**B.Sc. ACCIDENT AND EMERGENCY CARE TECHNOLOGY ACADEMIC YEAR 2018-19**

**I YEAR**

| S.NO | NAME OF THE SUBJECTS | TOTAL HOURS ALLOTTED |
|---|---|---|
| 1. | ANATOMY | 60 HOURS PER YEAR |
| 2. | PHYSIOLOGY | 60 HOURS PER YEAR |
| 3. | BIOCHEMISTRY | 30 HOURS PER YEAR |
| 4. | EMERGENCY MEDICAL SERVICES | 80 HOURS PER YEAR |
| 5. | ENGLISH | 60 HOURS PER YEAR |
| 6. | INTRODUCTION TO COMPUTERS | 50 HOURS PER YEAR |
| 7. | HOSPITAL ORIENTATION | 1000 HOURS PER YEAR |

**PAPER - 1**

**ANATOMY**

**COURSE DESCRIPTION**

The course is designed to assist students to acquire knowledge of the normal structure of human body and its functions. To ensure that the students understand the alteration in anatomical structure and function in disease in the practice of accident and emergency care technology

**OBJECTIVES**

At the end of the course, the student will be able to

1. Describe the anatomical terms, organization of human body and structure of cell, tissue, membranes and glands.
2. Describe the structure and functions of bones and joints.
3. Describe the structure and functions of systems in body.
4. Have knowledge about Applied Anatomy

**COURSE CONTENT**

**INTRODUCTION TO ANATOMICAL TERMS ORGANIZATION OF THE HUMAN BODY**

-Human Cell structure
-Tissues -Definition, Types, characteristics, classification, location, functions and formation
-Membranes and glands - Classification and Structure

-Upper limb – clavicle, scapula, humerous, radius, ulna
-Lower limb - femur, hipbone, sacrum, tibia, fibula, Vertebral column

**THORAX**

Intercostal space, pleura, bony thoracic cage, ribs, sternum & thoracic vertebrae

**HEART**

-Surface anatomy of heart
-Chambers of the heart
-Valves of the heart
-Major blood vessels of heart
-Pericardium
-Coronary arteries

-Muscles of thorax
-Muscles of upper limb - (arm & fore arm)
-Flexor and extensor group of muscles (origin, insertion, action)

**EXCRETORY SYSTEM**

Kidneys
Ureters
Bladder

**NERVOUS SYSTEM**

Autonomic nervous system
Peripheral nervous system
Central nervous system

**METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

**METHODS OF EVALUATION**

1. Written Test
2. Record Book
3. Assignments
4. Oral Presentations

**PRACTICALS**

**Mannequins To Be Provided**

**SPOTTERS (OSPE)**

**Osteology –** Bones identification (right and left side) and prominent features and muscle attachment of the bone, clavicle, scapula, radius, ulna, humerous, femur, hip bone, sacrum, tibia, and fibula.

**PHYSIOLOGY**

**COURSE DESCRIPTION**

The course is designed to assist students to acquire the knowledge of the normal physiology of various human body systems and understand the alternation in physiology in disease and practice of accident and emergency care technology

**OBJECTIVES**

At the end of the course, the student will be able to:

1. Describe the physiology of cell, tissues, membranes and glands.
2. Describe the physiology of blood and functions of heart.
3. Demonstrate blood cell count, coagulation, grouping, Hb; BP and Pulse monitoring
4. Describe the physiology and mechanism of respiration.
5. Demonstrate spirometry
6. Describe the physiology of Excretory system

**COURSE CONTENT**

**THE CELL**

Cell Structure and functions of the various organelles.
Endocytosis and exocytosis
Acid base balance and disturbances of acid base balances (Alkalosis, Acidosis)

## CARDIO-VASCULAR SYSTEM

Physiology of the heart
Heart sounds
Cardiac cycle, Cardiac output.
Auscultatory areas.
Arterial Pressures, Blood Pressure
Hypertension
Electro cardiogram (ECG)
Blood

- Composition of Blood, functions of the blood and plasma proteins, o classification and protein.
- o Pathological and Physiological variation of the RBC. o Function of Hemoglobin
- Erythrocyte Sedimentation Rate (ESR).
- o Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
- Platelets – formation

## RESPIRATORY SYSTEM

Respiratory movements.
Definitions and Normal values of Lung volumes and Lung capacities.

## EXCRETORY SYSTEM

Normal Urinary output
Micturition
Renal function tests, renal disorders.

## REPRODUCTIVE SYSTEM

Formation of semen and spermatogenesis.
Brief account of Menstrual Cycle, oogenesis

## CENTRAL NERVOUS SYSTEM

Functions of CSF
Reflexes.
Sympathetic and parasympathetic outflow
Impulse conduction
Structure of neuron
Degeneration and regeneration of nerve fibers
Cerebral blood flow

## ENDOCRINE SYTEM

- Functions
  - Pituitary,
  - Thyroid,
  - Parathyroid,
  - Adrenal
  - Pancreatic Hormones

## DIGESTIVE SYSTEM

- Physiological Anatomy of the GIT.
- Food Digestion in the mouth, stomach, intestine
- Absorption of foods
- Role of bile in digestion.

**METHODS OF TEACHING**

1. Lecture cum discussion
2. Demonstration
3. Lab visit
4. Practical work record

**METHODS OF EVALUATION**

1. Written Test
2. Record Book
3. Assignments
4. Oral Presentations

**PRACTICAL**

- OSPE
- The compound Microscope
- Determination of Blood Groups.
- Measurement of Vitals: HR, BP, Respiratory rate, Temperature, SPO2

## BIOCHEMISTRY

### COURSE DESCRIPTION

The course is designed to assist students to acquire the knowledge of the normal biochemical functioning of human body and alterations.

### OBJECTIVES

At the end of the course, the student will be able to

1. Identify the basic principles of biochemistry.
2. Synthesize the knowledge of these principles in various situations.

### COURSE CONTENT

1. **CARBOHYDRATES**
   Glucose and Glycogen Metabolism
2. **PROTEINS**
   Classification of proteins and functions, Metabolism
3. **LIPIDS**
   Classification of lipids and functions, Metabolism
4. **ENZYMES**
   Definition &
   functions
   Classification
   Factors affecting enzyme activity
   Active site – Coenzyme – Enzyme Inhibition – Units of enzyme

5. **VITAMINS & MINERALS**
   Fat soluble vitamins(A,D,E,K)
   Water soluble vitamins – B-complex vitamins- principal elements(Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chlorine and sulphur)-
   Trace elements – Calorific value of foods – Basal metabolic rate(BMR) – respiratory quotient (RQ) Specific dynamic action(SDA) – Balanced diet – Marasmus – Kwashiorkar

6. **ACIDS AND BASES**
   Definition
   Ph Values
   Henderson – Hasselbalch equation
   Buffers

OSPE
Urine strip test, Urine Nitrite test.

**METHODS OF TEACHING**
Lecture cum discussion
Demonstration
Lab visit
Practical work record

**METHODS OF EVALUATION**
1. Written Test
2. Record Book
3. Assignments
4. Oral Presentations

**PAPER – 2**

**EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES – I**

**COURSE DESCRIPTION**

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 Supervised Clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of practice them in Supervised Clinical settings.

**COURSE CONTENT**

**1. INTRODUCTION TO EMS**

History of EMS & Current trends
Understanding Emergency Medicine (the specialty, Its pros & cons)
Roles & responsibilities of emergency medical technician\
Medico-Legal issues
Abandonment,
sexual harassment,
consent & referral
Negligence
DNR orders, Coroner & medical examiner cases
Principles of life support- Basic-Adult and Paediatric
Triage

Critical points in functioning of EMS at a national level
Required components of EMS system
Existing EMS in India

1. **HOSPITALS & PATIENTS: ORIENTATION**

History
Classification
Organization & structure
Doorway to the hospital department
Departments & Team
Paramedical Staff
Ancillary departments
Lab
Pharmacy
Imaging
Physio/speech/
Patient support services
Admission
Medical insurance
Dietary
Social services
Health information management
Medical records
Electronic Medical Records
Medicolegal issues
Hospital safety

**2.HEALTH ASSESSMENT**

Purposes
Process of Health assessment
Health history
Physical examination:
Methods - inspection, Palpation, Percussion, Auscultation and Olfaction
Consent counselling

**3.PRE HOSPITAL TRANSPORT- ROLES & RESPONSIBILITIES**

Interfacility transport
Types of Ambulance
Ambulance-Communication system, Communication Equipments
Ambulance - communication with base and physician
Safety during transport
Sequence of procedure for Emergency call - Preparation & scene management
Confidentiality / privacy
Documentation

**PAPER – 3**

**ENGLISH**
**COURSE DESCRIPTION:**

The course is designed to enable students to enhance ability to comprehend spoken and written English (and use English) required for effective communication in their professional work. Students will practice their skills in verbal and written English during clinical and classroom experience.

**OBJECTIVES :**

At the end of the course, the student will develop
Ability to speak and write grammatically correct English
Effective skill in reading and understanding the English language
Skill in reporting

**COURSE CONTENT**
**COMMUNICATION**
Communication at the work place
Human needs and communication "Mind mapping"
Information communication

**COMPREHENSION PASSAGE**
Reading purposefully
Understanding what is read
Drawing conclusion
Finding and analysis

**EXPLAINING**

How to explain clearly
Explaining procedures
Giving directions

**WRITING BUSINESS LETTERS**

How to construct correctly
Formal language
Address
Salutation
Body and Conclusion

**REPORT WRITING**

Reporting an accident
Reporting what happened at a session
Reporting what happened at a meeting

**PRACTICUM**

- The clinical experience in the wards and bed side nursing will provide opportunity for students to fulfill the objectives of learning language

Assignment on writing and conversation through participation in discussion debates seminars and symposia. The students will gain further skills in task oriented communication.

**METHODS OF EVALUATION**

1. Individual Oral presentations.
2. Group Discussion.
3. Answering questions front the prescribed English text.
4. Summary / Essay / Letter writing.
5. Medical / General vocabulary exercises

**METHODS OF EVALUATION**

1. Individual oral presentations
2. Group discussion
3. Answering questions from the prescribed English text.
4. Summary / Essay / Letter writing
5. Grammar exercises
6. Medical / General vocabulary exercises

**WEIGHTAGE OF MARKS**

***English 100 marks***
***Internal Examination: 100 marks***

**No Practical's for English**

**Internal assessment For English**

| | |
|---|---|
| Term test | 30 marks |
| Assignment | 20 marks |

**PAPER - 4**

**INTRODUCTION TO COMPUTERS**

**DESCRIPTION**
This course is designed for students to develop basic understanding of uses of computer and its applications.

**OBJECTIVES**
At the end of the course, the student will develop

1. Demonstrate skill in the use of MS Office, MS Excel and MS Power point
2. Demonstrate use of internet and Email

**COURSE CONTENT**

**INTRODUCTION TO COMPUTER**

Creating and Managing Professional Documents using Word
Presenting and Managing Data effectively using Excel
Creating and Managing presentations using Power point
Communicate and Manage tasks, contacts and Appointments Using Office Outlook
Introduction to Digital Life Style

**TYPING TEXT IN MS WORD**

Inserting tables in a document.
Formatting the text – using different font sizes, bold, italics
Bullets and numbering
Pictures, file insertion

Aligning the text and justify s
Choosing paper size
Adjusting margins
Header and footer, Inserting page No's in a document
Printing a file with options
Using spell check and grammar

**CREATING TABLE IN MS-EXCEL**

Cell editing – Using formulas and functions
Manipulating data with excel
Using sort function to sort numbers and alphabets\
Drawing graphs and charts using data in Excel – Auto formatting – Inserting data from other worksheets.

**PREPARING NEW SLIDES USING MS- POWERPOINT** Inserting slides – Slide transition and animation – Using templates
Different text and font sizes – Slides with sounds – Inserting clip arts, pictures, tables and graphs– Presentation using wizards.

**INTRODUCTION TO INTERNET**

Using search engine – Google search – Exploring the next using Internet Explorer and
Navigator – Uploading and Download of files and images – E-mail ID creation –
Sending messages – Attaching files in E-mail

Typing a text and aligning the text with different formats using MS-Word
Inserting a table with proper alignment and using MS-Word
Create mail merge document using MS-word to prepare greetings for 10 friends
Preparing a Slide show with transition, animation and sound effect using MS PowerPoint
Customizing the slide show and inserting pictures and tables in the slides using MS PowerPoint
Creating a worksheet using MS-Excel with data and use of functions
Using MS-Excel prepare a worksheet with text, date time and data
Preparing a chart and pie diagrams using MS-Excel
Using Internet for searching, uploading files, downloading files and creating e-mail ID

**METHODS OF TEACHING**

Lecture cum discussion
Demonstration
Practical work record

**METHODS OF EVALUATION**

1. Written Test
2. Record Book
3. Assignments
4. Oral Presentations

**WEIGHTAGE OF MARKS 25**

Term test 15marks
Assignment 10 marks

## II YEAR SUBJECTS

| S.NO. | NAME OF THE SUBJECTS | TOTAL HOURS ALLOTTED |
|---|---|---|
| 1. | PATHOLOGY | 40 HOURS PER YEAR |
| 2. | MICROBIOLOGY | 50 HOURS PER YEAR |
| 3. | PHARMACOLOGY | 60 HOURS PER YEAR |
| 4. | PATIENT EXAMINATION AND NURSING | 90 HOURS PER YEAR |
| 5. | EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES -II | 100 HOURS PER YEAR |
| 6. | HOSPITAL ORIENTATION | 1000 HOURS PER YEAR |

## PAPER -1

## PATHOLOGY

### COURSE DESCRIPTION

The course is designed o assist students to acquire the knowledge of the fundamentals of pathology

COURSE CONTENT

1. **INTRODUCTION - CELL**
   Cellular adaptation, Cell injury & cell death.
   Overview: Cellular response to stress and noxious stimuli.
   Cellular adaptations of growth and differentiation.
   Overview of cell injury and cell death.
   Causes of cell injury.
   Reversible and irreversible cell injury
   Examples of cell injury and necrosis

**2. INFLAMMATION**

Historical highlights
General features of inflammation
Acute inflammation
Chemical mediators of inflammation
Outcomes of acute inflammation
Chronic inflammation

**3. IMMUNITY DISORDERS**

General features of the immune system
Disorders of the immune system

**4.INFECTIOUS DISEASES.**

General principles of microbial
pathogenesis Viral infections –
Dengue, Hepatitis
Bacterial infections- Rheumatic Heart Disease. Typhoid fever,
Tuberculosis, Leprosy Fungal infections
Parasitic infection -Malaria
Ricketsial infections –Scrub typhus, Leptospirosis

**5.NEOPLASIA**

Definitions
Biology of tumor growth Benign and Malignant neoplasms
Carcinogenic agents and their cellular interactions

**6.ENVIRONMENTAL AND NUTRITIONAL DISORDERS**.

Environmental and disease
Common environmental and occupational exposures
Nutrition and disease.

**7.CARDIOVASCULAR SYSTEM**

Coronary artery disease.

**8.SHOCK**

Mechanism & types – Anaphylactic, Distributive, Septic, Obstructive
SIRS, SEPSIS

**PRACTICALS**

Bleeding time
Clotting time
Blood grouping
Urine analysis by dipstick method
Haemoglobin Estimation

**MICROBIOLOGY**

**COURSE DESCRIPTION**

The course is designed to assist students to acquire understanding of fundamentals of microbiology and identification of microorganisms. It also provides opportunities for practicing infection control measures in hospital settings

**OBJECTIVES**

At the end of the course, the student will be able to:

1. Identify common disease producing microorganisms
2. Explain the basic principles of microbiology and their significance in health and disease.
3. Demonstrate skill in handling specimens
4. Explain various methods of disinfection and sterilization
5. Identify the role of the nurse in hospital infection control system

**COURSE CONTENT**

1. **INTRODUCTION**
   Concepts and terminology
   Principles of microbiology

2. **GENERAL CHARACTERISTICS OF MICROBES**
   Structure and classification of Microbes
   Morphological types
   Size and forms of bacteria
   Motility
   Colonization
   Blood and body fluids

Laboratory methods for identification of Microorganisms
Staining techniques: Gram staining, Acid Fast staining, Hanging drop preparation
Culture: various medias

3. **CLINICAL MICROBIOLOGY AND INFECTION CONTROL**

INTRODUCTION - Importance of infection in an ICU, Agents causing Infection SPREAD OF INFECTION Source; host; transmission, Bio hazardous materials Hospital Acquired infections : Prevention & Universal precautions

- o Sterilisation & Disinfection - concepts o Methods of sterilization
- o Spread of infection
- o Elimination of source - Cleaning and sterilizing equipments
- o Interrupting transmission of infection - role of Health Care Workers o Disposal of infectious wastes

SPECIFIC INFECTIONS

- o HIV-AIDS
- o Hepatitis A, B, C
- o Tropical Infections - Tetanus, Malaria, Leptospirosis, Dengue, Sepsis, Chickungunya, Scrub typhus, Enteric fever, Tuberculosis

**PRACTICALS:**

Use and care of microscope
Identification of smear, Blood Mounts and Yeasts.
Quick card tests for Malaria, Dengue
While giving care in the wards the students will practice collection of samples and processing of sterilization, immunization, chemotherapy and maintenance of personal and environmental hygiene.
Observation visit to incinerator, posting in CSSD and infection control department

**METHODS OF TEACHING**

Lecture cum discussion
Demonstration
Lab visit
Practical work record

**METHODS OF EVALUATION**

1. Written Test
2. Record Book
3. Assignments
4. Oral Presentations
5. Spotters -OSPE

**WEIGHTAGE OF MARKS**

**Theory: Clinical Microbiology -** Paper 2 in Year 2 - Total 100 marks

**Practicals -** Total 50 marks

**Internal Assessment:** 50 marks (Term tests 30 marks + 20 marks for assignments)

**PHARMACOLOGY**

**COURSE DESCRIPTION**

The course is designed to assist students to acquire understanding of fundamentals of drugs and their mode of action. It also provides opportunities for practicing infection control measures in hospital settings. It also helps to assist the students to use knowledge of pharmacology in practice of accident and emergency care technology.

**OBJECTIVES**

At the end of the course, the student will be able to:

To identify drugs used in ICU and describe their pharmacology, route of administration, uses and adverse effects.

**COURSE CONTENT**

1. **INTRODUCTION TO PHARMACOLOGY**
   Definitions
   Sources
   Common Terminologies used
   Types / Classification
   Pharmacodynamics: Actions,

Therapeutics, Adverse Effect,
Toxic Effect
Pharmacokinetics: Absorption, Distribution, Metabolism, Interaction, Excretion
Review: Routes and principles of administration of drugs
Indian Pharmacopoeia(IP):
Legal issues Rational use of drugs

**ii) CLINICAL PHARMACOLOGY**

Drugs - Nomenclature
Mode of action of drugs
Routes of administration
Drug dose calculation - Dilution, infusion rate
Medical gases: O2 ; N20
Neuromuscular Blocking agents
Antimicrobial drugs, Anti Viral and Anti Fungal agents - basic concepts -Antimicrobial
Resistance
Antiseptic agents

**2. DRUGS USED FOR CENTRAL NERVOUS SYSTEM**

Sedatives, hypnotics, opioid analgesics, general anesthetics, CNS stimulants, anticonvulsants, local anesthetics, NSAIDS.

**3. DRUGS USED FOR AUTONOMIC NERVOUS SYSTEM**

Parasympathetic agents, Parasympathetic Blocking agents, Sympathetic Agents
Sympathetic Blocking Agents

**4. DRUGS USED FOR CARDIOVASCULAR SYSTEM**

Drugs for congestive cardiac failure, Antiarrythmic drugs, Antihypertensive drugs
Antianginal drugs, diuretics, Coagulants and Anticoagulants, Cardiac stimulants, Drugs used in the treatment of shock

**5. DRUGS USED FOR ENDOCRINE AND METABOLIC DISORDERS:**

Insulin and oral antidiabetic agents, corticosteroids, thyroxin anti-thyroid drugs.

**6. DRUGS USED FOR RESPIRATORY SYSTEM**

Drugs for cough and bronchial asthma
Respiratory stimulants & antihistamine

**7. DRUGS USED FOR GASTRO INTESTINAL SYSTEM**

H2 antagonist, proton pump inhibitors, Antacids, Emetics and antiemetics,

**8. GENERAL PRINCIPLES FOR THE TREATMENT OF POISONING**

**PRACTICALS**

Drugs identification (spotters)
Identification of poisoning symptoms & treatment (OSPE)
Route of drug administration

**METHODS OF TEACHING**

Lecture cum discussion
Demonstration
Practical work record

**METHODS OF EVALUATION**

1. Written Test
2. Record Book
3. Assignments
4. Oral Presentations

## PAPER - 2

## PATIENT EXAMINATION AND NURSING

### COURSE DESCRIPTION

This course is designed to help the students to develop an understanding of the philosophy, objectives, theories and process of nursing in various Supervised Clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of accident and Emergency care technology and practice them in Supervised Clinical settings.

### OBJECTIVES

Students are able to:

- Understand the basic principles of nursing
- Describe the historical development of nursing in India.
- Demonstrate the beginning skill for effective communication
- Meet the needs of the patient is relation to comfort, rest and sleep including hygienic needs
- Demonstrate skill in applying nursing care related to vital signs
- Render first aid treatment
- Demonstrate the teaching skills while educating the patient, family and community.

### COURSE CONTENT

1. **INTRODUCTION - PUBLIC HEALTH**
   - Importance of Community Medicine
   - Modes of Transmission of Diseases
   - Principles of Prevention & Control of Diseases
   - Hospital infections, disinfection, disinfestations and sterilization
   - Disposal of Hospital wastes
   - Important Communicable diseases - – Respiratory, Intestinal; contact – STD / AIDS
   - Health education
2. **INDIVIDUAL PATIENT CARE**
   - The Art of History taking
   - Physical examination (GPE & different systems)
   - Care of Unconscious patient
   - Diagnosis of Brain death

3. **INTRODUCTION TO HEALTH AND HEALTH CARE SYSTEM**
   Definition and concepts of terms health, illness, mobility, mortality, patient
   Nature of disease pattern
   Impact of illness on individual, family and community
   Hospital (settings type and functions)

4. **ADMISSION OF**
   **PATIENTS** Preparation
   of unit Admission
   procedure Medico legal
   issues

5. **COMMUNICATION SKILLS** Process of
communication Modes of communication
Characteristics of effective communication
Factors affecting communication Observing,
listening and interviewing Nurse patient
relationship
   Communication with other members of health team

5. **COMFORT REST AND SLEEP NEED*S OF PATIENTS***
   Purposes of rest and sleep
   Factors affecting rest and sleep
   Common problems of sleep
   Use of comfort devices

6. **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
7. **HOUSE KEEPING**
   Rubber Goods, Enamel Ware Plastic, Porcelain, Glass Articles etc.

8. **VITAL SIGNS**
   Temperature

- o Definition and normal body temperature
- o Factors affecting normal body temperature o Assessment of normal body temperature

Pulse

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

Respiration

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

Blood pressure

- o Definition and normal blood pressure
- o Factors influencing normal blood pressure o Assessment of blood pressure

**FIRST AID AND NURSING EMERGENCIES**

Principles of first aid management
Wounds, haemorrhage, shock
Fracture, dislocations, muscle injuries
Splinting
Respiratory emergencies, unconsciousness
Burns, scalds, foreign bodies in the skin, eye, ear, nose, throat, stomach
Frost bite, effects of heat cramps, bites and stings
Poisoning
Bandaging

**9. FLUID AND ELECTROLYTE BALANCE**

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

**10. BODY MECHANICS**

Movement of patient lifting and transporting

**11. INFECTION CONTROL**

Infection cycle
Universal precautions
Barriers technique

## 12. HEALTH EDUCATION

Aims and objectives of health education
Principles of health education
Methods of health education
Audio visual aids – purposes, types, selection and use

**PRACTICALS**

1. Use of comfort devices
2. Bandaging
3. Lifting and transporting of injured persons
4. Insertion of NG tube
5. Record keeping

**PAPER – 3**

**EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES - II**

**COURSE DESCRIPTION**

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 Supervised Clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of practice them in Supervised Clinical settings

**TRIAGE AND GENERAL EMERGENCIES**

Concepts and principles of Disaster Nursing
Causes and Types of Disaster:
Natural and Man made Earthquakes, Floods, Epidemics, Cyclones Fire, Explosion, Accidents, Violence, Terrorism; biochemical, War
Policies related to emergency/disaster management; International, national, state, institutional
Disaster preparedness:
Team, Guidelines, protocols, Equipments, Resources
Coordination and involvement of; Community, various govt. departments, non- government.
Organizations and International agencies
Legal Aspects of Disaster
Impact on Health and after effects :Post Traumatic Stress Disorder
Rehabilitation; physical, psychosocial, Financial, Relocation

Concept, priorities, principles and Scope of emergency care
Organization of emergency services: physical setup, staffing,
Equipment and supplies, protocols,
Concepts of triage and role of triage person
Coordination and involvement of different departments and facilities
Principles of emergency management

1 **LIFE SUPPORT & RESUSCITATION**
Basic life support in perspective
Cardiopulmonary function and actions for survival
Adult Basic life support, Advanced Cardiac life support
Pediatric Basic Life support
Special resuscitation situations(drowning, hanging, Pregnancy)
Safety during CPR training and actual rescue

**BASIC PRINCIPLES OF TRAUMA CARE (ATLS)**
The principles of kinetic energy Mechanism –Basic mechanics of Injury Pattern.
Primary survey
Secondary survey as appropriate
Re-assessment
Identification of Life threatening injuries
Shock –different types & Categories
Revised trauma score, Glasgow Coma Score
Lifting & transporting of injured persons
Splints and Immobilization

PRACTICALS:-

12 Lead ECG and Interpretation of normal ECG-
IV cannulation
Blood sampling
Triage
Transportation of patients( Spime board and Scoop board)
BLS
ACLS
Biomedical waste dispose
Splinting Immobilization

## III YEAR SUBJECT

| S.NO | NAME OF THE SUBJECTS | TOTAL HOURS ALLOTTED |
|---|---|---|
| 1. | EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES -III | 120 HOURS PER YEAR |
| 2 | EMERGENCY SURGERY AND EMERGENCY SURGICAL SERVICES | 120 HOURS PER YEAR |
| 3. | CLINICAL PROCEDURES & INSTRUMENT IN EMERGENCY SERVICES | 100 HOURS PER YEAR |
| 4. | PATIENT CARE | 1000 HOURS PER YEAR |

## PAPER – 1

## EMERGENCY MEDICINE & EMERGENCY MEDICAL SERVICES - III

**Course Description:** 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 Supervised Clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of practice them in Supervised Clinical settings.

**COURSE CONTENT**

1. **Medical emergencies**
   Hypoglycemia
   Hyperglycemia, DKA ,HONK
   Poisoning
   Anaphylaxis
   Hypothermia
   Hyperthermia
   Mental illness
2. **Fluids and electrolytes**
   Fluid administration (Types of Fluids)
   Formulas (Hypo and Hyper natremia)
   - oDehydration
   - o Over hydration

   Electrolyte imbalance (Sodium, Potassium, Bicarbonate, Chloride)

3. **Acid base emergencies: (Respiratory and metabolic Acidosis/Alkalosis) Interpretation**

4. **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

5. **Gastrointestinal Emergencies**:
   Abdominal pain
   Peptic ulcer disease
   Cholecystitis
   Hepatitis
   Pancreatitis
   Abdominal aortic aneurysm
   Bowel obstruction
   Hernias
   Gastro intestinal bleeding

   **6.Cardiovascular Emergencies:**
   Angina pectoris
   Myocardial infarction (MI), Thrombolytic Therapy
   Congestive Cardiac Failure (CCF)
   Aortic Aneurysm
   Hypertensive Emergencies
   12 lead ECG and Interpretation
   Heart Block and Cardiac Arrhythmias

6. **Central Nervous System Emergencies:**
   Meningitis
   Stroke
   Seizure
   Status epileptics
   Syncope

7. **Genito urinary emergencies:**
   Renal failure
   Urolithiasis
   Urinary tract infection
   Haematuria

8. **Hematological Disorders:**
   Red blood cell disorders:
   Anemia and Types/Polycythemia
   White blood disorders
   Platelet abnormalities
9. **Endocrine and Metabolic Emergencies:**
   Diabetic Ketoacidosis
   Hyperosmolar coma
   Thyroid crisis
   Diabetes insipidus
   Vomiting
   Diarrhea

10. **Emergency Drugs** - Drug introduction, indication, contra-indications, side – effects and routes of administration with doses of following drugs:
    Adrenaline (Epinephrine)
    Aspirin
    Atropine
    Adenosine
    Amiodarone
    Antidotes
    Benzylpenicilin
    Beta blockers- Esmolol/Metoprolol/Lebatolol
    Calcium channel blockers- Verapamil/Diltiazem/Nifidipine/ Amlodipile
    Calcium chloride
    Calcium gluconate
    Chlorpromazine
    Diazepam
    Dexamethasone
    Dextrose
    Dopamine
    Dobutamine
    Furosemide

Flumazenil
Fentanyl
Glucagon
Glyceryl trinitrate
Hydrocortisone
Lidocaine
Lorazepam
Mannitol
Morphine Sulphate
Midazolam
Naloxone hydrochloride
Norepinephrine
Phenytoin
Paracetamol
Salbutamol
Sodabicarbonate
Vasopressors
Drugs in obstetrics – Oxytocin/Methergine/Carboprost
IV fluids
Potassium Chloride
Succinyl choline
Atracurium
Vecuronium
Propofol
Ketamine
Tranexamic acid
Magnesium Sulphate

**11. Dermatological Emergencies:**

Viral infections:
Varicella
Herpes zoster
Acute leprosy reactions
Autoimmune disorders:
Pemphigus vulgaris
Systemic lupus erythematosus
Toxic disorders:
Acute erythroderma
Severe pruritus,
Scabies
Allergic reactions – Anaphylaxis/Angioedema

12. **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

13. **Toxicology:**

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
Opiates toxicity
Organophosphates
Carbon monoxide
Cyanide
Caustics
Copper sulphate
Digoxin toxicity
Hydrocarbons
Tricyclic antidepressant toxicity
Metals – Arsenic/Iron
Acetaminophen overdose
Poisonous alcohols - Methanol
Poisonous plants **– Oleander, Oduvanthalai**

14. **Emergencies due to venomous bites and stings**:

Snake bite
Scorpion stings
Spider bite
Bee and wasp stings
Dog bite
Cat bite
Human bite
Monkey bite

15. **INDUSTRIAL HAZARDS**

Electrocution
Amputation

Crush injury
Fall from height
Assaults

**OBSTETRICAL EMERGENCIES**
Pre eclampsia
Placenta praevia/Abruption
Post Partum Hemorrhage
Amniotic fluid embolism
Cord prolapse
Ectopic Pregnancy

**17. MENTAL HEALTH EMERGENCIES**
Aggressive patient
Suicide
Deliberate self-harm

**18. Paediatric emergencies**
Neonatal resuscitation
Pediatric resuscitation
Assessment of newborn and pediatric
Meconium aspiration
Diaphragmatic hernia
Apnea
Drowning
SIDS (Sudden infant Death Syndrome)
Neonatal Seizure
Febrile convulsion
Shock

PAPER - 2

**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.

1. **PRINCIPLES OF ANAESTHESIA**
   General Anaesthesia
   Local Anaesthesia
   Regional Anaesthesia
2. **WOUNDS AND SUTURING**
   Types of common wounds
   Treatment
   Cleansing the wound
   Wound healing
   Principles of incision and closure (including suturing)
3. **BURNS**
   Skin Anatomy
   Classification of Burn
   Special Burn considerations

   **FOREIGN BODY OBSTRUCTION**

4. **GASTROINTESTINAL SYSTEM**
   Acute Appendicitis
   Acute Pancreatitis
   Intestinal obstruction
   Upper GI Bleed
   Lower GI Bleed
   Duodenal and gastric ulcer
   Renal colic

5. **TRAUMA**
   * Head injury
   Thoracic injuries
   Blunt trauma, Penetrating trauma

6. **TORSION**

**TESTIS**

**PRACTICALS**

Assisting in various procedures like:
- Central Venous Access o Suturing of

Wounds o
Tracheostomy
o Intercostal Drainage
o Needle Thoracocentesis
o Cricothyroidectomy
Skills of intubation in a Maniquenin

**PAPER – 3:**

**CLINICAL PROCEDURES AND INSTRUMENTS EMERGENCY SERVICES**

**COURSE DESCRIPTION**

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 Supervised Clinical settings. It is aimed at helping the students to acquire knowledge, understanding and skills in techniques of practice them in Supervised Clinical settings

**1. INSTRUMENTATION IN EMERGENCY SERVICES**

Introduction to Biomedical engineering (Man – machine relationship)
ECG
DC Defibrillator
Intravenous pumps
Laryngoscope, ambubag, suction machine
SPO2 monitoring, Temperaure monitoring
BP apparatus, BP monitoring-NIBP, IBP
Ventilators-Intensive care, portable
Manual resuscitator
Radiology equipment &radiation hazards
Suction machine
Nebuliser
Medical gases
Ambulance and its power supply
Dialysis machine
Infant warmer & incubator

**1. CLINICAL PROCEDURES IN EMERGENCY ROOM**

**Vital Sign Measurement:**

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

SP02
Pain score (VAS)

**Respiratory procedures:**

- p Endotracheal intubation and extubation
- o Drugs through ET tube
- o Tracheostomy insertion and management
- o Suctioning an artificial airway:
- o Naso tracheal suctioning
- o Insertion of nasopharyngeal and oropharyngeal airway
- o Mechanical ventilation
- o Intercostal drain
- o age
- o Thoracocentesis

**Intermediate Airways**

- o Laryngeal Mask Airway
- o Esophageal – Tracheal Combitube

**Non invasive Assessment and Support of Oxygenation and Ventilation** o Pulse oximetry
o Carbon dioxide Monitoring -->
Capnometry o Oxygen therapy
o Delivery systems for Inhaled Medication

- Nebulizers
- Metered Dose Inhaler

**Cardiovascular procedures (Observation)**

- o Cardiac Monitoring
- o Central venous pressure monitoring
- o Insertion of Arterial line:
- o Central venous cannulation
- o Transcutaneous cardiac pacing
- o Transvenous cardiac pacing
- o Pericardiocentesis
- oCardioversion
- o Defibrillation

**CannulatingUmbilical Vein**

- o Indication
- o Procedure
- o Drugs through umbilical vein o Complication

**Intraosseous Infusion**

- Indication
- Procedure
- Drugs through intraosseous line
- Complication

**Gastrointestinal procedures**

Insertion of nasogastric tube

Insertion of enteral feeding tube and initiation of feedings. Gastric lavage

Upper gastrointestinal endoscopy Insertion of rectal tube Paracentesis

Peritoneal lavage

**Poison decontamination**

- p Activated charcoal
- Whole bowl irrigation

**Genitourinary procedures**

- p Urethral catheterization
- Peritoneal dialysis
- Placement and Management of external Arteriovenous shunt (Assiting).
- Continuous Arteriovenous hemofiltration (Assiting)

**Intravenous Therapy**

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

**Neurologic Procedures**

Lumbar Puncture **(Observation/Assiting)**

**PRACTICALS**

ECG Interpretation

- Spotter identification

Thermometer

BP apparatus

Stethoscope

Glucometer
Intraosseous infusion
LMA
Combitube
ET intubation
Nebuliser
Ventilator
Capnography
Pulse oximeter

Chest X-ray interpretation

ABG – Interpretation

ACLS
ATLS

**REFERENCE BOOKS**


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

## SCHEME OF EXAMINATION
## FIRST YEAR

| Subject | Internal assessment | | Theory | | Practical | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Max | Min | Max | Min | Max | Min | Max | Min |
| **Paper 1:** Anatomy, Physiology, Biochemistry | 50 | 25 | 100 | 50 | 50 | 25 | 200 | 100 |
| **Paper 2:** Introduction to Emergency medicine (EM) and EMS-I | 50 | 25 | 100 | 50 | 50 | 25 | 200 | 100 |
| **Paper 3:** Computers Science | 50 | 25 | 100 | 50 | 50 | 25 | 200 | 100 |
| **Paper 4:** English | 50 | 25 | 100 | 50 | 50 | 25 | 200 | 100 |

**Note :** Paper 3 and Paper 4 is Internal Examination

## SECOND YEAR

| Subject | Internal assessment | | Theory | | Practical | | Viva voice | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Max | Min | Max | Min | Max | Min | Max | Min | Max | Min |
| **Paper 1** Pathology, Microbiology, Pharmacology | 50 | 25 | 100 | 50 | - | - | - | - | 150 | 75 |
| **Paper 2** Patient examination and Nursing | 50 | 25 | 100 | 50 | - | - | - | - | 150 | 75 |
| **Paper 3** Emergency medicine (EM) and EMS -II Practical exam on Patient Examination, Nursing, Triage, Life Support, Trauma care | 50 | 25 | 100 | 50 | 50 | 25 | 50 | 25 | 250 | 125 |

## THIRD YEAR

| Subject | Internal assessment | | Theory | | Practical | | Total | |
|---|---|---|---|---|---|---|---|---|
| | Max | Min | Max | Min | Max | Min | Max | Min |
| **Paper1:** Emergency medicine (EM) and EMS -III | 50 | 25 | 100 | 50 | 50 | 25 | 200 | 100 |
| **Paper 2:** Emergency surgery & Emergency Surgical Services | 50 | 25 | 100 | 50 | - | - | 150 | 75 |
| **Paper 3:** Clinical Procedures and Instrumentation in Emergency Services | 50 | 25 | 100 | 50 | 50 | 25 | 200 | 100 |

**POSTINGS DURING ONE YEAR INTERNSHIP**

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