THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI – 600 032.

REGULATION AND SYLLABUS FOR

B.SC., DEGREE IN ACCIDENT AND EMERGENCY CARE TECHNOLOGY

The University emblem symbolizes various systems of Medicine and Para Medical Systems. It also depicts the global character of Preventive, Promotive, and Curative Medicine. The motto "HEALTH FOR ALL" reflects all the objectives of this Medical University.

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI – 600 032.

REGULATIONS OF THE UNIVERSITY

(Degree courses under Allied Health Sciences)

In exercise of the powers conferred by Section 44 of the Tamil Nadu Dr. M.G.R. Medical University, Chennai Act 1987 (Tamil Nadu Act 37 of 1987) the Standing Academic Board of the Tamil Nadu Dr. M.G.R. Medical University, Chennai hereby makes the following regulations:

SHORT TITLE AND COMMENCEMENT:

These regulations shall be called as "**B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES"** of the Tamil Nadu Dr. M.G.R. Medical University, Chennai.

They shall come into force from the academic year 2010-2011

The regulations framed are subjected to modification from time to time by the Standing Academic Board.

OVER ALL OBJECTIVES:

The **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES** is prepared to assist the Doctors for providing Quality Patient Care in selected areas of Clinical Specialty in the Hospital and Community.

1. **ELIGIBILITY FOR ADMISSION:**

A pass in 10+2 or an equivalent with 12 years of Schooling from a recognized Board or University with minimum 35% marks in each subjects separately including English for all categories. (Except the following 4 Years Courses 1) BASLP, 2) Bachelor of Optometry and 3) Bachelor of Prothetics and Orthotics).

2. **AGE LIMIT FOR ADMISSION:**

A candidate should have completed the age of 17 years at the time of admission or would complete the said age on or before 31st December of the year of admission to the **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES.**

3. **ELIGIBILITY CERTIFICATE:**

The candidate who has passed any qualifying examinations other than the Higher Secondary Course Examination conducted by the Government of Tamil Nadu, before seeking admission to any one of the affiliated institutions shall obtain an Eligibility Certificate from the University by remitting the prescribed fees along with application form which shall be downloaded from the University website (www.tnmgrmu.ac.in)

4. **REGISTRATION:**

A Candidate admitted in any one of the **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES** in any one of the affiliated institutions of this University shall register his / her name with this university by submitting the prescribed application form for registration duly filled, along with the prescribed fee and a declaration in the format to the Academic Officer of this University through the affiliated institution within 30 days from the cut-off date prescribed for the course for admission. The applications should have date of admission of the course.

5. MIGRATION/TRANSFER OF CANDIDATE:

a) A student studying in any one of the **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES** can be allowed to migrate/transfer to another institution of Allied Health Science under the same or another University.

b) Under extraordinary circumstances, the Vice Chancellor shall have the powers to place any migration/transfer he/she deems fit before the Governing Council and get its approval for grant of permission/ratification for Migration/Transfer to the candidates undergoing the course of study in affiliated institutions of this University.

6. COMMENCEMENT OF THE COURSE:

The course shall commence form 1st August of the academic year.

7. MEDIUM OF INSTRUCTION:

English shall be the Medium of Instruction for all the Subjects of study and for examinations of the **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES**

8. CURRICULUM:

The Curriculum and the syllabus for the course shall be as prescribed in these regulations and are subject to modifications by the Standing Academic Board from time to time.

9. DURATION OF THE COURSE:

The duration of certified study for the **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES** shall extend over a period of three academic years.
The candidate should complete this course in 6 years (double the duration) from the date of joining the course.

10. RE-ADMISSION AFTER BREAK OF STUDY:

The regulations for re-admission are as per the University Common Regulation for Re-admission after break of study for all courses.

11. WORKING DAYS IN THE ACADEMIC YEAR:

Each academic year shall consist of not less than 270 working days

12. ATTENDANCE REQUIRED FOR ADMISSION TO EXAMINATION:

a. No candidate shall be permitted to appear in any one of the parts of **B.Sc., DEGREE COURSES UNDER ALLIED HEALTH SCIENCES** examinations unless he/she has attended the course in the subject for the prescribed period in an affiliated institution recognized by this University and produce the necessary certificate of study, attendance and satisfactory conduct from the Head of the institution.

b. A candidate is required to put in a minimum of 90% of attendance out of 270 working days in both theory and practical separately in each subject before admission to the examinations except for 1st candidates where attendance will be counted from the date of joining. **The academic year should consist of not less than 270 working days.**

c. A candidate must have 100% attendance in each of the Practical/ Clinical areas before the award of Degree.

13. CONDONATION OF LACK OF ATTENDANCE:

There shall be no condonation of lack of attendance.

14. INTERNAL ASSESSMENT MARKS:

The Internal Assessment should consist of the following points for evaluation:-

i) Theory

ii) Practical / Clinical

iii) Viva

a) A minimum of two written examinations shall be conducted in each subject during a year and the average marks of the three performances shall be taken into consideration for the award of Internal Assessment marks.

b) A minimum of one practical examination shall be conducted in each subject (wherever practical has been included in the curriculum) and grades of ongoing clinical evaluation is to be considered for the award of Internal Assessment marks.

14. CUT-OFF DATES FOR ADMISSION TO EXAMINATIONS:

a. 30th September of the academic year concerned

b. The candidates admitted up to 30th September of the academic year shall be registered to take up the 1st year examination during August of the next year.

c. All kinds of admission shall be completed on or before 30th September of the academic year. There shall not be any admission after 30th September even if seats are vacant.

15. DURATION:

Course Duration	**3 years**
Weeks per year	**52 weeks**
Vacation	**2 weeks**
Hours per week	**45**
Hours per academic year	**1935 hours**
No. of working days per year	**270 days**

16. COURSE OF INSTRUCTION

FIRST YEAR

SUBJECT	**HOURS**	
	Theory	**Practical**
Anatomy	40	-
Physiology	45	-
Biochemistry	25	-
Computers	80	-
English	80	-
Introduction to Emergency Medicine and EMS	65	
Hospital Orientation	-	1600
Total	**335**	**1600**
TOTAL	**1935**	

SECOND YEAR

SUBJECT	HOURS	
	Theory	**Practical**
Pathology	30	
Clinical Microbiology	40	
Pharmacology	20	
Patient Examination and Nursing	50	225
Emergency Medicine and EMS -I	70	**1500**
Total	**210**	**1725**
TOTAL	**1935**	

THIRD YEAR

SUBJECT	HOURS	
	Theory	**Practical**
Emergency Medicine and EMS -II	135	1300
Clinical procedures and Instrumentation in emergency services (Ambulance equipments)	100	400
Emergency surgery	100	100
Total	**335**	**1800**
Total	**1935**	

17. SCHEME OF EXAMINATION

FIRST YEAR

Subject	Internal assessment		Theory		Practical	
	Max	**Min**	**Max**	**Min**	**Max**	**Min**
Anatomy, Physiology, Biochemistry	50	25	100	50	50	25
Computers Science	50	25	100	50	50	25
English	50	25	100	50	50	25
Introduction to Emergency medicine (EM) and EMS	50	25	100	50	50	25

SECOND YEAR

Subject	Internal assessment		Theory		Practical		Viva voice	
	Max	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**
Pathology, Microbiology, Pharmacology	50	25	100	50	-	-	-	-
Patient examination and Nursing	50	25	100	50	-	-	-	-
Emergency medicine (EM) and EMS -I Practical exam on Patient Examination, Nursing, Triage, Life Support, Trauma care	50	25	100	50	50	25	50	25

THIRD YEAR

Subject	Internal assessment		Theory		Practical	
	Max	**Min**	**Max**	**Min**	**Max**	**Min**
Emergency medicine (EM) and EMS -II	50	25	100	50	50	25
Emergency surgery	50	25	100	50	-	-
Ambulance Equipments	50	25	100	50	50	25

18. COMMENCEMENT OF THE EXAMINATIONS

1st August /1st February. If the date of commencement falls on Saturdays, Sundays or declared Public holidays, the examination shall begin on the next working day.

19. DISTRIBUTION OF TYPE OF QUESTION PATTERN FOR 100 MARKS

Distribution of marks 100 (COMMON TO ALL SINGLE SUBJECTS)

Essay	3 x 10 = 30 Marks
Short Notes	8 x 5 = 40 Marks
Short Answer	10 x 3 = 30 Marks
Total	**100 Marks**

20. MARKS QUALIFYING FOR A PASS

A candidate shall be declared to have passed the examinations, if he/she obtains the following qualifying marks:

50% of marks in the subjects where internal evaluation alone is conducted at the institution level.

50% of marks in the University theory examinations.

50% of marks in University practical examination.

50% of marks in aggregate in theory, practical and internal assessment marks taken together**.**

50% of marks in each Section A& B separately where two subjects are combined in single paper. If a candidate who has failed to secure the minimum pass mark of 50% ether in Section A or B, the candidate has to write again both the Sections irrespective the fact whether the candidate has passed in one Section

21. CARRY- OVER OF FAILED SUBJECTS

a. A Candidate is permitted to carry over a maximum of three subjects to the next academic year. The candidate has to pass the carried over subjects before appearing second year University Examinations.
b. A candidate who has failed in more than three subjects shall not be permitted to undergo study and training of the next year.
c. The failed candidates can appear for the ensuing February/August examinations.
d. Only three attempts are allowed in each subjects including first attempt.

22. PRACTICAL EXAMINATION

Maximum number of candidates for practical examination should not exceed 20 per day.

23. EXAMINERS

One **internal** and one **external** examiner should jointly conduct practical/oral examination for each student.

24. REVALUATION / RETOTALLING OF ANSWER PAPERS

Revaluation of answer papers is not permitted. Only re-totaling of theory answer papers is allowed in the failed subjects if it is applied through the institution.

25. AWARD OF MEDALS AND PRIZES

The University shall award at its Convocation Medals and Prizes to outstanding candidates as and when instituted by the donors as per the prescribed terms and condition for the award of the same.

OVERVIEW

COURSE	YEAR	SUBJECT
B. Sc	I	Anatomy
		Physiology
		Biochemistry
		Computers
		English
		Hospital Orientation
		Introduction to EM
		Emergency Medical Services (EMS)
	II	Pathology
		Microbiology
		Pharmacology
		Clinical medicine
		Triage and general emergencies
		Life support & resuscitation
		Trauma care
	III	Cardiovascular emergencies
		Respiratory emergencies
		Neurological emergencies
		Nephro/Urology emergencies
		Gastro-intestinal emergencies
		Obstetric and Gynaecological emergencies
		Mental health emergencies
		Environmental emergencies
		Project/ Electives/revision

ENGLISH

PLACEMENT: FIRST YEAR **THEORY - 80 Hours**

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

1. Ability to speak and write grammatically correct English
2. Effective skill in reading and understanding the English language
3. Skill in reporting

COURSE CONTENT

1. COMMUNICATION

- Role
- Definition
- Communication
- Classification of communication
- Purpose
- Major difficulties
- Barriers
- Characteristics -The seven Cs

- Communication at the work place
- Human needs and communication “Mind mapping”
- Information communication

2. COMPREHENSION PASSAGE

- Reading purposefully
- Understanding what is read
- Drawing conclusion
- Finding and analysis

3. EXPLAINING

- How to explain clearly
- Defining and giving reasons
- Explaining differences
- Explaining procedures
- Giving directions

4. WRITING BUSINESS LETTERS

- How to construct correctly
- Formal language
- Address
- Salutation
- Body and Conclusion

5. 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 TEACHING

1. Lecture
2. Pair and Group Work
3. Role plays
4. Oral presentations.
5. Decoding & production grammar exercise.
6. Comprehension exercise
7. Writing assignments.
8. Word puzzles & Quizzes.
9. Communicative games & fluency activities.

METHODS OF EVALUATION

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

English 100 marks

Internal Examination: 100 marks

1. ***REFERENCES***

2. Selva Rose. 1997, Career English for Nurses. Cheiu;ai: Oient Longrnan Ltd.
3. Oxford advanced Leaiiers Dictionary, 1996.
4. Quirk, Randolph and (Jreenbaum Sidney, 1987. A University Grammar of English, Hong Kong: Longman group (FE) Ltd.
5. Thomson A. J. and Maitüiet A. V. 1987, A 1icticl English Grammar, Delhi: Oxford University Press.
6. Gimson A. E. 1986, An Introduction to pronunciation of English. Hong kong: Wing King Tong Ca. Ltd.
7. O' Connor J. D, 1 986. Better English h'onuwiation. Cambridge: University Press.
8. By water F. V. A. 1982, Proficincy Course in Enish. London: 1-lodder and Strongliton.
9. Roget S. P.. 1960, Thes2unis ol' Eiiglisli Words & Phrases, London: Lows & Brydone Ltd. 1960.

INTRODUCTION TO COMPUTERS

PLACEMENT: FIRST YEAR **THEORY - 80 Hours**

COURSE DESCRIPTION

This course is designed for students to develop basic understanding of uses of computer and its applications in Critical Care Technology [CCT].

OBJECTIVES

At the end of the course, the student will develop

1. Identify & define various concepts used in computer Identify application of computer in CCT.
2. Describe and Use the Disk Operating System
3. Demonstrate skill in the use of MS Office, MS Excel and MS Power point
4. Demonstrate use of internet and Email

COURSE CONTENT

1. INTRODUCTION TO COMPUTER

- I/O devices – memories
- RAM and ROM – Different kinds of ROM – kilobytes.
- MB, GB their conversions – large computer – Medium, Micro,Mini computers – Different computer languages
- Number system
- Binary and decimal conversions
- Different operating system
- MS DOS
- Basic Commands – MD, CD, DIR,TYPE and COPY CON Commands
- Networking – LAN,WAN,MAN (only basic ideas)

1. TYPING TEXTIN MS WORD

- Manipulating text
- Formatting the text – using different font sizes, bold, italics – Bullets and numbering – Pictures, file insertion – Aligning the text and justify – 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 – Find and replace - Mail merge – Inserting tables in a document.

2. 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.

3. 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.

4. 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 – Introduction to "C" language – Different variables, declaration, usage – writing small programs - using functions and sub – functions.

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
- Using C language writing programs using functions

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

WEIGHTAGE OF MARKS	***25***
Term test	***15marks***
Assignment	***10 marks***

RECOMMENDED BOOKS

1. Fundamentals of computers-V.Rajaraman-2004
2. Absolute beginners guide to computer basics-Michael Miller-Que Publisher, September 11,2009
3. Networking concepts and technology-by Deepak Kalkadia, Francesso Diamambro, Prentice hall publisher, May 25, 2007
4. Operating system concepts (6^{th} edition)-by Abraham Silberschatz, Peter BaerGalvin, Grege Gagne,Wiley Publisher,June 26,2001
5. Microsoft office 2007 for Dummies –by Wllace Wang,Jan 17,2006

ANATOMY

PLACEMENT: FIRST YEAR **THEORY - 40 Hours**

COURSE DESCRIPTION

This course enables the student to gain knowledge of the structure of the various organ systems in the body and use this knowledge to develop desirable attitude and skill while taking care of patients.

OBJECTIVES

At the end of the course, the student will develop

1. Describe the anatomical terms, organization of human - body and structure of cell, - tissues, membranes and glands
2. Describe the structure & functions of bones and joints
3. Describe the structure & functions of systems in the body.

Organization of the human body

- Introduction to the human body
- Definition and subdivision of anatomy
- Anatomical position and terminology
- Regions and systems of the body
- Cavities of the body and their contents
- Levels of organization of the body

COURSE CONTENT

1. **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
2. **OSTEOLOGY**
    - Upper limb – clavicle, scapula, humerous, radius, ulna
    - Lower limb - femur, hipbone, sacrum, tibia, fibula, Vertebral column
3. **THORAX**
    - Intercostal space, pleura, bony thoracic cage, ribs, sternum & thoracic vertebrae
4. **HEART**
    - Surface anatomy of heart
    - Chambers of the heart
    - Valves of the heart
    - Major blood vessels of heart
    - Pericardium
    - Coronary arteries
5. **SKELETO-MUSCULAR SYSTEM**
    - Muscles of thorax
    - Muscles of upper limb - (arm & fore arm)
    - Flexor and extensor group of muscles (origin, insertion, action)

6. EXCRETORY SYSTEM

- Kidneys
- Ureters
- Bladder

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. Surface Anatomy, Radiology, and X-ray Chest PA view.

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

WEIGHTAGE OF MARKS	***25***
Term test	***15marks***
Assignment	***10 marks***

Recommended Books:

1. Cohen – Memmler's Structure & Function of Human Body, 2009, LWW.
2. Waugh – Ross & Wilson Anatomy & Physiology, 2008, Elsevier.
3. Tortora – Anatomy & Physiology, 2007, Wiley
4. Chaurasia – Human Anatomy, 2005, CBS Publishers
5. Standring - Gray's Anatomy, 2006, Elsevier

PHYSIOLOGY

PLACEMENT: FIRST YEAR **THEORY - 45 Hours COURSE DESCRIPTION**

The Course is designed to assist the students to acquire knowledge of the normal physiology of various human body systems and understand the alterations in physiology in diseases and for practice of Critical Care Technology.

OBJECTIVES

At the end of the course, the student will develop

1. Describe the physiology of cell, tissues, membranes and glands
2. Describe the physiology 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

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, lood 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
- Micturation
- Renal function tests, renal disorders.

5. REPRODUCTIVE SYSTEM

- Formation of semen and spermatogenesis.
- Brief account of Menstrual Cycle.

6. CENTRAL NERVOUS SYSTEM

- Functions of CSF.

7. ENDOCRINE SYTEM

- Functions
    - ❖ Pituitary,
    - ❖ Thyroid,
    - ❖ Parathyroid,
    - ❖ Adrenal and
    - ❖ 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.

PRACTICAL

1. The compound Microscope
2. Determination of ESR-By Westergren's method
3. Determination of Blood Groups.
4. Measurement of human Blood Pressure.
5. Examination of Respiratory System to count Respiratory Rate and measure inspiration and expiration

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

WEIGHTAGE OF MARKS	***25***
Term test	***15marks***
Assignment	***10 marks***

RECOMMENDED BOOKS

1. Waugh – Ross & Wilson Anatomy & Physiology, 2008, Elsevier.
2. Essentials of Medical Physiology K.Sembulingam -4th edition
3. Essentials of Medical Physiology, Anil Baran Singh Mahapatra, Publisher Current books International
4. Venkatesh – Basic Medical Physiology for Nursing, 2009, LWW
5. Tortora – Anatomy & Physiology, 2007, Wiley
6. Venkatesh – Basic Medical Physiology, 2009, LWW

BIO - CHEMISTRY

PLACEMENT: FIRST YEAR **THEORY - 25 Hours**

COURSE DESCRIPTIONS

The student understands the chemical processes that occur in living organisms and correlates their knowledge with the patients illness and the various diagnostic and therapeutic procedures instituted for patient treatment.

OBJECTIVES

At the end of the course, the student will

1. Identify the basic principles of Biochemistry and Biophysics

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

3. **LIPIDS**

Classification of lipids and functions

4. **ENZYMES**

- Definition
- Nomenclature
- Classification
- Factors affecting enzyme activity
- Active site – Coenzyme – Enzyme Inhibition – Units of enzyme
- Isoeznzymes
- Enzyme pattern in diseases.

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 – Kwasoirkar

6. **ACIDS AND BASES**

- Definition
- Ph Values
- Henderson – Hasselbalch equation
- Buffers
- Indicators
- Normality
- Molarity
- Molality

PRACTICALS

- Benedict's test
- Heat coagulation tests

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

WEIGHTAGE OF MARKS	***25***
Term test	***15marks***
Assignment	***10 marks***

REFERENCE

1. V. Sathya Narayanan “Essentials of Biochemistry” - sBooks and Allied Publications Ltd, Kolkatta (2002).
2. Ambika Shanmugam, Fundamentals of Biochemistry” 7 Ed, Kartik Offset Printers, Chennai, 1998.

INTRODUCTION TO EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES - I

PLACEMENT: FIRST YEAR **Time: Theory - 65 hours**

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 EM

- History of Emergency Medicine
- Understanding Emergency Medicine (the specialty, Its pros & cons)
- Training in Emergency Medicine
- Scope of the emergency ambulance service
- Definition and nature of emergency call and urgent calls
- Standards of performance for emergency calls and urgent calls
- Arrangements for dealing with major incidents
- Contracts and purchasing arrangements for patient transport services
- Responding to the call
  - Communications and dispatching
  - Rescue and extrication
- Mobility of patients
- Non-emergency patient categories
- Arrangements for conveying escorts
- Quality standards typically applied to Patient Transport Services
- National and local patient charters
- Function of ambulance control
- Ambulance communications system
- Patient transport requests are received, planned and allocated and ambulance vehicles are deployed
- Importance of cooperation and network between control staff and ambulance crews

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
  - Medico-legal issues

3. EMERGENCY MEDICAL SERVICES (EMS)

- History and current trends
- Pre-hospital transport
- Roles & responsibilities
- Legal issues
- Principles of life support

4. HEALTH ASSESSMENT

- Purposes
- Process of Health assessment
  - Health history
  - Physical examination:
  - Methods- inspection, Palpation, Percussion, Auscultation and Olfaction
- Preparation for examination: patient and unit
- General assessment
- Assessment of each body System
- Recording of health assessment

5. FIRST AID AND EMERGENCIES

- Wounds, hemorrhage, shock
- Fracture, dislocations, muscle injuries
- Respiratory emergencies, unconsciousness
- Burs, scalds, foreign bodies in the skin, eye, ear, nose, throat, stomach
- Frost bite, effects of heat, cramps, bites and stings
- Poisoning
- Lifting and transporting injured persons
- Bandaging

METHODS OF TEACHING

1. Lecture cum discussion
2. Demonstration
3. Hospital orientation
4. 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***

PATHOLOGY

PLACEMENT: SECOND YEAR **THEORY - 30 Hours**

COURSE DESCRIPTION

This course is designed to enable students to acquire knowledge of pathology of various disease conditions and apply this knowledge in practice of Accident and Emergency Care Technology.

COURSE CONTENT

1. INTRODUCTION - CELL

- Cellular adaptation, Cell injury & cell death.
- Introduction to pathology.
- 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.
- Mechanisms 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
- Morphologic patterns of acute inflammation
- Chronic inflammation

3. IMMUNITY DISORDERS

- General features of the immune system
- Disorders of the immune system

4. NFECTIOUS DISEASES.

- General principles of microbial pathogenesis
- Viral infections
- Bacterial infections- Rheumatic Heart Disease.
- Fungal infections

5. NEOPLASIA

- Definitions
- Nomenclature
- Biology of tumor growth Benign and Malignant neoplasms
- Epidemiology
- Carcinogenic agents and their cellular interactions
- Clinical features of tumors

6. ENVIRONMENTAL AND NUTRITIONAL DISORDERS.

- Environmental and disease
- Common environmental and occupational exposures
- Nutrition and disease.
- Coronary artery disease.

PRACTICALS

1. Bleeding time
2. Clotting time
3. Blood grouping
4. Urine analysis by dipstick method

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

WEIGHTAGE OF MARKS	***25***
Term test	***15marks***
Assignment	***10 marks***

RECOMMENDED BOOK

1. Text book of pathology Harsh mohan -6th edition

MICROBIOLOGY

PLACEMENT: SECOND YEAR **THEORY - 40 HOURS**

(Theory 30 +10 lab)

COURSE DESCRIPTION

This course is designed to enable students to acquire understanding of fundamentals of Microbiology and identification of various micro-organisms. It also provides opportunities for practicing infection control measures in hospital settings.

OBJECTIVES

At the end of the course, the student will

1. Identify common disease producing micro-organisms.
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 dis-infection and sterilization
5. Identify the role of the nurse in hospital infection control system

COURSE CONTENT

1. INTRODUCTION

- Importance and relevance to nursing
- Historical perspective
- 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
- Growth and nutrition of microbes. Temperature
- Moisture
- Blood and body fluids
- Laboratory methods for identification of Microorganisms
- Staining techniques: Gram staining, Acid Fast staining, Hanging drop preparation
- Culture: various medias

PRACTICAL

- Use and care of microscope

- Common examination: smear, Blood, Mouldes and Yeasts.

3. CLINICAL MICROBIOLOGY AND INFECTION CONTROL

- INTRODUCTION - Importance of infection in an ICU, Agents causing Infection
- SPREAD OF INFECTION Source; host; transmission, Biohazardous materials
- INFECTION CONTROL & 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
    - Surveillance; quality control

- SPECIFIC INFECTIONS

  Nosocomial Infections: Types - Prevention.

  - HIV-AIDS
  - Hepatitis A, B, C
  - Tropical Infections - Tetanus, Malaria, Leptospirosis, Dengue, Rickettsial, Amoebiasis Sepsis

PRACTICALS

- Each Student will practice in the laboratory as indicated in each unit of the courses outline. While giving care in the wards they will practice collection and processing of sterilization, immunization, chemotherapy and maintenance of personal and environmental hygiene.
- Observation visit to incinerator, posting in CSSD and infection control department.

METHOD OF TEACHING

1. Lecture
2. Discussion
3. Demonstration

METHOD OF EVALUATION

1. Written Tests
2. Assignments
3. Practical and Oral Test

WEIGHTAGE OF MARKS ***50***

Term test ***30 marks***

Assignment ***20marks***

REFERENCES

1. Ananthanarayanan R. “Text Book of Mirobio1ogy”, Bombay, Oient Jaym Panickat, C. K. Longman, 1981.
2. Probisher, “Fundamentals of Microbiology”, Philadelphia, W. B. Saunders Co., 1952.
3. Stewai, Beswick — Bacteriology, Virology, Immunity” London> The English Language Book Society, 1977.
4. Wilson, M. E. Helen Eckel Mizer and Josephine A Mo cue “Microbiology in Patient Care”, U.S.A., Mac Milan Co., 1979

PHARMACOLOGY

PLACEMENT: SECOND YEAR **THEORY- 20 Hours**

COURSE DESCRIPTION

This course is designed to introduce the concepts of drugs used in Accident and Emergency care technology.

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
- Principles of therapeutics

2. CLINICAL PHARMACOLOGY

- Drugs - Nomenclature
- Mode *of* action *of* drugs
- Routes *of* administration
- Drug dose calculation - Dilution, infusion rate
- Medical gases: O2 ; N20
- Bronchodilators
- Mucokinetic agents
- Antihistamines
- Steroids
- Drugs affecting Autonomic Nervous System
- Isotropic agents, Chronotropic agents,
- Vasopressors & Vasodilators
- Anti-Hypertensive
- Analgesics; Sedatives
- 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, anti-convulsants, 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

METHOD OF TEACHING

1. Lecture
2. Discussion
3. Demonstration

METHOD OF EVALUATION

1. Written Tests
2. Assignments
3. Practical and Oral Test

WEIGHTAGE OF MARKS	***25***
Term test	***20 marks***
Assignment	***5marks***

RECOMMENDED BOOKS

1. Essentials of Medical Pharmacology-K.D.Tripathi -6th edition
2. Pharmacology and Pharmacotherapeutics-R.S.Satoskar-revised 19th edition

PATIENT EXAMINATION AND NURSING

PLACEMENT: SECOND YEAR **THEORY- 50 Hours**
PRACTICAL - 225 hours
(50 lab and 175 clinical)

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.

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
- Health, its philosophy and dimensions
- Nature of disease pattern
- Impact of illness on individual, family and community
- Hospital (settings type and functions)
- Functions of a nurse
- Factors influencing health

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 NEED*S*

- 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

A. Temperature
- Definition and normal body temperature
- Factors affecting normal body temperature
- Assessment of normal body temperature

B. Pulse

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

C. Respiration
- Definition and normal respiratory rate
- Characteristics of normal respiration
- Factors influencing respiratory rate
- Alterations in respiration

D. Blood pressure

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

10. 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
- Lifting and transporting injured persons
- Bandaging
- Cardiopulmonary resuscitation
- Physical assessment

11. FLUID AND ELECTROLYTE BALANCE

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

12. BODY MECHANICS

Movement of patient lifting and transporting

13. INFECTION CONTROL

- Infection cycle
- Universal precautions
- Barriers technique

14. 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. CPR

METHODS OF TEACHING

1. Lecture and discussion
2. Demonstration

METHOD OF EVALUATION

1. Written assignments
2. Written exams.

WEIGHTAGE OF MARKS

Theory	***50 MARKS***
Term test	***30 marks***
Assignment	***20marks***

PRACTICAL	***50 MARKS***
Practical Examination	***25 marks***
Clinical Evaluation	***10 marks***
Case study/case book	***5 marks***
Practical record	***5 marks***
Observational /field visit	***5 marks***

RECOMMENDED BOOKS

1. First Aid - The authorised manual of St. John's Ambulance Association and St. Andrew Ambulances Association. The British Redcross Scociety, Published by St. John's Ambulance Association
2. Handerson Virginia and Nite Gladys "Principles and Practise of Nursing".
3. Kozier - Dugas, "Introduction to Patient Care.
4. Mac. Clein Esther and Cragg Sherley, Scientific Principles, in Nursing, C.V.Mosby Co, St Lours,
5. Malesanos et.al, Health Assessment, The C.V.Mosby Co., Toronto .
6. Notter / Spalding, "Professional Nursing Foundations Perspectives and Relationship"
7. Patricia A. Potter et.al, "Fundamentals of Nursing", Toronto, The C.V.Mosby Co.

EMERGENCY MEDICINE AND EMERGENCY MEDICAL SERVICES - II

PLACEMENT: SECOND YEAR **THEORY- 70 Hours**
PRACTICAL - 1500 hours
(100 lab and 1400 clinical)

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; bio- chemical, 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
- Hospital infection
- Shock/ Dehydration
- Hypoglycemia/ hyperglycemia
- Anaphylaxis/Allergy

2. LIFE SUPPORT & RESUSCITATION

- Basic life support in perspective
- Cardiopulmonary function and actions for survival
- Adult Basic life support
- Pediatric Basic Life support
- Special resuscitation situations
- Safety during CPR training and actual rescue
- Risk factors and prudent heart living

3. BASIC PRINCIPLES OF TRAUMA CARE

- The principles of kinetic energy Mechanism.
- Primary survey and prioritise patient management as necessary
- Secondary survey as appropriate
- Re-assessment
- Revised trauma score, Glasgow Coma Score
- The upper airway
- Chest injuries
- Hypovolaemic shock
- Head injuries
- Maxillofacial injuries
- Spine and spinal cord
- Abdomen
- The urinary tract
- Limb injuries
- Handling distressed relatives breaking bad news
- Trauma in pregnancy
- Paediatric trauma
- Trauma in elderly
- Prehospital care
- Transportation to hospital
- Management of severe burns
- Chemical incidents
- Blast and gunshot injuries
- Trauma in hostile environments
- Major incidents
- Chest trauma
- Abdominal trauma

4. 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, disinfestation, & Sterilization
- Disposal of hospital wastes
- Important communicable diseases - Respiratory; Intestinal; contact - STD / AIDS

PRACTICALS

1. **Spine Immobilisation,** scoop board, Splinting and Sling using of cervical collar procedure
   Procedure for using spine board with strapping

   Procedure to perform log roll and what is the use of performing a log roll

   Method of using : Wooden splints

   Triangular bandage (including as sling)

   Uses and complications of splint

2. **Use of Roller Bandage**
   Elbow and knee bandage

   Hand and Foot bandage

   Eye bandage

   Ear bandage

   Jaw bandage

   Neck bandage

   Shoulder spica

   Thumb spica

   Reef Knots)

3. Management of a Trauma Victim (Primary survey and Secondary survey).

METHODS OF TEACHING

1. Lecture and discussion
2. Demonstration

METHOD OF EVALUATION

1. Written assignments
2. Written exams.

WEIGHTAGE OF MARKS

Theory	***50 MARKS***
Term test	***30 marks***
Assignment	***20marks***

PRACTICAL	***50 MARKS***
Practical Examination	***25 marks***
Clinical Evaluation	***10 marks***
Case study/case book	***5 marks***
Practical record	***5 marks***
Observational /field visit	***5 marks***

CLINICAL PROCEDURES AND INSTRUMENTATION EMERGENCY SERVICES

PLACEMENT: THIRD YEAR **THEORY- 100 Hours**
PRACTICAL - 400 hours
(100 lab and 300 clinical)

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:

- Nasotracheal suctioning
- Insertion of nasopharyngeal and oropharyngeal airway
- Mechanical ventilation
- Intercostal drainage
- Thoracentesis

Intermediate Airways

- Esophageal Obturator Airway
- 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
    a. Nebulizers
    b. 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 umbilical vein
- 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

- Ipecac induced emesis
- 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

3. DIGESTIVE SYSTEM

- Acute abdominal problems
- Pathophysiology
- Management
- Abdominal trauma

4. **RESPIRATORY SYSTEM**

- Respiratory arrest
- Respiratory diseases

- Pathophysiology
- Management
- Chest trauma

5. CIRCULATORY SYSTEM

- Structure of heart (Including function)
- Blood vessels
- Arterial and venous distribution in body
- Pathophysiology
- Heart sound
- Blood pressure and cardiac output
- Cardiac cycle
- Electrocardiograph (ECG)
- Electrical conducting system
- Cardiac diseases
- Shock
- Cardiac arrest
- Management

6. CENTRAL NERVOUS SYSTEM

- Functional area of brain and reflex
- Anatomy of spinal cord
- Cranial nerves
- Spinal nerves
- Sympathetic and parasympathetic outflow
- Impulse conduction
- Structure of neuron

- Degeneration and regeneration of nerve fibers
- Cerebral blood flow
- Unconscious patient
- Syncope
- Epilepsy
- Meningitis
- Cerebro vascular accident
- Head injury
- Spinal trauma
- Maxillofacial injury
- Pathophysiology
- Management

7. MEDICAL EMERGENCIES

- Hypoglycemia
- Hyperglycemia
- Poisoning
- Anaphylaxis
- Hypothermia
- Hyperthermia
- Mental illness

PRACTICALS

- Power supply testing
- Fuses testing
- Spot identification
- Thermometer
- BP apparatus
- Stethoscope

- Glucometer
- Intraosseous infusion
- LMA
- Combitube
- ET intubation
- Nebuliser
- Ventilator
- Capnography
- Pulseoximeter

METHODS OF TEACHING

1. Lecture and discussion
2. Demonstration

METHOD OF EVALUATION

1. Written assignments
2. Written exams.

WEIGHTAGE OF MARKS

Theory	***50 MARKS***
Term test	***30 marks***
Assignment	***20marks***

PRACTICAL	***50 MARKS***
Practical Examination	***25 marks***
Clinical Evaluation	***10 marks***
Case study/case book	***5 marks***
Practical record	***5 marks***
Observational /field visit	***5 marks***

RECOMMENDED BOOKS

1. Paramedic practice today above and beyond- Barbara-Mosby Elsevier
2. Mosbys paramedic textbook,3rd edition ,Mosbys Mick J.Sanders –Mosby Elsevier
3. Rosens emergency medicine-7th edition Marx ,Hockberger Walls, Adams Mosby Elsevier
4. Essentials of Medical Pharmacology, 6th edition ,K.D.Tripathi-Jaypee
5. Clinical Procedure in Emergency Medicine by "Robert & Hedges"-Saunders
6. Nancy Caroline's emergency care in streets 6th edition, Editor Andrew N. Pollak Jones and Bartlett publishers

EMERGENCY SURGERY

PLACEMENT : THIRD YEAR

Theory : 100hrs
Practical : 100hrs

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 Anaestesia
- 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. ACUTE ABDOMINAL PAIN

5. ESOPHAGEAL OBSTRUCTION AND FOREIGN BODIES

- Site
- Radiographic consideration
- Esophageal pharmacologic Maneuvers

- Foley catheter manipulation of Esophageal Foreign Bodies
- Special situations: Fish Bones in the Throat
    - Button Battery ingestion
    - Childhood coin ingestion

6. GASTROINTESTINAL BLEEDING

- Upper GI Bleed
- Lower GI Bleed

7. STOMACH

- Anatomy and physiology
- Peptic ulcer: Aetio pathogenesis
- Clinical features
- Difference between duodenal and gastric ulcer
- Investigations and Treatment

8. CHOLECYSTITIS

- Definition
- Pathophysiology
- Causes
- Signs and symptoms
- Investigations
- Treatment

9. PANCREAS

- Histology
- Acute Pancreatitis:
    - Definition
    - Pathophysiology
    - Causes

    - Signs and symptoms
    - Investigations
    - Treatment
- Chronic Pancreatitis:
    - Aetiology
    - Clinical features
    - Investigations
    - Treatment

10. GASTROINTESTINAL TRACT

11. APPENDIX

- Acute Appendicitis:
    - Pathology
    - Clinical features
    - Physical Examination
    - Investigations
    - Treatment

12. INTESTINAL OBSTRUCTION

13. ABDOMINAL TRAUMA

- Solid viscus injuries (Liver, Spleen, Kidney)
- Hollow viscus injuries (Intestines, Urinary bladder)
- Vascular injuries in the abdomen
- Diaphragmatic rupture
- Evisceration
- Mesenteric avulsion, Hematoma

14. ANORECTAL DISORDERS

15. RENAL COLIC

- History
- Causes
- Presentation
- Examination of the Kidney
- Investigations
- Management

16. TORSION TESTIS

17. SPECIAL EMERGENCY SURGICAL PROCEDURES

PRACTICALS

Assisting in various procedures like:

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

METHODS OF TEACHING

1. Lecture and discussion
2. Demonstration

METHOD OF EVALUATION

1. Written assignments
2. Written exams.

WEIGHTAGE OF MARKS

Theory	***50 MARKS***
Term test	***30 marks***
Assignment	***20marks***

RECOMMENDED BOOKS:

1) A manual on clinical surgery,7th edition S Das-Dr.S.Das
2) Manipal manual of Surgery,2nd edition ,K.Rajgopal Shenoy-CBS Publishers

EMERGENCY MEDICAL SERVICES

PLACEMENT: THIRD YEAR **THEORY - 135 HOURS**
PRACTICAL - 1300 hours
(100 lab and 1200 clinical)

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. **Medical emergencies**
    - Hypoglycemia
    - hyperglycemia
    - Poisoning
    - Anaphylaxis
    - Hypothermia
    - Hyperthermia
    - Mental illness
2. **Fluids and electrolytes**
    - Fluid administration
    - Formulas
    - Electrolyte imbalance
3. **Acid base emergencies:**
4. **Respiratory Emergencies:**
    - 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
    - Subarachnoid 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

12. Dermatological Emergencies:

- Virus infections:
    - Varicella
    - Herpes zoster
    - Acute leprosy reactions
- Autoimmune disorders:
    - Pemphigus vulgaris
    - Systemic lupus erythematosus
- Toxic disorders:
    - Acute erythroderma
    - Dermatitis venenata
    - Severe pruritus,
    - Scabies
    - Allergic reactions

13. Communicable disease:

a. 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
- Carbonmonoxide
- Cyanide
- Caustics

- Coppersulphate
- Digoxin toxicity
- Hydrocarbons
- Tricyclic 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
- Fish stings
- Dog bite
- Cat bite
- Leech bite
- Human bite

16. **Natural disasters**

- Earthquakes
- Tornadoes
- Hurricanes
- Winter storm
- Floods
- Firestorm and wildfires
- Tsunamis
- Volcanic eruptions
- Heat related disasters

17. Manmade disasters

- Hazardous material emergencies
- Radiation injuries
- Air crash disaster
- Maritime disasters

- Derailing
- Terrorist bombing
- Fire and burn care
- Chemical disasters
- Biologic weapons
- Mass shooting

18. Industrial Hazards

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

19. Obstetrical emergencies

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

20. MENTAL HEALTH EMERGENCIES

- Aggressive patient
- Suicide
- Deliberate self-harm

21. Paediatric emergencies

- Neonatal resuscitation
- Pediatric resuscitation
- Assessment of newborn and pediatric
- Meconium aspiration
- Diaphragmatic hernia
- Apnea
- Drowning

- SIDS (Sudden infant Death Syndrome)
- Hypoglycemia,
- DKA
- Dehydration
- Fluid therapy
- Foreign body obstruction
- Asphyxia neonatorum
    - Neonatal Seizure
    - Febrile convulsion
- Shock
- Arrhythmias

PRACTICALS:

1. Triage (Evaluation and Management)
2. Removal of Crash Helmet
3. Wireless Communication
4. Demonstrate in simulated situations, the techniques of management of a variety of poisoning.
   [Knowledge about Activated carcoal, sorbitol, Atropine, PAM, Naloxone, Neurobion, Ryle's tube, Foley's catheter, Kidney tray, Gastric Lavage tube, Antisnake venom (ASV)]
5. Environmental emergencies
6. History taking, Examination and Presentation of Paediatric Case
7. Spotters
8. Emergency Drugs
9. ABG,ECG Interpretation
10. IM ,IV injection

METHODS OF TEACHING

Lecture and discussion
Demonstration

METHOD OF EVALUATION

Written assignments
Written exams.

WEIGHTAGE OF MARKS

Theory	***50 MARKS***
Term test	***30 marks***
Assignment	***20marks***

PRACTICAL	***50 MARKS***
Practical Examination	***25 marks***
Clinical Evaluation	***10 marks***
Case study/case book	***5 marks***
Practical record	***5 marks***
Observational /field visit	***5 marks***

RECOMMENDED BOOKS

1. Gold Franks Toxicologic Emergencies 8th edition, Neal E. Flomenbaum,Lewis R. Goldfrank-Mc Graw Hill
2. Emergency medicine-2nd edition,Plantz ,Wipfler-Lippincott Williams And Wilkins
3. Rosens emergency medicine-7th edition Marx ,Hockberger Walls, Adams-Mosby Elsevier
4. Adams emergency medicine,Adams,Erick D.Barton-Saunders Elsevier
5. Emergency medicine- 5th edition, Judith E. Tintinalli-Mc Graw Hill
6. Nancy Caroline's emergency care in streets 6th edition, Editor Andrew N. Pollak Jones and Bartlett
7. Nelson Textbook of paedeatrics 18th edition ,Kliegman ,Behrman,Jenson-Saunders Elsevier
8. Care of new born –6th edition,Meharban Singh-Sagar
9. Essential Pediatrics-7th edition O.P. Ghai, Vinod K.Paul-CBS publisher
10. IAP book of pediatrics,3rd edition, A.Parthasarathy, Nair-Jaypee
11. Disaster medicine –2nd edition David E .Hogan, Jonathan-Lippincott Williams and Wilkins
12. Rosens emergency medicine-7th edition Marx ,Hockberger Walls, Adams-Mosby Elsevier