

Accident and Emergency Care Technology

Syllabus for B.Sc courses

Allied health courses offered by The Tamilnadu Dr.M.G.R. Medical -
University

Overview

	Year	Semester	Subjects
B.Sc	1	1	English
			Hospitals & patients: Orientation
			Computers
			Introduction to EM
			Emergency Medical Services (EMS)-
		2	Anatomy
			Physiology
			Biochemistry
	2	1	Pathology
			Microbiology
			Pharmacology
			Clinical medicine
		2	Triage and general emergencies
			Life support & resuscitation
			Trauma care
	3	1	Cardiovascular emergencies
			Respiratory emergencies
			Neurological emergencies
			Nephro/Urology emergencies
			Gastro-intestinal emergencies
			Obstetric and Gynaecological emergencies
			Mental health emergencies
			Environmental emergencies
		2	Project/ Electives/revision

1st Year

Section-1 (months: 1-3)

English

- **Communication:-**
 - Role of communication
 - Defining Communication
 - Classification of communication
 - Purpose of communication
 - Major difficulties in communication
 - Barriers to communication
 - Characteristics of successful communication – The seven Cs
 - Communication at the work place
 - Human needs and communication “Mind mapping”
 - Information communication
- **Comprehension passage:-**
 - Reading purposefully
 - Understanding what is read
 - Drawing conclusion
 - Finding and analysis
- **Explaining:-**
 - How to explain clearly
 - Defining and giving reasons
 - Explaining differences
 - Explaining procedures
 - Giving directions
- **Writing business letters:-**
 - How to construct correctly
 - Formal language
 - Address
 - Salutation
 - Body
 - Conclusion
- **Report writing:-**
 - Reporting an accident
 - Reporting what happened at a session
 - Reporting what happened at a meeting

Section-2 (months 1-3)

Hospitals & patients: Orientation

Hospitals

- History
- Classification
- Organisation & structure
- Doorway to the hospital – Emergency department
- Departments & Teams
- Paramedical Staff
- Ancillary departments
 - Lab
 - Pharmacy
 - Imaging
 - Physio/speech/

- Patient support services
- Admin/Billing
- Medical insurance
- Patient transport
- Dietary
- Social services
- Health information management
 - Medical terminology
 - Medical records
 - Electronic Medical Records
 - Medico-legal issues

Section-3 (month: 4)

Computers

- Hardware
 - CPU
 - I/O devices
 - Memory
- Software
 - Operating systems
 - Applications
 - Word processing
 - Presentations
- Internet
 - E-mail
 - Search engines
 - Uploading/downloading files
 - Cloud computing
 - Educational sites

Section-4 (month-4-5)

- Introduction to EM
 - History of Emergency Medicine
 - Understanding Emergency Medicine (the specialty, Its pros & cons)
 - Training in Emergency Medicine
- Emergency Medical Services (EMS)-history and current trends
 - History
 - Pre-hospital transport
 - Roles & responsibilities
 - Legal issues
 - Moving patients
 - Principles of life support

Anatomy (Month-7)

- Basic Anatomical terminology
 - The human body
 - Skeleton
 - Brain
 - Head and neck
 - Limbs
 - Thorax
 - Abdomen

Physiology (Month-8-9)

- The Cell:
 - Cell Structure and functions of the various organelles.
 - Endocytosis and exocytosis
- The 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.
 - Detailed description about WBC-Total count (TC), Differential count (DC) and functions.
 - Platelets – formation and normal level and functions
 - Blood groups and Rh factor

Biochemistry (Month-10)

- Carbohydrates--Glucose and Glycogen Metabolism
- Proteins:-Classification of proteins and functions
- Lipids:-Classification of lipids and functions
- Enzymes:
 - Definition – Nomenclature – Classification – Factors affecting enzyme activity
 - Active site – Coenzyme – Enzyme Inhibition – Units of enzyme –
 - Isoenzymes – Enzyme pattern in diseases.
- 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 – Kwashiorkor

2nd Year

Pathology (Month 1-3)

- 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.
 - Mechanisms of cell injury.
 - Reversible and irreversible cell injury.
 - Examples of cell injury and necrosis
- Inflammation.
 - General features of inflammation
 - Historical highlights
 - Acute inflammation
 - Chemical mediators of inflammation
 - Outcomes of acute inflammation
 - Morphologic patterns of acute inflammation
 - Summary of acute inflammation
 - Chronic inflammation
- Immunity disorders.
 - General features of the immune system
 - Disorders of the immune system
- Neoplasia.
 - Definitions
 - Nomenclature
 - Biology of tumor growth benign and malignant neoplasms
 - Epidemiology
 - Carcinogenic agents and their cellular interactions
 - Clinical features of tumors

Microbiology (Month-4)

- Morphology and physiology of bacteria
- Sterilization and disinfection
- Culture media and methods
- Bacterial taxonomy
- General properties of viruses
- AIDS
- Normal microbial flora of human body
- Immunophrophylaxis

Pharmacology (Month-4)

- Introduction and Sources of drugs
- Route of admin
- Pharmacokinetics
- Adverse drug reactions

Clinical medicine (Month 5-6)

- Public health
 - Importance of Community Medicine
 - Modes of Transmission of Diseases
 - Principles of Prevention & Control of Diseases
 - Hospital infections, disinfection, disinfestation and sterilisation
 - Disposal of Hospital wastes
 - Important Communicable diseases (various systems)
 - Health education
- Individual Patient care
 - The Art of History taking
 - Physical examination (GPE & different systems)
 - The Unconscious patient
 - Diagnosis of Brain death
 - Case presentation
- Nursing –principles
 - Introduction to Nursing health & Health care system
 - Nurse patient relationship
 - Good Housekeeping/Hygiene needs
 - Vital signs
 - First aid & Nursing emergencies

2 nd Year						
System	Topics	Anatomy	Physiology/Biochem	pharm	Skills	equipment
Triage and general emergencies	Triage Hospital infection	Human body	Auscultatory areas Heart sounds. Arterial pressures, blood pressure		Triage Measuring BP	BP apparatus Pulse oximeter Thermometer
	Shock/ Dehydration					MPM monitor
	Hypoglycemia/hyperglycemia		Glucose and Glycogen Metabolism	Insulin OHA dextrose	IV access	Glucometer
	Anaphylaxis/Allergy		Type IV hypersensitivity			
Life support & resuscitation	Adult Basic life support Pediatric Basic Life Support Special resuscitation situations Safety during CPR training and actual rescue Risk factors and prudent heart living		Cardiopulmonary function & actions for survival			
Trauma care	Extremity trauma Head trauma & spine injury Chest trauma Abdominal trauma	Osteology	Metabolic response to trauma		ATLS Transport	Cervical collar Spine board

3 rd Year						
System	Topics	Anatomy	Physiology/Biochem	pharm	Skills	Equipment
Cardiovascular emergencies	ACS Heart failure Dysrhythmias Hypertensive crisis	Heart – Surface anatomy of heart, chambers of the heart, valves of the heart, major	Cardio-Vascular System: Physiology of the heart Cardiac cycle, Cardiac output. Hypertension		ECG ACLS	ECG

		blood vessels of heart, pericardium, coronary arteries.				
Respiratory emergencies	Asthma /COPD Pneumonia Pneumothorax and tension Respiratory failure	Thorax – Intercostal space, pleura, bony thoracic cage, ribs sternum & thoracic vertebrae Lungs – Trachea, bronchial tree	Respiratory system: (i) Respiratory movements. (ii) Definitions and Normal values of Lung volumes and Lung capacities.		Nebulisation Airway	Spirometer O2 delivery syst
Neurological emergencies	Seizure Stroke	Brain & spinal cord	Central Nervous system: (i) Functions of CSF		GCS	
Nephro/Urology emergencies	Acute renal failure Acute retention of urine Renal colic/testicular pain	Excretory system – Kidneys, ureters, bladder	Excretory system: (Normal Urinary output Micturition (iii) Renal function tests, renal disorders		Urinary catheterisation	

System	Topics	Anatomy	Physiology/Biochem	pharm	Skills	Equipment
Gastro-intestinal emergencies	acute abdomen Gastroenteritis	GIT Solid organs Hollow viscus	Digestive system (for the students of Diploma in Scope Support Technology) (i) Physiological Anatomy of the GIT. (ii) Food Digestion in the mouth, stomach, intestine (iii) Absorption of foods (iv) Role of bile in the digestion		ICD	ICD

Obstetric and Gynaecological emergencies	Managing labour Ectopic	Genito-urinary system	Reproductive system: (i) Formation of semen and spermatogenesis (ii) Brief account of menstrual cycle.			
Mental health emergencies	Aggressive patient Suicide Deliberate self-harm					
Environmental emergencies	Hyperthermia/heatstroke Burns/electric shock poisoning		Metabolic response to injury	charcoal	Nasogastric intubation	

EXAMINATION PATTERN FOR Diploma A & E Tech

FIRST YEAR:

Sl. No.	Subject Title	I A		University Exam	
		Max	Min	Max	Min
1.	Anatomy, Physiology, Biochemistry	50	25	100	50
2.	Hospital orientation, management, and computers	50	25	100	50
3.	English	50	25	100	50
4.	Emergency medicine (EM) and EMS	50	25	100	50

<u>First Year</u>	Subjects	Max	Min
Paper I	Anatomy, Physiology, Biochemistry	100	50
Paper II	Hospital orientation, management, and computers	100	50
Paper III	English	100	50
Paper IV	Emergency medicine (EM) and EMS	100	50
	Internal Assessment (IA)	100	50
Failure to achieve 50% in any one paper will result in fail in theory exam)			
IA marks should be 50% or above to be eligible to write the exam			
Internal assessment marks: Theory test -20; practicals-20; projects/logbook-10			
No practical exam in 1 st year			

SECOND YEAR:

Sl. No.	Subject Title	I A		University Exam		Practical		Viva Voce	
		Max	Min	Max	Min	Max	Min	Max	Min
1.	Pathology, Microbiology, Pharmacology	50	25	100	50				
2.	Patient examination, nursing	50	25	100	50				
3.	Emergency medicine (EM) and EMS Practical exam on Patient Examination, Nursing, Triage, Life Support, Trauma care	50	25	100	50	50	25	50	25

<u>Second year</u>	Subjects	Max	Min
Paper I	Pathology, Microbiology, Pharmacology	100	50
Paper II	Patient examination, nursing	100	50
Paper III	Emergency medicine (EM) and EMS	100	50
	Practical exam on Patient examination, nursing, Triage, Life support, Trauma care	100	50

EXAMINATION QUESTION PAPER PATTERN

Essay	3 x 10 = 30 Marks
Short Notes	10 x 5 = 50 Marks
Short Answers	10 x 2 = 20 Marks
Total	100 Marks

Textbooks

Contemporary Communicative English for Technical Communication

Board of Editors

ISBN: 8131755908

ISBN-13: 9788131755907

Language: English

Publisher: Pearson Education

An Introduction to Clinical Emergency Medicine

Guide for Practitioners in the Emergency Department

[View All Contributors](#)

Paperback

ISBN: 9780521542593

DOI: 10.2277/0521542596

Hospitals: What They Are and How They Work, Fourth Edition

Author(s): Donald J. Griffin, MBA, MS, JD, FACHE, Assistant Professor, School of Health Administration, Texas State University, San Marcos, Texas

Details: ISBN-13: 9780763791094,

Paperback 438 pages © 2012

Computers in Medicine

Lele, R D

ISBN: 0070585350

ISBN-13: 9780070585355

Publisher: McGraw-Hill Education (India) Pvt Ltd

Community medicine by Park

Fundamentals Of Nursing: The Art And Science Of Nursing Care (fundamentals Of Nursing)

Carol Taylor, Carol Lillis, Priscilla LeMone, Pamela Lynn

ISBN: 0781781574

ISBN-13: 9780781781572

Publisher: Lippincott Williams & Wilkins,

The Basic Emt (2003 Edition) - Hardcover Version: Comprehensive Prehospital Care (basic Emt)

Norman E. McSwain

ISBN: 0323022561

ISBN-13: 9780323022569

Publisher: Mosby
