Christian Institute of Health Sciences and Research

REGULATION AND SYLLABUS FOR

Bachelor of Science in Accident and Emergency Response

4 years Degree course

2025

THE NAGALAND UNIVERSITY REGULATIONS FOR ALLIED HEALTH SCIENCES

The Regulations & syllabus are subject to modifications by the university from time to time.

I. Eligibility for Admission:

1. The candidate should have passed the Higher Secondary (10+2) from CBSE or State Education Board or any Govt. recognized Board with at least 50% marks percentage or 45% for SC/ST/ OBC candidates in physics, chemistry, and biology.

2. For B.Sc. Health Information Management course, candidates with Physics, Chemistry, and Mathematics in 10+2 may also be considered

3. The candidate should have attained the age of 17 years as of the current year.

4. Lateral Entry:

Candidates who have completed a two-year diploma programme in that discipline from Boards recognized by Central / State Government(s) / State / Central University with at least 50% marks percentage in aggregate or 45% for SC/ ST/ OBC candidates shall be eligible for Lateral Entry to the second year (3rd semester) of Bachelor Programme in Allied Health Science courses.

II. Duration of the Course:

Group A: 4 years, i.e., Three years or 6 semesters of academic studies and one year of internship (B.Sc. HIM, B.Sc. DTT, B.Sc. AOTT, B.Sc. RTT, B.Sc. MRIT, B.Sc NMT, B.Sc AER).

Group B: 4 and a half years, i.e., Four years or 8 semesters of academic studies and six months of internship (BPT, BOT courses).

Group C: 4 years, i.e., Three and a half years or 7 semesters of academic studies and six months of internship (BMLS) during the 8th semester.

The maximum duration of the Bachelor Programme for Group A, B & C above shall be N+2 where N is the normal duration of the programme. No student shall be allowed to continue beyond the maximum duration.

III. Medium of Instruction:

The medium of instruction for all health sciences courses shall be English.

IV. Working Days Per Semester:

Each semester consists of 90 working days, with eight hours of work per day and 40 hours per week, totalling 720 hours per semester.

V. Internship Hours:

One-year internship programs will include 1440 hours of practical training.
Six-month internships will include 720 hours of practical training.

VI. Attendance:

A candidate must secure a minimum of 80% attendance in theory classes. Students who fail to meet the requirement due to illness may be eligible for a 5% condonation, provided they submit a medical certificate from a registered medical practitioner.

100% in skills training (practical/internship) to qualify for the award of degree. In case of insufficient attendance, the candidate's internship period will be extended accordingly.
There are no other exceptions to these rules under any circumstances.

VII. **Submission of Log Books:**

a. At the time of practical examination, each candidate shall submit to the examiners his / her Log book duly certified by the Head of the Department as a bonafide record of the work done by the candidate.

b. The practical record shall be evaluated by the concerned Head of the Department (Internal Evaluator) and the practical record marks shall be submitted to the University 15 days prior to the commencement of the theory Examinations.

c. In respect of failed candidates, the marks awarded for record at previous examination will be carried over for the subsequent examination. The candidates shall have the option to improve his performance by submission of fresh records.

VIII. **Revaluation / Retotalling of Answer Papers:**

a. There is no provision for candidates to request for revaluation of the answer papers of failed candidates in any examination. However, the failed candidates can apply for retotaling.

b. The Academic Committee shall constitute a moderation committee of 3 members each year. Moderation of marks cannot exceed 5 marks for any one candidate for all papers combined.

IX. **PATTERN OF QUESTION PAPER FOR UNIVERSITY EXAMINATION:**

Descriptive type Questions =30%
Descriptive Short Notes =30%
Short Answer questions =20%
MCQ Type =20%

X. **Assessment**:

1. Assessment for theory and practical examinations:

Students must attain at least 50% marks in each theory and practical component, both in internal assessments and in the final university examinations.
The final marks will be 75% from the university examination and 25% will be from the internal assessment.

2. The distribution of marks between theory and practical shall be provided in the **Curriculum and Syllabi** of each courses

3. Assessment for internship:

During the internship, students gain clinical experience and learn to document patient care effectively. Each student must maintain a logbook and a portfolio.

Activity	Marks %	Assessor
Log book	20	Supervisor
Portfolio*	20	Supervisor
Practical	40	Examiners
Viva voce	20	Examiners

*Portfolio:

The portfolio provides one with an opportunity to demonstrate the breadth and depth of your knowledge on certain topics
The portfolio incorporates the follow documents:
• Curriculum vitae
• Progress reports
• "Summary of Competency Achievement" demonstrating the level of competency achieved in each sub-module.
• Samples of work prepared by the intern from at least 5 of the modules of internship training guide.
A presentation delivered covering key aspects of the module

The clinical supervisor will examine the portfolio at regular (at least once in three months) intervals and provide feedback to the Intern.

4. Mode of Evaluation:

Evaluation for Theory papers during Odd End Semester Examination shall be internally done by the colleges and Theory papers during Even End Semester Examinations shall be externally evaluated or as notified by the University.

XI. **Internship Project:**

As part of the internship, students are required to choose a relevant subject and prepare an in-depth project report, which should include the objective, scope of the project, and a detailed report.

XII. **Eligibility Criteria for End-Semester Examinations:**

A student is deemed qualified to appear at the end-semester examinations only if they secure minimum qualifying marks as in section above in the Internal Assessment Tests and maintain 80% attendance in each subject.

XIII. **Advancement to the Next Semester:**

Advancement to the next semester is contingent upon meeting the following condition and clearing any backlogs as described:

1. A student may not fail in more than two papers in the preceding semester to be eligible to advance to the next semester.

XIV. **Repeat examination for failed candidates:**

Failed papers in odd semesters can be retaken during the exams of the subsequent odd semester. Similarly, failed papers in even semesters exams can be retaken during the subsequent even semester exams.

XV. **VACATION**

Maximum of 4 weeks in each semester
OR
Maximum of 30 days including Saturdays and Sundays

XVI. **RE-ADMISSION AFTER BREAK OF STUDY:**

Students shall be allowed to continue after break in studies provided the maximum duration as given in Clause-II is not exceeded.

XVII. **Award of the Degree**:

a. Candidates who have passed all written examinations and successfully completed the compulsory internship as per the university's requirements will be awarded the degree.
b. Final Consolidated Mark sheet shall be issued to the candidate after submission of his/her Internship Completion Certificate by the College.

XVIII. **Curriculum and Syllabi**

Nagaland University shall provide separate curriculum and syllabus for each Allied Health Science Course. The approval and modification of the curriculum and syllabi shall be as per the norms and procedure of the University.

XIX. **Academic Calendar**

a. Odd semester shall be from July to December, and Even semester shall be from January to June.
b. The odd semester and even semester university (end) examinations shall be conducted in the months of December and June respectively.

Bachelor of Science in Accident and Emergency Response (AER)
Semester-Wise Distribution of Subjects
Total Credits= 132; Total Marks=3,250

Semester	Code	Subject	Credits			Marks					Total contact hours	
						Internal		External				
			Theory	Practical	Total credits	Theory	Practical	Theory	Practical	Total	Theory	Practical
1st Semester Subsidiary	AER-101	**Basic sciences part 1** (Human Anatomy & Physiology)	4	1	5	30	20	100	50	200	72	36
	AER-102	**Basic sciences part 2** (Biochemistry, Pathology, Pharmacology & Microbiology)	4	1	5	30	20	100	50	200	72	36
	AER- 103	English Medical Terminology Computer	4	1	5	30	20	100	50	200	72	36
	AER- 104	Biostatistics /Sociology	2	3	5	30	20	100	50	200	36	108
				Total credits	**20**				**Total marks**	**800**	**Total contact hours = 468**	
2nd Semester	AER-201	Applied anatomy & physiology	6	1	7	30	20	100	50	200	90	36
	AER-202	Hospital duty and patient care	4	2	6	30	20	100	50	200	72	108
	AER-203	Emergency Medical Sciences 1	4	3	7	30	20	100	50	200	72	108
				Total credits	**20**				**Total marks**	**600**	**Total contact hours = 486**	
3rd semester	AER-301	Healthcare management, professionalism & values	3	-	3	30	20	50	50	100	90	35
	AER-302	Introduction to Trauma Care	4	2	6	30	20	50	50	100	80	100
	AER-303	BLS, ACLS, ATLS, PALS (as per AHA guidelines)	4	4	8	25	25	100	100	200	80	100
	AER-304	Emergency Nursing and principles of nursing	2	1	3	30	20	100	50	150	80	100
				Total credits	**20**				**Total marks**	**550**	**Total contact hours = 665**	
4th Semester	AER-401	Introduction to Disaster management	5	-	5	30	20	100	50	200	90	72
	AER-402	Research Methodology	5	-	5	25	-	75	-	100	90	288
	AER- 403	Ambulance management and pre-hospital care	7	3	10	25	25	100	50	200	80	120
				Total credits	**20**				**Total marks**	500	**Total contact hours = 740**	
5th Semester	AER-501	Emergency Medicine 1	10	-	10	50	-	100	50	200	90	360
	AER-502	Emergency Surgery	8	2	10	50	-	100	50	200	90	200
				Total credits	**20**				**Total marks**	**400**	**Total contact hours = 740**	
6th Semester	AER-601	Emergency Medicine 2	10	-	10	50	-	100	50	200	90	360
	AER-602	Emergency Equipment/instruments and procedures	6	4	10	30	20	100	50	200	90	150
				Total credits	**20**				**Total marks**	**400**	**Total contact hours = 690**	
		PROJECT SUBMISSION	**Total credit= 12**			**Full marks = 100 ; Pass Mark = 40**						
Internship		12 months compulsory rotational clinical posting										
		Practical & Viva										

INTERNSHIP – Minimum 2120 hours (calculated based on 8 hours per day, if 265 working days in a 12-month span)

INDEX

DETAIL SYLLABUS FOR
BACHELOR OF SCIENCE IN ACCIDENT AND EMERGENCY RESPONSE COURSE

SEMESTER-1

20 CREDITS

SUBJECT CODE: AER-101
BASIC SCIENCES I (Human anatomy and physiology)

HUMAN ANATOMY

UNIT 1: INTRODUCTION
1. Definition of anatomy and its divisions **2.** Introduction to anatomical terms of location, positions, and planes **3.** Cell and its organelles. **4.** Glands **5.** Basic tissues
UNIT 2: CONNECTIVE TISSUE
1. Bone – Classification, names of bone cells, parts of the long bone, microscopy of compact bone, names of all bones, vertebral column, intervertebral disc. **2.** Osteology: **a.** Upper limb – clavicle, scapula, humerus, radius, ulna **b.** Lower limb - femur, hipbone, sacrum, tibia, fibula Vertebral column **3.** Histology: Types of tissue **a.** Epithelia - Squamous Glandular Transitional Cartilage **b.** Connective tissue – bone, fibrous tissue, muscle **4.** Joints – Classification of joints with examples, synovial joint **5.** Muscular system: Classification & histology
UNIT 3: CARDIOVASCULAR SYSTEM
1. Surface anatomy of the heart **2.** Blood supply of heart **3.** Systemic & pulmonary circulation **4.** Blood Vessels (Vein + artery) Anatomy, Course of Vessel. **5.** Lymphatic system **6.** Histology of lymphatic tissues **7.** Names of regional lymphatics, axillary and inguinal lymph nodes in brief.
UNIT 4: GASTRO-INTESTINAL SYSTEM
1. Parts of GIT: Oral cavity, tonsil, dentition, pharynx, salivary glands, Oesophagus, stomach, small and large intestine, liver, gall bladder, pancreas, spleen, peritoneum & reflections.
UNIT 5: RESPIRATORY SYSTEM
1. Parts of RS: nose, nasal cavity, paranasal air sinuses, larynx, trachea, lungs, bronchopulmonary segments, diaphragm **2.** Histology of trachea, lung, and pleura **3.** Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum & thoracic vertebrae **4.** Lungs – Trachea, bronchial tree
UNIT 6: URINARY SYSTEM
1. Kidney, ureter, urinary bladder, the male and female urethra **2.** Histology of the Kidney, the structure of nephrons, Ureter and Bladder

UNIT 7: REPRODUCTIVE SYSTEM

1. Parts of the male reproductive system, testis, vas deferens, epididymis, prostate (gross &histology)
2. Parts of the female reproductive system, uterus, fallopian tubes, ovary (gross & histology).
3. Mammary gland – gross.

UNIT 8: ENDOCRINE GLANDS

1. Names of all endocrine glands in detail on the pituitary gland, thyroid gland & suprarenal gland – (gross & histology).

UNIT 9: NERVOUS SYSTEM

1. Neuron & Classification of NS
2. Cerebrum, cerebellum, midbrain, pons, medulla oblongata, spinal cord with spinal nerve (gross & histology)
3. Meninges, Ventricles & cerebrospinal fluid, Names of basal nuclei.
4. Blood supply of the brain (circle of Willis)
5. Spinal and Cranial nerves
6. Sympathetic trunk & names of parasympathetic ganglia

UNIT 10: SENSORY ORGANS

1. Skin: Skin-histology & Appendages of skin
2. Eye: Parts of the eye & lacrimal apparatus, Extra-ocular muscles & nerve supply
3. Ear: parts of the ear- external, middle and inner ear and contents

UNIT 11: EMBRYOLOGY

1. Spermatogenesis & oogenesis
2. Ovulation, fertilisation
3. Fetal circulation
4. Placenta

PRACTICAL

- Histology – Slides for identification and general features
- Vein / ARTERY-Surface Anatomy
- Anatomical positions and planes
- Osteology (bone identification right and left side and prominent features and muscle attachment of the bones) Clavicle, scapula, radius, ulna, humerous, femur, hip bone, tibia, fibula, sacrum.

SUGGESTED READING:

a) Textbook of Anatomy Vol. 1,2,3 by Inderbir Singh
b) Textbook of Anatomy Vol. 1,2,3 by B.D. Churasia
c) Textbook of Anatomy by Ross and Wilson

HUMAN PHYSIOLOGY

UNIT 1: GENERAL PHYSIOLOGY

1. Introduction to cell physiology, transport across the cell membrane
2. Homeostasis, Body Fluid compartment & measurement

UNIT 2: BLOOD

1. Composition of Blood, functions of the blood and plasma proteins.
2. Erythropoiesis, pathological and Physiological variation of the RBC.
3. Structure, function, and metabolism of Haemoglobin
4. Erythrocyte Sedimentation Rate.
5. Detailed description about WBC.
6. Platelets, coagulation of blood, anti-coagulants, bleeding disorders.
7. Blood groups and Rh factor

UNIT 3: NERVE-MUSCLE

1. Neuron structure, types, neuroglia-types, nerve fibre classification, properties of nerve fibres
2. Classification of muscle, the structure of skeletal muscle
3. Mechanism of muscle contraction, types of contraction

UNIT 4: RESPIRATORY SYSTEM

1. Physiological Anatomy of Respiratory tract.
2. Respiratory movements.
3. Exchange of Respiratory gases in the Alveoli.
4. Non-Respiratory functions of Lungs
5. Transport of Respiratory gases in the blood.
6. Artificial Respiration.
7. Chemical regulation of respiration
8. Neural regulation of respiration

UNIT 4: CARDIOVASCULAR SYSTEM

1. Physiological Anatomy of the heart
2. Heart sounds
3. Cardiac cycle, Cardiac output.
4. Auscultatory areas.
5. Cardiac murmurs.
6. Arterial pressures, blood pressure
7. Hypertension
8. Hormonal regulations for arterial pressure and determination of arterial Blood pressure.
9. Basics of Electrocardiogram (ECG)
10. Applied physiology of coronary circulation.
11. Foetal circulation
12. Circulatory shock.
13. Coronary circulation
14. Effects of exercise on CVS and Respiratory system

UNIT 5: EXCRETORY SYSTEM

1. Kidneys- functions, structure of nephron, type, non-excretory functions of kidney
2. Renal function tests
3. Mechanism of GFR, Definition, normal value, factors affecting GFR
4. Concentrating Mechanism of Tubules
5. Physiology of Bladder Function, Micturition reflex, Diuretics
6. Physiology of Electrolytes balance
7. Renal disorders.
8. Functions of Kidney and Regulation of Hypertension / EPO secretion

UNIT 6: DIGESTIVE SYSTEM

1. Physiological Anatomy of the GIT.
2. Food Digestion in the mouth, stomach, and intestine
3. Stomach-functions, composition and regulation of gastric juice
4. Absorption of foods
5. Role of bile in the digestion
6. Pancreas- function, composition and regulation of pancreatic juice
7. Digestion & absorption of Carbohydrates, fats and proteins

UNIT 7: ENDOCRINE SYSTEM

1. Classification of Endocrine glands & their hormones & properties-chemistry and receptor, feedback mechanisms of hormone regulation.
2. Functions of the pituitary gland, thyroid glands, parathyroid glands, adrenal and pancreatic Hormones.
3. Calcium homeostasis & disorders

UNIT 8: REPRODUCTIVE SYSTEM

1. Introduction to reproductive system, sex differentiation & Puberty
2. Male reproductive system, functions of testosterone & Spermatogenesis
3. Female reproductive system, functions of Estrogen, Progesterone, Oogenesis
4. Ovulation & Menstrual cycle
5. Physiological changes during pregnancy, pregnancy tests, parturition & lactation
6. Male & Female contraceptive methods

UNIT 9: CENTRAL NERVOUS SYSTEM

1. Introduction to CNS, Sensory receptors classification, properties
2. Sensory pathways
3. Motor pathways
4. Classification of reflexes
5. Cerebral cortex (Sensory and motor)-functions, Medulla and Pons-functions

6. Cerebellum –functions, disorders
7. Basal ganglia-functions, disorders
8. Autonomic Nervous System - Sympathetic and parasympathetic distribution and functions
9. Hypothalamus and Limbic system-functions
10. CSF, lumbar puncture
11. EEG

UNIT 10: SPECIAL SENSES

1. Vision –Functional anatomy of eye, visual pathway, lesion
2. Audition – Physiological anatomy of Ear, Mechanism of hearing, auditory pathway, deafness
3. Olfaction –modalities, receptor, function, abnormalities
4. Gustation-modalities, receptor, function, taste pathway, abnormalities

PRACTICAL

1. Blood pressure Recording
2. Auscultation for Heart Sounds
3. Artificial Respiration
4. Determination of vital capacity
5. Estimation of Hemoglobin – By sahli's method
6. Determination of ESR-By westergren's method
7. Determination of Blood Groups.
8. Determination of packed cell volume.
9. Identification of Normal ECG (wave pattern)
10. Normal laboratory values (CBC, LFT, KFT, PT, APTT, INR)
11. Measurement of vital signs (BP, SpO2, HR, RR, Temperature)
12. Spotters

SUGGESTED READING:

1. Textbook of Medical Physiology" by Guyton and Hall, 13th edition (Publisher, Elsevier)
2. Textbook of Physiology for MBBS Students by A.K. Jain
3. Textbook of Physiology by Chaudhuri Sujit K
4. Ghai's textbook of practical physiology by VP Varshney & Mona Bedi

SUBJECT CODE: AER 102

BASIC SCIENCES II (Biochemistry, Pathology, Pharmacology & Microbiology)

a) BIOCHEMISTRY:

Basics of carbohydrates, Amino acids, Protein and Non-protein, Lipids, Enzymes, Vitamins and Minerals- Iron, Calcium & Magnesium, Calorific values of foods, BMR, Balanced diet, Acids and Bases

b) PHARMACOLOGY:

General definitions- Pharmacology, Drugs, Medical pharmacology, Toxicology, Pharmacodynamic properties, Pharmacokinetic properties

- Introduction to pharmacology, Basic pharmacology terminology and concepts
- Introduction to pharmacodynamics
- Introduction to pharmacokinetics- absorption, distribution, elimination
- Mechanism of drug action, dosage forms, routes of administration
- Common generic and trade names
- Medication errors, Legal aspects in pharmacology
- CLINICAL PHARMACOLOGY: 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
- DRUGS USED FOR CENTRAL NERVOUS SYSTEM:

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

- DRUGS USED FOR AUTONOMIC NERVOUS SYSTEM:
  Parasympathetic agents, Parasympathetic Blocking agents, Sympathetic Agents Sympathetic Blocking Agents
- DRUGS USED FOR CARDIOVASCULAR SYSTEM:
  Drugs for congestive cardiac failure, Antiarrhythmic drugs, Antihypertensive drugs Antianginal drugs, diuretics, Coagulants and Anticoagulants, Cardiac stimulants, Drugs used in the treatment of shock
- DRUGS USED FOR ENDOCRINE AND METABOLIC DISORDERS:
  Insulin and oral antidiabetic agents, corticosteroids, thyroxin antithyroid drugs.
- DRUGS USED FOR RESPIRATORY SYSTEM Drugs for cough and bronchial asthma, Respiratory stimulants & antihistamine
- DRUGS USED FOR GASTRO INTESTINAL SYSTEM:
  H2 antagonist, proton pump inhibitors, Antacids, Emetics and antiemetics,
- GENERAL PRINCIPLES FOR THE TREATMENT OF POISONING PRACTICALS:
  Drugs identification (spotters) Identification of poisoning symptoms & treatment (OSPE) Route of drug administration

c) BASIC PATHOLOGY

- Introduction of Pathology- Branches of Pathology
- INTRODUCTION TO 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
- **Basic Haematology** – Blood collection & Different anticoagulant use. Blood Composition, Functions, Normal Ranges & Disorders
- INFLAMMATION: General features of inflammation, Acute inflammation,
  Chemical mediators of inflammation, Outcomes of acute inflammation, Chronic inflammation
- IMMUNITY DISORDERS: General features of the immune system, Disorders of the immune system
- 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)
- NEOPLASIA: Definitions, Biology of tumour growth (Benign and Malignant neoplasms), Carcinogenic agents and their cellular interactions
- ENVIRONMENTAL AND NUTRITIONAL DISORDERS:
  Common environmental and occupational exposures, Nutrition and disease.
- CARDIOVASCULAR SYSTEM: Coronary artery disease. 8.SHOCK (Mechanism & types – Anaphylactic, Distributive, Septic, Obstructive SIRS, SEPSIS)
- Clinical pathology- Study of body Fluids- Urine, stool & CSF and their variations in common diseases.

d) MICROBIOLOGY

- INTRODUCTION: Concepts and terminology, Principles of microbiology
- 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)
- CLINICAL MICROBIOLOGY AND INFECTION CONTROL
  - 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 equipment
- Interrupting transmission of infection role of Health Care Workers
- Disposal of infectious wastes SPECIFIC INFECTIONS
- HIVAIDS
- Hepatitis A, B, C
- Tropical Infections Tetanus, Malaria, Leptospirosis, Dengue, Sepsis, Chikungunya, Scrub typhus, Enteric fever, Tuberculosis

- Basics of Immunology- Ag Ab reaction & Basics in Immune response & Hypersensitivity, Parasites and Fungi

SUGGESTED READING

1. Textbook of Biochemistry for Medical Students 6th Edition, DM Vasudevan Sreekumari S , KannanVaidyanathan.
2. Textbook of Microbiology 9th Edition, Ananthanarayan, Paniker**.**
3. Textbook of pathology & Genetics by Purnima S. Rao.
4. Handbook on Medical Laboratory Technology Praful B Godkar
5. Biochemistry by V. Satyanarayan, Books and Allied Pvt. Ltd. Calcutta
6. Text book of Medical Biochemistry by Chatterjee and Shinde

SUBJECT CODE: AER 103

ENGLISH, MEDICAL TERMINOLOGY, COMPUTER

a) ENGLISH COMMUNICATION SKILLS

Course Objective

To develop the potential for language use to perform communicative functions, meeting the demands in the student's academic and professional set-ups.

The subject covers the aspects of oral communication, Grammar, Reading and Writing.

Subject description:

Phonetics/ Vocabulary& Reading:

Oral Work:/ Grammar / Reading/ Writing:

Reference: Manipal Academy of higher education; English book for Nurse by Selva Rose, 3rd Edition.

b) MEDICAL TERMINOLOGY- (Including fundamentals of clinical science)

Subject Description: Orientation to medical terminology, terms related to sympathetology, causation investigations, and treatment of conditions within medicine, surgery, Obstetrics and Gynaecology, all specialties including terms related to biological disorders (skin and breast, Musculoskeletal, Neurological and Psychiatric, Cerebro & Cardiovascular disorders, and Common diseases affecting each of the above systems).

Reference: Handbook of Medical Terminology- IR Asher
Medical diagnostic & procedural Terminology- Asher
Medical Dictionary-Oxford &IBH

c) BASICS OF COMPUTERS

Course Content:
Introduction to computer – I/O devices – memories – RAM and ROM – Different kinds of ROM
Networking – LAN, WAN, MAN (only basic ideas)
MS word, MS-Excel, MS-POWERPOINT,
Explorer and Navigator – Uploading and Download of files and images – E-mail ID creation –Sending messages – Attaching files in E-mail – Introduction to "C" language –

Practical
Creating a worksheet using MS-Excel with data and sue 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 creating e-mail ID
Using C language writing programs using functions
Computer application of statistical data

SUGGESTED READING: 1. Computer Fundamentals: Pearl Software
2. Fundamentals of Computers: E. Balagurusamy

SUBJECT CODE: AER 104

BIOSTATISTICS, SOCIOLOGY

a) BIOSTATISTICS

General Statistics

- Definition and importance of biostatistics
- Types of data, rates, and ratio
- Methods of collection of data- primary and secondary data
- Sampling of data
- Measures of central tendency (Mean, median, mode)
- Measures of Dispersion (Mean deviation, standard deviation, Range)
- Presentation of data (Bar diagram, Pie diagram, Histogram, Frequency, Polygon, Frequency curve, Cumulative frequency curve, Line diagram)
- Correlation and Regression analysis
- Basic concept of probability

SUGGESTED READING:
Introduction to Biostatistics and Research Methods (5th Edition)– P.S.S. Sundar Rao& J. Richard.

b) SOCIOLOGY AND ENVIRONMENT HEALTH:

Sociology and health

- Difference between community health and clinical medicine
- Concepts in sociology that influence health and disease.
- Social structure, social behavior, social institutions, socialization, culture, custom, and acculturation. standard of living, social problems, social stress, and social surveys
- Types of family, functions of family, family, and health, broken family.
- Demography and health.
- Influence of social factors on health.

Practical including fieldwork.
SUGGESTED READING – Textbook of preventive Medicine by Park and Park Chapters 12 and 13.

Environment health: (The influence of environment on health and preventive measures**)**

- Water, air, soil, housing, waste, radiation

- Water - Sources of water, quality of water, water pollution, purification of water, disinfection.
- Air –air pollutants, sources of air pollution, effects of air pollution.
- Housing – types, and influence on health
- Waste disposal - excreta disposal, hospital waste disposal impact on health
- Radiation exposure and its effect on health

SUGGESTED READING

– Textbook of Preventive Medicine by Park and Park Chapters 12 and 13.

SEMESTER II

CREDITS POINTS: 20

SUBJECT CODE: AER-201

APPLIED ANATOMY & PHYSIOLOGY RELATED TO ED

UNIT 1: APPLIED ANATOMY

1. Anatomy of Heart and its electrical activity and blood supply (coronary circulation)
2. Anatomy of Lungs (pleura- types, basics of abnormal lung anatomy)
3. Anatomy of the Vascular System
4. Upper Limb Vessels- Course, Distribution, Branches, Origin& Abnormalities
5. Neck Vessels- Course, Distribution, Branches, Origin& Abnormalities
6. Femoral Vessels - Course, Distribution, Branches, Origin& Abnormalities
7. Brain- Circulation to the brain (Circle of willis)

SUGGESTED READING

1. Textbook of Anatomy Vol. 1,2,3 by Inderbir Singh
2. Textbook of Anatomy Vol. 1,2,3 by B.D. Churasia
3. William Davis (P) understanding Human Anatomy and Physiology – McGraw Hill

UNIT 2: APPLIED PHYSIOLOGY

1. Physiology of Enzyme mediated pathways and feedback mechanisms
2. Physiologic Alterations in Pregnancy
3. Haemostasis - Coagulation Cascade, Coagulation Factors, Auto Regulation, Bleeding time(BT), Clotting time(CT), PT, PTT, Thrombin Time
4. Acid-Base Balance - Basic Principles & Common Abnormalities like Hypokalemia, Hyponatremia, Hyperkalemia, Hypernatremia, Hypocalcemia, Hypercalcemia, pH, etc.
5. Physiology of Abdomen and its organs (blood supply)
6. Cardiac Physiology (cardiac cycle, electrical activity, valves and functions)
7. Respiratory Physiology (Respiratory trunk, pleura, trachea, pulmonary circulation)

SUGGESTED READING

1. Textbook of Medical Physiology" by Guyton and Hall, 13th edition (Publisher, Elsevier)
2. Textbook of Physiology for MBBS students by A.K. Jain
3. Textbook of Physiology by Chaudhuri Sujit K
4. William Davis (P) understanding Human Anatomy and Physiology – McGraw Hill
5. Ghai's textbook of practical physiology by VP Varshney & Mona Bedi

SUBJECT CODE: AER-202

HOSPITAL DUTY AND PATIENT CARE

1. HOSPITAL AND RECORDS & REPORTS:

- Definition and Functions of Hospitals
- Classification, Organization and Departments of Hospitals
- Management of Hospitals
- Definition of Records and Reports
- Different types of Records and Reports
- Values, Objectives and Maintenance of records
- Principle of good record writing

2. FIRST AID:

- Introduction
- Aims & objectives of first aid
- Priorities of first aid
- Golden rules of first aid
- Qualities & responsibilities of first aider
- Simple first aid measures in selected conditions like–
    a. Food poisoning
    b. Snakebite
    c. Scorpion bite
    d. Dog bite
    e. Foreign bodies in various organs
    f. Burns & scalding
    g. Hemorrhage

3. HYGIENE AND BASIC CARE OF PATIENTS AND THEIR NEEDS:

- Personal Hygiene and Maintenance of Hygiene
- Maintaining therapeutic environment
- Safety factors for patients such as safety from mechanical injury, thermal &chemical injury, radiation & bacteriological injury, safety from allergens.
- Different positions of the body (Supine position, Prone Position, Cardiac position, Lateral Position, Fowlers position)

4. VITAL SIGNS OF PATIENTS:

- Body temperature
- Maintenance of body temperature
- Factors influencing body temperature
- Different types of fever
- Stages of rigor
- Management of pyrexia
- Pulse
- Common pulse sites
- Factors influencing pulse rate
- Characteristics of Pulse
- Abnormal pulses
- Reading of pulse

- Blood Pressure
- Definition
- Factors influencing B.P.
- Abnormalities of B.P.
- Recording of B.P.
- Respiration
- Regulation of respiration
- Factors causing variations in respiration
- Abnormal respirations
- Reading of respiratory rate.
- Different methods of Artificial Respiration

SUGGESTED READING

1. Fundamentals of Hospital Practice and Patents care by Vyakarnam Nageshwer

SUBJECT CODE: AER 203

EMERGENCY MEDICAL SCIENCES 1

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

2. HOSPITALS & PATIENTS:

- Hospital 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
- Medico legal issues
- Hospital safety

3. HEALTH ASSESSMENT

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

4. PRE HOSPITAL TRANSPORT- ROLES & RESPONSIBILITIES

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

5. ETHICS (MLCs and hospital related, Good Samaritan laws)
Medical and legal issues & Ethical issues

- Legal system in India
- Legal accountability of the paramedic
- Scope of practice
- Negligence
- Crime scene and emergency scene responsibilities
- Documentation
- Reportable cases
- Medical ethics
- Patient's rights
- Autonomy
- With holding or with drawing resuscitation

MAINTAINING LOG BOOK

DEPARTMENT POSTING: EMERGENCY DEPARTMENT (3-4 CLINICAL HOURS/ DAY)

SEMESTER III

CREDIT POINTS: 20

SUBJECT CODE: AER-301

HEALTHCARE MANAGEMENT, PROFESSIONALISM & VALUES

UNIT 1: Principals of Management
1. Introduction to management **2.** Strategic Management **3.** Foundations of Planning **4.** Planning Tools and Techniques **5.** Decision Making, conflict and stress management **6.** Managing Change and Innovation **7.** Understanding Groups and Teams **8.** Leadership **9.** Time Management **10.** Cost and efficiency
UNIT 2: Health care management
1. Departments in Hospital **2.** Clinical services management **3.** Organising of support services **4.** Management of utility services **5.** Evaluation of Hospital services **6.** Issues related to Healthcare technology **7.** Present trend in healthcare technology **8.** Problems & constraints **9.** Planning & adopting appropriate technology in healthcare **10.** Evaluation method of health technology
UNIT 3: Professional values
1. Integrity, Objectivity, Professional competence and due care, Confidentiality **2.** Personal values- ethical or moral values **3.** Attitude and behaviour- professional behaviour, treating people equally **4.** Code of conduct, professional accountability and responsibility, misconduct **5.** Differences between professions and importance of team efforts **6.** Cultural issues in the healthcare environment
SUGGESTED READING
1. Principles of management- LM Prasad **2.** Hospital planning & administration- B.M. Sakharkar **3.** Organizational behaviour- Stephen Robins **4.** Hospital Administration- CM Francis

SUBJECT CODE: AER-302

INTRODUCTION TO TRAUMA CARE

Trauma care

1. Trauma systems and mechanism of injury
    - Energy
    - Biomechanics and Kinematics
    - Trauma centres
    - Types of trauma
2. Soft tissue injury and Bleeding and Shock
3. Review of Cardio Vascular system
4. Anatomy and physiology of skin
    - Pathophysiology of Haemorrhage
5. Assessment and management of bleeding patient
    - Pathophysiology of shock
    - Assessment and management of shock
6. Wound healing
7. Closed versus open wounds
8. Crush injuries (Assessment and management of soft tissue injury)
9. Management of crush syndrome
10. Blast injuries
11. Burns, Abdominal Injuries & Thoracic Injuries
    - Pathophysiology of Burns
    - Assessment and Management of Burns
    - Review of anatomy and physiology of skin
    - Pathophysiology of Burns
    - Assessment & Management of Burns
12. Review of anatomy and physiology of abdomen
13. Pathophysiology, assessment and management of abdominal injuries
14. Pathophysiology Assessment & Management of Thoracic Injuries
15. Musculoskeletal injuries, Head and face and Spinal Injuries
    - Assessment and management of head and facial injuries
    - Assessment and management of spinal injuries
    - Spinal immobilization techniques
16. Environmental Emergencies
    - Heat Illness
    - Cold Injuries
    - Drowning
    - Diving Injuries
    - Altitude Illness
    - Lightning Strike
17. Bites & Stings

Disaster preparedness and management

1. Fundamentals of emergency management,
2. Psychological impact management,
3. Resource Management,
4. Preparedness and risk reduction,
5. Key response functions (including public health, logistics and governance, recovery, rehabilitation, and reconstruction), information management, incident command, and institutional mechanisms.

SUBJECT CODE: AER 303

BLS, ACLS, ATLS, PALS (as per AHA guidelines)

BASIC LIFE SUPPORT
ADVANCED CARDIAC LIFE SUPPORT
ADVANCED TRAUMA LIFE SUPPORT
PEDIATRIC ADVANCED LIFE SUPPORT

SUBJECT CODE: AER 304

EMERGENCY NURSING AND PRINCIPLES OF NURSING

In the teaching of the principles of nursing, stress shall be laid on the basic principles of the subject with more emphasis on its applied aspects.

(i) Goal: The broad of teaching undergraduate students the Principles of Nursing aims at providing comprehensive knowledge of the principles of asepsis, assessment of vital signs, dressings, small procedures, assisting the physician in the care of the sick patient, and adequate documentation of therapy instituted.

(ii) Objectives

(A) Knowledge: At the end of the course the student shall be able to:

(a) Explain the principles of asepsis and its necessity in the clinical area;
(b) Assess the medical condition of the patient with respect to his vital signs;
(c) Triage the patient needing immediate medical attention.

(B) Skill at the end of the course the student shall be able to;

(a) Perform small procedures like bed making, insertion of intravenous canulae, administering Injections, cleaning and dressing of wounds, care of bedridden patients, and bladder catheterization.
(b) Assist the physician in procedures and therapy of patients;
(c) Document all treatments undertaken with medico-legal completeness.

(C) Integration: At the end of the integrated teaching the student shall acquire an integrated knowledge of nursing principles and their importance in the care of the sick patient.

SYLLABUS:

1.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

6. 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 NEEDS 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

9.FIRST AID AND NURSING EMERGENCIES

- Principles of first aid management
- Wounds, hemorrhage, 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

SUGGESTED READING

1. Foundations of Nursing
2. Principles & Practice of Nursing- Sr Nancy
3. Textbook on First Aid & Emergency Nursing- I Clement

DEPARTMENT POSTING:

1. EMERGENCY DEPARTMENT

2. INTENSIVE CARE UNIT (2 WEEKS)

3. PEDIATRICS (2 WEEKS)

SEMESTER IV

CREDIT POINTS: 20

SUBJECT CODE: AER-401

INTRODUCTION TO DISASTER MANAGEMENT

Disaster preparedness and management
1. Fundamentals of emergency management **2.** Psychological impact management **3.** Resource Management **4.** Preparedness and risk reduction **5.** Key response functions (including public health, logistics and governance, recovery, rehabilitation, and reconstruction), information management, incident command, and institutional mechanisms. PRACTICALS: • Mock drills

SUBJECT CODE: AER-402

RESEARCH METHODOLOGY

I. Overview of research process
II. Research problem
III. Hypothesis & Assumption
IV. Literature review
V. Research Approaches & Designs
VI. Population Samples, Sampling
VII. Tool & Methods of Data Collection
VIII. Analysis of Data
IX. Communication Format of Thesis

REFERENCES:

1. **Research Methodology and Statistical Techniques** by S. Gupta
2. Nursing Research and Statistics Paperback– 1 Jan 2010 by **Suresh K. Sharma(Author)**

SUBJECT CODE: AER-403

AMBULANCE MANAGEMENT AND PRE-HOSPITAL CARE

1 AMBULANCE OPERATIONS, MEDICAL INCIDENT COMMAND

- Understanding your ambulance
- Ambulance staffing and development
- Emergency vehicle operation
- Air medical transport
- The incident command
- Standard operating procedures
- Medical incident command
- Triage

2 TERRORISM AND WEAPONS OF MASS DESTRUCTION, RESCUE AWARENESS AND OPERATIONS

- Terrorism
- Weapons of mass destruction
- Paramedic Response to terrorism
- Chemical agents
- Biological agents
- Radiological/nuclear devices
- Guide lines for operations
- Steps of special rescue
- General rescue scene procedure
- Assisting rescue crews
- Patient care

3 HAZARDOUS MATERIAL INCIDENTS

- Identification of hazardous materials
- Hazardous scene management
- Contamination and toxicology
- Decontamination and treatment

4 CRIME SCENE AWARENESS

- Awareness
- Highway incidents
- Residential incidents
- Violence on the streets
- Hostage situations
- Contact and cover
- Self defense
- Preserving crime scene evidence

5 INTRODUCTION TO AIR AMBULANCE

- Understanding your Air Ambulance
- Understanding Air Physics
- Critical care transport considerations

DEPARTMENT POSTING: EMERGENCY DEPARTMENT

SEMESTER V

CREDIT POINTS: 20

SUBJECT CODE: AER-501

EMERGENCY MEDICINE 1

- 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
   - Hypoglycaemia
   - Hyperglycaemia, DKA, HONK
   - Poisoning
   - Anaphylaxis
   - Hypothermia
   - Hyperthermia
   - Mental illness

2. FLUIDS AND ELECTROLYTES
   - Fluid administration (Types of Fluids)
   - Formulas (Hypo and Hypernatremia)
   - Dehydration
   - 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.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. 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
- Potassium Chloride
- Succinyl choline
- Atracurium
- Vecuronium
- Propofol
- Ketamine
- Tranexamic acid
- Magnesium Sulphate

8. 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
- Drug overdose (common drugs)

9. 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
10. MENTAL HEALTH EMERGENCIES
    - Aggressive patient
    - Suicide
    - Deliberate self-harm

SUGGESTED READING

1. Emergency Medicine – Tintinalli Book of Emergency Medicine
2. Emergency Medicine: Best practices at CMC

SUBJECT CODE: AER-502

EMERGENCY SURGERY

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 Anesthesia
    - Local Anesthesia
    - Regional Anesthesia
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
7. AIRWAY MANAGEMENT
   - Review of Anatomy and Physiology
   - Basic Airway Management
   - Manual airway maneuvers
   - Airway Adjuncts
   - Supplemental O2 therapy and delivery devices
   - Suctioning
   - Assisted and artificial ventilation

Advanced airway management

- Endo tracheal intubations
- Kings PtL Airway
- Digital intubations
- Laryngeal mask airways and Combitube intubations
- Rapid sequence intubations.

Surgical Airway

- Surgical and non-surgical airways.
- Special patient consideration.

PRACTICALS

Assisting in various procedures like:
o Central Venous Access
o Suturing of Wounds
o Tracheostomy
o Intercostal Drainage
o Needle Thoracocentesis
o Cricothyroidectomy
Skills of intubation in a Mannequin

SUGGESTED READING

1. Emergency Medicine – Tintinalli Book of Emergency Medicine
2. Springer- Textbook of Emergency General Surgery

DEPARTMENT POSTING:

1. EMERGENCY DEPARTMENT

2. WARD POSTINGS

SEMESTER VI

CREDIT POINTS: 20

SUBJECT CODE: AER 601

EMERGENCY MEDICINE 2

1. GASTROINTESTINAL EMERGENCIES:
   - Abdominal pain
   - Peptic ulcer disease
   - Cholecystitis
   - Hepatitis
   - Pancreatitis
   - Abdominal aortic aneurysm
   - Bowel obstruction
   - Hernias
   - Gastro intestinal bleeding
2. GENITO URINARY EMERGENCIES:
   - Renal failure
   - Urolithiasis
   - Urinary tract infection
   - Haematuria
3. HEMATOLOGICAL DISORDERS:
   - Red blood cell disorders:
   - Anemia and Types/Polycythemia
   - White blood disorders
   - Platelet abnormalities
4. ENDOCRINE AND METABOLIC EMERGENCIES:
   - Diabetic Ketoacidosis
   - Hyperosmolar coma
   - Thyroid crisis
   - Diabetes insipidus
   - Vomiting
   - Diarrhea
5. 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
6. 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

7. INDUSTRIAL HAZARDS
   - Electrocution
   - Amputation
   - Crush injury
   - Fall from height
   - Assaults

8. OBSTETRICAL EMERGENCIES
   - Pre-eclampsia
   - Placenta praevia/Abruption
   - Post-Partum Haemorrhage
   - Amniotic fluid embolism
   - Cord prolapse
   - Ectopic Pregnancy

DRUGS IN OBSTETRICS – Oxytocin/Methergine/Carboprost

9. PAEDIATRIC EMERGENCIES
   - Neonatal resuscitation

- Physiological changes in neonate
- Neonatology Emergencies
- Specific intervention and resuscitation steps
- Management of premature, seizures, thermoregulation,
- Hypoglycaemia
- Common birth injuries.
   - Paediatric resuscitation
   - Assessment of new-born and paediatric
   - Meconium aspiration
   - Diaphragmatic hernia
   - Apnoea
   - Drowning
   - SIDS (Sudden infant Death Syndrome)
   - Neonatal Seizure
   - Febrile convulsion
   - Shock
   - Child Abuse:
   - Child abuse and neglect
   - Children with special health care needs.

SUGGESTED READING

1. Emergency Medicine – Tintinalli Book of Emergency Medicine
2. Emergency Medicine: Best practices at CMC

SUBJECT CODE: AER 602

EMERGENCY PROCEDURES AND INSTRUMENTS/ EQUIPMENT

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,
- AMBU bag,
- Suction machine
- SPO2 monitoring,
- Temperature monitoring
- BP apparatus, BP monitoring, NIBP, IBP
- Ventilators Intensive care,
- 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
- SP02
- Pain score (VAS)

a) 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 drainage
- 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

b) Cardiovascular procedures (Observation)

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

Intraosseous Infusion (Indication, Procedure, Drugs through intraosseous line, Complications)

c) 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 bowel irrigation

d) Genitourinary procedures

- Urethral catheterization

e) Insertion of intravenous catheter

- Administration of parenteral nutrition
- Blood and Blood product administration

f) Neurologic Procedures

- Lumbar Puncture (Observation/Assisting)

PRACTICALS: To know the basics of all procedures mentioned above and to be confident to perform the same.

ECG Interpretation
Spotter identification Thermometer BP apparatus Stethoscope Glucometer Intraosseous infusion LMA Combitube ET intubation Nebuliser Ventilator Capnography Pulse oximeter
Chest Xray interpretation
ABG – Interpretation

MAINTAINING A LOG BOOK

SUGGESTED READING

1. Clinical procedures in Emergency medicine - Roberts and Hedges
2. Textbook of Procedures in Emergency Care – Dr. Anuja Agarwal and Pooja Shah

DEPARTMENT POSTING:

1. EMERGENCY DEPARTMENT

2. LABOR ROOM

3. CARDIAC INTENSIVE CARE UNIT

4. PICU/NICU

INTERNSHIP

- 12 months compulsory rotational clinical posting.
- Project work & Submission of dissertation.
- Evaluation of internship & project work- practical & viva.
- Minimum 2120 hours (calculated based on 8 hours per day, if 265 working days in 12 months)