B.Sc. ACCIDENT AND EMERGENCY CARE TECHNOLOGY
ACADEMIC YEAR 2014-15

I 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.

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

OSTEOLOGY

- 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

SKELETO-MUSCULAR SYSTEM

- 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

- **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

1. **THE CELL**
   - Cell Structure and functions of the various organelles.
   - Endocytosis and exocytosis
   - Acid base balance and disturbances of acid base balances (Alkalosis, Acidosis)
2. **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,
     - classification and protein.
     - Pathological and Physiological variation of the RBC.
     - Function of Hemoglobin
     - Erythrocyte Sedimentation Rate (ESR).
     - Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
     - Platelets – formation
3. **RESPIRATORY SYSTEM**
   - Respiratory movements.
   - Definitions and Normal values of Lung volumes and Lung capacities.
4. **EXCRETORY SYSTEM**
   - Normal Urinary output
   - Micturition
   - Renal function tests, renal disorders.
5. **REPRODUCTIVE SYSTEM**
   - Formation of semen and spermatogenesis.
   - Brief account of Menstrual Cycle, oogenesis
6. **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

7. **ENDOCRINE SYTEM**
    - Functions
        - Pituitary,
        - Thyroid,
        - Parathyroid,
        - Adrenal
        - Pancreatic Hormones
8. **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

- 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

PRACTICALS

- Benedict's test
- 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 and advanced
- Triage
- Critical points in functioning of EMS at a national level
- Required components of EMS system
- Existing EMS in India

2. 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

3. HEALTH ASSESSMENT

- Purposes
- Process of Health assessment
- Health history
- Physical examination:
- Methods - inspection, Palpation, Percussion, Auscultation and Olfaction
- Preparation for examination: patient and unit

4. 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

PRACTICAL

- 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

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

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
      - Sterilisation & Disinfection - concepts
      - Methods of sterilization
      - Spread of infection
      - Elimination of source - Cleaning and sterilizing equipments
      - Interrupting transmission of infection - role of Health Care Workers
      - Disposal of infectious wastes
   - SPECIFIC INFECTIONS
   - HIV-AIDS
   - Hepatitis A, B, C
   - Tropical Infections - Tetanus, Malaria, Leptospirosis, Dengue, Sepsis, Chickungunya, Scrub typhus, Enteric fever, Tuberculosis

PRACTICALS:

- Use and care of microscope
- Common examination: smear, Blood, Moulds 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

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:

1. To identify drugs used in ICU and describe their pharmacology, administration, uses and adverse effects.
2. To describe pharmacology of vasopressors and inotropes.

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

2. 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

3. DRUGS USED FOR CENTRAL NERVOUS SYSTEM

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

4. DRUGS USED FOR AUTONOMIC NERVOUS SYSTEM

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

5. 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, Plasma expanders

6. DRUGS USED FOR ENDOCRINE AND METABOLIC DISORDERS:

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

7. DRUGS USED FOR RESPIRATORY SYSTEM

- Drugs for cough and bronchial asthma
- Respiratory stimulants, histamine& antihistamine

8. DRUGS USED FOR GASTRO INTESTINAL SYSTEM

- H2 antagonist, proton pump inhibitors, Antacids, Emetics and antiemetics,
- Diarrhoea.

9. GENERAL PRINCIPLES FOR THE TREATMENT OF POISONING

PRACTICALS

Drugs identification (spotters)
Identification of drugs by chemical test, poisoning symptoms & treatment
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)
- The 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

6. **COMFORT REST AND SLEEP NEEDS**

- Purposes of rest and sleep
- Factors affecting rest and sleep
- Common problems of sleep
- Use of comfort devices

7. **HYGIENE NEEDS**

- 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

8. **HOUSE KEEPING**

- Rubber Goods, Enamel Ware Plastic, Porcelain, Glass Articles etc.

9. **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
  - 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

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

10. FLUID AND ELECTROLYTE BALANCE

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

11. BODY MECHANICS

- Movement of patient lifting and transporting

12. INFECTION CONTROL

- Infection cycle
- Universal precautions
- Barriers technique

13. 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

1. **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
   - Safety during CPR training and actual rescue
2. **BASIC PRINCIPLES OF TRAUMA CARE**
   - The principles of kinetic energy Mechanism –Basic mechanics of Injury Pattern.
   - Primary survey
   - Secondary survey as appropriate
   - Re-assessment
   - Revised trauma score, Glasgow Coma Score
   - Lifting & transporting of injured persons
   - Shock –different types & Categories
3. **COMMUNITY MEDICINE**
   - Importance of Community Medicine : Definitions of various terms
   - Modes of transmission of diseases
   - Principles of prevention and control of diseases
   - Hospital infections, disinfection, disinfestations, & Sterilization
   - Disposal of hospital wastes
   - Important communicable diseases - Respiratory; Intestinal; contact - STD / AIDS

III YEAR SUBJECT

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
   - Formulas
     - Dehydration
     - Fluid therapy
   - Electrolyte imbalance

3. **Acid base emergencies:**
4. **Respiratory Emergencies:**
   - Foreign body obstruction
   - Chronic obstructive pulmonary disease (COPD)
   - Asthma
   - Pneumonia, Pulmonary edema
   - Common medication in respiratory problems
   - (Meter dose inhaler, nebuliser)
   - Mechanical ventilator
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
    - Cardiac Arrhythmias
    - 12 lead ECG
    - Heart Block
7. **Central Nervous System Emergencies:**
    - Meningitis
    - Stroke
    - Seizure
    - Status epileptics
    - Syncope
    - Sub arachnoid hemorrhage
    - Epidural hemorrhage
8. **Genito urinary emergencies:**
    - Renal failure
    - Urolithiasis
    - Urinary tract infection
    - Haematuria
9. **Hematological Disorders:**
    - Red blood cell disorders:
    - Anemia – Aplastic
    - Hemolytic
    - Hypochronic / Microcytic
    - Megaloblastic
    - Normochromic normocytic
    - Hemoglobinopathies
    - (Sickle cell disease / trait, Thalessemia)
    - Polycythemia
    - White blood disorders
    - Platelet abnormalities
10. **Endocrine and Metabolic Emergencies:**
    - Diabetic Ketoacidosis
    - Hyperosmolar coma
    - Thyroid crisis
    - Diabetes insipidus
    - Vomiting
    - Diarrhea
11. **Emergency Drugs -** Drug introduction, indication, contra-indications, side – effects and routes of administration with doses of following drugs:
    - Adrenaline (Epinephrine)
    - Aspirin
    - Atropine

- Amiodarone
- Antiarrythmic
- Antidotes
- Benzylpenicilin
- Beta blockers
- Calcium channel blockers
- 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
- IV fluids
- Oxytocin
- Tranexamic acid
- Magnesium Sulphate

12. 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

13. 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

14. **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
- Acetaminophen overdose
- Poisonous alcohols
- Poisonous plants

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

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

16. INDUSTRIAL HAZARDS

- Electrocution
- Amputation
- Crush injury
- Fall from height
- Assaults

17. OBSTETRICAL EMERGENCIES

- Pre eclampsia
- Placenta praevia
- Post Partum Hemorrhage
- Amniotic fluid embolism
- Cord prolapse

18. MENTAL HEALTH EMERGENCIES

- Aggressive patient
- Suicide
- Deliberate self-harm

19. 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

4. FOREIGN BODY OBSTRUCTION

5. GASTROINTESTINAL SYSTEM

- Acute Appendicitis
- Acute Pancreatitis
- Intestinal obstruction
- Upper GI Bleed
- Lower GI Bleed
- Duodenal and gastric ulcer
- Renal colic

6. ABDOMINAL TRAUMA

* Blunt trauma, Penetrating trauma

7. TORSION TESTIS

PRACTICALS

Assisting in various procedures like:

- Central Venous Access
- Suturing of Wounds
- Tracheostomy
- Intercostal Drainage
- Needle Thoracocentesis
- Cricothyroidectomy

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
- Power generation, transmission & distribution

- Manual resuscitator
- Radiology equipment &radiation hazards
- Suction machine
- Nebuliser
- Medical gases
- Ambulance and its power supply
- Dialysis machine
- Infant warmer & incubator

2. CLINICAL PROCEDURES IN EMERGENCY ROOM

- **Vital Sign Measurement:**
  - Pulse assessment
  - Respiratory assessment
  - Temperature assessment
  - Blood pressure assessment

- **Respiratory procedures:**
  - Endotracheal intubation and extubation
  - Drugs through ET tube
  - Tracheostomy insertion and management
  - Suctioning an artificial airway:
  - Naso tracheal suctioning
  - Insertion of nasopharyngeal and oropharyngeal airway
  - Mechanical ventilation
  - Intercostal drain
  - age
  - Thoracocentesis
- **Intermediate Airways**
  - Laryngeal Mask Airway
  - Esophageal – 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
- **Cardiovascular procedures**
  - Cardiac Monitoring
  - Central venous pressure monitoring
  - Insertion of Arterial line:
  - Central venous cannulation
  - Transcutaneous cardiac pacing
  - Transvenous cardiac pacing
  - Pericardiocentesis
  - Cardioversion
  - Defibrillation

- **Cannulating Umbilical Vein**
  - Indication
  - Procedure
  - Drugs through umbilical vein
  - 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**
  - Activated charcoal
  - Whole bowl irrigation

- **Genitourinary procedures**
  - Urethral catheterization
  - Peritoneal dialysis
  - Placement and Management of external Arteriovenous shunt.
  - Continuous Arteriovenous hemofiltration

- **Intravenous Therapy**
  - Insertion of intravenous catheter
  - Administration of parenteral nutrition
  - Blood administration

    .
- **Neurologic Procedures**
  - Lumbar Puncture

PRACTICALS

- ECG
    - Power supply testing
    - Fuses testing
    - Spot identification
        - Thermometer
        - BP apparatus
        - Stethoscope
        - Glucometer
        - Intraosseous infusion
        - LMA
        - Combitube
        - ET intubation
        - Nebuliser
        - Ventilator
        - Capnography
        - Pulse oximeter

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6. Oxford advanced Leaners Dictionary, 1996
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16. First Aid – L.C.Gupta

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