MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF ALLIED HEALTH CARE SCIENCES AND TECHNOLOGY

Suraram X Roads, Jeedimetla,
Hyderabad-500055
Web: https://mrvv.edu.in/

Program

Bachelors of

Emergency Medical Technologist (Paramedic)

2026

MALLA REDDY VISHWAVIDYAPEETH

SCHOOL OF ALLIED HEALTH CARE SCIENCES AND TECHNOLOGY

BACHELORS OF EMERGENCY MEDICAL TECHNOLOGIST (PARAMEDIC)

VISION

- To become a center of excellence in emergency medical technology education and training.
- To produce skilled, competent, and compassionate emergency medical technologists.
- To promote excellence in pre-hospital and emergency patient care.
- To encourage ethical and professional healthcare practices.
- To foster innovation, research, and lifelong learning in emergency medicine.
- To contribute to society through quality emergency healthcare and disaster response services.

MISSION

- To provide quality education in emergency medical technology through theory and practical training.
- To equip students with skills in emergency assessment, stabilization, and patient transport.
- To train students in advanced life support, trauma care, and critical emergency interventions.
- To develop professional ethics, leadership, teamwork, and communication skills.
- To encourage research, evidence-based practice, and innovation in emergency care.
- To prepare graduates for effective response during emergencies, disasters, and public health crises.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- Apply advanced knowledge and practical skills in emergency medical and pre-hospital care.
- Demonstrate clinical reasoning and decision-making in emergency and critical situations.
- Practice professional ethics and provide patient-centered emergency care.
- Work effectively with multidisciplinary healthcare teams in emergency settings.
- Engage in research, evidence-based practice, and lifelong professional learning.

- Contribute effectively to disaster management, emergency preparedness, and community healthcare.

PROGRAM OUTCOMES (POs)

- Apply knowledge of medical sciences and emergency care in clinical practice.
- Perform systematic patient assessment and emergency evaluation.
- Demonstrate competency in emergency procedures, trauma care, CPR, and life support.
- Analyze and solve emergency healthcare problems using critical thinking.
- Utilize emergency medical equipment and healthcare technologies effectively.
- Communicate effectively with patients, families, and healthcare teams.
- Demonstrate leadership, teamwork, and professional responsibility in emergency settings.
- Practice according to ethical, legal, and professional standards.
- Participate in public health programs, disaster management, and emergency preparedness.
- Apply research knowledge and evidence-based practice in emergency care.
- Demonstrate lifelong learning and continuous professional development.
- Show commitment to patient safety, healthcare quality, and social responsibility.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- Provide effective pre-hospital emergency care and ambulance-based patient management.
- Perform emergency medical procedures such as airway management, CPR, defibrillation, and trauma stabilization.
- Manage medical, surgical, pediatric, obstetric, cardiac, and trauma emergencies efficiently.
- Operate emergency medical equipment including ECG monitors, ventilators, and defibrillators.
- Participate effectively in disaster response, mass casualty management, and emergency preparedness.
- Demonstrate professionalism, ethical practice, teamwork, and communication in emergency medical services.

COURSE OUTCOMES (COs)

- Explain the fundamentals of anatomy, physiology, pathology, and emergency medicine.
- Assess and manage patients in emergency and critical care situations.

- Demonstrate life-saving procedures and emergency interventions effectively.
- Apply infection control, patient safety, and medico-legal principles in practice.
- Use emergency medical equipment and monitoring devices efficiently.
- Communicate effectively and collaborate with healthcare professionals.
- Demonstrate ethical values, professionalism, and leadership in emergency care.
- Apply research knowledge and evidence-based practices for continuous improvement.

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SCHOOL OF ALLIED HEALTH CARE SCIENCES AND TECHNOLOGY

BACHELOR OF EMERGENCY MEDICAL TECHNOLOGIST (PARAMEDIC)

COURSE STRUCTURE

First Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 101	Anatomy	3	1	4	45	30	75	30	70	100
BEMT 102	Physiology	3	1	4	45	30	75	30	70	100
BEMT103	Biochemistry	3	1	4	45	30	75	30	70	100
BEMT104	Introduction to EMS and Ambulance Operation	1	2	3	15	30	45	30	70	100
BEMT105	Communication Skills	2	-	2	30	-	30	25	25	50
BEMT106	Basics of Computers	2	-	2	30	-	45	25	25	**BEMT106**
VAC	Professionalism and Values	2	-	2	30	-	30	25	-	-
Total		**16**	**5**	**21**	**270**	**120**	**375**	**185**	**330**	**500**

Second Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 201	Pharmacology	3	1	4	45	30	75	30	70	100
BEMT 202	Pathology	3	1	4	45	30	75	30	70	100
BEMT 203	Microbiology	3	1	4	45	30	75	30	70	100
BEMT 204	Instrumentation of EM part-I	3	1	4	45	30	75	30	70	100

BEMT 205	Community Medicine	1	1	2	15	30	45	25	25	50
BEMT 206	Psychology	1	1	1	2	15	30	45	25	25
VAC	Health and well being	2	-	2	30	-	30	25	-	-
Total		17	6	21	227	165	390	405	330	500

Third Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total
		L	P	C	L	T/P	Total	IA*	UE**	(IA+UE)
BEMT 301	Introduction to Patient Care and Assessment	3	1	4	45	30	75	30	70	100
BEMT 302	Medical Emergencies Part-1: Respiratory, Cardiovascular, Neurological, Gastrointestinal and Genitourinary	3	1	4	45	30	75	30	70	100
BEMT 303	Trauma Emergencies part-1: Introduction to Trauma, Hemorrhage and Shock, Head and Facial Trauma, Thoracic and Abdominal Trauma.	3	1	4	45	30	75	30	70	100
BEMT 304	Instrumentation Part-2	3	1	4	45	30	75	30	70	100
BEMT 305	Indian culture, heritage, yoga &meditation	2	-	2	30	-	30	25	25	50

BEMT 306	Soft skills and Clinical Communication Skills	2	-	2	30	-	45	25	25	50
VAC	Stress management	2	-	2	30	-	30	25	-	-
Total		**18**	**4**	**22**	**270**	**120**	**405**	**195**	**330**	**500**

Fourth Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 401	Medical Emergencies-II	3	1	4	45	30	75	30	70	100
BEMT4 02	Trauma II	3	1	4	45	30	75	30	70	100
BEMT 403	Surgical Emergencies	3	1	4	45	30	75	30	70	100
BEMT 404	Burns	3	1	4	45	30	75	30	70	100
BEMT 405	Introduction and Application of Artificial Intelligence in healthcare	2	-	2	30	-	30	25	25	50
BEMT 406	Healthcare management: Personality development, Leadership, Human Rights	2	-	2	30	-	30	25	25	50
VAC	Environmental Awareness	2	-	2	30	-	30	25	-	-
Total		**18**	**4**	**22**	**270**	**120**	**390**	**195**	**330**	**500**

Fifth Semester

Course code	Course Titles	Credits/Wee k			Hours/Semester			Assessment		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 501	Toxicology and Environmental Emergencies	3	1	4	45	30	75	30	70	100
BEMT 502	Gynecological and Obstetric Emergencies	3	1	4	45	30	75	30	70	100
BEMT 503	Neonatology and Pediatric	3	1	4	45	30	75	30	70	100
BEMT 504	Clinical Pharmacology-Emergency Medications	3	1	4	45	30	75	30	70	100
BEMT 505	Basics of Radiology & Imaging Interpretation	2	1	3	30	30	60	25	25	50
BEMT 506	Telemedicine	2	1	3	30	30	60	25	25	50
VAC	Interpersonal Communication	2	-	2	30	-	30	25	-	-
	Total	**18**	**6**	**24**	**270**	**180**	**450**	**195**	**330**	**500**

Sixth Semester

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 601	Disaster and MCI Management	3	1	4	45	30	75	30	70	100
BEMT 602	Research Methodology and Biostatistics	3	-	3	45	-	45	30	70	100
BEMT 603	Intensive Care Concepts and Management	6	-	6	90	-	90	30	70	100

BEMT 604	Intensive Care Concepts and Management Practical	-	3	3	-	90	90	30	70	100
BEMT 605	Emergency Clinical Procedures	-	3	3	-	90	90	25	25	50
BEMT 606	Business Entrepreneurship Development	2	-	2	30	-	30	25	25	50
VAC	Soft skill Development	2	-	2	30	-	30	25	-	-
Total		**16**	**7**	**23**	**240**	**210**	**450**	**195**	**330**	**500**

Seventh and Eight Semester

Course code	**Course Titles**	**Credits/Week**			**Hours/Semester**			**Assessments**		**Total (IA+UE)**
		L	**P**	**C**	**L**	**T/P**	**Total**	**IA***	**UE****	
BEMT 701	Internship					1250	1250			
BEMT 801	Internship					1250	1250			
Total						**2500**	**2500**			

UNDER GRADUATE PROGRAM

Eligibility for admission

He/she has passed the Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board in biology/Botany, Zoology physics, chemistry, Admission is done based on the NEET exam appeared candidates followed by a counselling session.

Eligibility criteria:

A. Higher Secondary (10+2) or equivalent examination recognized by any Indian University or a duly constituted Board with Physics, Chemistry, Biology/Botany, Zoology.

OR

B. Candidates who have studied abroad and have passed the equivalent qualification as determined by the University will form the guideline to determine the eligibility and must have passed with science subjects: Physics, Chemistry, Biology up to 12th Standard level.

OR

C. Candidates who have passed the Senior Secondary school examination of National Open School with a minimum of 5 subjects with any of the following group subjects.
   - English, Physics, Chemistry, Botany, Zoology
   - English, Physics, Chemistry, Biology and any other language

2. Candidates who have studied abroad and have passed the equivalent qualification as determined by the Association of Indian Universities will form the guideline to determine the eligibility and must have passed in the subjects: Physics, Chemistry, Biology and English up to 12th Standard level with pass marks (equivalence to) 50% in physics, chemistry, biology / botany, zoology
3. He/she has attained the age of 17 years as on 31st December of the year of admission
4. He/she has to furnish at the time of submission of application form, a certificate of Physical fitness from a registered medical practitioner and two references from persons other than relatives testifying to satisfactory general character.
   - During subsequent counselling (s) the seat will be allotted as per the merit of the candidate depending on the availability of seats on that particular day.
   - Candidate who fails to attend the Medical Examination on the notified date(s) will forfeit the claim for admission and placement in the waiting list except permitted by the competent authority under special circumstances.
   - The name of the student(s) who remain(s) absent from classes for more than 15 days at a stretch after joining the said course will be struck off from the college rolls without giving any notice.

Provision of lateral entry

Lateral entry to second year of undergraduate bachelors programme for candidates who have passed diploma in emergency medical services/emergency care programs from the Government Boards and recognized by State/Central University, fulfilling the conditions specified and these students are eligible to take admission on lateral entry system only if the related subjects have been studied at diploma level with appropriate transfer of credits.

Duration of the course

The Bachelor of Emergency Medical Technologist (Paramedic) undergraduate degree program is of four years duration (3+1) including one year of compulsory internship.

Duration of the course: 4 (3+1) years or 8 (6+2) semesters.

Total hours – 5200 (Didactics+ Practical +Simulation education internship)

Semesters - An academic year consists of two semesters

- Odd Semester: June/July to November/December
- Even Semester: November/December to April/May

Medium of instruction

English shall be the medium of instruction for all the subjects of study and for examination of the course.

Principal / Head of the institute

In an affiliated college, Principal or Head of the institute must be an Emergency Medical Services / Paramedic professional only. In a university set up, HOD must be an paramedic. Dean must belong to Allied and Healthcare professions as mentioned in the NCAHP Act.

Attendance

A candidate has to secure minimum-

- 75% attendance in theoretical
- 80% in Skills training (practical and clinical training) for qualifying to appear for the examination.

Assessment

Assessments should be completed by the academic staff, based on the compilation of the student's theoretical & clinical performance throughout the training programme. To achieve this, all assessment forms and feedback should be included and evaluated.

Competency standards

Classification Units of Competency Skills at Entry level for paramedics

1. Clinical Competence:
    - Assess, diagnose, and manage emergencies
    - Life support techniques
    - Triage and transport
2. Professionalism and Ethics:
    - Medico-legal understanding
    - Ethical decision-making
3. Communication and Teamwork:
    - Patient and team communication
    - Leadership in emergency settings
4. Public Health and Preventive Care:
    - National health programs
    - Mass casualty response
5. Lifelong Learning and Research:
    - Evidence-based practice
    - Continuous development

SEMESTER – 1

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 101	Anatomy	3	1	4	45	30	75	30	70	100
BEMT 102	Physiology	3	1	4	45	30	75	30	70	100
BEMT103	Biochemistry	3	1	4	45	30	75	30	70	100
BEMT104	Introduction to EMS and Ambulance Operation	1	2	3	15	30	45	30	70	100
BEMT105	Communication Skills	2	-	2	30	-	30	25	25	50
BEMT106	Basics of Computers	2	-	2	30	-	45	25	25	**BEMT106**
VAC	Professionalism and Values	2	-	2	30	-	30	25	-	-
Total		**16**	**5**	**21**	**270**	**120**	**375**	**185**	**330**	**500**

1. GENERAL ANATOMY

L/T/P/C

3/-/1/4

Instructors In charge:

MD Anatomy, M Sc Anatomy or Masters of Advance Care Paramedic or Equivalent with experience in handling anatomy.

Course Description: General anatomy deals with the entire human anatomy with emphasis on different tissues, blood vessels, glands, skeletal and the entire central nervous system in particular.

Objectives: At the end of the semester, the student should be able to:

1. Comprehend the normal disposition, inter-relationships, gross, functional and

applied anatomy of various structures in the human body.

2. Identify the microscopic structures of various tissues, and organs in the human body and correlate the structure with the functions.
3. Identify the anatomical structure in the dissected specimen.
4. Learn to correlate anatomical structures with relevant clinical conditions

Course plan

Unit	Topic / Module	Hours
1	**Organization of the Human Body** • Introduction to the human body • Definition and subdivisions 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 **Cell** • Definition of a cell, shapes and sizes of cells Parts of a cell • Cell membranes cytoplasm, subcellular organelles and their main functions **Cell Division** • Definition and main events that occur in different stages of mitosis and meiosis. **Tissues** • Tissues of the body • Definition and types of basic tissues 1. • Characteristics, functions and locations of different types of tissues	7 Hours
2	**Systems of Support and Movement** **1. Skeletal system** **Skeleton** • Definition, axial and appendicular skeleton with names and number of bones, Types of bones. • Parts of bones. Functions of bones. Name location and general features of the bones of the body.	9 Hours

	Joints • Definition and types of joints with examples. Axes and kind of movements possible. Name, location, type, bones forming, movements possible. **2. Muscular system** Parts of the skeletal muscle. Definition of origin and insertion. Name and location of the skeletal muscles of the body. Origin, insertion, nerve supply and action of large muscles like sternocleidomastoid, pectoralis major, deltoid, Biceps brachii, Triceps brachii, gluteus, gastronemius and diaphragm.	
3	**Control Systems of the Body** **1. Nervous system** Sub-divisions of the nervous system **Spinal cord** • Location, extent, spinal segments, external features and internal structure. **Brain** • Sub-divisions, location external features of medulla oblongata, pons, mid-brain, cerebellum and cerebrum. Meninges and spaces around them. Name and location of ventricles of brain and circulation of cerebrospinal fluid. Blood supply of the brain and spinal cord. **Cranial nerves** • Name, number, location and general distribution. Spinal nerves • Typical spinal nerve groups and number of spinal nerves. Name and location of cervical plexus and brachial plexus. Location and general distribution of the branches. **Autonomic Nervous system** • Definition and functions **2. Sense organs** • Location and features of the nose, tongue, eye, ear and skin **3. Endocrine system** 1. Names of the endocrine glands. Location and features of pituitary, thyroid, parathyroid, suprarenal, pancreas, ovaries and testes. Names of hormones produced by each	15 Hours

	gland.	
4	**Maintenance of the Human Body** **1. Cardio-vascular system** • Types and general structure of blood vessels. Structure and types of arteries and veins. Structure of capillaries Shape, size, location, coverings, external and internal features of heart. Structure of heart wall, conducting system of the heart. Blood supply of the heart. **The systemic arteries and veins**. • Name, location, branches and main-distribution of principal arteries and veins. 1. **Lymphatic system** • Lymph, lymphatic vessels, name, location and features of the lymphatic organs. 2. **Respiratory system** • Names of organs of respiration, Location and features of nose, pharynx, larynx, trachea, bronchi, lungs and pleura.	14 Hours
5	**1. Digestive system** • Names of organs of digestion. Parts of alimentary canal and accessory organs. Location and features of mouth, pharynx, esophagus, stomach, small and large intestines. Location and features of salivary glands, pancreas, liver and gall bladder. **2. Urinary system** • Names of urinary organs, location and features of kidney, ureter, urinary bladder and urethra.	9 Hours
6	**Reproductive system** • Names of male and female organs of reproduction. Location and features of scrotum, testis, epididymis, vas deferens, seminal vesicle, ejaculatory duct, prostate gland, penis and spermatic cord. Location and features of uterus and its supports, uterine tube, ovary vagina vulva and breast.	6 Hours
	Practical	30 Hours

	• Bones, GIT, Respiratory, Cardiovascular, Excretory, Neuro-brain and Spinal cord, Male & Female reproductive • Simple ideas about scalp, triangles of neck, axilla, cubital fossa, mediastinum, inguinal canal, femoral triangle, popliteal fossa. • Demonstration of dissected specimens	
	Total Hours	**75 Hours**

Recommended books:

- Ross and Wilson: Anatomy and Physiology in health and illness
- B D Chaurasia: General human anatomy

References:

- B D Chaurasia: Regional Anatomy. Vol I, II, III
- Richard S. Snell: Clinical Anatomy

Online reference:

- http://study.com/academy/course/anatomy-physiology-course.html
- https://oli.cmu.edu/jcourse/lms/students/syllabus.do?section=434867c180020ca 600dec7797edc76be

2. PHYSIOLOGY

L/T/P/C

3/-/1/4

Instructors In charge:

MD Physiology, M Sc Physiology or Masters of Advanced Care Paramedic or Equivalent with experience in handling physiology

Course Description: General physiology deals with the entire human anatomy with emphasis on different organ systems, their physiological functions with special emphasis on blood and neurophysiology

Objectives: At the end of the semester, the student should be able to:

1. Comprehend basic terminologies used in the field of Human Physiology
2. Define and describe basic Physiological Processes governing the normal functioning of the human body.
3. Apply this knowledge in their Allied Health practice

Course Plan:

Unit	Topic / module	Hours
1	**General Physiology:** • Structure and function of the cell • Transport mechanisms across cell membranes • Homeostasis and feedback mechanisms Introduction to body fluid compartments •	3 hours
2	**Blood and Body Fluids:** • Composition and functions of blood • Haematopoiesis and RBC lifecycle • Haemoglobin and anaemia • WBC types and immunity • basics Platelets and haemostasis Blood groups and transfusion • Plasma proteins • Clinical correlation: Haemorrhage, shock, blood loss in trauma	6 Hours

3	**Nerve and Muscle Physiology:** • Resting membrane potential and action potentiall • Nerve structure, classification of nerve fibres, Impulse formation and conduction. • Neuromuscular junction. • Skeletal, cardiac, and smooth muscle physiology.	6 Hours
4	**Cardiovascular System:** • Structure, conduction system, innervation of the heart and properties of cardiac muscle. • Cardiac cycle, heart sounds, • ECG Heart rate, cardiac output, • Blood pressure- Definition, measurement, factors maintaining B.P, regulation of blood pressure Circulatory shock types and management_Vascular system and microcirculation • • Clinical correlation: Hypovolemia, haemorrhagic shock, cardiac arrest	10 Hours
5	**Respiratory System:** • Physiological anatomy of upper and lower respiratory tract. Mechanics of breathing • • Lung volumes and capacities: definitions, normal values intra pulmonary and intra pleural pressures, surfactant. • Gas exchange and transport • Regulation of respiration • Hypoxia, cyanosis, and respiratory failure • Clinical correlation: Airway obstruction, Ventilatory support	10 Hours
6	**Renal and Electrolyte Physiology:** • Structure of nephron and its blood supply • Formation of urine, • Fluid and electrolyte balance Acid-base regulation • Clinical correlation: Fluid loss, dehydration, acidosis in trauma	6 Hours

7	**Gastrointestinal Physiology:** • Movements and secretions of GIT • Salivary glands secretions, functions, nerve supply regulation. • Gastric glands - secretions, functions, nerve supply regulation. • Pancreatic gland - secretions, functions, nerve supply regulation. • Liver, Functions of bile • Small intestine and large intestine. Deglutition, vomiting • • Clinical correlation: Stress ulcers, enteral feeding in trauma care	4 Hours
8	**Endocrine Physiology:** • Hypothalamus - hypophyseal inter relationship Pituitary hormones- functions • • Thyroid hormones functions, biosynthesis Parathyroid hormones - tetany • • Insulin glucagon actions. Diabetes mellitus • Stress response role of cortisol and catecholamine's • 1. Clinical correlation: Endocrine response to trauma and surgery	3 Hours
9	**Reproductive System:** • Male reproductive organs- spermatogenesis and testosterone actions • Female reproductive organs– Oogenesis and oestrogen, progesterone functions. • Menstrual cycle • Pregnancy and lactation basics • Contraception • • 1. Clinical correlation: Considerations in trauma in women	2 Hours

10	**Central Nervous System and Special Senses:** • Structure and functions of brain, properties of neurons. Structure and functions of spinal cord, spinal cord pathways. • Autonomic nervous system Pain physiology and analgesia • Functions of brain stem, thalamus, basal ganglia, cerebellum, cortex and reticular formation. • Cerebrospinal fluid. • Thermoregulation • 1. Clinical correlation: Head injury, spinal shock, pain management	10 Hours
Practical Skills (lab/clinical/ simulation)	**Practical Physiology:** • Measurement of vital signs: pulse, BP, respiratory rate ECG recording and interpretation • Haemoglobin estimation, blood grouping, clotting time Cased based learning (charts): Cardiovascular system, Respiratory system, sensory and motor system • Test of vision and hearing • Examination of effects of exercise on blood pressure. • Case-based learning: shock, trauma resuscitation parameters	30 Hours
	Total Hours	**75 Hours**

Reference books:

- Guyton and Hall: Textbook of Medical Physiology
- Essentials of Medical Physiology (Sembulingam & Prema Sembulingam, 8th edition
- A C Guyton: Text book of Medical Physiology, 8th edition, Saunders company, Japan,
- G J Tortora, B Derrickson: Principles of anatomy & physiology,11th edition, Harper & Row Publishers, New York

Online Resources material:

- https://onlinecourses.nptel.ac.in/noc25_bt22/preview

3.BIOCHEMISTRY

L/T/P/C

3/-/1/4

Instructors In charge:

Ph.D. or MD in biochemistry or Masters of Advance Care Paramedic or Equivalent with experience in handling Biochemistry.

Course Description: Biochemistry deals with the biochemical nature of carbohydrates, proteins, minerals, vitamins, lipids etc. A detailed study of these, emphasizing on their chemical composition and their role in metabolism is the required aim of this course. To gain in-depth knowledge on biomolecules, nutrients and in the basic concept of molecular biology.

Objectives: At the end of the semester, the student should be able to:

- To have a knowledge about the chemistry and metabolism of various macromolecules Carbohydrates, Proteins and lipids.
- To learn about enzymes, vitamins, minerals and nutrition.
- To know the structure and function of Hemoglobin and Nucleic acids.
- To learn about the organ function tests like liver function test, thyroid function test and Renal function tests.

To have a knowledge about the Molecular biology and its techniques

Course Plan:

Unit	Topic / module	Hours
1	Carbohydrate Chemistry Classification of carbohydrates and their biological importance, Reducing property of sugars. Metabolism of Carbohydrate – Digestion and absorption of carbohydrates, Steps of Glycolysis & energetics, steps of TCA cycle & energetics, significance of HMP shunt pathway, definition and steps of Gluconeogenesis, Galactose metabolism, regulation of blood glucose, glucose profile, hypoglycaemia & hyperglycaemia, Galactosemia and Diabetes mellitus. [***NOTE**: Included topics: Regulation of blood glucose, Glucose profile and hypoglycemia. Excluded topics: Steps of glycogen synthesis and breakdown 1. and Bioenergetics importance of ATP & outline of respiratory chain]	10 Hours

2	**Lipids Chemistry** • Classification of lipids, essential fatty acids, functions of cholesterol & triglycerides, Phospholipids • Types and their functions. **Metabolism of Lipids**: Digestion and absorption of lipids, steps of β oxidation of fatty acids, normal value & clinical significance of cholesterol, Ketone bodies & diabetic ketoacidosis, types and functions of lipoprotein, lipid profile, hypercholesterolemia and atherosclerosis. 1. **[*NOTE:** Included topics: Normal values & clinical significance of cholesterol, ketone bodies & diabetic ketoacidosis and Atherosclerosis. Hemoglobin Structure and function of Hemoglobin**]**	9 Hours
3	**Proteins Chemistry** Classification of amino acids, plasma proteins, immunoglobulins. **Metabolism of Proteins:** Digestion and absorption of proteins, transamination, deamination, steps of urea cycle, Phenylketonuria, Alkaptonuria, trans methylation, products derived from Glycine and tyrosine. Techniques: Electrophoresis and Chromatography. **Nucleic acids:** Structure and function of DNA & RNA, types of RNA. Outline of Uric acid formation and gout. **Hemoglobin:** Structure and function of haemoglobin & hemoglobinopathies _ Sickle cell anemia & Thalassemia. **[*NOTE:** Included topics: Hemoglobin Structure and function of haemoglobin & hemoglobinopathies Sickle cell anemia & Thalassemia, outline of uric acid formation & Gout and Techniques Electrophoresis & Chromatography. Excluded topics: Structure of proteins**]**	13 Hours

4	**Enzymes:** Definition, classification, coenzymes, factors affecting enzyme activity. Isoenzymes, clinically importance of enzymes. **Function Tests:** Liver function test, Renal function tests and Thyroid function tests. **Vitamins:** Classification, Fat soluble vitamin: Functions, source, deficiency manifestations of vitamin A, D, E and K. Functions and deficiency manifestations of vitamin C, Co-enzymic forms and deficiency manifestations of B-complex vitamins. 1. **[*NOTE:** Included topics: Thyroid function tests**]**	11 Hours
5	**Nutrition:** Basal Metabolic Rate (BMR), Specific Dynamic Action (SDA), Glycemic index, Dietary fibre, Balanced diet, Protein Energy Malnutrition (PEM). **Minerals:** Calcium, Phosphorous, Iron, Iodine, Copper, Fluoride, Selenium & Zinc. Electrolytes, Outline of pH homeostasis and acid base balance. 1. **[*NOTE:** Included topics: ~~M~~inerals copper, fluoride, selenium & zinc and electrolyte, Outline of pH homeostasis and acid base balance.**]**	7 Hours
6	**Molecular biology and Techniques:** 1. Outline of DNA replication, mutation, and genetic code. Outline of Molecular techniques and applications including ELISA, PCR, Blotting, RIA, colorimetry & Spectrophotometry. **[*NOTE:** Included topics: Molecular biology and Techniques.**]**	6 Hours
Practical Skills (lab/clinical/ simulation)	• Charts and OSPE • Glucometer & pH meter • 1. ~~-~~Spotters Glassware/ Lab Instruments	30 Hours
	Total Hours	**75 Hours**

Text Books Recommended:

- Concise text book of Biochemistry for Paramedical students by DM Vasudevan, Sreekumari S, Kannan Vaidyanathan.
- Essentials of Biochemistry by U. Sathyanarayana.

Reference books:

- Textbook of Biochemistry for paramedical students by Dr. P. Ramamoorthy
Harper's Illustrated Biochemistry – 30th edition

4. INTRODUCTION TO EMS AND AMBULANCE OPERATIONS

L/T/P/C
1/-/2/3

Instructors in charge: Bachelors / Post Graduate Program in Emergency Care or Masters of Advance Care Paramedic or Equivalent with experience.

Course Description: This introduces students to the principles and practices of Emergency Medical Services (EMS) and ambulance operations. It provides a comprehensive overview of pre-hospital emergency care systems, focusing on the roles, responsibilities, and coordination of EMS personnel within the healthcare delivery system.

The course emphasizes the operational aspects of ambulance services, including dispatch systems, vehicle types and equipment, response protocols, safety practices, legal and ethical considerations, and communication techniques

Objectives: At the end of the semester, the student should be able to:

- Understand the structure and scope of Emergency Medical Services (EMS)
- Recognize the roles and responsibilities of EMS personnel
- Demonstrate knowledge of ambulance operations and types
- Explain EMS communication systems
- Understand legal and ethical principles in EMS operations
- Describe safety protocols and infection control in pre-hospital care
- Demonstrate the principles of ambulance driving and patient transport

Course Plan:

Unit	Topic / module	Hours
1	**Introduction to Emergency Medical Services** Define Emergency Medical Services (EMS) systems. • Differentiate the roles and responsibilities of the EMS-Professional from other pre-hospital care providers. • Describe the roles and responsibilities related to personal safety. • Discuss the roles and responsibilities of the EMS-Professional towards the safety of the crew, the patient and bystanders.	2 hours Theory 5 hour Practical

	• Define quality improvement and discuss the EMS-Professional's role in the process. • Define medical direction and discuss the EMS-Professional's role in the process. • State the specific statutes and regulations in your state regarding the EMS system. • Assess areas of personal attitude and conduct of the EMS- Professional. • Characterize the various methods used to access the EMS 1. system in your community.	
2	**Workplace Safety and Wellness** • Provider Safety and well being Standard safety precaution Personal protective equipment • Stress management understanding and dealing with death and dying • Prevention of response related injuries Prevention of work related injuries Lifting and moving patients • Disease transmission • 1. Wellness principles	2 hours Theory 4 hour Practical
3	**Public Health** • Define Public health and its role in the health care system Define intentional and unintentional injuries • Discuss the detrimental effects of injuries as related to public health • Discuss Pediatric injuries and risk factors for them • Discuss the detrimental efforts of chronic and acute illness as related to public health • Explain the concept of years of potential life lost Explain the relevance of a teachable moment in EMS Discuss the principles of injury prevention • List the major public health laws, regulations and guidelines Explain the paramedics unique role in promoting public health both in terms of illness and injury	3 hours Theory 5 hour Practical

	• Define primary and secondary prevention • Define morbidity and mortality • Discuss the concept of injury surveillance and how it relates to EMS • Explain the Haddon matrix and how it can be used in the understanding and prevention of injury • List ways a paramedic can promote injury prevention in the community • Describe the steps involved in organizing a community prevention programme.	
4	**Medical, legal and ethical issues.**	2 hours Theory 4 hour Practical
5	**Ambulance operations**	4 hours Theory 6 hour Practical
6	**Lifting and Moving Patients**	2 hours Theory 6 hour Practical
	Total Hours	**45 Hours**

Text Books:

- Emergency Care and Transportation of the Sick and Injured
- Author: American Academy of Orthopaedic Surgeons (AAOS) Publisher: Jones & Bartlett Learning Edition: 12th or latest
- Prehospital Emergency Care
  Authors: Joseph J. Mistovich, Keith J. Karren Publisher: Pearson Edition: 11th or latest
- Focus on prehospital patient care along with EMS roles and operational aspects. Principles of EMS Systems Authors: American College of Emergency Physicians Publisher: Jones & Bartlett

Reference Books:

- Mosby's Paramedic Textbook Author: Mick J. Sanders
- Fundamentals of Emergency Care Author: Richard Beebe

- Paramedic: Anatomy and Physiology (for understanding transport physiology) Author: American Academy of Orthopedic Surgeons (AAOS)

Online Resources:

- U.S. National Highway Traffic Safety Administration (NHTSA) – EMS Resources https://www.ems.gov
- National Association of Emergency Medical Technicians (NAEMT) https://www.naemt.org
- Open Educational Resources (OER)

5.COMMUNICATION SKILLS

L/T/P/C

2/-/-/2

Instructors in charge: Masters in the field of communication preferable or Equivalent with experience.

Course Description: This course deals with essential functional English competency aspects and nuances of the communication skills essential to function effectively in academic and clinical setup for the health care professionals.

Objectives: At the end of the semester, the student should be able to:

- This course trains the students in oral presentations, expository writing, logical organization and structural support.
- Exhibit respectful attitude and verbal and non-verbal behaviours during patient interactions.
- By acquiring skills in the use of communication techniques the students will be able to express better, grow personally, professionally, develop poise and confidence.

Cours plan

Units	Topics	Hours
1	**Aspects of Communication** • Importance of communication • Communication Process Verbal and Non Verbal • Communication Communication of Barriers	
2	**Vocabulary** • Word formation _ prefixes and suffixes • Medical terminology • Words often misused or confused • Medical idioms, proverbs & Phrasal • Phrasal Verbs • Medical Prefixes, Suffixes and roots • Medical Terminology _ lay terms	6 Hours
3	**Writing Skills**	6 Hours

	• Letter writing - permission, leave and Other official letters • Note making methods • Paragraph Writing • Introduction to Clinical case report Writing • Developing a survey Questionnaire on health aspects	
4	**Speaking Skills** • Day to day Conversation • Clinical Communication-Carry out patient-centered communication • Building initial rapport with Patient • Nonverbal communication during clinical interactions • Gathering Health information • Clarify and restate information to confirm details • Expressing empathy • Express respect • Active listening and Paraphrasing.	8 Hours
5	**Listening Skills** • Active listening: Importance, types and strategies • Conversations between health personnel	3 Hours
6	**Reading Skills** • Passage from TOEFL /OET • Reading comprehending passages from Case Reports medical English articles/ manuals of medical equipments.	4 Hours

Unit	Topic	Hours

	Practical:
	• Professional speaking
	  • Audience Analysis
	  • Organizing a speech
	  • Delivering a speech: Presentation Strategies
	  • Interview Techniques
	  • Group Discussion
	• Professional writing
	  • Trans-coding -- from verbal to visual & from visual to verbal
	  • Editing, Proof reading, Referencing
	  • Proposals
	  • User manual and Product description
	  • Reports _feasibility, market survey, project
	  • Conference paper/journal article writing in IMRAD Format
	  • Memos and E-mails
	  • Advertisement Writing
	• Scenarios Practice (Role play)
	  • As Paramedic
	  • As Patient
	  • As Parent/ attendant	

	Total	**30 Hours**

References:

Books for General English Books

- Practical English Usage, Michael Swan
- Speak in English, Lakshminarayanan.K. R
- Effective English Communication by Krishna Mohan and Meenakshi Raman, Tata Mc Graw – Hill Publishing Company Limited, New Delhi.

Books for Clinical Communication:

- Skills for Communicating with Patients Jonathan Silverman Suzanne Kurtz Juliet Draper
- Cambridge English for Nursing, Virginia Allum and Patricia McGarr.
- Career English for Nurses by Selva Rose

6.BASIC COMPUTERS AND INFORMATION SCIENCES

L/T/P/C

2/-/-/2

Instructors in charge: Masters in the field of computer science preferable or Equivalent with experience.

Course Description: This course introduces foundational concepts in computers and information sciences, including basic hardware, software, and digital literacy. Students will learn essential skills in MS office, internet navigation, Artificial Intelligence and file management. Emphasis is placed on understanding information systems, Pre-hospital care and medical records. This course builds confidence in using technology effectively.

Objectives: At the end of the semester, the student should be able to:

- To introduce basic concepts of computers and their applications.
- To familiarize students with computer hardware, software, and operating systems.
- To enable students to create and manage basic documents, presentations, and spreadsheets.
- To explore AI tools for documentation and productivity enhancement

Course Plan:

Unit	Topic / Module	Hours
1	**Introduction to Computers** • Basics of computers, components & tools • Calculator, Notepad, Character Map • Web browsers, Device Manager, Control Panel • Basic DOS commands	4 Hours
2	**Hardware & Software** • Hardware and peripheral devices • Types of software • Operating Systems & Application Software • Input/output devices, Storage devices, Networks Email & Internet	5 Hours

3	**MS Word & PowerPoint** • MS Word: Home, Edit, Page Layout Tools, Proofing, Mail Merge • MS PowerPoint: Slide design, formatting, SmartArt, Images, Slide Animation	8 Hours
4	**Microsoft Excel** • Basics of Excel & functions • Data validation & conditional formatting Charts, Protecting sheets, Page setup	7 Hours
5	**AI Tools** • ChatGPT, Copilot, Gemini • Google Docs & Google Sheets	3 Hours
	Practical • Hands-on practice with Word, PowerPoint, Excel AI Tools Practice	3 Hours
	Total	**30 Hours**

Reference Books

- Introduction to Computers & Data Processing – Shelly, Gray B.
- Introduction to Computer Applications – Donald Curtis
- Introduction to Technology in Medicine – N.F. Kember
- Mastering Microsoft Office 2007 – Alison Balter

7.PROFESSIONALISM AND VALUE

L/T/P/C

1/-/-/1

Learning Objectives:

- To develop professional ethics and workplace behavior.
- To enhance communication and interpersonal skills.
- To understand workplace responsibilities and accountability.
- To promote leadership and teamwork qualities.

Learning Outcomes:

- Demonstrate professional conduct and ethical behavior.
- Communicate effectively in workplace settings.
- Exhibit responsibility, accountability, and discipline.
- Work collaboratively and show leadership skills.

(15hrs)

UNIT I **(2hrs)**

Introduction to Professionalism

What is professionalism?

Characteristics of a professional: Appearance, behaviour, and attitude

The importance of professional ethics and integrity

UNIT II **(2hrs)**

Effective Communication in the Workplace

Verbal and non-verbal communication

Active listening and responding

Communicating across cultures

UNIT III **(2hrs)**

Workplace Etiquette and Networking

Social etiquette in the workplace

Malla Reddy Vishwavidyapeeth

Networking best practices

Building relationships with colleagues, managers, and clients

UNIT IV **(2hrs)**

Time Management and Organization

Prioritizing tasks and setting goals

Managing deadlines and avoiding procrastination

Tools and techniques for effective time management

UNIT V **(2hrs)**

Accountability and Reliability

Taking responsibility for your actions

Being reliable and dependable in the workplace

How accountability affects professional reputation

UNIT VII **(1hrs)**

Problem Solving and Decision Making

Approaches to critical thinking and decision-making

Strategies for solving workplace problems effectively

The role of creativity and innovation in problem-solving

UNIT VII **(1hrs)**

Teamwork and Collaboration

Working with diverse teams

Building trust and collaboration in teams

Managing team conflicts and maintaining harmony

UNIT VIII **(1hrs)**

Conflict Resolution and Handling Difficult Conversations

Understanding conflict dynamics

Techniques for resolving conflicts professionally

Role-playing difficult conversations in the workplace

UNIT IX **(1hrs)**

Ethical Dilemmas in the Workplace

Recognizing ethical challenges

Making decisions based on ethical principles

The role of transparency and honesty

UNIT X **(1hrs)**

Building Emotional Intelligence and Adaptability

What is emotional intelligence and why does it matter?

Developing self-awareness and self-regulation

Adapting to changing work environments

Reference Textbook

1. Professionalism: Skills for Workplace Success" by Deborah C. Dillon
2. The Professional Workplace: The Skills You Need to Succeed" by Ronald W. Holmes

SEMESTER - 2

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 201	Pharmacology	3	1	4	45	30	75	30	70	100
BEMT 202	Pathology	3	1	4	45	30	75	30	70	100
BEMT 203	Microbiology	3	1	4	45	30	75	30	70	100
BEMT 204	Instrumentation of EM part-I	3	1	4	45	30	75	30	70	100
BEMT 205	Community Medicine	1	1	2	15	30	45	25	25	50
BEMT 206	Psychology	1	1	1	2	15	30	45	25	25
VAC	Health and well being	2	-	2	30	-	30	25	-	-
Total		17	6	21	227	165	390	405	330	500

1.MICROBIOLOGY

L/T/P/C
3/-/1/4

Instructors in charge: MD Microbiology / PhD Microbiology or M.Sc. Microbiology or Equivalent with experience.

Course Description: This course provides a comprehensive introduction to microbiology, covering microorganisms, infection control, immunology, and characteristics of bacteria, viruses, fungi, and parasites

Objectives: At the end of the semester, the student should be able to:

- Explain the principles of microbiology, including the classification, morphology, and growth of microorganisms.
- Recognize the causes, classifications and symptoms for various bacterial, viral, fungal, and parasitic infections.
- Demonstrate knowledge of sterilization methods, disinfection practices, and strategies for preventing nosocomial infections.
- Describe the mechanisms of immunity, hypersensitivity reactions, and the principles of immunization.

Course Plan

Unit	Topic	Hours
1	**Fundamentals of Microbiology:** Introduction to microbiology and classification of microorganism. Bacterial morphology and classification. Growth, cultivation, and identification of bacteria.	9 Hours
2	**Bacterial Infections and Systemic Bacteriology:** Systemic Bacteriology (Gram-positive, Gram-negative, anaerobic bacteria, Mycobacterium tuberculosis) & normal flora.	9 Hours
3	**Disinfection, Sterilization & Infection Control:** Disinfection (disinfectants used in hospitals). Sterilization (methods, types, & applications). Nosocomial infections (causes, sources, routes, investigation & prevention)	9 Hours
4	**Immunology and Hypersensitivity:** Infection and immunity (types, sources, routes, and spread of infectious diseases) Immune response (humoral and cell-mediated immunity). Hypersensitivity (classification, mechanisms, and clinical aspects)	9 Hours
Unit	Topic	Hours
5	Virology, Mycology, Parasitology, and Safety Precautions: • Introduction to Virology (features, structure, classification, diagnosis). Introduction to Mycology (properties, classification, diagnosis). • Introduction to Parasitology (properties, classification, diagnosis). • Universal safety precautions. Biomedical waste management. Immunization (types of vaccines, immunization schedule)	9 Hours
Practical Skills (lab/clinical/ simulation)	• Compound microscope. Culture media. Gram stain & Acid-fast stain. Antibiotic susceptibility test. Sterilization Methods. • Chemical disinfectants. • Biomedical Waste Management & PPE	30 Hours
	Total	75 Hours

Text Book/Reference Books:

- Textbook of Microbiology -Ananthanarayan and Paniker's, 13th edition.
- Textbook of Microbiology - C.P baveja, 7th edition.

2.GENERAL CONCEPTS OF PHARMACOLOGY

L/T/P/C
3/-/1/4

Instructors in charge: MD Pharmacology / PhD Pharmacology / M.Pharm or Pharm D who have adequate experience in teaching pharmacology.

Course Description:

This course covers the mechanisms of action, indications, dosage, adverse effects and routes of administration of life-saving and widely used medications in the emergency department and EMS.

Objectives: At the end of the semester, the student should be able to:

- Understand pharmacology principles (pharmacokinetics, pharmacodynamics, adverse reactions).
- Know major drug classes, their uses, and interactions.
- Identify drugs used in Emergency Department and describe their pharmacology, route of administration, uses and adverse effects

Course plan

Unit	Topic	Hours
1	**General Pharmacology:** Introduction, Routes of drug administration, Pharmacokinetics, Pharmacodynamics, factors affecting drug actions & adverse drug effects. **Drugs used for autonomic nervous system:** Sympathetic agonists, Sympathetic antagonists & Parasympathetic agonists, Parasympathetic antagonists.	9 Hours
2	**Drugs used for Central Nervous System:** Alcohol, sedative hypnotics, Depressants, anticonvulsants, Histamines and Anti histamines, General & local anesthetics, Opioids & non-opioid analgesics.	9 Hours

3	**Drugs used for cardiovascular system:** Drugs for heart failure, Antiarrhythmic drugs, Antianginal drugs, Antihypertensive drugs, diuretics, Coagulants and Anticoagulants.	9 Hours
4	**Drugs for respiratory system:** Drugs for cough and bronchial asthma. **Drugs used for gastro intestinal system:** H2 antagonists, proton pump inhibitors, antacid, antiemetics, prokinetics, antidiarrheal drugs.	9 Hours
Unit	**Topic**	Hours
5	**Drugs used for endocrine and metabolic system:** Thyroxin, antithyroid drugs, Insulin and oral antidiabetic agents, corticosteroids. **Antimicrobial drugs:** Antibiotics, antiviral, antifungal, antitubercular drugs.	9 Hours
Practical Skills (lab/clinical/ simulation)	**Hands-on practice of administering medications via different routes on mannequin.** • Practice calculating medication dosages. Dilution of medications in various agents. • Simulation of Identification and management of adverse drug reactions. • Hands-on practice for preventing medication errors and ensuring patient safety.	30 Hours
	Total	75 Hours

Text Book/Reference Books:

- Essentials of medical pharmacology - K D Tripathi 9th edition
- PharmacologyFor MedicalGraduates -TaraV Shanbhag 6th edition.

3.PATHOLOGY

L/T/P/C
3/-/1/4

Instructors in charge: MD Pathology/ PhD Pathology or Equivalent with experience.
Course Description:

This course describes basic aspects of diseases, including their causes, development, and effects on the body.

Objectives: At the end of the semester, the student should be able to:

- Describe the basic pathological processes and mechanisms of disease.
- Identify and describe the morphological changes in cells and tissues.
- Understand the etiology, pathogenesis, and clinical manifestations of various diseases

Course Plan:

Unit	Topic	Hours
1	General Introduction to Pathology. **Cell & Inflammation:** Cell injury, Cellular adaptation & cell death. Etiology, Pathogenesis & Morphology of Cell Injury. Reversible and irreversible cell injury. Cellular adaptations of growth and differentiation. Acute & chronic Inflammation, mediators of inflammation & healing.	9 Hours
2	**Infectious and Parasitic Diseases**: Viral infections – Dengue, Hepatitis, Rabies, Varicella-zoster diseases. Bacterial infections- Typhoid, Tuberculosis, cholera. Fungal infections- Candidiasis. Parasitic infection-Malaria.	9 Hours
3	**Neoplasia:** Definition, Differences between benign & malignant neoplasms. **Immunopathology:** Immunity- definition, types, Hypersensitivity reactions, AIDS.	9 Hours

4	**Circulatory disturbances**: Blood groups, Shock, Thrombosis, Embolism, Infarction, Anemia, hemostasis & DIC.	9 Hours
5	**Systemic pathology**: Meningitis, Heart failure, Ischemic heart diseases, Respiratory distress syndrome, Renal failure.	9 Hours
Practical Skills (lab/clinical/ simulation)	Hands-on practice in microscope to identify normal and abnormal blood cells. Hands-on practice of analyzing urine samples Microbiological techniques such as Gram staining, culture testing. **Specimens:** Left ventricular hypertrophy of Heart, Tuberculosis organs, Gangrene Foot, Lung Abscess, Torsion of Testis, Lobar pneumonia. **Instruments:** Wintrobe's Tube, Haemocytometer with RBC & WBC, Pipette, Haemoglobinometer, Urinometer,Cytochrome stain, Mounting jar, Bone marrow aspiration needle, Lumbar puncture needle	30 Hours
	Total	**75 Hours**

Textbooks & References

- Textbook of pathology - Harsh Mohan, 9th edition
- ROBINS and KUMAR: Basis pathology, 11th Edition.

4.INSTRUMENTATION OF EMS (PART-1)

L/T/P/C

3/-/1/4

Instructors in charge: Bachelor of Emergency Medical Technologist (Paramedic) Masters of Advance Care Paramedic Equivalent with experience.

Course Description:

This course covers the fundamental principles, parts and practical applications of basic instrumentation used in emergency care and emergency medical services

Objectives: At the end of the semester, the student should be able to:

- Understand the principles and operation of basic emergency medical equipment.
- Develop skills in using emergency equipment and communication systems
- Apply safety protocols and precautions in emergency situations

Unit	Topic	Hours
1	Pulse oximeter, Thermometer, Stethoscope, ECG machine, BP apparatus, Glucometer, Multipara Monitor, Oxygen cylinders, Oxygen delivery devices (nasal cannula, simple face mask, venturi mask, NRB Mask, HFNC), Bag-valve-mask (BVM), Bain's circuit.	9 Hours
2	Nasopharyngeal airway, Oropharyngeal Airway, Supraglottic Airway devices (LMA, King LT), Laryngoscope with various blades, Endotracheal Tube (Sizes for adults and pediatrics), Intubating Stylet, Bougie, ET Tube Exchanger.	9 Hours
3	Syringes, Needles & IV Cannulas (Various sizes). IV set, IV fluids. Suturetray (needles drivers, forceps, scissors). Suturematerials & needle (various sizes) Absorbable & Non absorbable. Skin adhesive materials.	9 Hours
4	Dressing & bandage Materials, Tourniquet (Elastic, CAT & Pneumatic). Splinting and Traction Devices, C-collar, Long & short Spine Boards, Scope Board, Kendrick Extrication Devices.	9 Hours
5	AED, Defibrillator, Infusion Pump, Syringe pump, Suction apparatus, Nebulizer. NG / OG Tubes. Urinary Catheter. Urine Collection bag / Meter	9 Hours

Practical Skills (lab/clinical/ simulation)	• Identify the equipment and its parts Uses and indications for the equipment • Steps to use and troubleshoot the equipment Complications and potential errors • Practical hands-on experience with the equipment. • Steps to use and troubleshoot the equipment Complications and potential errors • Practical hands-on experience with the equipment.	30 Hours
	Total	**75 Hours**

Text Book/Reference Books:

- Roberts and Hedges' CLINICAL PROCEDURES in Emergency Medicine and Acute Care – 7th edition.

5.COMMUNITY MEDICINE

L/T/P/C

1/-/1/2

Instructors in charge: M.D Community Medicine / Masters or Ph.D. in community medicine with adequate experience in teaching.

Course Description: This course covers epidemiology, focusing on disease prevention, transmission and control. Students will learn about immunization, hospital infections, health education, and communicable diseases.

Objectives: At the end of the semester, the student should be able to:

- Understand how diseases spread and how to prevent them.
- Recognize and manage common communicable diseases.
- Apply health education and promotion principles to improve community health.

Course plan

Unit	Topic	Hours
1	Introduction, Importance of Community Medicine. Definitions of various terms. Definition and basics of epidemiology. Modes of transmission of diseases. Principles of prevention and control of diseases.	5 Hours
2	Immunization. Hospital infections, disinfection, disinfestation, & Sterilization. Nutrition and Health. Disposal of hospital wastes. Health Education	5 Hours
3	Important communicable diseases: Respiratory – Chickenpox, Rubella, Influenza & Tuberculosis. Intestinal – Hepatitis, Cholera, Typhoid. Contact-STD / AIDS. Others - Dengue, Malaria & Rabies.	5 Hours
Practical Skills (lab/clinical/ simulation)	Conducting a mock epidemiological study to understand disease transmission and control measures. Demonstration of vaccination techniques and discussion on immunization schedules. Practical demonstration of disinfection and sterilization methods in a hospital setting. Case study analysis of a communicable disease outbreak.	30 Hours
	Total	**45 Hours**

Text Book/Reference Books:

Park's Text Book of Preventive and Social Medicine- 28 edition

IAPSM textbook of community medicine - 3rd edition

6.PSYCHOLOGY

L/T/P/C

1/-/1/2

Instructors in charge: Masters or M.Phil. in Psychology / Ph.D. in Psychology or M.D Psychiatric Medicine with adequate experience in teaching.

Course Description:

This course teaches paramedics to assess and manage patients in emergency situations, covering psychological disorders, stress, and crisis intervention.

Objectives: At the end of the semester, the student should be able to:

- Understand the relevance of psychology to health professional practice.
- Apply psychological theories and concepts to emergency paramedicine.
- Develop strategies for coping with patients and managing stress.
- Provide psychological support to patients, families, and health professionals.

Couse plan

Unit	Topic	Hours
1	**Introduction to Psychology and Human Behavior** Definition and scope of psychology Branches of psychology Human behavior and stress response Introduction to normal and abnormal behavior	5 Hours
2	**Abnormal Psychology and Crisis Response** Introduction to abnormal psychology Anxiety, trauma, and stress-related disorders (panic, phobia, OCD, PTSD) Crisis communication and intervention Psychological support for patients and families	5 Hours
3	**Human Behavior and Stress Management in Emergency Situations** Human behavior in emergency situations Stress response models (Hans Selye, Lazarus and Folkman) Sources of stress and stress management techniques Changing health-impairing behavior Well-being and stress management for paramedics Psychological First Aid	5 Hours

Practical	• Demonstration of patient assessment techniques • Demonstration of providing psychological support to patients and families • Practice session on managing difficult patients interaction • Stimulations of counselling and psychotheraphy techniques • Apply relaxation techniques for patients and paramedic • Demonstration of crisis communication techniques • Introduce stress management techniques for paramedics • Promotes well-being and self-care for paramedics	30 Hours
Total	**45 Hours**	**Total**

Text Book/Reference Books:

- Introduction to PSYCHOLOGY, Morgan and King - 9th edition.
- Psychology by Saundra K. Ciccarelli, J. Noland White & Girishwar Misra – 6th edition.
- Psychology by Baron / Misra – 5th Edition.

7.HEALTH AND WELL-BEING

L/T/P/C

2/-/-/2

Course Description:

This course explores the holistic approach to health and well-being, focusing on physical, mental, and social aspects. Students will learn about health promotion strategies, the importance of physical activity, nutrition, mental health awareness, and stress management. The course also addresses the impact of lifestyle choices and societal factors on overall health.

Learning Objectives:

- To understand concepts of physical, mental, and social health.
- To promote healthy lifestyle practices.
- To develop stress management and coping strategies.
- To create awareness about preventive healthcare.

Learning Outcomes:

- Explain components of health and well-being.
- Adopt healthy lifestyle and preventive practices.
- Demonstrate stress management techniques.
- Promote health awareness in the community.

(15hrs)

UNIT I (1hrs)

Introduction to Health and Well-being: Overview of Health and Well-being Concepts

Dimensions of health: Physical, mental, social, and emotional. The impact of lifestyle choices on health

UNIT II (1hrs)

Physical Health and Fitness: Importance of physical activity for overall health

Types of exercise: Aerobic, strength, flexibility, and balance creating a personal fitness plan

UNIT III (1hrs)

Nutrition and Healthy Eating

Basics of nutrition: Macronutrients and micronutrients. Healthy eating habits and food groups. Impact of

nutrition on physical and mental health.

UNIT IV (1hrs)

Mental Health and Emotional Well-being

Understanding mental health: Definitions, stigma, and myths

Key aspects of emotional well-being

Building emotional resilience

UNIT V **(1hrs)**

Stress Management Techniques

Understanding stress and its effects on health

Mindfulness and relaxation techniques

Time management for stress reduction

UNIT VI **(2hrs)**

Sleep and Recovery

Importance of sleep for physical and mental health

Sleep hygiene and healthy sleep habits

Impact of sleep deprivation on overall well-being

UNIT VII **(2hrs)**

Social Health and Relationships

The role of social connections in well-being

Healthy relationships: Communication, boundaries, and support

Community involvement and social well-being

UNIT VIII **(2hrs)**

Substance Use and Addiction

The impact of alcohol, tobacco, and drugs on health

Understanding addiction and treatment options

Preventive measures and harm reduction strategies

UNIT IX **(2hrs)**

Chronic Diseases and Prevention

Common chronic diseases (e.g., diabetes, heart disease)

Risk factors and lifestyle modifications for prevention

Screening, early detection, and health monitoring

UNIT X **(2hrs)**

Building Healthy Habits

The psychology of habit formation

Strategies for adopting and maintaining healthy habits

Overcoming barriers to healthy behaviour changes

Reference Textbook

Health and Wellness" by S. L. Kaskutas & K. A. A. Nielson

SEMESTER-3

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total
		L	P	C	L	T/P	Total	IA*	UE**	(IA+UE)
BEMT 301	Introduction to Patient Care and Assessment	3	1	4	45	30	75	30	70	100
BEMT 302	Medical Emergencies Part-1: Respiratory, Cardiovascular, Neurological, Gastrointestinal and Genitourinary	3	1	4	45	30	75	30	70	100
BEMT 303	Trauma Emergencies part-1: Introduction to Trauma, Hemorrhage and Shock, Head and Facial Trauma, Thoracic and Abdominal Trauma.	3	1	4	45	30	75	30	70	100
BEMT 304	Instrumentation Part-2	3	1	4	45	30	75	30	70	100
BEMT 305	Indian culture, heritage, yoga &meditation	2	-	2	30	-	30	25	25	50
BEMT 306	Soft skills and Clinical Communication Skills	2	-	2	30	-	45	25	25	50
VAC	Stress management	2	-	2	30	-	30	25	-	-
Total		**18**	**4**	**22**	**270**	**120**	**405**	**195**	**330**	**500**

1. INTRODUCTION TO PATIENT ASSESSMENT AND CARE

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

Course Description: This course provides a comprehensive foundation in patient assessment and care, with a strong emphasis on clinical reasoning and emergency response. Through detailed instruction and hands-on practice, students will explore the key components of a thorough medical history and physical examination, particularly in emergency scenarios.

Objectives: At the end of the semester, the student should be able to:

- To introduce students to the principles and techniques of effective doctor–patient communication and history taking.
- To train students in conducting systematic general and system-wise physical examinations.
- To familiarize students with common signs and symptoms of medical emergencies.
- To develop skills in documentation, clinical reasoning, and patient presentation.
- To enable rapid recognition and assessment of critical conditions across various systems (respiratory, cardiovascular, CNS, GI, urinary, muscular, and skeletal).
- To instil awareness of ethical considerations and effective decision-making in emergency settings

Course Plan

Unit	Topics	Practical Hours
1	**Doctor_Patient Interaction & History Taking** • Medical Terminology • Introduction to effective communication in emergencies • Ethical considerations in emergency settings • The art of history taking under time constraints • Components of history taking: Presenting complaints, History of present illness (HOPI), Past medical and	15 Hours

	surgical history, Medication history, Family history, social history and allergies • Routine screening questions in emergency triage • Writing and documenting medical history • SOAP format in EMS • Physical examination basics • How to present a case orally and in writing • Interpretation and clinical correlation of findings	
2	**General Examination** • Assessing General Health Condition • Level of Consciousness (GCS, • AVPU) Pain Assessment Scales • Nutritional Status (BMI) Vital Signs Assessment: Temperature, Pulse, Respiratory Rate, Blood Pressure, Oxygen Saturation (SpO_2), Capillary Refill Time (CRT), Pupillary Reaction and Size	4 Hours

3	**Examination of the Respiratory System** • Anatomy and physiology review of the respiratory system • Inspection, palpation, percussion, and auscultation • Identification of abnormal breath sounds (e.g., wheeze, crackles) • Assessment of respiratory distress • Oxygen saturation interpretation (SpO_2) **Examination of the Cardiovascular** • **System** Heart sounds and murmur • basics Palpation of pulses • Capillary refill and perfusion assessment • Blood pressure measurement (manual and automatic) **Examination of the Gastrointestinal System** • Abdominal quadrants and organ location Abdominal pain assessment	20 hours

	• GI history: appetite, bowel, vomiting, bleeding • Physical exam: inspection, auscultation, percussion, palpation **Examination of the Urinary System** • History taking: urinary frequency, urgency, dysuria, haematuria, incontinence • Inspection of abdomen for bladder distension • Palpation of kidneys (ballottement technique) • Costovertebral angle tenderness (CVA tenderness) • Urine output monitoring (catheterization, urometer) • Urine color, smell, and consistency • Assessment of fluid balance and signs of dehydration • Recognition of acute kidney injury (AKI) signs	
4	**Examination of the Central Nervous System** • **(CNS)** Mental status exam in emergencies • Glasgow Coma Scale (GCS) • Pupil size and reactivity • Cranial nerve overview • Motor and sensory examination **Examination of the Muscular System** • Inspection for muscle wasting, hypertrophy, fasciculation's • Muscle tone evaluation (spasticity vs. flaccidity) • Muscle strength grading (0 -5 scale) • Range of motion (active and passive) • Functional testing (e.g., grip strength, standing/squatting) • Assessment of trauma-related muscle injury • Clinical recognition of myopathies, rhabdomyolysis • Muscle tenderness or swelling (compartment syndrome) **Examination of the Skeletal System** • History: trauma, pain, swelling, loss of function • Inspection for deformities, swelling, redness • Palpation for tenderness, crepitus, temperature Range • of Motion (ROM) assessment for major joints • Examination of fractures, dislocations • Assessment of limb shortening or misalignment	6 hours

5	**Focused areas Physical Examination** • **Skin** Colour, temperature, hydration, Signs of cyanosis, pallor, jaundice • **Head & Face** Scalp injuries, deformities, • trauma **Eyes** Pupil reaction, foreign bodies, trauma **Ears** Bleeding, discharge, hearing loss • • **Nose and Sinuses** Epistaxis management, trauma signs • **Mouth, Tongue, Throat**, Oral hygiene, hydration status, airway obstruction, tonsils, uvula • **Teeth and Gums** Dental abscess, trauma evaluation • **Neck**-Lymph nodes, tracheal position, jugular vein distention • **Nails** – clubbing, koilonychias	6 hours
	History Taking Practice (SOAP format, presenting complaints, triage- based questioning) General Examination Vitals (Temp, Pulse, BP, RR, SpO2, CRT, GCS, BMI) Respiratory & Cardiovascular Exam Auscultation, percussion, BP, pulse, murmur recognition Abdominal & Urinary System Exam Palpation, tenderness, CVA, bladder inspection CNS & Musculoskeletal Exam - Cranial nerves, ROM, muscle strength Focused Physical Exam - Head-to-toe (Skin, eyes, ears, oral cavity, neck, nails)	30 Hours
	Total Hours	**75 Hours**

Reference Books & Resources:

- Nancy Caroline's Emergency Care in Street, 8th Edition.
- Mosby's Paramedic Textbook, 4th Edition by Mick J Sanders

2. MEDICAL EMERGENCIES PART-1

L/T/P/C

3/-/1/4

(Respiratory, Cardiovascular, Neurological, Gastrointestinal and Genitourinary)

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or equivalent with experience.

Course Description:

This course is designed to equip healthcare professionals with the knowledge and skills necessary to recognize, assess, and manage a wide range of system-specific medical emergencies. Students will also develop critical decision-making skills, focusing on the evaluation of emergency severity and the implementation of evidence-based interventions. Scenarios and case studies will reinforce the ability to act swiftly and competently in emergency situations.

Objectives: At the end of the semester, the student should be able to:

- Understand the basic anatomy and physiology of major organ systems related to emergency care.
- Recognize, describe, and classify various respiratory, cardiovascular, neurological, gastrointestinal, and genitourinary emergencies.
- Assess and interpret clinical signs and symptoms associated with system-specific emergencies.

Course Plan

Unit	Topics	Hours
1	**Respiratory Emergencies** Emergency Respiratory Diseases : Asthma Exacerbation, Status Asthmaticus Acute Respiratory Distress Syndrome (ARDS) , Bronchitis , Obstructive Sleep Apnea (OSA) , Cystic Fibrosis, Chronic Obstructive Pulmonary Disease (COPD) Exacerbation, Upper Airway Obstruction, Pneumonia, Pulmonary Oedema, Pulmonary Embolism, Pneumothorax / Tension Pneumothorax, Respiratory Arrest / Apnea, Respiratory failure, Tuberculosis (TB), COVID-19 / Viral Respiratory Illnesses, Foreign Body Aspiration, Epiglottitis, Interstitial Lung Disease (ILD), Occupational lung diseases, genetics (Alpha-1 Antitrypsin Deficiency ,Pulmonary Arterial Hypertension, Surfactant Protein Deficiency),Air Pollution related Respiratory emergency ,plural effusion Infective Respiratory Diseases: Empyema, Influenza and H1N1-related Lung Complications, Respiratory Syncytial Virus (RSV) in Children, Fungal Lung Infections (e.g., Aspergillosis, Histoplasmosis), Septic Pulmonary Embolism, Legionnaires' Disease, Pertussis and Diphtheria, Pneumocystis Pneumonia (PCP) in Immunocompromised, Mycoplasma and Atypical Pneumonias Non-Infective Respiratory Diseases: Pulmonary Fibrosis and Interstitial Lung Disease, Pneumothorax (Spontaneous, Traumatic), Sleep Apnea (Obstructive and Central), Allergic Bronchopulmonary Aspergillosis (ABPA), Sarcoidosis, Anaphylaxis with Respiratory Compromise, Occupational Lung Diseases (Silicosis, Asbestosis), Lung Cancer and Superior Vena Cava Syndrome, Drug-Induced Pulmonary Toxicity	9 Hours
2	**Cardiovascular Emergencies** Emergency cardiovascular disease: Myocardial Infarction (MI), Angina (Stable/Unstable), Cardiac Arrest, Heart Failure (Left/Right), Hypertensive Crisis, Arrhythmias (AF, VT, VF), Bradycardia/Tachycardia, Pericardial Tamponade, Pulmonary Embolism, Shock (Cardiogenic), Endocarditis, Aortic Dissection, Syncope (Cardiac Origin), Cardiomyopathies, Congenital Heart Diseases	15 Hours

	Infective cardiovascular disease: Infective Endocarditis, Prosthetic Valve Endocarditis Drug Use Associated Endocarditis, Viral Myocarditis, Bacterial Myocarditis, Parasitic Myocarditis (e.g., Chagas Disease),Fungal Myocarditis, Viral Pericarditis, Bacterial Pericarditis, Tuberculous Pericarditis, Fungal Pericarditis, Rheumatic Heart Disease, Sepsis-Induced Myocardial Dysfunction, Device- Related Infections (Pacemakers, Valves),Catheter-Associated Cardiac Infections,COVID-19 Related Cardiac Infections, Post- Infectious Cardiomyopathy, Pericardial Effusion due to Infection, Cardiovascular Syphilis (Advanced Stage),Lyme Carditis **Non-infective cardiovascular disease**: Hypertension (Essential and Secondary), coronary artery disease (CAD) Valvular Heart Diseases (Aortic Stenosis, Aortic Regurgitation, Mitral Stenosis, Mitral Regurgitation, Tricuspid Valve Disorders),Pericardial Effusion, Aortic Aneurysm and Aortic Dissection, Peripheral Artery Disease (PAD),Pulmonary Hypertension (Non-Genetic/Non-Infective),Marfan Syndrome and Other Connective Tissue Disorders Affecting the Heart, Myocardial Contusion (Trauma-Induced), Stress Cardiomyopathy (Takotsubo),Cardiac Tumours (e.g., Myxoma),Orthostatic Hypotension, Cardiac Syncope (Non-Infective Causes), Hyperlipidaemia and Atherosclerosis	
3	**Neurological Emergencies** **Emergency Neurological Conditions:** Stroke (Ischemic and Hemorrhagic), Transient Ischemic Attack (TIA), Seizure and Status Epilepticus, Traumatic Brain Injury (TBI), Concussion, Skull Fracture, Meningitis and Encephalitis, Subarachnoid Hemorrhage, Subdural and Epidural Hematomas, Spinal Cord Injury, Acute Neuropathy (e.g., Guillain-Barré Syndrome), Migraine and Cluster Headaches (Acute Phase), Intracranial Space-Occupying Lesions (e.g., Tumor bleed), Neurogenic Shock, Delirium and Acute Confusional States, Acute Flaccid Paralysis, Brain Death Criteria and Neurological Examination **Infective Neurological Diseases**: Bacterial Meningitis (e.g., Meningococcal, Pneumococcal), Viral Meningitis (e.g., Enteroviruses, HSV), Encephalitis (Herpes Simplex Virus, Arboviral, Japanese Encephalitis), Brain Abscess, Neurocysticercosis, Tuberculous Meningitis, Neurosyphilis, Cryptococcal Meningitis (in HIV), prion diseases (e.g., CJD), HIV-Associated Neurocognitive Disorders, Sepsis-associated encephalopathy	8 hours

	Non-Infective Neurological Diseases: Epilepsy (Focal and Generalized), Multiple Sclerosis (MS), Parkinson's Disease, Myasthenia Gravis, Motor Neuron Disease (e.g., ALS), Neurodegenerative Disorders (e.g., Alzheimer's, Dementia), Peripheral Neuropathy (Diabetic, Toxic, Idiopathic), Bell's Palsy, TIA due to atherosclerosis, Tics and Tourette Syndrome, Space-occupying lesions (benign/malignant brain tumors), CNS Manifestations of Autoimmune Disease (e.g., SLE, Vasculitis), Neurotoxin-related Injury (e.g., Snakebite, Lead poisoning), Genetic and Developmental Neurological Disorders	
4	**Gastrointestinal Emergencies** Emergency GI Conditions: Upper GI Bleed: Oesophageal varices, Mallory-Weiss tear, Peptic ulcer, Lower GI Bleed: Diverticulosis, Colorectal carcinoma, Inflammatory bowel disease, Acute Pancreatitis, Acute Appendicitis, Bowel Obstruction (Small and Large), Peritonitis, Perforated Peptic Ulcer, Cholecystitis / Biliary Colic, Cholangitis (Charcot's triad), Acute Hepatitis, Mesenteric Ischemia, Hernia with Strangulation, Gastroenteritis with Severe Dehydration, Esophageal Obstruction or Foreign Body, Ascites with Spontaneous Bacterial Peritonitis, Gastrointestinal Perforation, Acute Gastric Dilatation Infective GI Diseases: Viral Hepatitis (A, B, C, E), Bacterial Gastroenteritis (Salmonella, Shigella, E. coli, Campylobacter), Clostridium difficile colitis, Parasitic Infections (Amoebiasis, Giardiasis), Typhoid and Paratyphoid Fever, Helicobacter pylori-associated ulcers, Tubercular enteritis, Liver abscess (Amoebic, Pyogenic), Ascariasis and intestinal helminths, Norovirus/Rotavirus in outbreaks Non-Infective GI Diseases: Peptic Ulcer Disease (non-infective aetiology), Inflammatory Bowel Disease (Crohn's, Ulcerative Colitis), Gastroesophageal Reflux Disease (GERD), Non-alcoholic Fatty Liver Disease (NAFLD), Alcoholic Hepatitis and Cirrhosis, Gallstones and Biliary Dyskinesia, Chronic Pancreatitis, Colorectal Cancer, Intestinal Polyps (Familial Adenomatous Polyposis), Celiac Disease, Autoimmune Hepatitis, Drug-Induced Liver Injury, Gastrointestinal Motility Disorders (e.g., IBS, Gastroparesis)	9 hours

5	**Genitourinary Emergencies** Emergency GU Conditions: Acute Urinary Retention, Renal Colic due to Ureteric Calculi, Acute Kidney Injury (AKI), Obstructive Uropathy, Urinary Tract Infections (UTI), Pyelonephritis, Urosepsis, Haematuria (Gross or Microscopic), Testicular Torsion, Priapism, Fournier's Gangrene, Post-obstructive Diuresis, Acute Prostatitis, Urinary Fistulae, Neurogenic Bladder (Acute Onset) Infective GU Diseases: Lower UTI (Cystitis, Urethritis), Upper UTI (Pyelonephritis),Catheter-Associated UTI, Sexually Transmitted Infections (STIs): Gonorrhoea, Chlamydia, Genital Herpes, HIV- associated nephropathy, Tuberculosis of the Genitourinary Tract, Prostatic abscess, Vulvovaginal Candidiasis (with urinary complaints),Renal abscess, Perinephric abscess	9 hours
Practical Skills (lab/clinical/ simulation)	• System-wise case presentation practice (Respiratory, CVS, Neuro) • Symptom-based triage simulations (e.g., chest pain, breathlessness) • Emergency vital signs and monitoring in system-specific cases • Neurological and GI case-based discussion and clinical signs • Assessment of renal emergencies with case vignettes • Documentation practice (SOAP, emergency notes, diagnosis)	30 Hours
	Total	**75 Hours**

Text Book/Reference Books:

1. Rosen's Emergency Medicine: Concepts and Clinical Practice, vol.1 and 2
2. Hutchison's Clinical Methods: An Integrated Approach to Clinical Practice - 2017 edition
3. Nancy Caroline Emergency Care in the streets - 8th edition
4. Mosby's EMT basic textbook 2nd edition
5. Tintinalli's textbook of Emergency Medicine- Judith E. Tintinalli 9th edition
6. Roberts and Hedges' Clinical Procedures in Emergency Medicine - 7th edition

3. TRAUMA- PART-1

(Introduction to Trauma, Hemorrhage and Shock, Head and Facial Trauma, Thoracic and Abdominal Trauma.)

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

course description:

This course provides students with advanced training in the assessment, triage, and initial management of trauma patients across pre-hospital settings. Emphasizing a systems-based and evidence-informed approach. Through scenario-based learning and case analysis, paramedics will learn to differentiate types of trauma, recognize organ-specific injuries, and make informed decisions regarding transport priorities and early interventions. The course reinforces clinical judgment in the field to optimize patient outcomes during the critical pre-hospital window.

Objectives: At the end of the semester, the student should be able to:

- To define trauma and explain its epidemiology, classification, and pathophysiology.
- To understand the principles of trauma systems, pre-hospital triage, and transport decisions.
- To apply the structured approach (ABCDE) for primary and secondary trauma surveys.
- To recognize and manage hemorrhagic and traumatic shock effectively.
- To assess and manage head, facial, thoracic, and abdominal trauma using evidence-based practices.
- To develop skills in early trauma recognition, patient monitoring, communication, and procedural techniques.

Unit	Practical Topics	Hours
1	**Introduction to Trauma Terminology** Definition and scope of trauma, Epidemiology of trauma (global and national), Classification of trauma (blunt, penetrating, polytrauma, etc.), Mechanisms of injury (MOI): MVCs, falls, assaults, blast injuries, The Golden Hour and concept of the trauma triad of death (hypothermia, acidosis, coagulopathy) **Trauma Systems and Prehospital Care,** Components of a trauma system**,** Levels of trauma centers**,** Role of EMS in trauma care**,** Scene safety and triage (START, SALT)**,** Transport decisions: "Stay and play" vs "scoop and run"**,** Documentation and communication with hospital teams. **Primary and Secondary Survey,** Initial assessment and resuscitation: ABCDE approach**,** A: Airway with cervical spine protection**,** B: Breathing and ventilation C: Circulation with hemorrhage control**,** D: Disability (neurologic assessment, AVPU/GCS)**,** E: Exposure and environment control Secondary survey: head-to-toe exam**,** Monitoring and reassessment**,** ECG, pulse oximetry, BP, capnography, FAST ultrasound	9 Hours
2	**Haemorrhage and shock** Introduction to Shock in Trauma, Types of shock in trauma (hypovolemic, neurogenic, obstructive), causes, pathophysiology, Early recognition and management, Fluid resuscitation (crystalloids, blood products, fluid calculation), Permissive hypotension, massive transfusion protocol (MTP)	10 Hours

3	**Head and facial trauma** • Head Trauma, types of injury, Mechanisms of injury, Signs and Symptoms, Emergency Management • Facial Trauma types of injury, Mechanisms of injury, Signs and Symptoms, Emergency Management • Fractures and Classifications, Nasal fractures, Zygomatic complex fractures, Orbital blow-out fractures, Le Fort classification (I, II, III) for maxillary fractures, Mandibular fractures (angle, condyle, parasymphysis) types of injury, Mechanisms of injury, Signs and Symptoms, Emergency Management • Orthopaedic Involvement in Craniofacial Trauma, Open vs closed fractures, Temporomandibular joint dislocation, Facial trauma with associated orthopedic injuries (e.g., clavicle, shoulder), Role of maxillofacial surgeon vs orthopedic surgeon, Splinting • principles	8 hours
4	**Thoracic Trauma** Classification of Thoracic Injuries: **Bony injuries:** • Rib fractures (single, multiple, flail chest) Sternum fracture • Clavicle and scapula fractures Thoracic vertebral fractures **Soft tissue and internal injuries:** • Pulmonary contusion • Pneumothorax, Tension pneumothorax, Hemothorax, Cardiac tamponade • Tracheobronchial rupture Diaphragmatic rupture Aortic injury	9 hours

5	**Abdominal trauma** Organ-specific Trauma **Liver trauma** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation, grading, conservative vs. operative management **Splenic injury** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation, non-operative vs. splenectomy **Renal trauma** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation, haematuria, management approach **Bladder and urethral injury** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation, special signs, retrograde cystography **Pancreatic trauma** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation delayed presentation **Intestinal perforation** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation peritonitis and sepsis **Diaphragmatic injury** causes, mechanism of injury, Clinical Presentation and Initial Assessment, Diagnostic Evaluation association with blunt trauma	9 hours
Practical Skills (lab/clinical/ simulation)	• System-wise trauma case presentation practice (Head/Face, Thoracic, Abdominal trauma) • Trauma triage and transport decision simulations (using START/SALT, scoop-and-run vs. stay-and-play) Emergency trauma assessment: Primary & Secondary Survey (ABCDE, GCS, AVPU, FAST) • Head and facial trauma clinical signs + fracture classification and splinting techniques • Thoracic and abdominal injury case-based discussion (with physiological monitoring) • Shock recognition drills and trauma resuscitation (fluid calculation, MTP) • Trauma documentation practice (SOAP notes, trauma	30 Hours

	checklists, handover communication)	
	Total	**75 Hours**

Text Book/Reference Books:

- Advanced Traum Life Support (ATLS) Provider Manual, 10th Ed. (NAEMT, 2022)
- Prehospital Traum Life Support (ATLS) Provider Manual, 10th Ed. (NAEMT)
- Textbook of Orthopedics, 5th edition, John Ebinezer.
- Textbook of orthopedics and traumatology, Mayil Vahanan Natarajan
- Nancy Caroline's Emergency Care in Street, 8th Edition

4. INSTRUMENTATION - PART-2

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

Course Description:

This course introduces students to the fundamental principles and clinical applications of instrumentation used in critical care and emergency settings. With a focus on both theoretical knowledge and practical skills, students will explore the design, function, and safe operation of essential ICU and emergency medical devices.

Objectives: At the end of the semester, the student should be able to:

- Understand the fundamental principles and functioning of emergency and ICU equipment.
- Identify and operate infusion, drug delivery, and monitoring systems used in critical care.
- Demonstrate appropriate usage, safety, and troubleshooting procedures for life-support devices.
- Apply knowledge of diagnostic and supportive equipment in emergency and intensive care settings.
- Integrate advanced critical care technologies into patient management scenarios through simulation

Course plan

Unit	Topic	Hours
1	**Infusion and Drug Delivery Systems** Infusion pumps (syringe & volumetric) Smart pumps and drug library features PCA (Patient-Controlled Analgesia) Insulin pumps and anticoagulant infusers Safety checks and troubleshooting	4 Hours
2	**Respiratory, Neurological and Temperature Monitoring** • **Devices** Intracranial Pressure (ICP) monitoring EEG machines (basic understanding) Pupilometers and reflex hammers Temperature monitoring (core & peripheral) • Neuromuscular monitors (Train of Four) • • Arterial Line Monitoring • Central Venous Pressure (CVP) Monitoring Pulmonary Artery Catheters • Mechanical Ventilators Humidifiers and Nebulizers	8 Hours
3	**Renal, GI, and Nutritional Support Devices** Dialysis Machines**:** Principles of CRRT and Hemodialysis Gastrostomy and Jejunostomy care equipment Parenteral Nutrition devices and tubing systems	6 hours
4	**Emergency Diagnostic and Imaging Tools** • Portable X-ray and Ultrasound in emergency • Point-of-care testing (ABG analyzers, glucometers, lactate meters) • POCUS (Focused Assessment with Sonography in Trauma - FAST) Bedside ECHO	6 hours
5	**Advanced and Specialized ICU Equipment** • ECMO (Extracorporeal Membrane Oxygenation) basics Intra-aortic balloon pump (IABP) • Ventricular Assist Devices (VAD) • Organ support systems (Liver-assist devices) • Tele-ICU and smart ICU monitoring	6 hours

Unit	Topic	Hours
Practical Skills (lab/clinical/ simulation)	• Demonstration and hands-on: Syringe/volumetric/smart pumps, PCA, insulin infusers • Dialysis (CRRT and hemodialysis) machine setup and alarm response • Tube feeding and parenteral nutrition setup with troubleshooting • ICP monitor demo, pupillometer use, TOF testing, temperature monitoring • Point-of-care diagnostic tools (ABG, glucometer, lactate meter) • Point-of-care diagnostic tools (ABG, glucometer, lactate meter) • Portable imaging (X-ray/USG), FAST scan, ECG/ECHO interpretation • ECMO/IABP/VAD/liver-assist equipment: orientation and function overview • ICU integration simulation (Tele-ICU, documentation, patient device mapping)	30 Hours
	Total	**60 Hours**

Text Book/Reference Books:

- Nancy Caroline Emergency Care in the streets - 8th edition
- Mosby's EMT basic textbook 2nd edition
- Tintinalli's textbook of Emergency Medicine- Judith E. Tintinalli 9th edition
- Roberts and Hedges' Clinical Procedures in Emergency Medicine - 7th edition

5. INDIAN CULTURE, HERITAGE, YOGA AND MEDITATION

L/T/P/C

2/-/-/2

Instructors in charge: Masters in the particular field or Equivalent with experience.

Course Description:

This interdisciplinary course offers students an immersive exploration into the profound legacy of Indian culture, heritage, yoga, and meditation**,** tracing its origins, evolving relevance in modern times. Designed to instill a deep appreciation for India's philosophies, and

civilizational ethos, the course integrates historical knowledge with experiential learning to foster holistic development intellectual, emotional, physical, and spiritual.

Objectives: At the end of the semester, the student should be able to:

- Understand and respect the values and belief systems rooted in Indian culture
- Recognize the influence of Indian cultural traditions on health practices and patient behavior
- Identify key historical, social, artistic, and scientific contributions of ancient and medieval India
- Appreciate the importance of preserving tangible and intangible heritage
- Analyze the physiological and psychological benefits of yoga practices in managing stress and enhancing emotional well-being.
- Apply principles of therapeutic yoga in the management of common lifestyle and clinical conditions

Course plan

Unit	Topic	Hours
1	**Foundations and Philosophical Roots of Indian Culture** • Definition, meaning, and scope of Indian culture • Unity in diversity: language, religion, customs, • cuisine Dharma, karma, and Purusharthas (goals of • life) Overview of six classical schools of Indian • philosophy Ahimsa, satya, seva, and spiritual wellness • Ethical conduct in Ayurveda and Siddha • Traditional ethics in modern healthcare professionalism **Festivals, Rituals, and Cultural Beliefs in Health** • Indian festivals and their social significance • Marriage, birth, death, and life-cycle rituals • Role of rituals and prayer in healing and recovery • Belief systems and their impact on healthcare-seeking behavior **Indian Arts, Literature, and Symbolism in Healing** • Classical dance, music, sculpture, and visual arts • Epics and scriptures: Ramayana, Mahabharata, Gita • UNESCO heritage and medical symbolism in architecture • Storytelling as a medium of healing and education **Cultural Sensitivity and Family Dynamics in Healthcare** • Cultural taboos: food, touch, gender, end-of-life care Beliefs in karma, rebirth, and healing traditions • Case studies: impact of cultural understanding in care • Family systems, caregiving roles, and shared decision-making • Changing roles of women in healthcare • Community-based care approaches	15 Hours

2	**Understanding Indian Heritage and Its Historical Roots** • Meaning, components, and scope of Indian heritage (tangible & intangible) • Historical timeline from Indus Valley to Modern India • Role of heritage in personal identity and nation-building • Key preservation institutions: ASI, INTACH, UNESCO • Contributions of Harappan, Mauryan, Gupta civilizations • Heritage developments during Mughal and Colonial eras • Influence of freedom movement on cultural consciousness **Architectural and Monumental Heritage** • Major architectural styles: Dravidian, Nagara, Indo-Islamic Important temples, forts, palaces, mosques • Symbolism and function of heritage sites (stepwells, hospitals, universities) • Conservation techniques and preservation challenges **Performing Arts, Literature, and Philosophical Traditions** • Classical and folk dances (e.g., Bharatanatyam, Kathak) • Carnatic and Hindustani music traditions • Oral storytelling: Kathakali, Yakshagana, Baul traditions • Vedas, Sangam literature, Bhakti-Sufi poetry • Philosophical foundations: Vedic, Buddhist, Jain, Bhakti-Sufi • Interfaith harmony and spiritual healing in Indian traditions • Cultural integration in pluralistic society **Scientific, Medical, and Everyday Heritage** • Ayurveda, Siddha, Unani: principles and healing systems • Sushruta and Charaka's medical legacy • Contributions to surgery, astronomy, and mathematics • Seasonal food regimens and health practices • Traditional crafts, handlooms, rural technologies • Heritage in food, festivals, and regional cuisines • Community participation and heritage tourism **Experiential Learning and Heritage Reflection** • Visit to a heritage monument, museum, or cultural center • Group project: poster/digital presentation on a heritage theme	15 Hours

	• Reflective writing: "My cultural roots and healthcare journey" • Quiz or exhibition on Indian heritage themes	
3	**Foundations of Yoga and Meditation** • Historical evolution of yoga: Vedic to modern • Definitions, goals, and types of yoga (Hatha, Raja, Bhakti, etc.) • Basic concepts in yoga philosophy: Pancha Koshas, Ashtanga Yoga • Health and disease in yoga framework • Yama and Niyama: ethical and personal guidelines • Science of meditation and neurophysiological basis **Yogic Postures and Their Benefits** • Categories of asanas: standing, sitting, supine, prone, balancing • Key postures and their anatomical/physiological benefits • Safety precautions and contraindications • Practice of ~~10~~ 12 essential asanas (e.g., Tadasana, Bhujangasana, Shavasana) **Pranayama, Bandhas, and Energy Control** • Physiology of breathing and introduction to prana • Practice of pranayama techniques (Anulom Vilom, Bhramari, Kapalabhati, etc.) • Concept and awareness of Bandhas (Jalandhara, Uddiyana, Moola) • Integration of breath control with postures and relaxation	15 hours
Total	**45 Hours**	**Total**

Unit	Topic	Hours
	Meditation, Mindfulness, and Emotional Balance • Meditation vs. concentration vs. mindfulness • Techniques: breath awareness, mantra, guided imagery • Mindfulness in clinical practice and stress reduction • Yoga Nidra, progressive muscle relaxation • Yoga for emotional intelligence and resilience • Use of yoga in emergency and high-stress settings **Clinical and Practical Applications of Yoga** • Yoga therapy for lifestyle disorders (HTN, diabetes, asthma) • Role in pain, rehab, and surgical recovery • Case studies in clinical yoga • Daily practical sessions: asana, pranayama, meditation Peer teaching, feedback sessions, and self-reflection journal	
	Total	**45 Hours**

Text Book/Reference Books: As per the Faculty

6.SOFT SKILLS AND CLINICAL COMMUNICATION SKILLS

L/T/P/C

2/-/-/2

Instructors in charge: Masters in the particular field or Equivalent with experience.

Course Description:

Effective emergency care is not solely about clinical expertise—it demands sharp communication, teamwork, emotional intelligence, and interpersonal sensitivity. This course is designed to equip students of emergency care with essential soft skills and clinical communication competencies vital for time-critical environments.

Objectives: At the end of the semester, the student should be able to:

- Demonstrate effective verbal and non-verbal communication with patients, caregivers, and team members
- Use empathy and professionalism in patient interactions
- Handle difficult conversations, including delivering bad news
- Work collaboratively in a healthcare team
- Exhibit leadership, time management, and emotional intelligence in stressful situations

Course plan

Unit	Topic	Hours
1	**Foundations of Healthcare Communication** • Importance and components of communication in clinical settings • Verbal, non-verbal, and para-verbal communication • Barriers to effective communication • Active listening and self-awareness • Building rapport with patients and families • Open vs closed-ended questions • ICE technique (Ideas, Concerns, Expectations) • Empathy, compassion, and cultural sensitivity **Clinical and Ethical Communication** • Patient history taking and case presentation • Communication during examination • Explaining diagnosis and procedures • Informed consent: legal and ethical considerations • SOAP format and clinical documentation **Interpersonal Communication in Healthcare Teams** • Healthcare teams and collaborative roles • SBAR format for interprofessional communication • Conflict resolution, feedback exchange • Respect in hierarchies and team dynamics **Crisis and Special Situation Communication** • SPIKES protocol for breaking bad news • Handling emotionally charged events and psychological first aid • Communicating with families during critical events • End-of-life and DNR conversations • Communication with children, elderly, impaired, psychiatric patients • Working with interpreters	30 Hours

	Professional Development and Practical Skills • Time management, multitasking, and decision-making in emergencies • Emotional intelligence, ethics, and professionalism • Grooming, body language, and etiquette • Simulations, role plays, OSCEs Reflective writing and peer feedback	
	Total	**30 Hours**

Text Book/Reference Books: As per the Faculty

7.STRESS MANAGEMENT

L/T/P/C

1/-/-/1

Learning Objectives:

- To understand the concept, causes, and types of stress.
- To identify physical, emotional, and behavioral responses to stress.
- To learn various stress management and coping techniques.
- To develop skills for maintaining mental well-being and resilience.
- To promote a balanced lifestyle in personal and professional life.

Learning Outcomes:

- Explain the causes and effects of stress on health.
- Identify personal stressors and recognize stress symptoms.
- Apply effective stress management techniques such as relaxation, time management, and coping strategies.
- Demonstrate improved emotional control and resilience.
- Maintain a healthy balance between personal and professional responsibilities.

(15 hrs)

UNIT I (3 hrs)

- Introduction to Stress and Its Effects Definition of stress: Eustress vs. Distress Types of stress: Acute vs. Chronic
- The biology of stress (fight-or-flight response, hormones)
- Short-term and long-term effects on physical and mental health: The role of perception and coping mechanisms

UNIT II (3 hrs)

- Identifying Stressors and Personal Stress Responses
- Internal vs. external stressors (work, relationships, environment) Identifying stress patterns (thoughts, behaviors, physical reactions) Emotional regulation and its role in stress management
- The Stress Process: How stress develops and escalates

UNIT III (3 hrs)

- Coping Strategies and Stress Relief Techniques
- Problem-focused. emotion-focused coping
- Cognitive Behavioral Therapy(CBT)techniques forstress
- Relaxationtechniques(deepbreathing,progressivemusclerelaxation)Timemanagement and organization as stress-relief tools

- Developing a personal coping plan

UNIT IV **(2 hrs)**

- Lifestyle Changes for Managing Stress: The role of physical activity and exercise, SleephygieneanditsconnectiontostressNutritionanditsimpactonmentalhealthSocial support and healthy relationships, Mindfulness and meditation practices

UNIT V **(2 hrs)**

- Stress ManagementatWork and School
- Managing work and school stress: Time management, prioritization, pressure environments and deadlines
- Building resilience and avoiding burnout
- The importance of taking breaks and practicing self-care

UNIT VI **(2 hrs)**

- Building Long-Term Stress Resilience
- Resilience theory and how to bounce back from adversity, developing a growth mindset to handle challenges. Building emotional intelligence to cope with stress. Integrating stress management into daily life

RECOMMENDED TEXT BOOKS

Stress Management: From Basic Science to Best Practice

SEMESTER-4

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 401	Medical Emergencies-II	3	1	4	45	30	75	30	70	100
BEMT4 02	Trauma II	3	1	4	45	30	75	30	70	100
BEMT 403	Surgical Emergencies	3	1	4	45	30	75	30	70	100
BEMT 404	Burns	3	1	4	45	30	75	30	70	100
BEMT 405	Introduction and Application of Artificial Intelligence in healthcare	2	-	2	30	-	30	25	25	50
BEMT 406	Healthcare management: Personality development, Leadership, Human Rights	2	-	2	30	-	30	25	25	50
VAC	Environmental Awareness	2	-	2	30	-	30	25	-	-
Total		**18**	**4**	**22**	**270**	**120**	**390**	**195**	**330**	**500**

1.MEDICAL EMERGENCIES*:* PART-2

L/T/P/C

3/-/1/4

(Pulmonology, Endocrine, Hematology, Immunological, Oncology, Psychiatry)

Instructors in charge*:*

- Bachelor of Emergency Medical Technologist (Paramedic),
- Masters of Advanced care paramedic or Equivalent with experience.

Course Description

This course introduces students to the recognition, assessment, and pre-hospital management of Medical emergencies.

Learning Objectives

By the end of this course, students will be able to:

- Identify and explain the causes of medical emergencies
- Explain the pathophysiology of the medical emergencies.
- Identify the clinical features related to the specific medical emergencies.
- Explain the diagnostic procedures for the specific medical emergency.
- Explain the treatment plan for a medical emergency.

Unit	Topic	Hours
1	**Metabolic and Endocrine Emergencies** • Diabetic Ketoacidosis • Hyperosmolar_hyperglycaemic state Hypoglycaemia • Thyroid Stroma • Myxoedema coma • Adrenal crisis • Pheochromocytoma crisis • Amyloidosis • Metabolic acidosis • Metabolic alkalosis	10 Hours

Unit	Topic	Hours
2	**Fluid and Electrolyte Imbalance** • Types of IV fluids • Fluid overload • Hyponatremia • Hypernatremia • Hypokalaemia • Hyperkalaemia • Hypocalcaemia • Hypercalcemia • Hypomagnesemia • Hypermagnesemia	10 Hours
3	**Haematological Emergencies** • Iron Deficiency Anaemia • Haemolytic Anaemia • Megaloblastic Anaemia • Polycythaemia vera • Thalassemia • Leukaemia • Sickle cell disease • Thrombotic Thrombocytopenic Purpura (TTP) • Disseminated Intravascular Coagulation (DIC) • Massive Transfusion Protocol	10 Hours
4	**Oncological Emergency** Malignancy-induced • Hypercalcemia • Superior Vena Cava Syndrome • Cord Compression • Intracranial Pressure • Syndrome of Inappropriate Anti-Diuretic Hormone • Tumour Lysis Syndrome • Febrile Neutropenia	8 Hours

5	**Psychiatric Emergencies** • Delirium and delirium • Violent or aggressive behavior • Anxiety or panic attack • Acute Psychosis • Schizophrenia • Withdrawal syndrome	7 Hours
Practical Skills	• • ABG Interpretation • Blood Investigations • Fluid Administration	30 Hours
	Total	**75 Hours**

Reference textbooks:

- Clinical Procedures in Emergency Medicine – Roberts and Hedges
- Tintinalli's Emergency Medicine: A Comprehensive Study Guide
- Emergency Procedures: A Handbook for Medical Professionals – Oxford University Press
- The ICU Book – Paul L. Marino (Ventilation, Mechanical support, and advanced procedures)

2.TRAUMA EMERGENCIES: PART-2

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or equivalent with experience.

Course Description

This course focuses on the assessment and management of musculoskeletal injury during trauma. It includes hands-on training in the spinal motion restriction & immobilization, and splinting of musculoskeletal emergencies in a pre-hospital setting.

Learning Objectives

By the end of this course, students will be able to:

- Describe the anatomy of the musculoskeletal system.
- Recognize musculoskeletal injuries.
- Spinal Motion Restriction.
- Practice immobilization and prevent complications.

Course plan

Units	Topics	Hours
1	**Introduction to Musculoskeletal Injury** • Fracture and types of fracture • Subluxation and dislocation • Fracture Healing and complications of fracture	3 Hours
2	**Pelvic Trauma** • Anatomy and physiology of pelvis • Mechanism of injury, assessment and management of pelvic injury • Pelvic Dislocation	2 Hours
3	**Spinal Injury** • Anatomy and physiology of spinal cord • Mechanism of injury, assessment and management of spinal bone injury • Mechanism of injury, assessment and management of the spinal cord	2 Hours

4	**Upper Extremity Injury** 1. Anatomy and range of motion of the upper extremity 2. Injury around the shoulder • Cervical fracture • Fracture of the scapula • Shoulder dislocation 3. Injury to the Arm • Proximal humerus fracture • Shaft of humerus fracture • Distal Humerus Fracture 4. Injury around the elbow • Supracondylar fracture • Elbow dislocation 5. Injury to the forearm • Both bone fractures of the forearm • Monteggia's fracture • Galeazzi's fracture • Smith and Barton fractur 6. Wrist Injury 7. Hand Injury	18 Hours

5	**Lower Extremity Injury** 1. Anatomy and range of motion of the lower extremity 2. Femur Fracture • Head of femur fracture • Neck of femur • Shaft of femur fracture • Distal/supracondylar fracture 3. Injury to the Knee • Patella fracture • Knee dislocation 4. Tibia and fibula fracture 5. Ankle injury 6. Achilles Tendon Injury 7. Foot Injury	18 Hours
6	**Special Musculoskeletal injury** 1. Crush Injury 2. Amputation	2 Hours
Practical Skills (lab/clinical/ simulation)	1. Cervical collar 2. Spine motion restriction devices 3. Pelvic binder 4. Splinting techniques 5. Plaster of Paris	30 Hours
	Total	**75 Hours**

Reference textbooks:

- Advanced Traum Life Support (ATLS) Provider Manual, 10th Ed. (NAEMT, 2022)
- Prehospital Traum Life Support (ATLS) Provider Manual, 10th Ed. (NAEMT)
- Textbook of Orthopedics, 5th edition, John Ebinezer.
- Textbook of orthopedics and traumatology, Mayil Vahanan Natarajan
- Nancy Caroline's Emergency Care in Street, 8th Edition

3.BURNS

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic Equivalent with experience.

Course Description

This course provides foundational and advanced knowledge in the assessment, management, and rehabilitation of patients with burn injuries. This course covers key concepts of burn pathophysiology, classification, resuscitation, wound care, infection control, pain management, and psychological support.

Learning Objectives

By the end of this course, students will be able to:

- Understand the classification and pathophysiology of burns.
- Perform initial assessment and fluid resuscitation in burns.
- Able to provide pain management and appropriate burn care.
- Psychological support for the burn patients.
- Know the special care and manage the special population

Course plan

Units	Topics	Hours
1	**Introduction to burns care** • Anatomy of the skin and its function • Types of burns • Degrees of burns • Pathophysiology of burns, shock, and burn oedema • Burn Resuscitation • Pain management	8 Hours
2	**Scar Assessment, Treatment, and Rehabilitation** • Scar Assessment • Burns scar treatment/debridement • Rehabilitation of scar management	5 Hours
	Non-Thermal Burns • Chemical burns • Electrical Burns	8 Hours

3	• Radiational Burns Frostbite, Inhalation burns	
4	**Burn Reconstruction Principles** • Principles of burn reconstruction • Tissue expander in burns • Reconstruction – skin substitute and tissue engineering	8 Hours
5	**Specialized Burns** • Pediatric burns • Geriatric Burns • Burns in Pregnancy • Eye and hand burns	8 Hours
6	**Critical Care and acute phase after burns** • Wound Care in Infectious Burns • Nutritional support for a burn patient • Psychological support in the acute phase of hospitalization • Rehabilitation in the acute phase	8 Hours
Practical Skills (lab/clinical/ simulation)	• Burn assessment – total body surface area burns • Fluid calculation in adult and pediatric • Wound debridement and dressing material • Airway Management • Escharotomy or fasciotomy skills	30 Hours
	Total	**75 Hours**

Reference Textbooks:

- Handbook of Burns, Volume 1, Acute Burn Care,
- Handbook of burns, volume 2, Reconstruction and Rehabilitation
- Total Burn Care, by Davind N. Herndon, 5th Edition.

4.SURGICAL EMERGENCIES

L/T/P/C

3/-/1/4

Instructors in charge:

Bachelor of Emergency Medical Technologist (Paramedic)

Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

This course provides a comprehensive overview of the diagnosis, assessment, and initial management of surgical emergencies commonly encountered in emergency departments and acute care settings.

Learning Objectives

By the end of this course, students will be able to:

- Identify and prioritize life-threatening surgical conditions.
- Perform systematic evaluation and initiate resuscitation in surgical emergencies.
- Interpret relevant diagnostic tests and imaging.
- Implement initial management and procedural interventions.

Course plan

Units	Topics	Hours
1	**Principles of anaesthesia** • Pre-anaesthetic Assessment • Airway Management • General Anaesthesia • Local Anaesthesia • Regional Anaesthesia	8 Hours
2	**Wounds** • Types of wounds and wound management • Wound healing • Suturing • Tetanus • Gas gangrene	10 Hours

3	**Abdominal and Gastrointestinal Emergencies** 1. Acute abdominal pain 2. Oesophageal emergencies • Gastro-oesophageal reflux disease Oesophageal obstruction • 3. Gastrointestinal bleeding • Upper GI Bleeding • Lower GI Bleeding 4. Stomach and Duodenum • Peptic ulcer • Duodenal ulcer 5. Abdominal Aortic Aneurysm 6. Appendicitis 7. Pancreatitis 8. Cholecystitis 9. Intestinal obstruction 10. Intestinal perforation Hernias	20 Hours
4	**Genitourinary System** • Renal Colic • Ureteric colic • Torsion of the testis	4 Hours
5	**Anorectal Disorders** • Rectal Prolapse Haemorrhoids	3 Hours
Practical Skills (lab/clinical/ simulation)	• Suturing • Tracheostomy • Surgical Cricothyroidotomy • Needle Cricothyrotomy • Needle thoracocentesis • Intercostal drainage	30 Hours
Total	**75 Hours**	

Reference textbooks:

- Manipal Manual of Surgery, 5th Edition, K Rajagopal Shenoy
- SRB manual of surgery, 6th Edition, Sriram Bhat M
- Tintinalli's Emergency Medicine, 9th Edition

5. INTRODUCTION AND APPLICATION OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE

L/T/P/C

2/-/-/2

Instructors in charge: Master's Degree in a relevant discipline or Equivalent with experience.

Course Description

This course provides a foundational understanding of Artificial Intelligence (AI) and its transformative applications in healthcare. Learners will explore how AI technologies are applied to clinical diagnostics, decision support systems, medical imaging, personalized medicine, patient monitoring, and administrative tasks.

Learning Objectives

By the end of this course, students will be able to:

- Understand the fundamentals of AI and machine learning.
- Identify and analyze key areas where AI is applied in healthcare.
- Evaluate real-world use cases of AI in diagnostics, imaging, and patient care.
- Understand the regulatory, ethical, and privacy issues surrounding AI in healthcare.

Course plan

Units	Topics	Hours
Unit 1: Introduction to Artificial Intelligence in Health Care	1. Define Artificial Intelligence and current practice 2. New age health care 3. Artificial intelligence and health records	5 Hours
Unit 2: Data in Health Care	1. Introduction to data and types of data 2. Health care data 3. Challenges in data 4. Data privacy	5 Hours
Unit 3: Machine Learning	1. Basics of Machine Learning 2. Difference between machine learning Vs software engineering 3. How machine learning will work 4. Deep learning 5. Neural network 6. Algorithm	8 Hours
Unit 4: Application of Artificial Intelligence in Health Care	1. Drug Discovery and molecular modeling using Artificial Intelligence 2. Drug delivery and pharmaceutical development 3. Cancer Diagnosis and treatment decision 4. Artificial Intelligence in Medical Imaging 5. Artificial Intelligence-assisted surgery 6. Medical devices	8 Hours
Unit 5: Ethics, Bias and Regulation	1. Ethical Considerations in Artificial Intelligence and Machine Learning 2. Bias Using Artificial Intelligence in Health Care 3. Regulation and legal framework	4 Hours
Total		**30 Hours**

Reference textbooks:

- Artificial Intelligence in Healthcare – Adam Bohr & Kaveh Memarzadeh
- Machine Learning and AI for Healthcare: Big Data for Improved Health Outcomes – Arjun Panesar
- Artificial Intelligence and Deep Learning in Pathology – Stanley Cohen

6.HEALTHCARE MANAGEMENT, PERSONALITY DEVELOPMENT, LEADERSHIP, HUMAN RIGHTS

L/T/P/C

2/-/-/2

Instructors in charge: Master's Degree in a relevant discipline or Equivalent with experience

Course Description This course equips healthcare professionals with the skills to lead effectively, enhance their personality, and uphold human rights in healthcare settings. The interdisciplinary content merges management principles, self- development techniques, and rights-based healthcare approaches to improve individual effectiveness and institutional culture.

Learning Objectives

By the end of this course, students will be able to

- Enhance the Interpersonal and Leadership skills.
- Learn the personality development and the principles of professional growth.
- Learn the system in health care setting.
- Human right in the health practice

Course plan

Units	Topics	Hours
Unit 1: Health Care Management	1. Introduction to Health Care Management 2. Law and ethics in health care management 3. Health care regulation and compliance 4. Emerging issue in Health Care Management	7 Hours
Unit 2: Personality Development	1. Introduction to personality development 2. Soft skills 3. Communication skills 4. Group discussion 5. Job interview 6. Body language	8 Hours
Unit 3: Leadership	1. Leadership thoughts 2. Leadership style 3. Health leadership challenges 4. Leadership Competencies 5. Ethical responsibility in health leadership	7 Hours

Units	Topics	Hours
Unit 4: Human Rights	1. Human Rights meaning 2. Universal Declaration of Human Rights 3. Global advocacy of human rights, Amnesty International and other organization 4. People's Union for Civil Liberty 5. Human Rights Commission in India 6. Remedies Against Violation of Human Rights in India	8 Hours
Total		**30 Hours**

Reference textbooks:

- Introduction to Health Care Management, 5th edition by Sharon B. Buchbinder & Nancy H. Shanks
- Personality Development and Soft Skills, by Barun K. Mithra
- Leadership for Health Professionals – Theory, Skills, and Applications by Gerald R. Ledlow & James H. Stephens
- Human Rights, as per the new 2019 -2020 syllabus by Dr. Parvathy Appaiah
- Nirmal Chiranjivi: Human Rights in India, New Delhi, OUP, 2021

9.ENVIRONMENTAL AWARENESS

L/T/P/C

2/-/-/2

Learning Objectives:

- Understand environmental issues and sustainability
- Learn impact of environment on health
- Study pollution, waste management, and conservation
- Promote environmental responsibility

Learning Outcomes:
Students will be able to:

- Explain environmental factors affecting health
- Demonstrate awareness of pollution and control measures
- Apply principles of waste management in healthcare
- Promote environmentally responsible practices

(30 hrs)

Unit 1 Introduction to Environmental Awareness (3 hrs)

What is environmental awareness?

The importance of environmental education.

Key environmental concepts: ecosystems, biodiversity, sustainability.

Historical perspective on environmental awareness.

Unit 2 Earth's Ecosystems and Biodiversity (3 hrs)

What are ecosystems?

Types of ecosystems: forests, oceans, wetlands, etc.

Importance of biodiversity.

Threats to biodiversity: habitat loss, invasive species, climate change.

Unit 3 Pollution and Its Impact (3 hrs)

Types of pollution: air, water, soil, noise, and light pollution.

Causes and effects of pollution on health and ecosystems.

Case studies of major pollution events.

Unit 4 Climate Change and Global Warming (3 hrs)

The science of climate change.

Greenhouse effect and human contributions.

Impacts of climate change: rising temperatures, sea levels, extreme weather.

Mitigation and adaptation strategies.

Unit 5 Resource Conservation (3 hrs)

Renewable vs. non-renewable resources.

The importance of conserving water, energy, and other resources.

Techniques for conservation: recycling, energy efficiency, and water-saving practices.

Unit 6 Sustainable Agriculture and Food Systems (3 hrs)

Environmental impact of conventional farming practices.

Sustainable agriculture: organic farming, permaculture, and agroecology.

The role of diet in environmental sustainability.

Unit 7 Waste Management (3 hrs)

Types of waste: municipal, industrial, hazardous, electronic.

The 3 Rs: Reduce, Reuse, Recycle.

Landfills, incineration, and composting.

Zero waste lifestyle.

Unit 8 Water Conservation and Management (3 hrs)

The global water crisis: causes and consequences.

Water management practices and policies.

The importance of clean water for all living organisms.

Unit 9 Environmental Policy and Legislation (3 hrs)

Global environmental treaties: Paris Agreement, Kyoto Protocol.

National environmental policies and regulations.

Role of NGOs, governments, and individuals in policy development.

Unit 10 Green Technologies and Innovations (3 hrs)

Introduction to renewable energy sources (solar, wind, hydro, etc.).

Electric vehicles and sustainable transportation.

Innovations in waste-to-energy and sustainable agriculture.

The Role of Individuals in Environmental Protection

How individual actions impact the environment.

Eco-friendly lifestyles: reducing waste, sustainable consumption, green travel.

Community action and grassroots movements.

Reference Textbook

Environmental Science: A Global Concern" by William P. Cunningham & Mary Ann Cunningham

SEMESTER-5

Course code	Course Titles	Credits/Week			Hours/Semester			Assessment		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 501	Toxicology and Environmental Emergencies	3	1	4	45	30	75	30	70	100
BEMT 502	Gynecological and Obstetric Emergencies	3	1	4	45	30	75	30	70	100
BEMT 503	Neonatology and Pediatric	3	1	4	45	30	75	30	70	100
BEMT 504	Clinical Pharmacology-Emergency Medications	3	1	4	45	30	75	30	70	100
BEMT 505	Basics of Radiology & Imaging Interpretation	2	1	3	30	30	60	25	25	50
BEMT 506	Telemedicine	2	1	3	30	30	60	25	25	50
VAC	Interpersonal Communication	2	-	2	30	-	30	25	-	-
	Total	**18**	**6**	**24**	**270**	**180**	**450**	**195**	**330**	**500**

1. TOXICOLOGICAL & ENVIRONMENTAL EMERGENCIES

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

This course introduces students to the recognition, assessment, and pre-hospital management of toxicological and environmental emergencies. It emphasizes identification, decontamination, antidote use, and the EMS provider's role in mass casualty early

and hazardous situations.

Learning Objectives

By the end of this course, students will be able to:

- Identify and explain common poisons and how they affect the body.
- Decide how to treat different poisonings using antidotes and decontamination.
- Recognize patterns (toxidrome) to figure out the type of poisoning.
- Perform basic emergency care for toxic and environmental emergencies.
- Plan how to respond to large-scale chemical or environmental incidents

Course plan

Units	Topics	Hours
1	**Principles of Toxicology** Pre-hospital Toxicology Assessment, Scene Safety and Hazard Identification, Routes of exposure: Inhalation, ingestion, dermal, Toxicokinetics: absorption, distribution, metabolism, excretion, Toxicodynamic: cellular effects, organ- specific toxicity, Common Toxidromes, Chemical Exposure and Hazmat Response, General management of Poisoning, Decontamination techniques, Gastric lavage, activated charcoal, Whole bowel irrigation, Emergency antidotes, Legal and Ethical Aspects of Poisoning Cases, Poison Control Center Coordination, Transport and Isolation of Contaminated Patients, Use of PPE in Toxic Exposure Scenarios	5

Units	Topics	Hours
2	**Common Toxic Emergencies** Organophosphate and Pesticide Poisoning, Opioid overdose, Cardiac Glycoside Toxicity, Acetaminophen / Salicylate overdose, Tricyclic antidepressant overdose, Heavy Metal poisoning, Alcohol toxicity: methanol vs ethanol, Sedatives - Hypnotics overdose, Carbon Monoxide toxicity, Hydrocarbon toxicity, Cyanide Poisoning, Beta-blocker and Calcium Channel Blocker overdose, Sulfonamides and Insulin Overdose (Hypoglycemia), Methemoglobinemia, Serotonin Syndrome, Sodium Channel Blocker Toxicity, Recreational Drug Toxicity (e.g., cocaine, MDMA, synthetic cannabis),Caustic Ingestion (acids and alkali),Food Poisoning and Botulism	15
3	**Environmental Emergencies** Insect Bites l Stings - Bee and wasp, Spider, Snakebite and Scorpion Envenomation: antivenom protocols, Animal Bites, Plant and Mushroom Poisoning, Hyperthermia - Types, Fluid resuscitation, Hypothermia: Frost bite, rewarming methods, Drowning: airway management, hypoxia, Lightening strike, High Altitude Illness, Decompression sickness, Hazardous material l Radiation Exposure, Mass Casualty Incidents Involving Toxic Agents	15
Practical Skills (lab/clinical/ simulation)	PPE and decontamination, Airway Management, Fluid Resuscitation, Antidote administration, Ryle's tube insertion, Gastric Lavage	30
Total		**75 Hours**

Reference textbooks:

- Goldfrank's Toxicologic Emergencies, 12th Ed. (2023) – Robert S. Hoffman
- Emergency Toxicology: A Comprehensive Clinical Guide (2022) – Frank Paloucek et al. ● Rosen's Emergency Medicine: Concepts and Clinical Practice, 10th Ed. (2023)
- Textbook of Medical Toxicology – Dr. V.V. Pillay, 3rd Ed.(2021)
- Forensic Medicine & Toxicology – Dr. Anil Aggrawal

2. GYNAECOLOGICAL & OBSTETRIC EMERGENCIES

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

This course focuses on acute gynecological and obstetric conditions requiring emergency care, including childbirth and maternal complications. It includes hands- on simulations of obstetric interventions, hemorrhage control, EMS management of female reproductive emergencies and pre-hospital childbirth.

Learning Objectives

By the end of this course, students will be able to

- Describe the female reproductive system and pregnancy changes.
- Recognize and manage emergency situations in pregnant women.
- Assist safely in normal deliveries in pre-hospital settings.
- Handle complications like bleeding, breech delivery, or eclampsia.
- Practice childbirth drills and know when to refer to a hospital.

Course plan

Units	Topics	Hours
1	**Obstetric Emergencies and Antenatal Care** Anatomy of the Female Reproductive System, Menstrual Cycle Phases -Follicular Phase, Ovulatory Phase, Luteal Phase, Hormonal Regulation in Reproductive Cycle, Maternal Adaptations in Pregnancy, Antenatal Assessment - History and Physical Examination, Ultrasound and Lab Investigations Abortion, Hypertensive Emergencies in Pregnancy-Gestational Hypertension, Severe Pre-eclampsia, Eclampsia, Antepartum Hemorrhage - Placenta Previa, Abruptio Placentae, Amniotic Fluid Embolism, Preterm Labor and PROM (Premature Rupture of Membranes), Cardiac Complications in Pregnancy -Congenital Heart Disease, Peripartum Cardiomyopathy	15

Units	Topics	Hours
2	**Emergency Childbirth (Field Deliveries)** Expected Vaginal Delivery in an Ambulance, Postpartum Hemorrhage (PPH), Uterine Rupture, Breech Presentation, Shoulder Dystocia, Multiple Gestation Delivery, Cord Prolapse, Trauma in Pregnancy, Assisted Vaginal Delivery (Forceps/Vacuum), Perimortem Caesarean Section, Cardiopulmonary Arrest in Pregnancy, Neonatal Assessment, Neonatal Resuscitation and Stabilization, Neonatal Handover Coordination with Receiving Facility.	15
3	**Gynaecological Emergencies** Ectopic Pregnancy, Pelvic Inflammatory Disease (PID),Acute Endometriosis Flare, Pelvic Mass with Acute Pain, Urinary Retention or Incontinence Related to Gynaecologic Conditions, Acute Abdominal Pain of Gynaecologic Origin, Ovarian Torsion, Ruptured Ovarian Cyst, Menorrhagia / Dysfunctional Uterine Bleeding (DUB),Anemia-Related Emergency Stabilization,Gynecological Trauma -Road Traffic Accidents (RTA), Sexual Assault, Sexual Assault and Forensic Evidence Preservation, EMS Role in Early Pregnancy Loss and Emotional Support, Psycho social Emergencies Related to Reproductive Health	15
Practical Skills (lab/clinical /simulation)	Antenatal assessment & Normal Delivery PPH simulation with uterine massage + uterotonics Obstetric drills: breech, eclampsia, dystocia, twin delivery	30
Total		**75 Hours**

Reference textbooks:

- Advanced Medical Life Support (AMLS) Provider Manual, 4th Ed. (NAEMT, 2022)
- Clinical Obstetrics and Gynecology, 5th Ed. (2022) – Brian A. Magowan
- Emergency Care in Obstetrics and Gynecology (2023) – Joseph S. Sanfilippo et al.
- DC Dutta's Textbook of Obstetrics – Hiralal Konar| 10th Ed. (2023)
- Manual of Obstetrics – Shirish N Daftary & Narendra Malhotra

3. NEONATOLOGY AND PEDIATRICS

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

This course explores emergency care principles for neonates and children, focusing on age-specific assessment, vital signs, trauma, infectious diseases, and resuscitation protocols. Pediatric Advanced Life Support (PALS) and Neonatal Resuscitation foundation techniques are emphasized.

Learning Objectives

By the end of this course, students will be able to

- Understand how babies and children are different from adults in emergencies.
- Assess and manage breathing, circulation, and consciousness in children.
- Follow newborn and pediatric resuscitation steps (PALS, NRP).
- Identify signs of serious illness, trauma, or abuse in children.
- Plan emergency care based on the child's age and condition.

Course plan

Units	Topics	Hours
1	**Neonatal Emergencies** Fetal Circulation, Intrapartum Fetal Surveillance, Neonatal Reflexes, Neonatal Thermoregulation, Assessment of the Newborn, Neonatal Resuscitation -APGAR Scoring Protocol, Birth Asphyxia -Oxygen Therapy, CPAP, Neonatal Jaundice - Phototherapy, Neonatal Sepsis -Blood Cultures, Antibiotic Therapy, Birth Trauma, Meconium Aspiration Syndrome, Neonatal Hypoglycemia, Neonatal Hypothermia, Neonatal Seizures, Congenital Diaphragmatic Hernia (CDH),Congenital Heart Disease Presenting in Neonates, Umbilical Cord Prolapse or Bleeding, Neonatal Transport Considerations.	15

Units	Topics	Hours
2	**Pediatric Assessment** Developmental Milestones: motor, language, psycho-social, Anatomical and Physiological differences, Pediatric vital signs and weight based dosing, Pediatric assessment triangle, Pediatric Glasgow coma scale, Congenital anomalies, Immunization schedules, Pediatric Pain Management in EMS, Transport Considerations for Critically Ill Children, Airway Management in Children, Pediatric Oxygen Therapy and Delivery Devices Non-Accidental Trauma (Child Abuse) - Identification and reporting of child abuse, ,Handling Children with Special Healthcare Needs, Communication Strategies with Pediatric Patients and Families, Documentation and Legal Considerations in Pediatric EMS, Infection Control and PPE Use in Pediatric Emergencies	15
3	**Pediatric Emergencies** Choking and Foreign Body Aspiration, Upper Airway Obstruction (e.g., Croup, Epiglottitis), Asthma Exacerbation, Acute Allergic Reaction, Anaphylaxis, Pneumonia, Bronchiolitis, Dehydration in Children, Shock (Hypovolemic, Septic, Anaphylactic),Meningitis, Sepsis, Febrile Seizures ,Diabetic Ketoacidosis (DKA),Pediatric Trauma-Head Injury, fractures, Drowning and Near-Drowning, Burns, Status Epilepticus, Poisoning and Toxic Ingestion ,Sudden Infant Death Syndrome (SIDS),Congenital Heart Disease Emergencies, Apnoea in Infants, Electrolyte Imbalances, Pediatric Cardiac Arrest and CPR, Heat Stroke and Hypothermia	15
Practical Skills (lab/clinical/ simulation)	Pediatric airway management and intubation, Pediatric Fluid Dose calculation, Pediatric Advanced Life Support (PALS) algorithms, Neonatal Assessment,Neonatal Resuscitation (NRP)	30
Total		**75 Hours**

Reference textbooks:

- Pediatric Advanced Life Support (PALS) Manual, AHA 2020 Guidelines + 2025 Updates
- Pediatric Emergency Medicine, 2nd Ed. (2023) – Gary R. Strange
- Advanced Pediatric Assessment, 4th Ed. (2022)IAP Textbook of Pediatrics Aparna Sharma / A Parthasarathy (IAP Editors)
- AIIMS Protocols in Neonatology – Dr. Vinod K Paul

4. CLINICAL PHARMACOLOGY – EMERGENCY MEDICATIONS

L/T/P/C

3/-/1/4

Instructors in charge: MD Pharmacology / PhD Pharmacology / M.Pharm or Pharm D who have adequate experience in teaching pharmacology

Course Description

This course provides foundational pharmacological knowledge for emergency medical providers. Students learn the action, indication, dosing, side effects, and legal aspects of medications used in EMS practice.

Learning Objectives

By the end of this course, students will be able to

- List emergency drugs and explain what they are used for.
- Calculate correct drug doses for adults and children.
- Choose the right medicine based on the patient's condition.
- Give emergency medicines safely and watch for side effects.
- Know what medicines are in an EMS drug kit and how to use them

Course plan

Units	Topics	Hours
1	**Cardiovascular & Resuscitation Medications** Vasopressors & Inotropes-Epinephrine Dopamine, Norepinephrine, Vasopressin, Antiarrhythmic - Amiodarone, Lidocaine, Adenosine Bradycardia Management- Atropine, Cardiac Ischemia - Aspirin, Nitroglycerin Fluid resuscitation - Indications, Types of Fluids, Fluid Administration Strategy, Fluid Responsiveness, Special considerations, Complications.	10
2	**Respiratory, Neurological & Metabolic Medications** Respiratory Agents -Albuterol, Ipratropium Magnesium Sulfate Sedatives & Anticonvulsants -Midazolam, Diazepam, Ketamine Hypoglycemia Management -Dextrose, Glucagon Electrolyte & Acid-Base Management Calcium Chloride, Sodium Bicarbonate, Potassium chloride	10

Units	Topics	Hours
3	**Toxicology, Pain & Anaphylaxis Medications** Antidotes & Adsorbents - Naloxone, Activated Charcoal, Acetylcysteine (NAC), Pain Management - Morphine, Fentanyl Anaphylaxis & Allergic Reactions- Epinephrine (IM), Diphenhydramine Methylprednisolone, Hydrocortisone Drugs used in Obstetrics _Oxytocin, Tocolytic agents	10
Practical Skills (lab/clinical/ simulation)	• EMS Drug Kit Essentials • Drug formulary and identification Route of administration • Appropriate dosage administration using practice medications • Infusion protocols: IV drip rate calculation	30
Total		**60 Hours**

Reference textbooks:

- Basic and Clinical Pharmacology, 16th Ed. (2023) – Bertram Katzung
- Textbook of Pharmacology for Paramedical Students – S.P. Bhargava
- Mosby's Paramedic Textbook, 5th Ed. (2023) – Mick J. Sanders
- EMS Medication Field Guide, 2024 Ed. – Jones & Bartlett Learning
- Essentials of Medical Pharmacology – K.D. Tripathi| 8th Ed. (2022)

5. BASICS OF RADIOLOGY & IMAGING INTERPRETATION

L/T/P/C

2/-/1/3

Instructors in charge: MD Pharmacology / PhD Pharmacology / M.Pharm or Pharm D who have adequate experience in teaching pharmacology

Course Description

Students will gain a foundational understanding of diagnostic imaging in the emergency setting. This course focuses on interpreting X-rays, CT scans, and point- of-care ultrasound (POCUS) for trauma and medical emergencies.

Learning Objectives

By the end of this course, students will be able to

- Understand different types of medical imaging (X-ray, CT, Ultrasound).
- Spot common injuries or conditions on emergency scans.
- Use ultrasound to check lungs, heart, and bleeding in trauma.
- Make quick image-based decisions in emergencies.
- Record and report your findings clearly for handovers.

Course plan

Units	Topics	Hours
1	**X-ray (Radiography)** Principles of X-ray imaging: How X-rays are generated and interact with tissues, Common views in trauma: Chest, pelvis, cervical spine, extremities, Portable X-ray in EMS: Use in ambulances or field hospitals. Radiographic signs of emergencies: Pneumothorax, Fractures, Foreign bodies, Pulmonary edema	10
2	**CT Scan (Computed Tomography)/MRI (Magnetic Resonance Imaging)** CT basics: Cross-sectional imaging, contrast use, Trauma CT protocols: Head, chest, abdomen/pelvis. MRI (Magnetic Resonance Imaging) basics: Magnetic fields and radio waves, Limitations in EMS: Time, availability, contraindications, Emergency indications Spinal cord injury, Stroke (diffusion-weighted imaging), Soft tissue evaluation	10
3	**Ultrasound (Sonography)** Point-of-care ultrasound (POCUS): Bedside use in EMS.FAST exam: Focused Assessment with Sonography for Trauma, Lung ultrasound: Pneumothorax, pleural effusion, Cardiac ultrasound: Pericardial effusion, tamponade, Vascular access guidance, FAST vs CT in trauma: Emergency findings: Intracranial hemorrhage, Solid organ injury, Aortic dissection, Pulmonary embolism	10
Practical Skills (lab/clinical/ simulation)	X-ray Interpretation Skills Point-of-Care Ultrasound (POCUS) Skills CT Scan Recognition and Relevance Image-based EMS Decision Making Communication and Documentation of Imaging Findings Simulation and Case-based Image Interpretation Practice	30
Total		**60 Hours**

Reference textbooks:

- Felson's Principles of Chest Roentgenology, 5th Ed. (2022) – Lawrence Goodman
- Emergency Radiology: The Requisites, 3rd Ed. (2023) – Jorge A. Soto
- Introduction to Bedside Ultrasound, 2nd Ed. – Mike Stone (Free via One Minute Ultrasound App)
- Textbook of Radiology and Imaging – David Sutton, Indian Adaptation by Anil T Ahuja
- Fundamentals of Diagnostic Radiology – Subhash Chandra Parija (Editor)
- Manual of Radiographic Positioning – Sushil Kachewar

6. TELEMEDICINE

L/T/P/C

2/-/1/3

Instructors in charge: Master's Degree in a relevant discipline or Equivalent with experience

Course Description

This course introduces students to telemedicine's role in EMS, covering its platforms, legal frameworks, tele-triage, remote guidance, and integration with emergency dispatch and clinical decision-making systems.

Learning Objectives

By the end of this course, students will be able to

- Explain how telemedicine helps in emergencies and rural areas.
- Use telehealth tools to communicate with doctors during calls.
- Follow rules for patient privacy and consent in tele-consultations.
- Practice doing remote assessments and sending vital signs.

Course plan

Units	Topics	Hours
1	**Telemedicine Foundations** History and evolution of telehealth Platforms: video conferencing, mobile apps Tele-triage protocols Remote monitoring (Pandemic situations)	10
2	**Legal and Ethical Aspects** Data privacy: HIPAA, Indian IT Act Consent and documentation Medico-legal and ethical liability Cross-border consultations	10
3	**Telemedicine in Practice** Rural health outreach via mobile vans Disaster response: remote triage Integration with EMR and PACS 104 Health Helpline Process Introduction to technology and Artificial intelligence in health care systems	10

Units	Topics	Hours
Practical Skills (lab/clinical/ simulation)	• Telemedicine – Roles, equipments • How to advice to callers by algorithm based applications • Use of Telemetry - transferring data to the receiving facility • e.g. ECG, Vital trends • Simulation: Mock calls - teleconsultation	30
Total		**60 Hours**

Reference textbooks:

- Telemedicine in Emergency Medicine, 2nd Ed. (2023) – Jefferson & Doarn
- Digital Health and Telemedicine: Case-Based Learning (2024) – Mary Hegarty
- WHO Guidelines on Digital Health Interventions, 2023 update
- Telemedicine – Technology and Applications (MHEALTH, Telehealth, EHR) – R.S. Khandpur
- Telemedicine Practices: Indian Guidelines – Ministry of Health, India / Board of Governors MCI

7.INTERPERSONAL COMMUNICATION

L/T/P/C

2/-/-/2

Learning Objectives:

- To develop effective verbal and non-verbal communication skills.
- To enhance patient interaction and counseling abilities.
- To improve teamwork and professional relationships.
- To manage conflicts and emotional situations in healthcare settings.

Learning Outcomes:

- Communicate clearly and effectively with patients and colleagues.
- Demonstrate active listening and empathy.
- Handle difficult conversations and conflicts professionally.
- Exhibit strong interpersonal and teamwork skills.

(15hrs)

UNIT I (1hrs)

- Introduction to Interpersonal Communication
- Overview of interpersonal communication theory.
- Key principles: sender, message, receiver, feedback, noise .Importance of communication in daily life.

UNIT II (1hrs)

- Verbal Communication
- The role of language in communication.
- Choosing words carefully: Clarity, precision, and ambiguity. Influence of culture and context on verbal communication.

UNIT III (1hrs)

- Non-Verbal Communication
- Body language, facial expressions, and gestures. Space, posture, and touch in communication.
- The role of non-verbal cues in conveying emotions

UNIT IV (1hrs)

- Listening Skills
- Types of listening: Active, passive, reflective. Barriers to effective listening.
- Developing empathy through listening.

UNIT V **(1hrs)**

- Self-Disclosure and Relationship Development: The importance of self-disclosure in relationships. The Johari Window model.
- How self-disclosure affects trust and intimacy.

UNIT VI **(2hrs)**

- Conflict in Interpersonal Communication Types of conflict: Productivevs. destructive. Conflict management styles.
- Strategies for resolving conflict in healthy ways.

UNIT VII **(2hrs)**

- Cultural and Gender Differences in Communication
- Cultural influences on communication styles .Gender communication differences.
- Strategies for effective cross-cultural communication.

UNIT VIII **(2hrs)**

- Communication in Close Relationships
- Communication patterns in romantic relationships, family, and friendships.
- Managing expectations and maintaining healthy communication in intimate relationships.

UNIT IX **(2hrs)**

- Communication in the Workplace
- Interpersonal communication in professional settings.
- Navigating professional relationships and maintaining boundaries. Communication and leadership.

UNIT X **(2hrs)**

- Digital Communication
- The role of technology in interpersonal communication. The impact of social media on relationships.
- Pros and cons of digital communication tools.
- The Ethics of Communication
- Ethical dilemma in communication.
- Honesty, transparency, and privacy in conversations. Balancing openness with respect for others' boundaries.

RECOMMENDED TEXT BOOKS

"Interpersonal Communication: Everyday Encounters"(Author:JuliaT.Wood,9thEdition

SEMESTER-6

Course code	Course Titles	Credits/Week			Hours/Semester			Assessments		Total (IA+UE)
		L	P	C	L	T/P	Total	IA*	UE**	
BEMT 601	Disaster and MCI Management	3	1	4	45	30	75	30	70	100
BEMT 602	Research Methodology and Biostatistics	3	-	3	45	-	45	30	70	100
BEMT 603	Intensive Care Concepts and Management	6	-	6	90	-	90	30	70	100
BEMT 604	Intensive Care Concepts and Management Practical	-	3	3	-	90	90	30	70	100
BEMT 605	Emergency Clinical Procedures	-	3	3	-	90	90	25	25	50
BEMT 606	Business Entrepreneurship Development	2	-	2	30	-	30	25	25	50
VAC	Soft skill Development	2	-	2	30	-	30	25	-	-
Total		**16**	**7**	**23**	**240**	**210**	**450**	**195**	**330**	**500**

1. DISASTER AND MCI MANAGEMENT

L/T/P/C

3/-/1/4

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic),
- Masters of Advance care paramedic or Equivalent with experience.

Course Description

This advanced-level course is designed to equip EMS paramedics with the essential knowledge, skills, and operational readiness required to respond effectively to disasters

and mass casualty incidents (MCIs). The course emphasizes an all-hazards approach, integrating principles of disaster medicine, incident command, triage systems, and interagency coordination.

Learning Objectives

By the end of this course, students will be able to:

- Understanding the concept of triage and prioritization of care while managing multiple patients simultaneously in prehospital emergency care environment
- To assess disaster scenes, perform triage, provide field-based critical care, and coordinate with emergency services and disaster response teams.
- To understand and apply disaster preparedness principles, mass casualty incident (MCI) response, leadership during crises, and the role of prehospital care in integrated disaster systems

Course plan

Unit	Topics	Hours
Unit I	▪ Disasters and Mass-Casualty Incidents (MCIs) ▪ Disaster management preparedness, planning, training, response, and after-action review ▪ Types of Disaster- Natural and Man-made. ▪ Incident command system (ICS)-Roles and Responsibilities ▪ Medical Incident Command ▪ EMS response within ICS,	16 Hours

Unit	Topics	Hours
	▪ Triage ▪ Triage principles ▪ Overview of triage systems (START, Jump START, SALT, etc.) ▪ Resource management ▪ Triage ▪ Performing ▪ Retriage ▪ Destination decisions ▪ Critical Incident Stress ▪ Management -post-traumatic and cumulative stress • Hospital disaster preparedness and planning • Public health emergencies and outbreak-driven disasters • Urban Search and Rescue (USAR) operations	
Unit II	• Mass-Casualty Incidents Due to Terrorism and Disaster • Terrorism and weapons of mass destruction- Paramedic response, • Chemical/biological/Explosive/radiological/nuclear agents. • Railway accidents and derailment trauma • Terrorist bombing: blast injuries, scene safety, multi-casualty triage • Air crash disasters: triage, extrication, field stabilization • Maritime disasters and offshore rescue • Air crash disasters: triage, extrication, field stabilization • Tactical Emergency Medical Support (TEMS)	14 Hours
Unit III	• Hazardous material incidents Hazardous material scene size up/scene management, identification of hazardous material, contamination and Poisoning, chemical and toxicological terminology. • Establishing Safety Zones • Personal Protective Equipment • Decontamination and treatment, medical	09 Hours

	monitoring and rehabilitation.	
Unit IV	• Crime scene awareness – Awareness, highway incidents, residential incidents, violence on streets, contact and cover, self- defense, crime scenes. • Vehicle Extrication and Special Rescue	06 Hours

Unit	Topics	Hours
Practical Skills (lab/clinical/ simulation)	**Practical demonstration of** 1. Desk top exercises 2. Mock drill 3. Loading a patient 4. Unloading a patient 5. Techniques for patient extrication from a vehicle 6. Rescue Awareness and operations: Breaking tempered glass, 7. How to disconnect or cut battery cables in traditionally fueled and alternatively fueled vehicles 8. Stabilizing a Vehicle during Extrication 9. Stabilizing a suspected spinal injury in the water	30 Hours
	Total	**75 Hours**

Text Books

- Disaster medicine –2nd edition David E .Hogan, Jonathan-Lippincott Williams and Wilkins
- Rosens emergency medicine- Marx ,Hockberger Walls, Adams-Mosby Elsevier
- Ciottone's Disaster Medicine, 3rd Edition – Gregory R. Ciottone

Reference Books

- EMS and disaster management – A holistic approach PK Dane
- Principles of Emergency Management and Emergency Operations Centers – Michael J. Fagel
- Nancy Caroline's Emergency Care in the Streets – Latest Edition
- Disaster Response and Recovery: Strategies and Tactics for Resilience – David A. McEntire

2. RESEARCH METHODOLOGY AND BIOSTATISTICS

L/T/P/C

3/-/-/3

Instructors in charge: Ph.D. or Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

This foundational course introduces paramedic students to the core principles of research methodology and biostatistics**,** with a focus on developing the skills necessary to critically evaluate scientific literature, design research projects, and apply evidence- based practices in prehospital care.

Learning Objectives

The objective of this module is to help the students understand the basic principles of research and methods applied to draw inferences from the research findings.

- Understand the fundamentals of research and its role in knowledge creation.
- Identify and define research problems systematically.
- Recognize and apply ethical principles in conducting research.
- Describe and design appropriate research methodologies for different problem statements.
- Differentiate between various types of data and select suitable research tools.

Course plan

Unit	Topics	Hours
Unit I	Research Methodology: Introduction to research methods, Identifying research problem, Ethical issues in research, Research design, Types of Data, Research tools and Data collection methods, sampling methods, Developing a research proposal	15
Unit II	Biostatistics: Introduction, Central Limit Theorem, Measures of Morality, Sampling, Statistical significance, Correlation, Sample size determination Statistics Collection of Data - presentation including classification and diagrammatic representation frequency distribution. Measures of central tendency; measures of dispersion	15
Unit III	Statistical tests to compare means in normal and not normal distribution with one or more groups. Tests to check for association between groups. Use of computerized software for statistics	15
	Total	**45 Hours**

Text Books

- Introduction to research Methodology: A beginners Guide to doing a research project by Uwe Flick, Sage Publications.
- Research Methodology: Methods and techniques by C. R. Kothari, New Age Publications.
- Research methodology by Ranjeet Kumar
- Research Methodology by C.R. Kothari
- Research Design by John W. Creswell
- Doing Your Research Project by Judith Bell

3. INTENSIVE CARE CONCEPTS AND MANAGEMENT

L/T/P/C

-/-/3/3

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

This advanced-level course is designed to bridge the gap between prehospital emergency care and critical care transport by providing paramedics with in-depth knowledge of intensive care concepts and patient management strategies. The course focuses on the pathophysiology, monitoring, and advanced interventions required for critically ill and hemodynamically unstable patients.

Learning Objectives

- Understand the structure, protocols, and multidisciplinary functioning of the Intensive Care Unit (ICU), including care bundles, infection control, and transport protocols.
- Gain in-depth knowledge of respiratory and neurological emergencies in ICU, including mechanical ventilation, ARDS, and coma management.
- Learn to interpret ICU-based investigations such as chest X-rays, ventilatory parameters, ABG, and neurological assessments like GCS and ICP monitoring
- Demonstrate biomedical waste management principles in compliance with protocols.
- Understand safe intra- and inter-facility hospital transport protocols for critically ill patients.

Course plan

Unit	Topics	Hours
Unit I	**ICU Fundamentals and Care Systems** • ICU Admission Criteria and ICU Environment • Care bundles in ICU (VAP bundle, Sepsis bundle, CLABSI, CAUTI prevention) • Infection control practices in ICU • Biomedical waste management – segregation, colour coding, disposal • Nutrition support in ICU: Enteral and Parenteral nutrition • ICU crash cart setup and medication organization • Intra-hospital and inter-hospital transport of critically ill patients: Protocols, monitoring, and equipment required	15 Hours

Unit	Topics	Hours
Unit II	**Respiratory Emergencies and Imaging** • Respiratory emergencies: o Acute respiratory failure o COPD exacerbation • ARDS o Status asthmaticus • Chest X-ray interpretation: o Normal landmarks and cardiac silhouette o Optimum placement of tubes and lines (ETT, NGT, Central line) o Abnormal CXR: Tension Pneumothorax, Haemothorax, Lung contusion, ARDS, Pulmonary edema, Pneumonia types	15 Hours

Unit III	**Mechanical Ventilation Concepts** **Introduction to Mechanical Ventilation** • Definition and goals of mechanical ventilation • Physiology of respiration and indications for ventilatory support Classification: Invasive vs. Non-Invasive Ventilation (NIV) **Basic components of a ventilator circuit** • Lung compliance – static and dynamic • Airway resistance – causes and clinical relevance Auto-PEEP – identification and implications • Tidal volume (Vt) – normal values and target setting Minute ventilation (VE) – importance in CO_2 removal • Use of ventilator graphics (Pressure-volume loop, Flow-volume loop) **Initiation of Mechanical Ventilation** • Indications for mechanical ventilation: respiratory failure types I & II, altered sensorium, neuromuscular weakness Initial setup parameters: • • FiO_2 • Respiratory rate (RR) • Tidal volume (6–8 ml/kg of ideal body weight) PEEP (positive end-expiratory pressure) Inspiratory: Expiratory • ratio (I:E) Ventilator alarms and troubleshooting basics	15 Hours

Unit	Topics	Hours
	Modes of Ventilation ○ Volume Control Ventilation (VCV) Pressure Control Ventilation (PCV) ○ Synchronized Intermittent Mandatory Ventilation (SIMV) Assist-Control (A/C) ○ Continuous Positive Airway Pressure (CPAP) Bi-level Positive Airway Pressure (BiPAP) ○ Comparison of pressure vs. volume control mode **Weaning and Extubation** ○ Criteria for weaning: RSBI, $FiO_2 < 40\%$, PEEP < 5, good mental status, hemodynamic stability ○ Weaning protocols: spontaneous breathing trials (SBT), T-piece trials Extubation procedure ○ Extubation failure – causes, reintubation criteria, preventive measures	
Unit IV	**Ventilator Care and ICU Procedures** • Daily ventilator care protocols • ETT cuff pressure monitoring and securing • Tracheobronchial suctioning – open and closed techniques • Sedation holidays and sedation scales • Humidification systems • Chest physiotherapy, bedside pulmonary function tests (PFTs) • Role of bedside bronchoscopy • Restraint application in ICU • ICU endoscopy basics • Care and troubleshooting of Intercostal Drainage (ICD) systems	15 Hours
Unit V	**CNS Monitoring and Neurocritical Care** • Glasgow Coma Scale (GCS) and neurologic assessments • Sedation and delirium in ICU – Cause and management • Intracranial Pressure (ICP) monitoring • Brainstem death and brain death testing Coma • and unconscious patient protocols Seizure and • status epilepticus management Guillain-Barré • Syndrome: Critical care aspects • Analgesia and sedation protocols (RASS, BIS)	15 Hours

	Total	**75 Hours**

4. INTENSIVE CARE CONCEPTS AND MANAGEMENT - PRACTICAL

L/T/P/C

-/-/3/3

Instructors in charge:

Bachelor of Emergency Medical Technologist (Paramedic)

Masters of Advance Care Paramedic or Equivalent with experience.

Course Description

Paramedics will explore evidence-based practices in managing complex conditions such as respiratory failure, shock states, traumatic brain injury, multi-organ dysfunction, and sepsis. Emphasis is placed on high-acuity patient assessment, mechanical ventilation, advanced airway techniques, pharmacologic management, invasive monitoring, and the use of critical care equipment in transport settings. Through case-based learning, simulations, and skill labs, this course prepares paramedics to function as effective members of the critical care team.

Learning Objectives

By the end of this course, students will be able to

- Demonstrate appropriate usage, safety, and troubleshooting procedures for life-support devices.
- Apply knowledge of diagnostic and supportive equipment in emergency and intensive care settings.
- Integrate advanced critical care technologies into patient management scenarios through simulation.

Course plan

Unit	Topics	Practical Hours
Unit I	**Airway and Ventilation Management** 1. Endotracheal tube suctioning (open and closed) 2. Demonstration of cuff pressure monitoring 3. FBAO techniques (CPR on mannequin) 4. Airway adjuncts: OPA, NPA insertion 5. BVM ventilation on mannequin 6. Setting up a mechanical ventilator (Task Trainers/demonstration/simulation)	15 Hours

Unit	Topics	Practical Hours
Unit II	**Monitoring and Equipment** 1. Monitoring parameters: SpO_2, ECG, NIBP, RR, temperature 2. Setting up ICU monitor and interpreting vitals 3. Intercostal Drainage (ICD) care and troubleshooting 4. Intra-hospital transport setup – equipment and protocol 5. Crash cart layout and emergency drug arrangement 6. Spirometry and bedside PFT (demonstration) 7. Tracheostomy care (model-based)	15 Hours
Unit III	**Drug Administration and Calculation** 1. Calculation of drug dosages and dilution (simulation) 2. Preparation of IV adrenaline/dopamine infusion 3. Identification and discussion of emergency drugs: o Adrenaline, Atropine, Amiodarone o Diazepam, Lorazepam, Morphine, Fentanyl o Dopamine, Dobutamine, Phenytoin, Midazolam o Mannitol, Naloxone, Hydrocortisone 4. Drug route and technique: IV, IM, subcutaneous (mannequin/dummy) 5. Use of syringe pump and infusion pump	15 Hours
Unit IV	**Diagnostic & Procedural Interpretation** 1. Chest X-ray interpretation –normal vs abnormal findings (trauma, ARDS, pneumothorax, etc.) 2. ECG rhythm recognition –tachycardia, bradycardia, arrest rhythms 3. ABG interpretation – acid-base disturbances 4. Glasgow Coma Scale (GCS) scoring 5. Sedation assessment tools (RASS/SAS)	15 Hours
Unit V	**Special Procedures (Simulation/Demonstration)** 1. Neurologic assessment in ICU patient (pupil reaction, limb response) 2. Preparation and equipment for bronchoscopy (demo) 3. Bedside restraint application 4. Endoscopy setup in ICU (demo) 5. Sedation and analgesia administration protocol	15 Hours
Unit VI	1. BLS and ACLS Protocols Team Dynamics 2. Megacode 3. Simulation case scenarios	15 Hours

	Total	**90 Hours**

Text Books:

- Nancy Caroline Emergency Care in the streets - 8th edition
- Mosby's EMT basic textbook 2nd edition
- Tintinalli's textbook of Emergency Medicine- Judith E. Tintinalli 9th edition
- Roberts and Hedges' Clinical Procedures in Emergency Medicine - 7th edition

5. EMERGENCY CLINICAL PROCEDURES

L/T/P/C

-/-/3/3

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic Equivalent with experience.

Course Description

This hands-on, skills-focused course is designed to enhance the competence and confidence of paramedics in performing critical emergency clinical procedures across a wide range of prehospital scenarios. Emphasizing both foundational and advanced interventions, the course integrates evidence-based practices with real-world application to improve patient outcomes.

Learning Objectives

By the end of this course, students will be able to

- To develop and demonstrate proficiency in essential emergency and critical care procedures.
- To understand and apply evidence-based protocols in real-life scenarios to improve patient outcomes.
- To ensure students gain hands-on experience with basic and advanced techniques in emergency medical care, ensuring competence in high-pressure clinical environments

Course plan

Unit	Topics	Practical Hours
Unit I	**Gastrointestinal & Genitourinary Procedures Gastrointestinal Procedures:** 1. **Nasogastric Tube Insertion (Ryle's tube):** o Indications, Procedure, Confirmation, Troubleshooting. o Practical demonstration and hands-on insertion. 2. **Gastric Lavage:** o Indications in poisoning cases, technique, patient monitoring. 3. **Whole Bowel Irrigation:** o Practical steps for managing toxic ingestion cases. 4. **Peritoneal Lavage:** o Techniques in blunt trauma assessment. 5. **Parenteral Nutrition:** o Venous access for nutrition administration and monitoring. **Genitourinary Procedures:** 1. **Foley's Catheterization (Male & Female):** o Techniques, indications, complications, and troubleshooting. 2. **Bladder Washout/Irrigation:** o Procedure steps, monitoring during and after the procedure.	10 Hours

Unit II	**Vascular Access & Neurological Procedures Vascular Access Procedures:** 1. **Intravenous (IV) Cannulation:** o Selection of appropriate sites, needle sizes, and color coding. o Insertion and troubleshooting. 2. **Intramuscular (IM) Injection:** o Common sites, safety, and technique. 3. **Intraosseous (IO) Access:** o Indications, equipment, and step-by-step process for insertion (e.g., EZ-IO). 4. **Arterial Line Cannulation:** o Indications, sites (radial, femoral), and procedure. o **Allen's Test**: To assess collateral circulation. 5. **Central Venous Cannulation:** o Jugular, subclavian, femoral sites, and troubleshooting.	15 Hours
Unit	**Topics**	Practical Hours
	6. **ABG Sampling:** o **Procedure for collection and analysis.** **Neurological Procedure:** 1. **Lumbar Puncture:** **Stepwise technique, patient positioning, complications, and post-procedure monitoring.**	

Unit III	**Cardiovascular Procedures** 1. **Central Venous Pressure (CVP) Monitoring:** ○ **Setup, interpretation, and clinical use in shock states.** 2. **Defibrillation:** ○ **Manual and AED defibrillation.** ○ **Pad placement, energy levels, troubleshooting.** 3. **Synchronized Cardioversion:** ○ **Preparation, indications, sedation, and monitoring.** 4. **Transcutaneous Cardiac Pacing:** ○ **Indications, device setup, patient preparation.** 5. **Transvenous Cardiac Pacing:** ○ **Overview, insertion, and troubleshooting during pacing.** 6. **Pericardiocentesis:** ○ **Indications, needle placement, ultrasound guidance.** 7. **Thoracocentesis:** ○ **Techniques for pleural fluid drainage in emergency scenarios.**	15 Hours
Unit IV	**Respiratory and Airway Procedures** **Basic Airway Adjuncts:** 1. **Oropharyngeal Airway (OPA), Nasopharyngeal Airway (NPA):** ○ **Sizing, insertion, and patient assessment.** **Advanced Airway Management:** 1. **Laryngeal Mask Airway (LMA):** ○ **Insertion technique, indications, troubleshooting.** 2. **Combitube Insertion:** ○ **Procedure and clinical uses in airway emergencies.** 3. **Endotracheal Intubation:** ○ **Equipment, indications, technique, and post-intubation care.** 4. **Extubation:** ○ **Criteria and technique for safely removing an ET tube.** 5. **Orotracheal & Nasotracheal Suctioning:** ○ **Techniques for clearing secretions from the airway.**	10 Hours
Unit	**Topics**	Practical Hours

	Thoracic Procedures: 1. **Needle Cricothyrotomy:** ○ **Indications, technique, and post-procedure care.** 2. **Intercostal Drainage (Chest Tube Insertion):** ○ **Insertion sites, patient preparation, complications, monitoring.** 3. **Needle Decompression for Tension Pneumothorax:** ○ **Step-by-step procedure, patient positioning, and assessment post-decompression.** **Emergency Tracheostomy:** **Indications and procedure for emergency airway management**	
Unit V	**Respiratory Support** 1. **Basics of Mechanical Ventilation:** ○ **Hands-on session to familiarize with ventilator** settings (FiO_2, PEEP, tidal volume, RR). 2. **Initiation of Ventilation:** ○ **Procedure to initiate ventilation, adjust initial ventilator settings.** 3. **High Flow Nasal Cannula (HFNC):** ○ **Set-up, indications, and patient monitoring during HFNC therapy.** 4. **Ventilator Alarms and Troubleshooting:** ○ **Understanding alarm types and taking corrective actions**	10 Hours
	Total	60 Hours

Reference Books & Resources:

- Clinical Procedures in Emergency Medicine – Roberts and Hedges
- Tintinalli's Emergency Medicine: A Comprehensive Study Guide
- Emergency Procedures: A Handbook for Medical Professionals – Oxford

University Press

- The ICU Book – Paul L. Marino (Ventilation, Mechanical support, and advanced procedures)
- Manual of Pediatric Emergency Procedures – Fleisher, Ludwig

6. BUSINESS ENTREPRENEURSHIP DEVELOPMENT

L/T/P/C

2/-/-/2

Instructors in charge:

- Bachelor of Emergency Medical Technologist (Paramedic)
- Masters of Advance Care Paramedic or Equivalent with experience

Course Description

This course introduces undergraduate students to the dynamic world of entrepreneurship, emphasizing the development of business ideas, the start-up lifecycle, and the entrepreneurial mindset. Designed to foster innovation, creativity, and strategic thinking, the course guides students through the foundational principles and practical processes involved in launching and managing successful ventures.

Learning Objectives

By the end of this course, students will be able to

- To provide a comprehensive understanding of entrepreneurship and its role in economic development.
- To develop entrepreneurial skills and knowledge required to establish and manage a business.
- To inspire creativity and innovation in students to identify business- Business Entrepreneurship Development opportunities.
- To make students aware of institutional support for entrepreneurship development.
- To cultivate entrepreneurial attitudes, ethics, and responsibility.

Course plan

Unit	Topics	Hours
Unit I	**Introduction to Entrepreneurship** • Meaning, definition and importance of entrepreneurship • Types of entrepreneurs • Entrepreneur vs Manager • Entrepreneurial process • Role of entrepreneurship in economic development	06 Hours

Unit	Topics	Hours
Unit II	**Entrepreneurial Competencies and Motivation** • Traits and characteristics of successful entrepreneurs • Innovation and creativity in entrepreneurship • Entrepreneurial motivation theories • Barriers to entrepreneurship Women • and rural entrepreneurship	06 Hours
Unit III	**Business Idea Generation and Planning** • Identifying business opportunities • Market research and feasibility study • Business Model Canvas • Preparing a business plan (executive summary, marketing, operations, financials) • Legal structures for startups (proprietorship, partnership, LLP, private/public limited)	06 Hours
Unit IV	**Financial and Institutional Support** • Sources of finance: Angel investors, venture capital, crowdfunding, bank loans • Government schemes for entrepreneurship (Startup India, Stand-up India, MSME) • Role of institutions: DIC, NSIC, SIDBI, NABARD, NIESBUD, EDI • Financial planning and break-even analysis	06 Hours
Unit V	**Managing and Sustaining the Enterprise** • Growth strategies: franchising, diversification, scaling • Entrepreneurial ethics and social responsibility • Managing business risks • Exit strategies: IPO, acquisition, liquidation • Case studies on successful Indian entrepreneurs	06 Hours
	Total	**30 Hours**

Textbooks:

- Vasant Desai – Dynamics of Entrepreneurial Development and Management, Himalaya Publishing House
- S.S. Khanka – Entrepreneurial Development, S. Chand & Company

- Raj Shankar – Entrepreneurship: Theory and Practice, Tata McGraw Hill
- Hisrich, Peters & Shepherd – Entrepreneurship, McGraw Hill Education

Reference Books:

- David H. Holt – Entrepreneurship: New Venture Creation, Prentice Hall
- Dr. C.B. Gupta & Dr. S.S. Khanka – Entrepreneurship and Small Business Management, Sultan Chand & Sons
- Peter F. Drucker – Innovation and Entrepreneurship, Harper Business
- Nandan H. – Fundamentals of Entrepreneurship, PHI Learning Pvt. Ltd.

7.SOFT SKILLS DEVELOPMENT

L/T/P/C

2/-/-/2

Learning Objectives:

- To enhance communication and interpersonal skills.
- To develop leadership and teamwork abilities.
- To improve problem-solving and decision-making skills.
- To build professional behavior and confidence.

Learning Outcomes:

- Communicate effectively in professional settings.
- Demonstrate teamwork and leadership qualities.
- Apply critical thinking in problem-solving.
- Exhibit professionalism and ethical behavior.

(15hrs)

Week 1 **(2hrs)**

Introduction to Soft Skills:
Definition of Soft Skills. Hard skills: The importance of soft skills in the workplace
Key soft skills: communication, teamwork, adaptability, problem-solving, leadership, etc. Activities: Icebreakers, group discussions on soft skills in the workplace. Assignment: Self-assessment on current soft skills

Week 2 **(2hrs)**

Communication Skills

The communication process: sender, message, receiver, feedback, active listening techniques

Body language and non-verbal cues. Effective speaking: tone, clarity, and pacing. Email and phone communication etiquette

Activities: Role-playing scenarios (e.g., client interaction, conflicted solution)

Assignment: Practice active listening and send an email incorporating effective communication principles.

Week3 **(2hrs)**

Emotional Intelligence (EQ): What is emotional intelligence? (Self-awareness, self-Regulation, motivation, empathy, and social skills) Recognizing and managing your emotions, Understanding others' emotions and building empathy, Developing emotional resilience
Activities: Emotional intelligence quizzes, group discussion on handling emotional stressful situations

Assignment: Journaling emotional responses and reflection on EQ practices.

Week4 **(1hrs)**

Teamwork and Collaboration Roles and dynamics within teams Effective communication in teams Conflict resolution in teams

Building trust and fostering a collaborative environment. Activities: Team exercises, problem-solving tasks, and brainstorming sessions
Assignment: Work on a team project or task, and present in class.

Week5 **(2hrs)**

Conflict Resolution Sources of conflict (miscommunication, differing priorities, etc.)
Conflict resolution strategies (e.g negotiation, mediation, compromise). The role of active listening in resolving conflicts

Managing personal emotions during conflict. Activities:
Case studies, role-playing conflict resolution scenarios
Assignment: Reflect on a personal or professional conflict and propose a resolution strategy.

Week 6 **(2hrs)**

Time Management and Personal Organization

The importance of time management in personal and professional success. Prioritization techniques (e.g., Eisenhower Matrix, ABCDE method)

Tools for time management (digital calendars, to-do lists, Pomodoro technique), setting SMART goals

Managing procrastination and avoiding distractions. Activities: Time-blocking exercises, goal-setting workshop
Assignment: Create a personal time management plan and track daily productivity for a week.

Week 7 **(2hrs)**

Leadership and Influence
Types of leadership (e.g., transformational, transactional, servant leadership)Leadingbyexample: qualities of effective leaders

Building and maintaining team morale. The art of persuasion and influence. Activities: Leadership style assessment, group discussions on leadership challenges. Assignment: Write a reflection on a leader you admire and why.

Week8 **(2hrs)**

Public Speaking and Presentation

Skills: Overcoming Fear of Public
Speaking
Structuring a presentation (opening, body, and conclusion), Effective use of visual aids (PowerPoint, etc.)

Engaging the audience through storytelling, eye contact, and body language Activities: Group presentations, peer feedback sessions, impromptu speaking exercises Assignment: Prepare and deliver a short presentation (5-7minutes) on a topic of choice. Assessment and Evaluation:

Class Participation: 20 Assignments:30 Final: 50

RECOMMENDED TEXT BOOKS

The7HabitsofHighlyEffective
People" by Stephen R.Covey

SEVENTH AND EIGHTH SEMESTER

Internship

Sl. No.	Course Titles	Hours per semester	
		Clinical Rotation	Total
BEMT 701	Internship	1250	1250
BEMT 801	Internship	1250	1250
	Total		**2500**

The internship time period provides the students the opportunity to continue to develop confidence and increased skill in simulation and treatment delivery. Students will demonstrate competence in beginning, intermediate, and advanced procedures in both areas. Students will participate in advanced and specialized treatment procedures. The student will complete the clinical training by practicing all the skills learned in classroom and clinical instruction. The students are expected to work for minimum 8 hours per day and this may be more depending on the need and the healthcare setting.

- ✓ A common year has 52 weeks + 1 day (365 days total)
- ✓ That means 52 Sundays occur (one per week).
- ✓ Subtracting those Sundays / One day off gives:
- ✓ 365 days – 52 days = 313 days
- ✓ Converting to weeks:
- ✓ 313 ÷ 7 = 44 full weeks with a remainder of 5 days.

1. Total week: 44
2. Hours Per Day: 8

   313 ×12= 3744 Total Hours (4000)

   313 × 8 = 2504 Total Hours (2500)

   313 × 24= 7512 Total Hours (7500)
3. Clinical Credit

   1 Credit = 45 Hours Of Clinical Practice
4. Calculating Credits:

   2500 ÷ 45= 55.55 (55)