA1c.
- **Lipids –** Definition, Classification with examples, Sources, Types of lipids present in the body, storage form, storage site, free cholesterol structure, functions of lipids, lipoproteinstructureanditsfunctions.
- **Nucleic acids –** Nucleotide, Nucleoside, types of nucleic acids,secondary structure of DNA& Its functions; Typesof RNA&itsfunctions.

**UNITII**

**PROTEINSANDENZYMES**

- **Proteins –** Definition, Classification, functions of proteins, Plasma proteins; Classification ofAminoacidswithexamples
- Hemoglobinstructure,Functionsofhemoglobin,hemoglobinderivatives,Abnormalhemoglobin
- **Enzymes:** Definition, Classification, coenzymes, Metalloenzymes, Factors affecting enzymeactivity, Regulation of enzymes, over view of Mechanism of enzyme action, Isoenzymes andClinical importanceofenzymes

**UNITIII**

**VITAMINS,MINERALS,NUTRITION**

**Vitamins:** Definition, Classification of VitaminsSources,RDA,Function&Deficiencysymptomsof

- FatSolubleVitamins(A,D,E&K);
- WaterSolubleVitamins(Thiamine,Riboflavin,Niacin,Biotin,Pantothenicacid,Pyridoxine,Folicacid,Cobalamine)and Vitamin C

**Minerals:**Definition,ClassificationofMinerals Sources,RDA,Function,Referencelevels&DeficiencySymptomsof

- Calcium,Phosphorus,IronCopper,Zinc,Sodium,Chloride,Iodine,Potassium,FluorineandSelenium.

2. **Nutrition:**BMR,SDA,Dietaryfibres,proteinEnergyMalnutritionandObesity

## UNIT IV – BIOENERGETICS AND METABOLISM

### *Bioenergetics*

- Electron transport chain and oxidative phosphorylation

### *Metabolism*

### Carbohydrates

- Digestion and absorption
- Glycolysis
- TCA cycle
- Metabolism of fructose and galactose

### Lipids

- Digestion and absorption
- Beta-oxidation of fatty acids
- Regulation of cholesterol level in the cell
- Outline of lipid transport

### Proteins

- Digestion and absorption
- Formation and disposal of ammonia
- Urea cycle
- Special products of lysine, tyrosine, and tryptophan

## UNIT V – MISCELLANEOUS

- Outline of DNA organization, replication, transcription, genetic code, and translation
- Organ function tests: liver, renal, and bone

## PRACTICAL

- Spotters

## REFERENCE BOOK

1. *Essentials of Biochemistry* by Satyanarayana, current edition, All India Publishers

## 4. ENGLISH

### UNIT I: SPOKEN COMMUNICATION

- Learning to read the phonetic symbols
- Stress
- Intonation
- Rhythm
- Commonly mispronounced words
- Correct pronunciation of important commonly used words in hospital practice

### UNIT II: VOCABULARY AND READING

- Special features of English vocabulary
- Common errors in choice of words
- Semi-technical vocabulary
- Collecting material from library on scientific topics
- Comprehensive exercises

### UNIT III: WRITING

- Writing letters regarding permission, leave, opening bank account, etc.
- Taking notes from lecture/reading materials
- Writing reports on patient care
- Summarizing scientific passages

### UNIT IV: GRAMMATICAL AND IDIOMATIC USAGE

- Correction of errors
- Types of interrogative sentences
- Active-Passive voice
- Tense
- Principles of precision, clarity, and specificity

**BASIC OF COMPUTERS**

**UNIT I: INTRODUCTION**

Computer basics – Types of computers – Hardware components – Input devices – Output devices – Storage devices – Memory – Units and sizes – Factors affecting performance – Operating systems – Applications software – Networking – LAN and WAN – Accessories – Backup – Computer virus – Software copyright.

**UNIT II: WORD PROCESSING**

Windows – Office automation – WORD processor – Open a new document – Toolbars – Menus – Font dialog box – Enter text – Scroll – Spelling checker – AutoCorrect – Undo and redo – Bullets and numbered lists – Indenting – Moving and copying – Find and replace – AutoShapes – Saving document – Preview and print.

**UNIT III: ELECTRONIC SPREADSHEET AND DATA PRESENTATION**

EXCEL spreadsheet – Grid of rows and columns – Active cell – Selecting range – Entering data – Editing data – Row and column labels – Adjusting width – Creating and copying formulae – Relative – Logical functions – Lookup function – Creating chart – Bar chart – Pie chart – Print and save.

POWERPOINT presentation – Creating slide shows – Building outline – Switching levels in outline – Adding pictures – Slide designs – Design templates – Formatting – Color scheme – Customized backgrounds – Inserting content – Hyperlink – Revolution in education.

**UNIT IV: DATABASE MANAGEMENT SYSTEM**

ACCESS database – Concept – Template – Primary key – Records and fields – Student roster database – Input mask – Adding records – Viewing data – Updating entries – Searching and querying – Sorting – Tables, Forms, and Reports.

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## UNIT V: APPLICATIONS IN HEALTHCARE AND MEDICINE

INTERNET – e-governance – access to information – communication facility – mechanics of E-mail – social transformation – electronic billing – drug information – information flow in IAY and radiology – storage of medical records – networking the organization – patient care – intelligent monitoring – scholarly information – health informatics – robotic assisted surgery – clinical decision support systems – telemedicine.

## REFERENCES (BOOKS)


1. Peter Norton, *Introduction to Computers*, 7th Edition, Tata McGraw Hill Education Private Limited, 2010.
2. Gary B. Shelly, Thomas J. Cashman, Misty E. Vermaat, *Microsoft Office 2007*, 1st Edition, Delmar Cengage Learning, 2010.

## 6. HOSPITALS & PATIENTS: ORIENTATION

### UNIT I: INTRODUCTION TO HOSPITAL ADMINISTRATION

- History
- Classification
- Organization structure
- Doorway to the hospital department
- Departmental teams
- Paramedical staff

### UNIT II: ANCILLARY DEPARTMENTS

- Laboratory (Lab)
- Pharmacy
- Imaging
- Physiotherapy / Speech therapy

### UNIT III: PATIENT SUPPORT SERVICES

- Admission procedures
- Medical insurance
- Dietary services

### UNIT IV: SOCIAL SERVICES AND HEALTH INFORMATION

- Social services
- Health information management
- Medical records
- Electronic medical records (EMR)

### UNIT V: MEDICOLEGAL AND SAFETY SERVICES

- Medico-legal issues
- Blood bank
- Hospital safety

## SEMESTER-II

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC201 | Microbiology | 40 | 60 | 100 | 4 |
| BSETC202 | Pathology | 40 | 60 | 100 | 4 |
| BSETC203 | Pharmacology | 40 | 60 | 100 | 2 |
| BSETC204 | Basics of Nursing | 40 | 60 | 100 | 2 |
| BSETC205 | Environmental Science | 40 | 60 | 100 | 2 |
| BSETC206 | Hindi | 40 | 60 | 100 | 2 |
| **PRACTICAL** | | | | | |
| BSETC207 | Microbiology Practical | 60 | 40 | 100 | 2 |
| BSETC208 | Pathology Practical | 60 | 40 | 100 | 2 |
| BSETC209 | Pharmacology Practical | 60 | 40 | 100 | 2 |
| **Total** | | **420** | **480** | **900** | **22** |

## SEMESTER– II

## MICROBIOLOGY

### *UNIT I: GENERAL BACTERIOLOGY*

- Introduction & history of microbiology
- Classification & morphology of bacteria
- Growth & nutrition
- Culture media & methods
- Sterilization & disinfection
- Fundamental aspects of antibacterial agents and antimicrobial susceptibility testing

### *UNIT II: IMMUNOLOGY*

- Infection and immunity
- Immunization schedule
- Applications of antigen-antibody reactions
- Hypersensitivity
- Tumor & transplantation immunology

### *UNIT III: VIROLOGY*

- Introduction to virology
- Viral hepatitis
- Poliomyelitis
- Rabies
- Human immunodeficiency virus (HIV)

### *UNIT IV: MYCOLOGY & PARASITOLOGY*

- Introduction to mycology
- Pathogenic yeasts & fungi
- Introduction to parasitology
- Amoebiasis
- Malaria
- Helminthic infections

### *UNIT V: APPLIED MICROBIOLOGY*

- Outline of common bacterial diseases, treatment & prevention:
    - Respiratory tract infections (upper & lower)
    - Meningitis (septic & aseptic)
    - Enteric infections (food poisoning & gastroenteritis)
    - Anaerobic infections
    - Skin & soft tissue infections

    - Urinary tract infections
    - Sexually transmitted diseases
    - Tuberculosis & leprosy
    - Hospital-acquired infections
- Biomedical waste management

**PRACTICAL EXERCISES**

- Spotters
- Gram staining

**REFERENCE BOOKS**


1. *Textbook of Microbiology* by Ananthanarayan & Panicker, 8th edition – Universities Press (India) Pvt. Ltd.
2. *Textbook of Microbiology* by C.P. Baveja, 4th edition – Arya Publications
3. *Textbook of Medical Parasitology* by C.K. Jayaram Paniker, 5th edition – Jaypee Publications
4. *Medical Parasitology* by C.P. Baveja & V. Baveja, 2nd edition – Arya Publications

# PATHOLOGY

## *UNIT I: GENERAL PATHOLOGY I*

**Topics:**

- Introduction to pathology
- Cellular pathology: adaptations of growth and differentiation
- Causes and mechanisms of cell injury
- Necrosis and apoptosis
- Pathologic calcification
- Cellular aging
- Acute inflammation: mediators, outcomes, morphologic patterns
- Chronic inflammation: causes, Granulomatous inflammation
- Tissue renewal, regeneration, and repair:
    - Healing by first and second intention
    - Scar formation and fibrosis
    - Coetaneous wound healing
- Hemodynamic disorders: edema, homeostasis, thrombosis
- Thrum boom boric disease
- Infarction
- Shock

## *UNIT II: GENERAL PATHOLOGY II*

**Topics:**

- Diseases of the immune system:
    - Innate and adaptive immunity
    - Components of immune system
    - Mechanisms of hypersensitivity reactions
    - Acquired Immunodeficiency Syndrome (AIDS)
- Neoplasia:
    - Definition and nomenclature
    - Characteristics of benign and malignant neoplasms
    - Molecular basis of cancer
    - Essential alterations for malignant transformation
    - Clinical aspects and laboratory diagnosis of cancer
- Environmental and nutritional pathology: common diseases
- Diseases of infancy and childhood: tumors and tumor-like lesions

## *UNIT III: SYSTEMIC PATHOLOGY I*

**Topics:**

- Blood vessels and heart:
    - Arteriosclerosis, atherosclerosis
    - Hypertensive vascular and heart disease

    - Ischemic heart disease
    - Valvular heart disease
    - Infective endocarditis, rheumatic fever, rheumatic heart disease
    - Cardiomyopathies
- Red blood cell and bleeding disorders: leukopenia, anemia, polycythemia, bleeding disorders
- Diseases of white blood cells: reactive proliferations
- Lymphoid and myeloid neoplasms – definitions and classifications
- Splenomegaly

***UNIT IV: SYSTEMIC PATHOLOGY II***

**Topics:**

- Lung:
    - Acute respiratory distress syndrome
    - Obstructive pulmonary diseases
    - Pulmonary infections
- Gastrointestinal tract: gastritis, peptic ulcer disease, inflammatory bowel diseases
- Liver and biliary tract:
    - Liver function tests
    - Hepatic failure, cirrhosis
    - Portal hypertension, jaundice
    - Cholelithiasis

## UNIT V: SYSTEMIC PATHOLOGY III

**Topics:**

***UROGENITAL SYSTEM***

- Renal function tests
- Nephritic syndrome
- Nephrotic syndrome
- Urolithiasis
- Pap smear

***THE BREAST***

- Carcinoma of the breast – types and classification

***ENDOCRINE SYSTEM***

- Thyroid gland: hyperthyroidism, hypothyroidism, thyroiditis, Graves' disease, diffuse and multinodular goiters
- Parathyroid glands: hyperparathyroidism
- Diabetes mellitus

***BONES, JOINTS, AND SOFT TISSUE***

- Fractures
- Osteomyelitis
- Arthritis: osteoarthritis, rheumatoid arthritis, infectious arthritis

***PERIPHERAL NERVE AND SKELETAL MUSCLE***

- Diseases of peripheral nerve
- Diseases of skeletal muscle

***CENTRAL NERVOUS SYSTEM***

- Infections of CNS – CSF findings

## REFERENCE BOOKS


1. *Pocket Companion to Pathologic Basis of Disease* by Robbins and Cotran, 7th edition – Saunders
2. *Pathology Quick Review and MCQs* by Harsh Mohan, 2nd edition – Jaypee Publications

## PHARMACOLOGY [UNDERGRADUATE]

### *UNIT I: GENERAL PHARMACOLOGY*

- Introduction to pharmacology – various terminologies
- Sources & routes of drug administration
- Absorption of drugs – factors modifying absorption
- Distribution of drugs
- Metabolism – Phase I & Phase II
- Excretion – routes, modes & kinetics of elimination
- Mechanism of drug action (brief)
- Drug interactions: synergism & antagonism
- Factors modifying drug action
- Adverse drug reactions (ADR) – reporting & monitoring

### *UNIT II: CENTRAL NERVOUS SYSTEM & RESPIRATORY SYSTEM*

- Introduction to CNS and neurotransmitters
- Drugs used in insomnia, sedatives, and hypnotics
- Anti-anxiety drugs: diazepam, alprazolam, others
- Antiepileptics: phenytoin, carbamazepine, sodium valproate
- General anesthetics: halothane, isoflurane, sevoflurane
- Local anesthetics: lignocaine, others
- Alcohols: ethyl alcohol, disulfiram
- Antiparkinsonians: levodopa + carbidopa
- Opioids: morphine, naloxone, tramadol, pentazocine
- NSAIDs: aspirin, ibuprofen, paracetamol, COX-2 inhibitors
- Drugs for bronchial asthma and cough

### *UNIT III: CARDIOVASCULAR SYSTEM & BLOOD*

- Drugs used in ischemic heart disease:
    - Nitrates
    - Calcium channel blockers: nifedipine, verapamil, others
    - Beta-blockers: propranolol, atenolol, metoprolol
    - Antiplatelets: aspirin, clopidogrel, others
    - Fibrinolytic drugs: streptokinase, others
- Drugs used in congestive cardiac failure (CCF): digoxin, others
- Shock management
- Diuretics – four groups: thiazides, loop, potassium-sparing, osmotic
- Hypertension: overview of drugs
    - Renin-angiotensin system: ACE inhibitors – captopril, ramipril, others
    - Receptor antagonists: losartan, others
- Antiarrhythmic drugs – classification: quinidine, lignocaine, amiodarone
- Drugs for hypercholesterolemia: statins
- Drugs for anemia: oral & parenteral iron, folic acid, vitamin B12, erythropoietin
- Coagulants and anticoagulants

***UNIT IV: HORMONES AND GIT***

- Contraceptives – oral and injectable
- Corticosteroids: glucocorticoids – hydrocortisone, prednisolone, dexamethasone; topical steroids
- Insulin and oral hypoglycemics: sulfonylureas, biguanides, others
- Thyroid and antithyroid drugs
- Sex hormones:
    - Estrogens and antiestrogens
    - Progesterone and anti-progestins
    - Androgens and anti-androgens

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**UNIT V: CHEMOTHERAPY AND MISCELLANEOUS**

***1. ANTIBIOTICS AND ANTIMICROBIALS***

- **Beta-lactam antibiotics:**
    - Penicillins: natural and semi-synthetic (amoxicillin, cloxacillin, clavulinic acid–sulbactam)
    - Cephalosporins: cephalexin, cefuroxime, cefixime, ceftriaxone, cefepime
- **Broad-spectrum antibiotics:** doxycycline, chloramphenicol, imipenem
- **Macrolides:** erythromycin, azithromycin, others
- **Quinolones:** ciprofloxacin, others
- **Sulfonamides:** cotrimoxazole
- **Aminoglycosides:** gentamicin, amikacin, others
- **Antitubercular drugs:** first-line anti-TB drugs
- **Antileprosy drugs:** dapsone, clofazimine
- **Antimalarials:** chloroquine, mefloquine, artemisinins
- **Antifungals:** amphotericin B, fluconazole, topical drugs
- **Antiviral drugs:** acyclovir, anti-HIV agents
- **Antiprotozoals:** metronidazole
- **Anthelmintics:** albendazole, praziquantel

***2. ANTICANCER DRUGS***

- **Antimetabolites:** methotrexate, 6-mercaptopurine
- **Alkylating agents:** cyclophosphamide, busulfan, cisplatin
- **Plant products:** vinblastine, vincristine, taxanes
- **Antibiotic agents:** actinomycin D
- **Monoclonal antibodies**

***3. IMMUNOMODULATORS***

- Cyclosporine, tacrolimus, azathioprine, steroids

## *4. TOXICOLOGY*

- Drugs used in common poisoning: organophosphates, methanol, benzodiazepines

**PRACTICALS**

- Spotters / charts

**REFERENCE BOOKS**


1. *Lippincott's Illustrated Reviews: Pharmacology*, 5th edition – Richard A. Harvey & Pamela C. Champe, Lippincott Williams & Wilkins
2. *Essentials of Medical Pharmacology*, 6th edition – K.D. Tripathi, Jaypee Publishers

## BASICS OF NURSING

### UNIT I: INTRODUCTION TO HEALTH

- Health care system and major health problems of the country
- Nature of disease patterns
- Technological advances and national health programmes
- Health for all by 2000 AD
- Role of health care workers in the health care delivery system
- Impact of illness on the individual, family, and community
- History of Nursing
- Communication skills: relationship with patients, process of communication

### UNIT II: CONCEPT OF NURSING

- Nursing processes:
    - Problem-solving approach
    - Assessment
    - Diagnosis
    - Planning
    - Implementation
    - Evaluation

### UNIT III: FIRST AID AND NURSING IN EMERGENCIES

- Definition, basic principles, scope, and rules
- Management of:
    - Wounds, hemorrhages, shock
    - Fractures, dislocations, muscle injuries
    - Respiratory emergencies, resuscitation, unconsciousness
    - Burns, scalds, foreign bodies in skin, eyes, ear, nose, throat, and stomach
- Frostbite, effects of heart cramps, bites and stings
- Poisoning
- Transporting injured persons

### UNIT IV: PERSONAL HYGIENE AND HEALTH

- Care of skin, mouth, eyes, nails, hair
- Menstrual hygiene, clothing, mental health
- Common health problems due to poor personal hygiene
- Comfort, rest, and sleep
- Hospital housekeeping

### UNIT V: HEALTH EDUCATION

- Introduction to principles and methods of health education
- Use of audiovisual aids

## ANATOMY

1. *Manual of Anatomy and Physiology* – Prof. P. Saraswathi (Vengadam Publishers, Ph: 044-26263469)
2. *BD Chaurasia: Gene*
3. *ral Human Anatomy*

## PHYSIOLOGY

1. *Basics of Medical Physiology* (3rd edition) – D. Venkatesh / H.H. Sudhakar

## BIOCHEMISTRY

1. *Textbook of Biochemistry for Paramedical Students* – Dr. P. Ramamoorthy
2. *Essentials of Biochemistry* – U. Sathyanarayana

## PSYCHOLOGY

1. *Psychology – The Science of Behaviour* (5th edition, 1982) – Neil Carlson & William Buskist, Allyn and Bacon
2. *Psychology Made Simple* – Abraham Sperling, Ph.D.; Advisory editor: M.S. Gill, MA, Ph.D., W.H. Allen, London

## ELEMENTS OF HEALTH AND NURSING PRINCIPLES

1. *Potter and Perry's Fundamentals of Nursing* – Clint & Geraldine, 2011, Elsevier Publications

## ENGLISH

1. *Effective English Communication* – Krishna Mohan & Meenakshi Raman, Tata McGraw–Hill Publishing Company Limited, New Delhi (Approx. Rs. 200)
2. *English for Colleges and Competitive Exams* – Dr. R. Dyvadatham, Emerald Publishers (Approx. Rs. 150)

**MICROBIOLOGY**

1. *Textbook of Microbiology* – Prof. C.P. Baveja
2. *Textbook of Microbiology* – Satish Gupte

**PATHOLOGY**

***Textbook of Pathology* – Harsh Mohan, 3rd edition**

**PHARMACOLOGY**

1. *Prep Manual for Undergraduates in Pharmacology* – Tara V. Shanbag, 2nd edition
2. *Pharmacology for Dental and Allied Health Sciences* – Padmaja Udaykumar, 3rd edition

**MEDICAL PHYSICS**

1. *Basic Radiological Physics* – K. Thayalan, Jaypee Brothers, New Delhi
2. *Lasers and Optical Fibre Communications* – P. Sarah, I.K. International Publishing House Pvt. Ltd., New Delhi **COMMUNITY MEDICINE** : 1. *Park's Textbook of Preventive and Social Medicine* – 23rd Edition

## ENVIRONMENTAL SCIENCE AND COMMUNITY MEDICINE

### UNIT I: NATURAL RESOURCES, ECOSYSTEMS & BIODIVERSITY

1. **Natural Resources**
    - Introduction & multi-disciplinary nature of environmental studies
    - Earth resources and human interactions
    - Renewable & non-renewable resources
    - Water resources
    - Mineral resources
    - Food resources: Effects of modern agriculture, fertilizer/pesticide problems, waterlogging, and salinity
    - Energy resources
2. **Ecosystems**
    - Concept of an ecosystem
    - Structure and functions of an ecosystem
    - Producers, consumers, and decomposers
    - Cycles in the ecosystem
3. **Biodiversity**
    - Introduction and definitions: genetic, species, and ecosystem diversity
    - India as a mega-diversity nation
    - Hotspots of biodiversity
    - Threats to biodiversity
    - Poaching of wildlife & man-wildlife conflicts
    - Endangered and endemic species of India
    - Conservation of biodiversity

### UNIT II: POLLUTION & SOCIAL ISSUES

1. **Pollution**
    - Definition, causes, effects, and control measures
    - Types: Air, water, soil, marine, noise, thermal, nuclear hazards
    - Solid waste management
    - Role of individuals in pollution prevention
2. **Social Issues, Human Population & Environment**
    - From unsustainable to sustainable development
    - Urban problems related to energy
    - Water conservation and rainwater harvesting
    - Global warming, acid rain, ozone layer depletion
    - Nuclear accidents & nuclear holocaust
    - Environmental Protection Act

### UNIT III: CONCEPT OF HEALTH & DISEASE

- Definition & philosophy of health
- Dimensions of health
- Concept of wellbeing & spectrum of health
- Responsibility of health
- Determinants of health & health indicators

- Concept of disease & causation
- Natural history of disease & iceberg phenomenon
- Concepts of control & prevention
- Modes of intervention
- Changing pattern of disease

**UNIT IV: EPIDEMIOLOGY**

- Definition & explanation of epidemiology
- Aims & epidemiologic approach
- Basic measurements in epidemiology & tools of measurement
- Measurements of mortality & morbidity
- Epidemiologic methods:
    - Descriptive epidemiology
    - Analytical epidemiology

casecontrolstudy–analyticalepidemiology–Cohortstudy–Experimentalepidemiology – RCT – Association & Causation Uses of epidemiology (Criteria for judging causality) – Infection disease epidemiology Definitions Dynamic of disease transmission & Modes oftransmission – Disinfection – Definition Types Agents used Recommended disinfectionprocedures-Investigation ofan epidemic.

**Unit–V:**

- **ENVIRONMENT&HEALTH:**Definition&components(environmentsanitationenvironmental sanitation)
- **Water:** Safe & Whole some water Requirements Uses source of water supply (sanitarywell)-Purification of water (1). Large scale purification, (2). Small scale purification–Water Quality– Specialtreatmentof water
- **Air**:CompositionTheairofoccupiedroomdiscomfort.Airpollution&itseffects.Prevention &Controlofairpollution
- **Ventilation**:DefinitionStandardsofventilationTypesofventilation.Light,Noise&Radiation,Metrologicalenvironment, Housing,Disposal ofwaste Excretadisposal

**PRACTICALS:**

1. EpidemiologyProblems
2. Environmentalspotters

**REFERENCEBOOK**

1. TextbookofPreventiveandSocialmedicinebyk.Park,21st edition,publishedbyBanarsidasBhanot

**SEMESTER–III**

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC301 | Emergency Medicine and Emergency Medical Services I(Part-I) | 40 | 60 | 100 | 6 |
| BSETC302 | Emergency Medicine and Emergency Medical Services II(Part-I) | 40 | 60 | 100 | 6 |
| BSETC303 | Basic Principles of Hospital Management | 40 | 60 | 100 | 4 |
| **PRACTICAL** | | | | | |
| BSETC304 | Emergency Medicine and Emergency Medical Services I(Part–I)Practical | 60 | 40 | 100 | 2 |
| BSETC305 | Emergency Medicine and Emergency Medical Services II(Part-I)Practical | 60 | 40 | 100 | 2 |
| BSETC306 | Basic Principles of Hospital Management Lab | 60 | 40 | 100 | 2 |
| **Total** | | **500** | **500** | **1000** | **22** |

## SEMESTER –III

## EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES PART-I THEORY: ACCIDENT AND EMERGENCY CARE TECHNOLOGY

### Course Description

This course is designed to help students understand the **philosophy, objectives, theories, and processes of accident and emergency care** in various supervised clinical settings. It emphasizes acquiring **knowledge, understanding, and practical skills** to handle emergencies effectively.

### UNIT I: TRIAGE AND GENERAL EMERGENCIES

***Concepts and Principles of Disaster Nursing***

- Understanding disaster nursing philosophy
- Role and responsibilities in disaster response

***Causes and Types of Disasters***

1. **Natural Disasters**
    - Earthquakes, Floods, Cyclones, Epidemics
2. **Man-made Disasters**
    - Fire, Explosions, Accidents, Violence, Terrorism, Biochemical incidents, War

***Policies Related to Disaster Management***

- International policies
- National, state, and institutional policies

### UNIT II: DISASTER PREPAREDNESS

***Team and Resources***

- Formation of emergency/disaster teams
- Guidelines, protocols, and standard operating procedures
- Equipment and resources readiness

***Coordination and Involvement***

- Community participation
- Government and non-governmental organization collaboration
- International agencies support

***Legal and Health Aspects***

- Legal aspects of disaster management
- Health impact and post-disaster consequences, including **Post-Traumatic Stress Disorder (PTSD)**

***Rehabilitation***

- Physical, psychosocial, financial support
- Relocation and reintegration

## UNIT III: EMERGENCY CARE MANAGEMENT

***Concepts***

- Principles and priorities in emergency care
- Scope of emergency services

***Organization of Emergency Services***

- Physical setup of emergency departments
- Staffing and roles
- Equipment and supplies management
- Protocols and standard procedures

***Triage***

- Concept and importance of triage
- Role of the triage personnel in prioritizing patients

***Coordination***

- Involvement of different hospital departments and external facilities

***Principles of Emergency Management***

- Planning and execution of emergency response
- Integration of prevention, preparedness, response, and recovery

## UNIT IV: LIFE SUPPORT & RESUSCITATION

### Basic Life Support (BLS)

- **Purpose:** Maintain cardiopulmonary function until full recovery or advanced care.
- **Focus:** Airway, breathing, circulation (ABC).

#### Key Components

1. **Cardiopulmonary Function and Survival Actions**
   - Maintaining oxygenation and circulation
   - Preventing cardiac arrest complications
2. **Adult Basic Life Support**
   - Chest compressions (rate & depth)
   - Rescue breaths
   - Automated External Defibrillator (AED) use
3. **Advanced Cardiac Life Support (ACLS)**
   - Management of arrhythmias
   - Use of medications (e.g., epinephrine) and advanced airway techniques
4. **Pediatric Basic Life Support**
   - Modified compression-to-ventilation ratio
   - Age-appropriate airway management
5. **Special Resuscitation Situations**
   - Drowning
   - Hanging
   - Pregnancy (left lateral tilt, modifications in compressions)
6. **Safety**
   - During CPR training
   - During actual rescue operations

## UNIT V: BASIC PRINCIPLES OF TRAUMA CARE (ATLS)

### Mechanics of Injury

- **Kinetic energy principles:** Impact energy determines severity of injury
- **Pattern recognition:** Helps anticipate associated injuries

#### Primary Survey (ABCDE)

- **Airway** with cervical spine protection
- **Breathing**
- **Circulation** with hemorrhage control
- **Disability** (neurological status)
- **Exposure/Environment**

#### Secondary Survey

- Head-to-toe examination after primary survey stabilization
- Identification of non-life-threatening injuries

#### Reassessment

- Continuous monitoring of vital signs and patient response

**Life-Threatening Injuries**

- Immediate recognition and intervention
- Prioritize according to severity

**Shock**

- Types: Hypovolemic, Cardiogenic, Neurogenic, Septic
- Categories: Mild, Moderate, Severe

**Scoring Systems**

- **Revised Trauma Score (RTS)** – predicts survival
- **Glasgow Coma Scale (GCS)** – assesses neurological function

**PRACTICALS – EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES (IPART-I)**

**1. ECG & Cardiac Monitoring**

- **12-Lead ECG**
  - Placement of leads
  - Recognition of **normal ECG patterns**
  - Basic interpretation of rhythm and waves

**2. Vascular Access & Sampling**

- **IV Consulate**
  - Site selection, aseptic technique, securing cannula
- **Blood Sampling**
  - Venipuncture technique
  - Labeling and transport of samples

**3. Triage & Patient Transport**

- **Triage**
  - Prioritizing patients based on severity
  - Using color codes (Red, Yellow, Green, Black)
- **Patient Transportation**
  - Use of **spine board**
  - Use of **scoop board**
  - Safe handling of trauma patients

**4. Life Support**

- **Basic Life Support (BLS)**
  - CPR for adults and children
  - Rescue breaths & chest compressions
- **Advanced Cardiac Life Support (ACLS)**
  - Defibrillation
  - Drug administration in emergency scenarios

**5. Safety & Infection Control**

- **Biomedical Waste Disposal**
  - Segregation and safe disposal of clinical waste

**6. Trauma Management**

- **Splinting & Immobilization**
  - Upper and lower limb fractures
  - Cervical spine precautions

## 1. EMERGENCYMEDICINE&EMERGENCYMEDICALSERVICESI

## THEORYPART-II

**UNITI**

**MEDICALEMERGENCIES**

- Hypoglycaemia
- Hyperglycemia,DKA,HONK

**UNITII**

- Poisoning
- Anaphylaxis

**UNITIII**

- Hypothermia
- Hyperthermia
- Mentalillness

**UNITIV**

**FLUIDSANDELECTROLYTES**

- Fluid administration(TypesofFluids)
- Formulas(Hypo andHypernatremia)
    a) Dehydration
    b) Overhydration
- Electrolyte imbalance(Sodium,Potassium,Bicarbonate,Chloride)

**UNITV**

Acid Base Emergencies: (Respiratory and Metabolic Acidosis / Alkalosis) Interpretation

## 2. PRACTICAL - EMERGENCY MEDICINE& EMERGENCY MEDICALSERVICES IPART-II

**CHART**

**SPBL**

**INSTRUMENTS/APPARATUS**

**BASIC PRINCIPLES OF HOSPITAL MANAGEMENT**

**UNIT I – Introduction to Management & Organization**

- Evolution and definition of **management**
- Importance of management in healthcare
- Core functions: **Planning, Organizing, Staffing, Motivating, Leading, Controlling**
- Management of healthcare units (brief overview)
- **Individual and group behavior** in organizations
- Concepts: **Perception, Motivation, MBO (Management by Objectives), Organizational Development**

**UNIT II – Planning & Management of Hospitals & Clinical Services**

- **Hospital infrastructure planning**
  - Physical layout and space allocation for various functions
  - Planning **clinical services, equipment, and human resources**
- Types of hospitals and their functions
- Organization and administration of clinical services
  - **Outpatient services**
  - Workflow, patient management, and clinical operations

**UNIT III – Organizing Support Services & Hospital Management**

- **Support services**
  - Imaging, CSSD, Laboratory, Blood Bank, Diet, Medical Records, Mortuary
  - Housekeeping, maintenance (water, electricity, civil, HVAC, lifts), pest control, transport, security
- **Procurement & inventory**
  - Purchasing procedures, storing, issuing, equipment maintenance, biomedical contracts
- **Financing of healthcare**
  - Trends, sources, hospital classification by financing
  - Roles of financial institutions in healthcare

**UNIT IV – Personnel & Quality Management, Marketing**

- **Personnel Management**
  - Manpower planning, training & development, team building, conflict management, performance appraisal, office rules
- **Quality Management**
  - Strategic planning, marketing, professional audit, QA programs, Quality Circle, TQM, patient satisfaction, ISO 9000
- **Hospital efficiency**
  - Computerization of hospital departments
  - Evaluation techniques for efficiency and effectiveness of hospital & medical care services

**UNIT V – Ethical, Legal & Current Issues in Hospital Management**

- **Laws and medico-legal issues**
  - Hospital laws, law of torts, autopsy, dying declaration, Consumer Protection Act (CPA)

- **Modern hospital services & technology**
  - Waste management, telemedicine, organ transplantation, rehabilitation services, health insurance
- **Operations Research & Quantitative Methods**
  - Application in hospital administration and nursing services


**3.** Principles of Hospital Administration and Planning, BM Sakharkar, 2nd edition, Jaypee Brothers, Medical Publishers Pvt. Limited,2008

**4.** Hospital Administration And Management: Theory And Practice, R. Kumar S.L.Goel,Deepand Deep Publications, 2007

**SEMESTER– IV**

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC401 | Emergency Medicine and Emergency Medical Services I(Part-II) | 40 | 60 | 100 | 6 |
| BSETC402 | Emergency Medicine and Emergency Medical Services II(Part-II) | 40 | 60 | 100 | 4 |
| BSETC403 | Patient Care | 40 | 60 | 100 | 4 |
| **PRACTICL** | | | | | |
| BSETC404 | Emergency Medicine and Emergency Medical Services I(Part-II) Practical | 60 | 40 | 100 | 2 |
| BSETC405 | Emergency Medicine and Emergency Medical Services II (Part-II)Practical | 60 | 40 | 100 | 2 |
| BSETC406 | Patient Care Practical | 60 | 40 | 100 | 2 |
| **Total** | | **500** | **500** | **1000** | **20** |

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## SEMESTER –IV

### 1. EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES IIPART-ITHEORY

**COURSEDESCRIPTION:**

This course is designed to help the students to develop an understanding of the philosophy,objectives, theories and process of accident and emergency care technology in various SupervisedClinical settings. It is aimed at helping the students to acquire knowledge; understanding and skills intechniquesof practicetheminSupervisedClinicalsettings.

**COURSECONTENT**

**UNITI**

**RESPIRATORY EMERGENCIES:**

- Foreign body obstruction
- Chronic obstructive pulmonary disease (COPD)
- Asthma
- Pneumonia, Pulmonary edema, ARDS
- Common medication in respiratory problems
- (Meter dose inhaler, nebuliser)
- Mechanical ventilator – General principles, Basic modes of ventilation, NIV

**UNIT II**

**GASTROINTESTINAL EMERGENCIES:**

- Abdominal pain
- Peptic ulcer disease
- Cholecystitis
- Hepatitis
- Pancreatitis
- Abdominal aortic aneurysm
- Bowel obstruction
- Hernias
- Gastrointestinal bleeding

**UNIT III**

1. **CARDIOVASCULAREMERGENCIES:**

- Anginapectoris
- Myocardial infarction(MI),ThrombolyticTherapy
- CongestiveCardiacFailure(CCF)
- AorticAneurysm
- HypertensiveEmergencies
- 12leadECGandInterpretation
- HeartBlockandCardiacArrhythmias

2. **CENTRALNERVOUSSYSTEMEMERGENCIES:**

- Meningitis
- Stroke
- Seizure
- Statusepileptics
- Syncope

**UNIT IV**

1. **GENITOURINARYEMERGENCIES:**

- Renalfailure
- Urolithiasis
- Urinarytractinfection
- Haematuria

2. **HEMATOLOGICALDISORDERS:**

- Redbloodcelldisorders:
- Anaemiaand Types/Polycythaemia
- Whiteblooddisorders
- Platelet abnormalities

**UNIT V**

**ENDOCRINEANDMETABOLICEMERGENCIES:**

- DiabeticKetoacidosis
- Hyperosmolarcoma
- Thyroidcrisis
- Diabetesinsipidus
- Vomiting
- Diarrhea

**UNITI**

**DERMATOLOGICALEMERGENCIES:**

- Viral infections:
- Vermicelli
- Herpes zoster
- Acuteleprosyreactions
- Autoimmunedisorders:
- Pemphigusvulgaris
- Systemiclupuserythematosus
- Toxicdisorders:
- Acuteerythroderma
- Severepruritus,
- Scabies

**UNIT II**

**COMMUNICABLE DISEASE:**

Causative organism, Mode of transmission, Signs and symptoms, Prophylaxis, Investigation and common treatment of following diseases:

Meningitis, Hepatitis, Malaria, Tuberculosis, Dengue. Acquired Immunodeficiency syndrome(AIDS), Typhoid, Plague, Polio,Tetanus,Chicken pox,Cholera, Measles, Category: III infection, control measures, precautions during transfer

**UNITIII**

**EMERGENCIESDUETO VENOMOUSBITESANDSTINGS**:

- Snakebite
- Scorpionstings
- Spiderbite
- Beeandwaspstings
- Dogbite
- Cat bite
- Humanbite
- Monkeybite

**UNITIV**
**INDUSTRIALHAZARDS**

- Electrocution
- Amputation
- Crushinjury
- Fallfromheight
- Assaults

**UNITV**

1. **OBSTETRICALEMERGENCIES**

- Placentapraevia
- PostPartumHemorrhage
- Amnioticfluidembolism

**2. MENTAL HEALTH EMERGENCIES**
• Aggressive patient
• Suicide

**3. PAEDIATRIC EMERGENCIES**
• Neonatal resuscitation
• Paediatric resuscitation
• Meconium aspiration
• Drowning
• SIDS (Sudden Infant Death Syndrome)
• Neonatal Seizure
• Febrile convulsion
• Shock

**4. PRACTICAL - EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES-II PART-II [U.E.]**
• CHARTS
• PBL INSTRUMENTS / APPARATUS

**5. PATIENT CARE [I.E.]**

**UNIT I**
**1. INDIVIDUAL PATIENT CARE**
• The Art of History taking
• Physical examination (GPE & different systems)
• Care of Unconscious patient
• Diagnosis of Brain death

**UNIT II**
**PATIENT HYGIENE**
• Definition and principles relevant to hygiene
• Factors influencing hygiene
• Care of skin and its appendages, mouth, eyes, ear, nose, perineum and clothing
• Common health problems of poor personal hygiene

## UNIT III – VITAL SIGNS

**TEMPERATURE**
- Definition and normal body temperature
- Factors affecting normal body temperature
- Assessment of normal body temperature

**PULSE**
- Definition and normal pulse rate
- Characteristics of normal pulse
- Factors influencing pulse
- Alterations in pulse
- Assessment of pulse

**RESPIRATION**
- Definition and normal respiratory rate
- Characteristics of normal respiration
- Factors influencing respiratory rate
- Alterations in respiration

**BLOOD PRESSURE**
- Definition and normal blood pressure
- Factors influencing normal blood pressure
- Assessment of blood pressure

## UNIT IV – ELECTROLYTE BALANCE

- Factors affecting fluid, electrolyte, and acid-base balance
- Care of patients with fluid and electrolyte imbalance
- Starting IV infusion

## UNIT V – BODY MECHANICS

- Movement of patient, lifting, and transporting

**INFECTION CONTROL**
- Infection cycle
- Universal precautions
- Barriers technique

## 6. BIOSTATISTICS [I.E.]

**COURSE DESCRIPTION:**
Introduction to basic statistical concepts; methods of statistical analysis; and interpretation of data.

**BEHAVIOURAL OBJECTIVES:**
• Understands statistical terms.
• Possesses knowledge and skill in the use of basic statistical and research methodology.

### UNIT I – INTRODUCTION

• Meaning, definition, characteristics of statistics
• Importance of the study of statistics
• Branches of statistics
• Statistics and health science including nursing
• Parameters and estimates
• Descriptive and inferential statistics
• Variables and their types
• Measurement scales

### UNIT II – TABULATION OF DATA

• Raw data, the array, frequency distribution
• Basic principles of graphical representation
• Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, ogive
• Normal probability curve

### UNIT III – MEASURE OF CENTRAL TENDENCY

• Need for measures of central tendency
• Definition and calculation of mean – ungrouped and grouped
• Meaning, interpretation, and calculation of median – ungrouped and grouped
• Meaning and calculation of mode
• Comparison of the mean, median, and mode

## BIOSTATISTICS

**COURSE DESCRIPTION:**

Introduction to basic statistical concepts; methods of statistical analysis; and interpretation of data.

**BEHAVIOURAL OBJECTIVES:**

• Understands statistical terms.
• Possesses knowledge and skill in the use of basic statistical and research methodology.

### UNIT I – INTRODUCTION

• Meaning, definition, characteristics of statistics
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• Branches of statistics
• Statistics and health science including nursing
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• Variables and their types
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• Raw data, the array, frequency distribution
• Basic principles of graphical representation
• Types of diagrams – histograms, frequency polygons, smooth frequency polygon, cumulative frequency curve, ogive
• Normal probability curve

### UNIT III – MEASURES OF CENTRAL TENDENCY

• Need for measures of central tendency
• Definition and calculation of mean – ungrouped and grouped
• Meaning, interpretation, and calculation of median – ungrouped and grouped
• Meaning and calculation of mode
• Comparison of mean, median, and mode
• Guidelines for the use of various measures of central tendency

## UNIT IV – MEASURES OF VARIABILITY

- Need for measures of dispersion
- The range, the average deviation
- The variance and standard deviation
- Calculation of variance and standard deviation – ungrouped and grouped
- Properties and uses of variance and standard deviation

## UNIT V – PROBABILITY AND STANDARD DISTRIBUTIONS

- Meaning of probability and standard distribution
- The Binomial distribution
- The Normal distribution
- Divergence from normality – skewness, kurtosis

## RECOMMENDED BOOKS


- B.K. Mahajan & M. Gupta (1995), *Textbook of Preventive & Social Medicine*, 17th Edition, 2002

**SEMESTER– V**

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | credits |
|---|---|---|---|---|---|
| BSETC501 | Emergency Surgery and Emergency Surgical Services | 40 | 60 | 100 | 4 |
| BSETC502 | Clinical Procedures And Instruments Emergency Services | 40 | 60 | 100 | 4 |
| BSETC503 | Toxicology | 40 | 60 | 100 | 4 |
| BSETC504 | Emergency Drugs I | 40 | 60 | 100 | 4 |
| **PRACTICAL** | | | | | |
| BSETC505 | Clinical –Emergency Surgery and Emergency Surgical Services Practical | 60 | 40 | 100 | 2 |
| BSETC506 | Clinical Procedures And Instruments Emergency Services Practical | 60 | 40 | 100 | 2 |
| **Total** | | **500** | **500** | **1000** | **20** |

## Semester – V

### 1. Emergency Surgery & Emergency Surgical Services

**Objectives:**
The student should gain knowledge and recognition of major abdominal illness and trauma, ask for relevant investigations, so as to avoid any delay in resuscitation.

**UNIT I – Principles of Anesthesia**

- General Anesthesia
- Local Anesthesia
- Regional Anesthesia

**UNIT II – Wounds and Suturing**

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

**UNIT III – Burns**

- Skin Anatomy
- Classification of Burn
- Special Burn considerations

**UNIT IV – Foreign Body Obstruction**

*(You can continue adding details here as per your syllabus.)*

**UNITIV**

**GASTROINTESTINALSYSTEM**

- Acute Appendicitis
- Acute Pancreatitis
- Intestinal obstruction
- Upper GIB lead
- Lower GIB lead
- Duodenalandgastriculcer
- Renal colic

**UNITV**

**TRAUMA**

- Head injury
- Thoracic injuries
- Blunt trauma, Penetrating trauma

**TORSION**

**2. CLINICALS - EMERGENCY SURGERY & EMERGENCY SURGICALSERVICES-PRACTICALS**

**Recitals – Emergency Surgery & Emergency Surgical Services**

**Assisting in various procedures like:**

- Central Venous Access
- Suturing of Wounds
- Tracheotomy
- Intercostals Drainage
- Needle Thoracocentesis
- Cricothyroidectomy
- Skills of intubation in a Mannequin

**Clinical Procedures and Instruments – Emergency Services Course Description:**

This course is designed to help students develop an understanding of the philosophy, objectives, theories, and processes of accident and emergency care technology in various supervised clinical settings. It aims to help students acquire knowledge, understanding, and practical skills in emergency care techniques in supervised clinical settings.

**Instrumentation in Emergency Services**

**UNIT I**

- Introduction to Biomedical Engineering (Man–Machine Relationship)
- ECG (Electrocardiogram)
- DC Defibrillator
- Intravenous Pumps
- Laryngoscope, Ambu Bag, Suction Machine
- $SPO_2$ Monitoring, Temperature Monitoring
- BP Apparatus, BP Monitoring (NIBP – Non-Invasive Blood Pressure)

**Clinical Procedures in Emergency Room**

**Vital Sign Measurement**

- Pulse assessment
- Respiratory assessment
- Temperature assessment
- Blood pressure assessment
- $SPO_2$ measurement
- Pain score (VAS – Visual Analog Scale)

**Respiratory Procedures**

- Endotracheal intubation and extubation
- Administration of drugs through ET tube
- Tracheostomy insertion and management
- Suctioning an artificial airway
- Nasotracheal suctioning
- Insertion of nasopharyngeal and oropharyngeal airway
- Mechanical ventilation
- Intercostal drain insertion
- Thoracentesis

**UNIT II: Intermediate Airways**

- Laryngeal Mask Airway (LMA)
- Oesophageal–Tracheal Combitube

**Non-Invasive Assessment and Support of Oxygenation and Ventilation**

- Pulse oximetry
- Carbon dioxide monitoring
    - Capnometry
- Oxygen therapy
- Delivery systems for inhaled medication:
    - Nebulizers
    - Metered Dose Inhaler (MDI)

**UNIT III: Cardiovascular Procedures (Observation)**

- Cardiac monitoring
- Central venous pressure (CVP) monitoring
- Insertion of arterial line
- Central venous cannulation
- Transcutaneous cardiac pacing
- Transvenous cardiac pacing
- Pericardiocentesis
- Cardioversion
- Defibrillation

**UNIT IV: Poison Decontamination**

- Activated charcoal administration
- Whole bowel irrigation

**Genitourinary Procedures**

- Urethral catheterization

- Peritoneal dialysis
- Placement and management of external arteriovenous shunt (assisting)
- Continuous arteriovenous hem filtration (assisting)

**UNIT V: Intravenous Therapy**

- Insertion of intravenous catheter
- Administration of parenteral nutrition
- Blood and blood product administration

**Neurologic Procedures**

- Lumbar puncture (observation/assisting)

## 3. CLINICAL PROCEDURES AND INSTRUMENTS EMERGENCY SERVICES –

### PRACTICALS

**ECG Interpretation**

**• Spotter Identification**

- Thermometer
- BP apparatus
- Stethoscope
- Glucometer
- Intraosseous infusion
- LMA – (Laryngeal Mask Airway)
- Combitube
- ET intubation
- Nebuliser
- Ventilator
- Capnography
- Pulse oximeter
- Chest X-ray interpretation
- ABG – Interpretation (Arterial Blood Gas Analysis)
- ACLS – Advanced Cardiovascular Life Support
- ATLS – Advanced Trauma Life Support

## TOXICOLOGY

### UNIT I

- Define the term **poison**
- The four ways in which a poison may enter the body
- General principles of **assessment and management** of poison and overdose

### UNIT II

- **Opiates toxicity**
- **Organophosphates**
- **Carbon monoxide**
- **Cyanide**

### UNIT III

- **Caustics**
- **Copper sulphate**
- **Dioxin toxicity**

### UNIT IV

- **Hydrocarbons**
- **Tricycle antidepressant toxicity**
- **Metals** – Arsenic / Iron

### UNIT V

- **Acetaminophen overdose**
- **Poisonous alcohols** – Methanol
- **Poisonous plants** – Oleander, Oduvanthalai

## SOCIOLOGY

## INTRODUCTION TO MEDICAL SOCIOLOGY

### UNIT I

- Definition, objectiveses, scope, and its relevance to patient care
- Difference between **sociology of medicine** and **sociology in medicine**
- Historical development of medical sociology
- Sociological perspective of health and illness

### UNIT II

- Health, society, and education

### UNIT III – SOCIAL EPIDEMIOLOGY

- Meaning of social epidemiology
- Socio-cultural factors bearing on health in India
- Common occupational diseases and prevention of occupational diseases

### UNIT IV – HEALTH PROFESSION AND ORGANIZATION

- Medical social service in a hospital
- Hospital as a social organization
- Professional qualities of a physician

### UNIT V – PRINCIPLES OF SOCIOLOGY

- Definition and objectives of sociology
- Nature and scope of sociology
- Origin and nature of society
- Social groups – characteristics and functions
- Social control
- Culture and civilization

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4. Quirk Randolph and Greenbaum Sidney, 1987, *A University Grammar of English*, Hong Kong: Longman Group (FE) Ltd / Pearson
5. V. Rajaraman, *Fundamentals of Computers*, 2004
6. Michael Miller, *Absolute Beginner's Guide to Computer Basics*, Que Publisher, September 1, 2009
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9. Wallace Wang, *Microsoft Office 2013 for Dummies*, July 31, 2013
10. *Pocket Companion to Robbins & Cotran Pathologic Basis of Disease*
11. Prof. C.P. Bhaveja, *Microbiology for Dental Students*
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14. *Emergency Medicine* – Tintinalli, *Book of Emergency Medicine*

**SEMESTER–VI**

| PAPERS CODE | PAPERSNAME | INTERNAL | EXTERNAL | TOTAL | Credits |
|---|---|---|---|---|---|
| BSETC601 | Trauma Life &Cardiac Life Support | 40 | 60 | 100 | 4 |
| BSETC602 | Sociology | 40 | 60 | 100 | 4 |
| BSETC603 | Emergency Drugs II | 40 | 60 | 100 | 4 |
| **PRACTICAL** | | | | | |
| BSETC604 | Trauma Life & Cardiac Life Support Practical Cancer Biology Practical | 60 | 40 | 100 | 2 |
| BSETC605 | Comprehensive Viva | | | 100 | 2 |
| BSETC606 | Project | | | 100 | 4 |
| **Total** | | **500** | **500** | **1000** | **20** |

**SEMESTER–VI**

1. **TRAUMA**
2. **& CARDIAC LIFE SUPPORT**

***UNIT I***

- BLS
- TRIAGE
  - Primary Survey
  - Secondary Survey
- Airway & Ventilatory Management
- Shock
- Central & Peripheral Venous Access
- Thoracic Trauma – Tension Pneumothorax
- Other Thoracic Injuries
- Abdominal Trauma – Blunt Injuries
- Abdominal Trauma – Penetrating Injuries

***UNIT II***

- Spine and Spinal Cord Trauma
- Head Trauma
- Musculoskeletal Trauma
- Electrical Injuries
- Thermal Burns
- Cold Injury

***UNIT III***

- Paediatric Trauma
- Trauma in Pregnant Women
- Workshop: BLS
- Workshop: Cervical Spine Immobilization
- Imaging Studies in Trauma

***UNIT IV***

- BLS
- The Universal Algorithm for Adult ECC
- Ventricular Fibrillation / Pulseless Ventricular Tachycardia Algorithm

**UNIT IV (continued)**

- Pulseless Electrical Activity (PEA) / Asystole Algorithm
- Bradycardia Treatment Algorithm
- Tachycardia Treatment Algorithm

**UNIT V**

- Hypotension / Shock
- Acute Myocardial Infarction
- Paediatric Advanced Life Support
- Airway Management
- Defibrillation
- Drugs Used in ACLS
- Emergency Cardiac Pacing
- AED (Automated External Defibrillator)
- Techniques for Oxygenation and Ventilation

## 1. EMERGENCYDRUGS–I

**Drug introduction, indication, contraindications, side – effects and routes of administration with doses of following drugs:**

**UNITI**

- Adrenaline(Epinephrine)
- Aspirin
- Atropine
- Adenosine
- Amiodarone

**UNITII**

- BetablockersEsmolol/
- Metoprolol/Lebatolol
- Calcium channel blockers Verapamil/
- Diltiazem /Nifidipine/
- Amlodipile

**UNITIII**

- Calciumchloride
- Calciumgluconate
- Chlorpromazine
- Diazepam
- Dexamethasone

**UNITIV**

- Dextrose
- Dopamine
- Dobutamine

**UNITV**

- Furosemide
- Flumazenil
- Fentanyl

## 2. EMERGENCYDRUGS–II

**UNITI**

- Glucagon
- Glyceryltrinitrate
- Hydrocortisone
- Lidocaine
- Lorazepam
- Mannitol

**UNITII**

- MorphineSulphate
- Midazolam
- Naloxonehydrochloride
- Norepinephrine
- Phenytoin
- Paracetamol
- Salbutamol

**UNITIII**

- Vasopressors
- Drugsinobstetrics–Oxytocin /Methergine /Carboprost
- IVfluids
- PotassiumChloride
- Succinylcholine

**UNITIV**

- Atracurium
- Vecuronium
- Propofol

**UNITV**

- Ketamine
- Tranexamicacid
- MagnesiumSulphate

**3.** COMPREHENSIVEVIVA

**INTENSIVECARESERVICES &TRAINING[I.E**

## ALLIED HEALTH SCIENCE INTERNSHIP

### Regulations for Internship

Internship is an essential part of training in which an Allied Health Science graduate:

- Acquires practical skills
- Applies knowledge gained during the course of study

### Objectives

1. To facilitate reinforcement of academic and clinical training
2. To develop professionalism, communication, and team-building skills
3. To help understand ethical practices, including:
    - Rights and dignity of patients
    - Ethical conduct and professional obligations to colleagues, patients, families, and the community

### Duration and Eligibility

- Internship is **compulsory** for all candidates
- Commences **after completion and passing of all academic and clinical requirements**
- Duration: **1 year**
- Degree is awarded **after satisfactory completion of the internship**

### Evaluation of Internees

- Both **formative and summative evaluation** are carried out
- **Log Book**: Maintained by all internees; no marks are allotted
- **Satisfactory completion of the Log Book** is essential to complete the internship

**Assessment Process:**

- **Day-to-day assessment**: Carried out by supervisors during internship postings (recorded in Log Book)
- **Summative evaluation**: Based on supervisor observation and Log Book records
- **Certificate of satisfactory completion** issued by Head of Department
- University awards the degree after confirmation of satisfactory completion

### Internship Project

- Each intern is allocated a project by the respective Head of Department
- **Marks**: Total 100 (including viva)
- **Credits**: 6 credits (30 hours per credit) → Total 180 hours
- **Duration**: Maximum of 6 months