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# Curriculum Development for Three Year's Bachelor's Degree in Emergency Care.

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<p>One of the world's highest populated country India, has an uneven and inaccessible EMS system throughout the country. Reasons could be many among which lack of centralized body which provides EMS guidelines, central accessible single emergency number to call in case of emergency and inequity of care provided by pre-hospital care providers are the major ones.</p> <p>Variability in EMS education by different service providers is giving right to inappropriately trained professionals to do the most privileged work of saving lives. This brings our attention towards having a centralized and standardized EMS educational guidelines in the country.</p> <p>The goal of this study is to develop a centralized and standardized core curriculum for Bachelor's degree in emergency care. Upcoming students and ultimately pre-hospital care providers should have a same and equal knowledge depending upon their level of studies to develop equity of care.</p> <p>To come up with a desired curriculum as per the current EMS needs in India, curriculum of 11 different universities and colleges from all around the world were studied thoroughly and systematically. These curriculums were publicly available on university or college websites. Using deductive content analysis courses which fits best as per global standards and local scenarios were listed and included in the final curriculum.</p> <p>Courses that are included in the final curriculum are kept under seven different categories which are foundation courses, core EMT courses, supportive courses, proficient courses, optional courses, clinical rotation, and bachelor's thesis. These categories further have sub-categories which involve specific courses in each category.</p> <p>This curriculum is designed and developed to build confidence and skills in pre-hospital care providers and to increase student retention and goal achievement. In future with government involvement another milestone of having licensed paramedics in India can also be achieved.</p>	
Keywords	Curriculum, Emergency medical Service, Emergency Medical Technician, Courses, Modules.

## Contents

1	Introduction	1
2	Theoretical Background	4
3	Research Purpose	10
3.1	Research Aim	10
3.2	Research Objectives	10
4	Methodology	11
4.1	Data Collection	12
4.2	Data Analysis	12
4.2.1	Content Analysis	13
5	Results	18
6	Discussion	29
6.1	Trustworthiness of the study	31
6.2	Ethical Considerations	34
7	Conclusion	35
	References	36
	Appendices	
	Appendix 1. Curriculum Structure and Classification	1- 4
	Appendix 2. Detailed Curriculum	1- 66
	Appendix 3. Course Structure of Eleven Different Universities and Colleges	1- 11

## 1 Introduction

Any serious medical condition happening suddenly and expressing itself by severe acute symptoms (including unadorned pain) in which the unavailability and lack of immediate emergency care could practically result in: stern threat to the patient's overall health, serious damage to physical functions, or acute malfunctioning of a body part or organ is called as medical emergency. (KevinMD 2011). Emergency medical services is a system that addresses situation in which bodily harm is occurred due to injury or any other medical condition which includes appropriate monitoring, intervention and management of the victim on scene, providing the appropriate pre-hospital emergency care on scene or on route to the medical facility and timely transportation to the appropriate medical facility for further and advance medical care. (Prasad et al. 2016: 175.)

Thus, while delivering the care completely from the occurrence of acute medical condition to handing over the patient to appropriate medical facility for appropriate treatment, emergency care should to be strategically sound and maintained at all stages at the national, regional and communal stages. (Kobusingye et al. 2005: 627). Therefore, a successful EMS system depends on efficient communication systems, transportation and supplies, trained personnel as well as coordination of all involved parties.

Prehospital emergency care being the integral part of healthcare emergency services is a subsection of anaesthesiology and intensive care. In prehospital emergency care, mostly patient requires urgent assessment and is treated on scene of the incident it may be at home, workplace or a public place. Transportation to appropriate medical facility is a part of prehospital emergency care (HUS 2018). Prehospital emergency care is the speciality in which healthcare where in the pre-hospital emergency care provider need to work in extremely challenging conditions within a limited time.

In the educational framework, the utmost apparent explanation of curriculum is to sight it as a course for 'learning'. The famous American Hilda Taba in 1962 describe

it with a short definition as 'plan for learning'. The fundamentals of a curriculum generally concern with the goals and content of learning. Thus, the curriculum needs to focus on training and equipping the participants to work in pre-hospital settings. Thus, an efficient curriculum is one which endorses the complete knowledge required to suitably practice in the recognised area to ensure that all the skills are taught and learned within the prescribed time frame of the training period.

India is the second highest peopled country in the world and is having a fragmented EMS system which is fast evolving and is an essential field of healthcare system. Previously, the absenteeism of transport for patients facing medical emergencies was due to lack of right vehicles, the insufficiency of good roads, and the failure to pay for medical transport by general public were the common barrier to care. (Raz-zak & Kellermann 2002: 901). In 1985 initiative of starting an emergency care in the city of Mumbai was taken by Association for Trauma Care of India. However, this was a city-based movement rather than a country focused initiative. (Das & Desai 2017: 3). Later in 1991 government driven Centralised Accident & Trauma Services (CATS) ambulance service with 15 ambulances was launched in Delhi. Currently CATS have 151 ambulances stationed across the region attending to more than 150,000 calls a year.

In year 1994, the Christian Medical College in Vellore and Sundaram Medical Foundation 100 miles away in Chennai established the first emergency department Sri Ramachandra Medical College and Research Institute, Chennai initiated ED- monitored ambulance retrievals. (Subhan & Jain 2010: 209). In the year 1999, the first national conference of emergency management was hosted by Apollo Hospitals in Hyderabad and soon they launched their four-digit emergency call number 1066, which was soon replicated nationally in all Apollo hospitals.

Later in the year 2002, Lifeline foundation was formed in the western city Vadodara in partnership with National Highways Authority of India. Highway trauma took strong steps in India currently its large growing area of 600 providers and 5000 miles of highways covering various states. Year 2005, has done huge changes in Indian EMS when Satyam Computer Services took EMS initiative as their corporate social responsibility and launched Emergency Medicine and Research Institute, Hyderabad with the EMS helpline number 108 in partnership with Government of Andhra Pradesh. (Das & Desai 2017: 6).

Firm root in Indian EMS is taken by two publicly funded yet overlapping EMS helpline numbers which are quite popular i.e. 108 and 102 and having more than 17,000 ambulances across the country and primary focus has shifted to covering all the emergencies rather than focusing road traffic accidents only. Providers varies from public and private hospitals, organizations, start-ups, NGOs, etc. (Das & Desai 2017: 7). The provision of centralized and standardised prehospital emergency care must be the vital to ensure that even due to avoidable circumstances people should not lose their lives.

This research describes a curriculum for three-year bachelor's degree program in emergency care that is congruent with first 6-month format for foundation course then 18 months format for current EMS core content, and 12-month format for continuing education program which is an essential fragment of paramedic career path. The design of the curriculum is such that it could facilitate learning for pupils irrespective of their age and help them to obtain core competencies while dealing with several clinical scenarios for emergency situations. In the curriculum emphasis is given to emergencies which commonly occur with different presentations in our country then in western countries.

The development of this program is aimed for engaging and preparing care providers in the procedural, communication and decision-making aspect of prehospital care management. The curriculum is designed to assist educators and emergency care leaders to advance pre-hospital care education and equip society with the manpower which is appropriate to help them provide a uniform emergency care as an when its needed. This curriculum further reflects the importance of emergency care as a medical profession in India and later in other countries where there is no standardized curriculum available. Further this research is intended to project a core curriculum which is centralised and standardised as per Indian scenarios and best tailored the needs of EMS in India. The aim is to improve services, improve outcomes in student learning, augment engagement with the system, transition into careers and lifelong continuous learning.

## 2 Theoretical Background

### The Realities

Being the second largest community in the world, India need a lot of improvement in terms of health-related matters and educating professionals in the same area. As per a report an average Indian villager who doesn't have any personal means of conveyance has to travel 2 kilometres for a basic medicine, 6 kilometres for a laboratory test, and 20 Kilometres for an appropriate hospital care (WHO 2005).

Heart diseases takes the lead for death in India. Reasons could be many but when it comes to saving life paramedic should be able to handover the patient safely to appropriate medical facility. The Global Burden of Disease study estimates that in India out of 100 000 people 272 die because of cardiovascular diseases which is even extra than the world-wide average of 235 per 100 000 population (Prabhakaran, Jeemon & Roy 2016: 1606). Accidents on the roads due to increased traffic are the third leading cause of death. Death due to road accidents is alarming and situation is worsening every day as country is experiencing 10% increase in vehicles on road every year. The reported cases of deaths due to road traffic accidents in 2009 were 126,896 and this had been increased in 2010 to 133,938 which is about 5.5% more than the last year's deaths (Gopalakrishnan 2012: 144).

Any emergency wherein an infant or child is involved is considered serious. Diarrhoeal diseases are one of the biggest causes of under-5 deaths, as per the statistics by NITI Aayog in the year 2015 there were 43 deaths of under five children per 1000 births (NITI Aayog 2019). Other than this neonatal condition such as preterm birth and neonatal infections are also amongst the top ten leading causes of mortality in India.

Yearly around 44,000 women die in India due to the reasons that can be prevented during or after pregnancy (UNICEF 2018). In 2013, India had projected 82.7% delivery rate within the hospital, a maternal mortality ratio of 167 per 100,000 live births and early neo-natal mortality rate of 28 per 1000 live births. Although in the last decade a lot of improvement in the above indicators is seen in India but still a long

way to go for the improvements in maternal care. (Singh et al. 2016: 1). New target of global maternal mortality ratio is that by 2030 less than 70 per 100 000 live births. To achieve this goal, the WHO's Global Strategy for Women's, Children's, and Adolescents' Health (2016–2030) emphasizes that institutional childbirth in supervision with trained birth attendant and complete appropriate emergency obstetric care, learning through evidences are essential measures to follow. (Strehlow et al. 2016: 1-2).

As per the case study on Asian English published by British Library, India has the highest English-speaking people other than USA and UK. According to surveys English speaking population in India is 35 million which comprises just 4% of its population. However, an enhancement in the number of English medium schools in the past decade is clearly visible in Indian community.

As the computer literacy in India is less than 7 percent. However, things are changing in urban India and children are introduced with computers at an early age. According to NSS 575 report around 6% of houses in rural community and 29% houses in urban community owned computer. In India, among families which have members aging 14 years and above, 27% had internet access shown by the survey done in year, 2014. The magnitudes can range up to 16% in rural families and 49% in urban families. People between 14-29 years of age, almost 18% in rural communities and 49% in urban communities could work on computer (MOSPI 2014).

### **EMS Education**

Quality of care depends upon the care providers and quality of care providers determines the outcomes in emergency situations. This means if care providers are not skilled enough to provide the desired care, they can present danger to life. EMS education is a competency-based education focusing on what is needed for a student to deal effectively with varying and complex emergency scenarios. Facilitators and emergency care facilitators need to emphasis on learning outcomes which are afterwards fragmented into core competencies along consecutive levels of expertise. This in turn is beneficial for both teaching professional to structure the course and students to track their skill development (Gottipati & Shankararaman 2017: 42).



EMS itself is a specialty that incorporates administration, medical protocol development, disaster health management and most importantly quality resource management.

Three standardised levels of EMT training are there i.e. Emergency Medical Technician- Basic, Emergency Medical Technician- Advance and Paramedic. Emergency Medical Technician- Basic should undergo a full year of training after higher secondary school. Apart from skills known by Emergency Medical Technician- Basic an additional four months of skills and knowledge in airway adjuncts, intravenous therapy, precise emergency medications administration, electrocardiogram interpretation, and defibrillation is required for an EMT-Advanced. To be trained as paramedic additional four months training in advanced airway management and paramedic drug therapy, clinical decision making, as well as progressive skills for patient assessments, and field diagnosis is required. (Sharma & Brandler 2014: 308). Apart from this, various medical centres also implement 2 years diploma courses for trauma technicians but doesn't provide any degree to the participants. These are mostly certification courses or diploma courses conducted by various institutes and medical centres, thus the quality and capability to perform emergency care by pre-hospital care providers is always uncertain.

### **EMS Education in India**

Lot of erraticism is seen in the performance of EMS system. Need of an improved EMS system is clearly visible to transport people with limited resources to appropriate medical facility in a safe and timely manner. Pre-hospital emergency care needs to be simple, sustainable and efficient. Different levels of care providers can provide care which they are capable and authorized to provide. There are over 100,000 vacancies available in India for trained EMTs who can be deployed in ambulances to save lives. Need is of training organizations, facilitators and investments to bridge this gap. (Das & Desai 2017: 11).

But quality of emergency care in India has not progressed uniformly due to lack of awareness among general public, trained EMTs and other ambulance professionals thus corrective measures for improving EMS in India need to be introduced. This will further improve the accountability of EMS services in the country (Subhan and Jain 2010: 209-210). EMS education is the area which requires global attention however

many American and European academic institutions are opportunely providing and training Indian emergency care providers in their expertise. (Das & Desai 2017: 10).

In India EMS education was first initiated by Christian Medical College as they organized protocol based multi-speciality in poly trauma management and Sundaram Medical Foundation started nursing triage systems. In year 1995 “the Early Management of Trauma Course” was conducted by Christian Medical College. (EmergencyMedicine 2007). In the year 2000 Sri Ramachandra Medical College and Research Institute, Chennai started a bachelor's program Trauma Care Management which is the first University-recognized degree for trauma specialists in India and a master's program in the same was started in 2015.

Many more teaching institutes have since replicated the model with small modifications in the curriculum. There was no legislation in place to specify the qualification requirements of existing ambulance staff and equipment. Till the year 2004 there are no educational standards for paramedics and ambulance personnel. No provision of accreditation, review or periodic review of knowledge and skills occurs in this area (Joshi et al. 2004: 94-95). Lack of these standards brings an unskilled labour to do most privileged and delicate task of saving lives.

As a part of Indo-US collaboration in 2006 Stanford School of Medicine in partnership with EMRI developed the first internationally-affiliated training programs for paramedics and paramedic instructors, district hospital physician training programs, evidence-based care protocols for the 108 services, and focused refresher training programs for the existing EMTs. This program was based on the curriculum for paramedics provided by National Highway Traffic Safety Administration (NHTSA). National Highway Traffic Safety Administration has a designed curriculum for all the three levels (Basic, Advance and Paramedics) of care providers.

Currently in India cost effective modular model is applicable to train nurses and technicians who can provide emergency care in hospitals. Apart from courses offered by American Heart Association are also an obvious choice. In the year 2007 EMSIndia the first printable and electronic peer reviewed publication was launched by Lifeline Foundation in India, Bangladesh, Nepal and SriLanka which in the year 2014 evolved as Asian EMS Journal. (Das & Desai 2017: 6-7).

Apart from considerable improvement in this area, huge gaps in Indian EMS such as lack of legislation and accreditation of EMS workforce, lack of facilities for EMS education of paramedics is also considered as huge gap. (Das & Desai 2017: 12). EMS providers have their own training facilities with their own developed curriculum. These courses are mostly based on EMT or paramedic training courses in United States. To build a firm EMS system in India government need to initiate an EMS policy across the country, apart from that a centralized governing authority with its members are needed to set the standards of EMS training and operations throughout India. Creation of a single unique central number for calling in case of an emergency can also be beneficial.

Comprehensive centralized EMS curriculum needs to be implemented across the country, which is responsible for standardising procedures, emergency protocols, conveying procedural training and assistance, capacity building and accreditation of EMS system. (Garg 2017: 51). Thus, a curriculum for bachelor's degree in Emergency care which is validated by experts and affiliated to the university is the need of an hour in Indian EMS. Single standard curriculum should be followed by all pre-hospital care providers and their workforce to provide equity of care. The concern for accreditation and licensure of EMS personnel can later be solved with government involvement through this curriculum, making pre-hospital emergency care providers accountable in healthcare system.

In India 120,000 are reported number of ambulances but the experience of people availing their services is substandard. One reason of these substandard service is nonexistence of recognised educational curriculum in emergency care at national wide or municipal level. (Sikka et al. 2017: 157). In 2009 medical council of India has taken firm steps by recognizing emergency medicine as 30<sup>th</sup> speciality for medical training. Now to give recognition to EMS we need a National Prehospital care providers council which could command, control, and recognise EMS training schools and ratify the EMS training curriculum in the country.

### **Changing requirements of the curriculum**

In chapter 1 Introduction I described curriculum as the plan of learning but in today's highly complex world only learning and gathering skills doesn't solve the purpose. As described by Kawser (2014: 9) traditionally curriculum has two models: product

model and process model. Product model is focused on getting a product out of complete learning process within a set time frame. Students are provided with curriculum outlines, learning objectives, text books etc and are expected to finish their studies and get a degree. Whereas in process model focus is on continuous development with clear learning processes and outcomes is judged on their thinking capabilities, acting capabilities and feeling capabilities and how students are using their learning to solve the purpose.

These models are in another study (Ababio 2013: 286-287) where he said that in product model students are considered as raw materials and through teaching methods, they can be processed into finished product which can be consumed after finishing the study. In contrast to that in process model students are actively involved in learning processes and teacher act as facilitators to encourage conversations amongst students.

Fraser & Bosanquet (2006: 272-277) came up with the four categories of the curriculum based on how faculty members understand curriculums. Category A: Structure and content of the unit (subject). In this category curriculum is a product and students are considered as its consumers. Category B: Programme of the study having many units or courses to study in set duration. Curriculum is a product and candidates are receptors, they can play active role in changing the content and delivering techniques but doesn't have any role to play in its construction. Category C: Curriculum is considered as process. Students can explore their needs and motivations with their teachers while teachers need to define the process ensure that the structure should be intended around the theoretical framework. Category D: Curriculum is collective process where students and teachers are co-constructors of knowledge. It acts as a transformational process and helps in enhancing student's capability as an effective member of the society.

Barnett et al. (2001: 437) describes curriculum as changing world phenomena of performativity which emphasizes on output and use value. This provides a shift in the understanding of curricula from traditional to emerging curricula. Graduate need to engage purposively with this changing world this gives rise to another emerging concept of 'being'. To be as a being there must be readiness to learn and to engage,

attentiveness to hear and to discover, and willpower to keep working forward. (Barnett 2009: 434).

### **3 Research Purpose:**

Purpose of this study is to design a robust EMS system by creating a curriculum which is approved by Indian government. This curriculum needs to be centralized by government for all the service providers to develop licensed paramedics in the country.

#### **3.1 Research Aim**

Aim of this research is to develop a centralized and standardized core curriculum for students studying the core competencies and concepts of emergency care in India.

#### **3.2 Research Objectives**

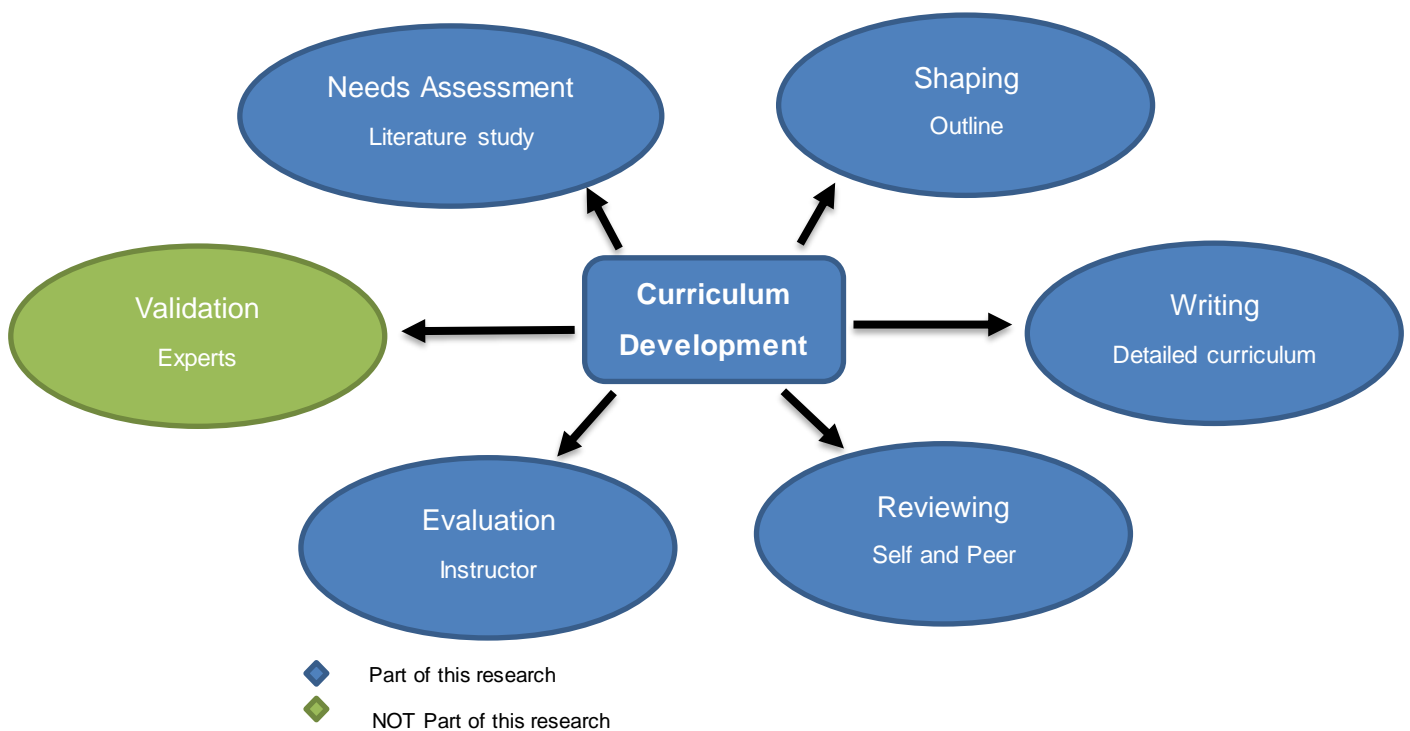
The main objectives of this research are:

- To analyse globally existing core curriculum in the field of emergency care.
- To create a draft of core curriculum as per the requirements in India.
- To develop a course curriculum which after successful completion and recognition by government of India can create licensed paramedics in India.

## 4 Methodology

A core curriculum must endorse results focused on the knowledgeable core competencies, more than that outcomes must be linked to creating perspectives, and the basic concepts in the discipline that are methods of examination and understanding specific to that discipline (THECB, 1999). The methodological approach of this research is qualitative case study analysis. A six-step approach is followed to develop this curriculum (European Union, 2014):

- 1) Curriculum Needs Assessment- Understanding what is required to keep on working and why.
- 2) Curriculum Shaping- Establishing curriculum outline.
- 3) Curriculum Writing- Details on what to be taught, how and when.
- 4) Curriculum Reviewing- By self and peer
- 5) Curriculum Evaluation- By thesis Instructor
- 6) Curriculum Validation- By experts in the area. However, this is will not be a part of this research.



**Figure 1:** Process of developing the core curriculum framework.

## **4.1 Data Collection Method**

Learning to practice, study and comprehend documents is a skill needed for any qualitative study (Patton, 2015). This research is mostly based on pre-existing curriculums which different universities are following in different parts of the world for training professionals in emergency care. Universities and colleges from London, Greenwich, Scotland, New Zealand, Australia, India, Florida, North Carolina, South Alabama, and Wisconsin are taken into consideration. Most of the universities selected for this study are based out of Europe, USA and Australia as different organizations in India follow either European, American or Australian EMS guidelines. The curriculum which these universities and colleges are following currently to train their pre-hospital care providers are studied thoroughly. Apart from these universities and colleges NHTSA (National Highway Traffic Safety Administration) syllabus and requirements for various levels of pre-hospital care providers is also thoroughly studied.

Personal and online visit to libraries were planned to find out requirements for developing a curriculum for bachelor's degree program. Curriculum of eleven different universities and institutes is studied thoroughly and systematically which provided the information about program processes and other various aspects of the program. Curriculum suitable as per Indian scenarios is projected in a structural and systematic way which is capable to best tailor and satisfy the requirements of EMS system in India.

## **4.2 Data Analysis**

Qualitative data analysis comprises of creativity, intellectual discipline, analytical rigor, and working vigorously to complete it with determined proficiency. Computer based programs can facilitate the work but are unable to provide uniqueness of the study (Patton, 2015). In this study focus will be more on the human thinking process involved analysis rather than mechanical data management.

### 4.2.1 Content Analysis

This is a process of investigating documents and permits the assessment of theoretical issues by the investigator. This will build a thoughtful understanding of the data and the purpose is to provide information, new findings, an illustration of facts and an applied guide to perform actions (Elo and Kyngäs, 2008: 110). Deductive content analysis of the pre-existing curriculum of universities all around the world was done which contribute to the quality of curriculum. To improve the relevance and practicality of the curriculum initially an insight is obtained for existing situation in India later globally existing core curriculums were studied thoroughly to find out best practices in EMS studies. The aim of the analysis phase has two-folds:

- To expand vision for present situation (literature study) and the potentials for its betterment (needs analysis).
- To specify the wanted features of the curriculum (curriculum specifications) and how can these be established (procedural specifications).

Universities or colleges which are selected for this study have their curriculum available online on their web pages. To organise content analysis each of the university is given a specific code from 001 to 011. Course structure of each university or college is listed separately from table 1 to table 11 in Appendix 3. Curriculum of following universities and colleges are taken into consideration:

- 1) Victoria university, Australia- 001
- 2) Whitireia University, New Zealand-002
- 3) St. George University of London-003
- 4) Greenwich University, UK-004
- 5) Western Carolina University, USA-005
- 6) University of South Alabama, USA-006
- 7) WITC (Wisconsin Indianhead technical college), USA-007
- 8) Emergency Research and Management Institute, India-008
- 9) Glasgow Caledonian University, Scotland-009
- 10) Jefferson College, Florida-010
- 11) National Highway Traffic Safety Administration (NHTSA)-011



As mentioned above the curriculum of these universities and colleges is a massive amount of data. To reduce the amount of raw information and to communicate the essence of data for this study, the structure of the curriculum is projected in Appendix 3, and curriculum of universities has been thoroughly studied. Topics which are included in the curriculums and are crucial for paramedic study are completely included with slight variation with the way it's been represented and taught during which semester. Apart from this, changes are also made as per the need of local scenarios in India. Besides this the topics which are specific to the local scenario of individual university are completely excluded from this curriculum.

Formed curriculum is divided into seven important categories based on the courses dealt by different universities, courses as per local needs, and to fulfil the practical requirements of the course. It is mandatory for candidates taking this course to successfully complete six categories (Foundation Courses, Core EMT Courses, Supportive Courses, Proficient/Provider Courses, Clinical Rotations and Bachelor's Thesis) of the course successfully to earn a bachelor's degree in Emergency Care. One category is not mandatory (Optional/Instructor Courses). Table 1 describes the complete list of courses which are included in the projected curriculum.

- 1) Foundation Courses- As students will be coming from different educational backgrounds, these courses are found to be mandatory to bring the whole group on equal educational knowledge to read core EMT courses in the coming semesters.
- 2) Core EMT Courses- After studying the core curriculum of different universities and colleges it was found that all the courses in this category are mandatory for paramedic studies.
- 3) Supportive Courses- These courses are also mandatory as they help the candidates in completing their degree successfully and will also help them in their future work environment.
- 4) Proficient/Provider Courses- As per local need assessment and requirement of trained prehospital care providers in India these courses are mandatory for all the students to gain advance knowledge and skills in course specific areas.
- 5) Optional/Instructor Courses- These courses are depending upon personal interest, rules and regulations of course governing bodies and instructor potential thus are not mandatory for students to pursue. However, interested and potential students are welcome to pursue these courses.

- 6) Clinical Rotations- Practical Knowledge and skills to perform in emergency situations are core features of a paramedic thus it is mandatory for all the students to go for clinical rotations in the hospital and in the ambulance.
- 7) Bachelor's Thesis- Pursuing and submitting the thesis project is mandatory for all the students.

**Table 1:** Categorization table as per courses dealt in each category for bachelor's degree program in Emergency care

S. No.	Courses	001	002	003	004	005	006	007	008	009	010	011
<b>1</b>	<b>Foundation Courses</b>											
a.	Anatomy and Physiology	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b.	Medical Terminology	✗	✗	✗	✓	✓	✓	✓	✗	✗	✓	✗
c.	Pharmacology	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✗
d.	General English	✗	✗	✗	✗	✓	✓	✓	✓	✗	✓	✗
e.	Emergency Medical Responder	✗	✗	✗	✗	✗	✗	✗	✓	✗	✓	✓
<b>2</b>	<b>Core EMT Courses</b>											
a.	EMT Preparatory	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b.	Airway	✗	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓
c.	Patient Assessment	✗	✗	✓	✓	✗	✓	✓	✓	✗	✓	✓
d.	Medical Emergencies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
e.	Trauma Emergencies	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
f.	Special Considerations	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
g.	Ambulance Operations	✗	✗	✗	✓	✓	✓	✓	✓	✗	✓	✓

h.	Assessment Based Management	✓	✓	✗	✓	✓	✗	✓	✓	✓	✗	✓
<b>3</b>	<b>Supportive Courses</b>											
a.	Paramedic Soft Skills	✗	✗	✗	✓	✗	✗	✗	✓	✓	✓	✗
b.	Computer & IT Skills	✗	✗	✗	✗	✗	✓	✗	✓	✗	✓	✗
c.	Research Skills & Methods	✓	✓	✓	✗	✓	✓	✗	✓	✗	✗	✗
d.	Bio-medical Waste Management	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
<b>4</b>	<b>Proficient/Provider Courses</b>											
a.	Basic Life Support	✗	✗	✗	✓	✓	✓	✓	✗	✗	✓	✗
b.	Advance Cardiovascular Life Support	✗	✗	✗	✓	✓	✓	✓	✗	✗	✓	✗
c.	Advance Paediatric Life support	✗	✗	✗	✓	✗	✓	✓	✗	✗	✗	✗
d.	International Trauma Life Support	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
e.	Advance Life Support Obstetrics	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
<b>5</b>	<b>Optional/Instructor Courses</b>											
a.	Basic Life Support	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
b.	Advance Cardiovascular Life Support	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
c.	Advance Paediatric Life support	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
d.	International Trauma Life Support	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
e.	Advance Life Support Obstetrics	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗
<b>6</b>	<b>Clinical Rotations</b>											

a.	Hospital	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
b.	Ambulance	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>7</b>	<b>Bachelor's Thesis</b>	<b>x</b>	✓	✓	<b>x</b>	✓	✓	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>	<b>x</b>

In order to form a complete curriculum for three years bachelor's degree program in emergency care a detailed deductive content analysis was done by forming the above categorization table. This categorization table consist of all generic categories and sub-categories of courses mentioned in the detailed curriculum and then after each university or college is represented with its code (001-011). Courses which are followed by all the universities are stated with ✓ sign and which are not with the x sign. This provides a concise, coherent, logical, nonrepetitive, and interesting account of the courses different universities do to conduct such type of program successfully.

## 5 Results

Interpretation of results is the body of research and can be measured as engine of the whole research process. If this is not clearly mentioned the data collected and

work performed will not have any specific purpose to accomplish. This study deals with developing curriculum for three years bachelor's degree program in emergency care for which curriculum of eleven different universities and colleges from different parts of the world is collected, studied thoroughly and then analysed to form the best out of all as per local scenarios. A course structure of the curriculum for the bachelor's degree in Emergency care is prepared (Appendix 1) and then a detailed curriculum is formed (Appendix 2).

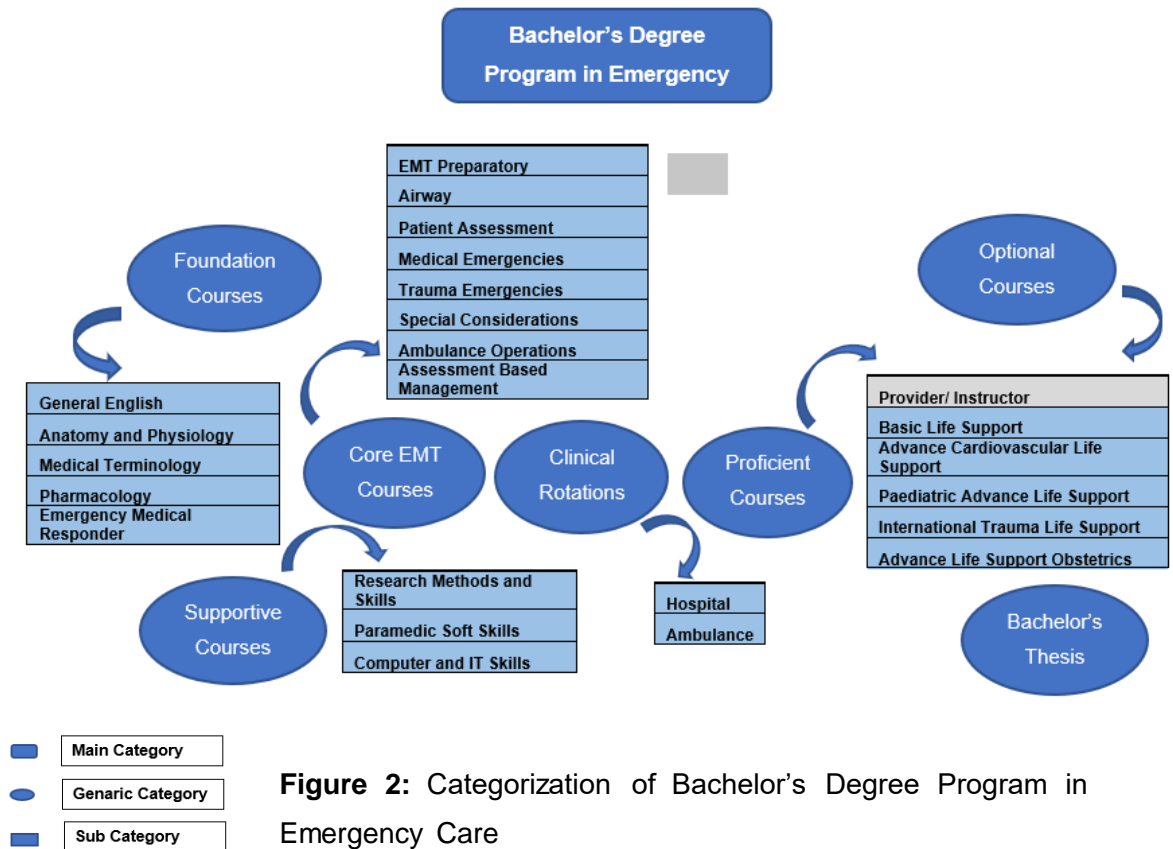
Complete course is focused on three important measures.

- Remembering
  - Understanding
  - Evaluation
- } Year one of Awareness
- Applying
  - Analysing
  - Evaluation
- } Year two of Proficiency
- Creating Solutions
  - Continuing Education
  - Evaluation
- } Year three of Mastery

To gain these three important measures (Awareness, Proficiency & Mastery) complete course is further divided into seven generic categories.

- Foundation Courses
  - Core EMT Courses
  - Supportive Courses
  - Proficient/Provider Courses
  - Clinical Rotations
  - Bachelors Thesis
  - Optional/Instructor Courses
- } Mandatory Courses
- } Non-Mandatory Courses

Figure 2 describes categorization of bachelor's degree program in emergency care, wherein degree is considered as main category which is further divided into seven generic categories. These generic categories are further divided into sub categories which denotes the courses candidates are going to learn over the period of three years.



The complete program of Bachelor's Degree in Emergency Care is of 180 credits. These 180 credits are further divided as 141 credits for instructions & self-study and 39 credits for practical orientation during clinical rotations. Instructions and self-study need a study of 27 hours/credit while clinical rotations need a study of 44 hours/credit. Thus, we can calculate that total number of hours of study for students:

$$\begin{array}{r}
 141 \text{ (Credits)} \times 27 \text{ (Hours)} = 3807 \text{ Hours} \\
 39 \text{ (Credits)} \times 44 \text{ (Hours)} = +1716 \text{ Hours} \\
 \hline
 5523 \text{ Hours}
 \end{array}$$

The motive is to produce quality paramedics and it is kept in mind that students should learn the practicalities of EMS field slowly and gradually, no extra workload is suggested. Students just need to complete 25 to 35 credits per semester. Credit distribution as per the seven generic categories:

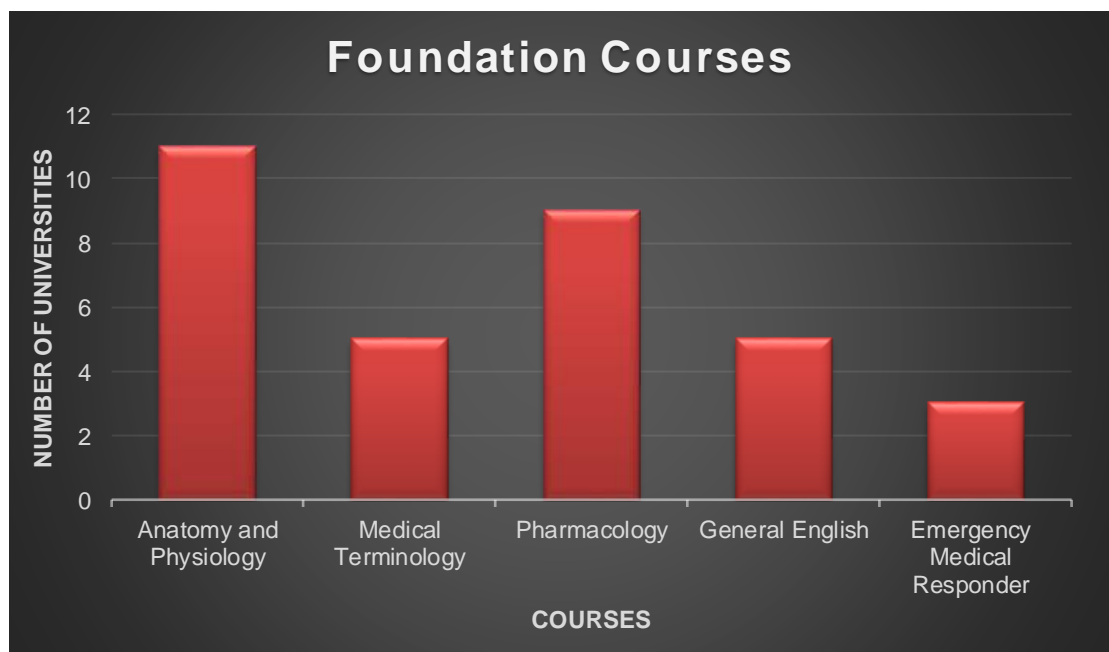
- Foundation courses- 27 Credits
- Core EMT Courses- 80 Credits
- Supportive Courses- 10 Credits

- Proficient Courses- 9 Credits
- Optional Courses- Nil
- Clinical Rotation- 39 Credits
- Bachelor's Thesis- 15 Credits

These credits are further divided in sub category courses which is organized and can be seen clearly in the structure and classification of the course curriculum (appendix 1).

### Foundation Courses:

The courses included in this category are pre-requisites for formal EMT studies. These courses will help candidates to have the equal knowledge base before starting the professional paramedic studies. It is also clearly seen from table 12 that courses like Anatomy & Physiology is taught by all and Pharmacology is taught by nine universities apart from that the knowledge of Medical Terminology is included by five and Emergency medical Responder is also considered by three of the universities and colleges. As per NHTSA Emergency Medical Responder course is mandatory for any paramedic course study.

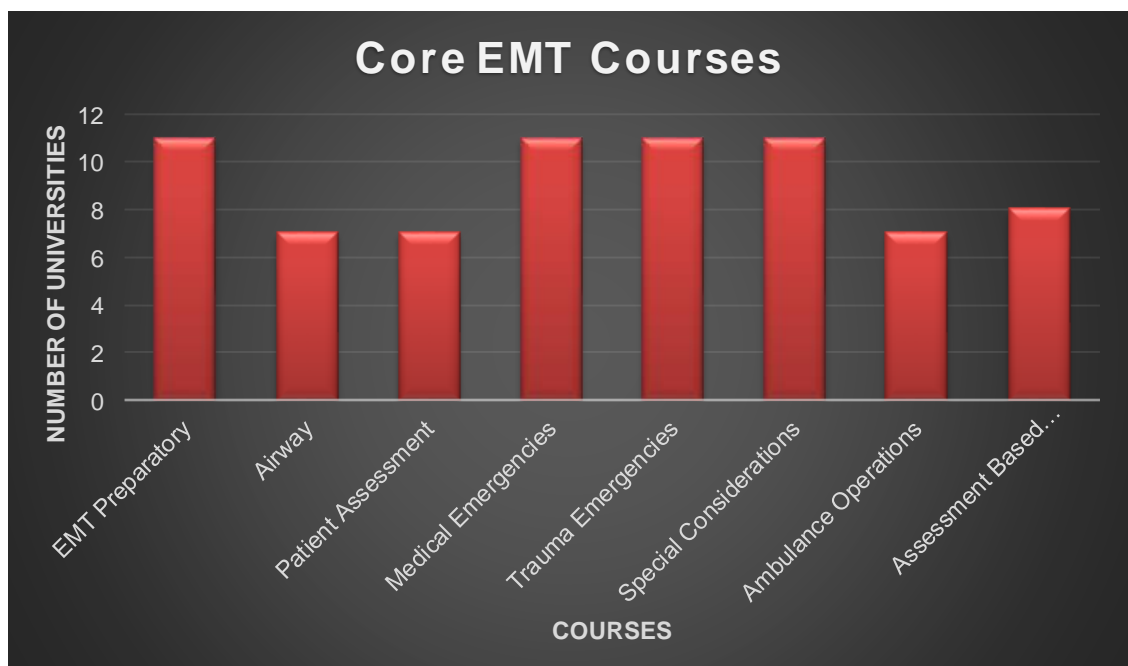


**Chart 1:** Number of universities considering these foundation courses as a part of their curriculum.

General English is also taken into consideration for foundation courses keeping in mind that medium of teaching this course will be English and in India Hindi is the primarily spoken language. We can also see in chart 1 that this course is also considered by five universities as a part of their core curriculum. The number of English-speaking students is quite less. Fluency and understanding of the language both are important as English is the store house of scientific knowledge and data. To complete this course successfully, candidates need to understand the lectures delivered, pass the examination, and submit their project report and all this will become easier by learning and practicing English. Candidates will be coming from different backgrounds thus all the above mentioned five courses are considered in the main curriculum to affluence their further studies and bring equity of familiarity within the whole group of candidates.

### **Core EMT Courses:**

After studying the curriculum of different universities and colleges courses which a paramedic needs to study are identified and listed. These courses are in concurrence with NHTSA and we can see from below chart that most of the universities consider these courses for paramedic studies thus to acquire the international standards of paramedic study all these core EMT courses are included in this curriculum also. These eight courses cover the most important skills and knowledge a paramedic needs to study and practice during their institutional phase. Furthermore, in their professional carrier these skills are the utmost required to save lives in a challenging emergency environment.





**Chart 2:** Number of universities considering these core EMT courses as a part of their curriculum.

After selecting the courses, each course is given the total number of credits and then these credits are further divided to be completed in different semesters. Credits are divided in such a way that per semester students just need to complete only 25-35 course credits. However, the subtopics and skills dealt in each semester differs as per the scope of practice of EMT- Basic, EMT- Advance and Paramedic. Table 2 describes the distribution of total number of course credits with respect to level of EMT study.

**Table 2:** Per semester credits distribution of core EMT courses.

S.No.	Core EMT Courses	Total credits	Semester 2 (EMT-B)	Semester 3 (EMT-A)	Semester 4 (Paramedic)
a.	EMT Preparatory	8	4	-	4
b.	Airway	15	5	5	5
c.	Patient Assessment	10	5	3	2
d.	Medical Emergencies	12	4	4	4
e.	Trauma Emergencies	12	4	4	4
f.	Special Considerations	10	-	5	5
g.	Ambulance Operations	10	3	3	4
h.	Assessment Based Management	This course will be taught in semester 5 after the completion of whole paramedic studies as a reminiscence to the whole studies and will be of 3 course credits.			

**Supportive Courses:**

Supportive courses added to the curriculum in a way that they could support the candidates either during their studies and later to effectively perform in their upcoming work life. Three supportive courses are taken into consideration.

- One is paramedic soft skills, as paramedics need to work directly, face to face with their customers and they have to work alone with no supervision or guidance sometimes or they might work as a leader or a team member. The public and employers constantly look for health care providers those are responsive to the patient requirements, can communicate appropriately as per the situation, and are adaptive regardless of changes in their professional responsibilities. Technically competent candidates are always in demand, socially conscious, and culturally sensitive (Rescue Digest, 2015). The 2007 report “Every Promise, Every Child: Turning Failure Into Action” indicated that a large percentage of students who are preparing themselves to enter workplace environment in coming 20 years does not possess soft skills or they do not apply them in the work space. (America’s Promise Alliance, 2018). A recent survey done by TimesJobs in 2016 in India found that 60% employers consider soft skills as an essential skill while hiring employees but of this, the majority (70%) difficultly find soft skills in their potential employees (The Economic Times, 2016). After understanding the importance of the course, paramedic soft skills is considered as very important skills candidates need to pursue in their professional life.
- Second is computer and IT skills is basic course which can help the candidates for learning how to work on computer as it can be unknown or new for some of the candidates. It will help them in preparing the reports, thesis effectively and will also be helpful in their day to day professional life . Experts argue that it should be provided with same importance as food, shelter and clothing in any progressive and developing nation(ReNew, 2014). Considering the stats from theoretical background and a limitation of not knowing from which part of the country candidates are going to join the program this course is taken into consideration.
- Third is research skills and methods, the course which introduces candidates with different type of research typologies, methodologies and help them to complete their thesis effectively. With the basic knowledge it will be easier for candidates to pursue their thesis project. We can also see in Table 12 that six universities or

colleges are considering this course important for paramedic studies. However, this course will also build a primary base if they would like to do any further research in the emergency field and further want to pursue their carrier in EMS research.

- Fourth is Bio-medical Waste Management, this is a short course but deals with a very important aspect of any medical studies. Disposing the medical waste in an appropriate manner is very important. To equip students with the knowledge and to indulge the importance of proper disposal of medical waste this course is taken into consideration.

### **Proficient Courses:**

These courses are all professional courses and are going to help the candidates in gaining advance skills in cardiovascular, trauma, paediatric and obstetric emergency management and perform them as an when needed on field with confidence. After the successful completion students will get at provider course completion card and they can further practice their skills when in ambulance with senior EMT. Total five provider courses are added to the curriculum as we can see these courses are not considered by many of the universities as a part of their curriculum but as per Indian scenarios it is important that providers should have an in-depth knowledge of these courses and should enhance their skills in treatment such victims.

Basic Life Support and Advance Cardiovascular Life Support courses are added to deal with heart patients, International Trauma Life Support is considered to deal with trauma patients, Paediatric Advance Life Support to deal with emergencies related to infants and children and Advance Life Support Obstetric is added to deal with maternal health and new born related emergences. All the above mentioned five courses are mandatory for candidates to complete the degree and will help them to obtain 9 course credits. In case some candidate is unable to clear either theoretical or practical examination for these courses they will be provided with a study period of one month and retake only examination. Even though if some candidate is unable to complete the course then they need to retake the whole course.

Provider certification once received need to be renewed as directed by course governing body which help the pre-hospital care providers to remain updated on recent guidelines

and various updated protocols of emergency care. Failure in doing this will lead to cancellation of the provider status, candidates must follow all the terms and conditions of the course governing body to get their status back.

### **Optional/instructor Courses:**

These courses are optional courses and are not mandatory to complete the degree. Candidates who want to pursue their carrier as EMS faculty or want to learn the teaching methods can do these courses. Instructor courses are also added in same five areas Basic Life Support, Advance Cardiovascular Life Support, International Trauma Life Support, Paediatric Advance Life Support and Advance Life Support Obstetric. These courses can only be done after the successful completion of specific provider courses and after completion of the provider course also only selected candidates (as per the criteria of governing body) will be allowed to pursue these courses. Instructor courses in these five areas depends on personal interest of the candidates, their performance in provider course and on their instructor potential. Absence in any of these three things will be taken as inability to be part of instructor courses.

Certification of instructor courses studied during semester 6, need to be renewed as directed by course governing body which help the pre-hospital care providers to remain updated on recent guidelines and various updated protocols of emergency care. Failure in doing this will lead to cancellation of the instructor status, candidates must follow all the terms and conditions of the course governing body to get their status back. This will in turn create improved future manpower to teach EMS courses in India. After the successful completion student will be given an instructor card and course completion certificate and would be eligible to teach these courses in conjunction with their training centre. It is also seen from above categorization table that these courses are not the part of any university curriculum but as the requirement of trained professionals in India is more, we would need trained and certified facilitators to teach these courses.

### **Clinical Rotation:**

Field experience is always considered as a very important part in any EMS core curriculum and this is clearly visible in the above categorization table that all the universities and colleges consider clinical rotations as the important part of their core curriculum. In

this core curriculum clinical rotations are kept in both hospital and ambulance environment. Hospital rotations are kept because the number of cases dealt in the hospital are far more than that of in any ambulance, so students can have more exposure in terms of number of cases handled. Ambulance rotations are planned to give the students exposure of learning and practicing the emergency skills in their actual work environment. Handling critical patients in confined space and challenging environment is difficult this will prepare the candidates to give insights about the challenges ahead of paramedic school.

The student will be required to perform patient evaluations, assessments, and treatment under the direction of a paramedic preceptor or senior EMT. Students also need to prepare clinical rotation reports following the scheduled ambulance rotation and hospital rotation. Candidates need to submit their semester specific clinical rotation report for the completion of individual semester or whole degree any failure in doing so will lead to considerable consequences with delay or failure in availing the degree. Clinical rotations are kept in sync with National Highway and Traffic Safety Administration field experience requirements for paramedics and are planned for more than 1500 hours. Exact duration for clinical rotation as per this curriculum is 1716 hours comprising of total 44 course credits.

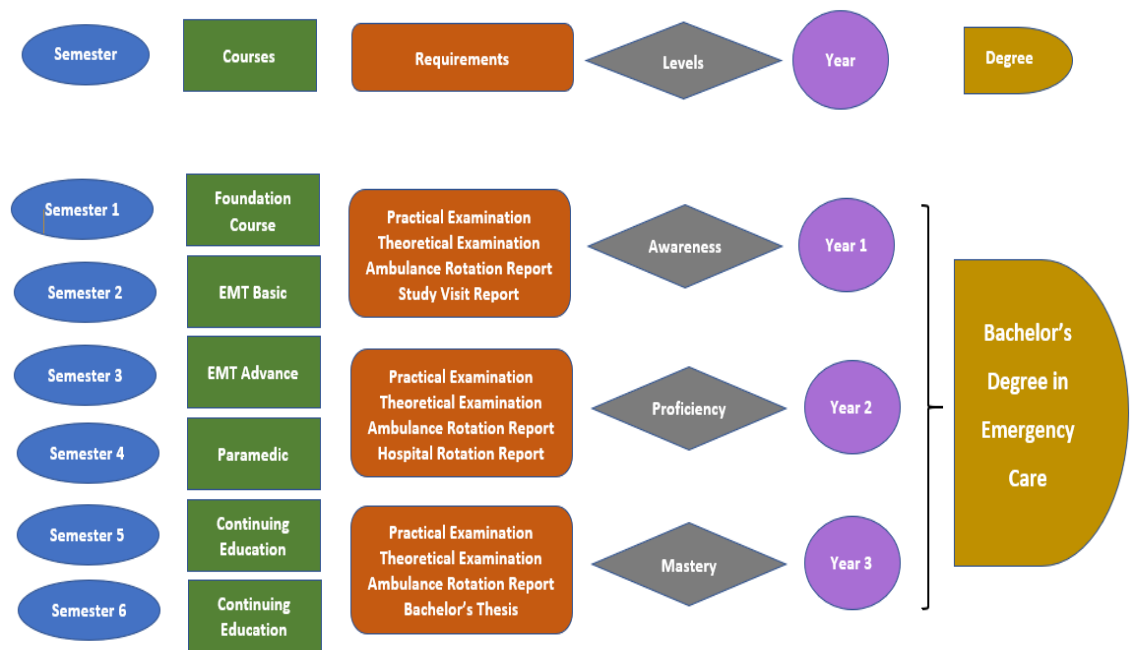
### **Bachelor's Thesis:**

To endorse research capabilities and scientific paper writing, academic research insight with the focus on Indian scenarios is the need of an hour thus research skills and methods course is taught in semester 5 so that candidates are familiar with various research methodologies, statistical methods and conduct research in EMS field. In order to support the students to complete it effectively a thesis supervisor will be allotted for every student, this supervisor shall work with students and facilitate them to complete their research within time. Students will have all the rights to choose their research topic. This will add on to the traditional teaching methodology and evidence-based future-focussed work in EMS can be taught to the coming generations.

Thesis will be graded as per the criteria decided for thesis evaluation (Appendix 2). These criteria are based on candidate's choice of topic selection, familiarity with the field, research method application and the way it is written and presented. Candidates need to submit their thesis project to the degree any failure in doing so will not be accepted

and will lead to considerable consequences with delay or failure in availing the Bachelor's Degree in Emergency Care.

Figure 3 describes the complete path to successfully complete three years bachelor's degree program in emergency care. This figure simply explains the semester wise course distribution and the requirement to complete those courses. If candidates successfully complete the requirements they will be promoted to the next semester or year and finally completing all the levels of studies they will be awarded a bachelor's degree in emergency care.



**Figure 3:** Path to achieve bachelor's degree in Emergency care.

## 6 Discussion

Main findings of the study:

This curriculum is made for diverse set of students keeping in mind institutional control for equity of content delivery. It will help participants in serving the society using their critical thinking processes and prepare them for future jobs. It is kept in mind that students should learn and experience it at the same time to build a sense of belonging and grasping the concept of emergency care clearly and confidently. Focus is determined on creating critical and intellectually independent graduates who have desire to learn with an open attitude. Although it's an institutional program but clear focus is incorporated for independent learning and reducing the student work load during the program.

Each year in this curriculum is designate to complete a level of studies. Year one is dedicated to build awareness (work environment and its challenges), year two is dedicated to build proficiency (actual working and challenges) and year three is dedicated to build mastery (solution and implementation). As discussed in the theoretical background India needs a centralized and standardized curriculum to build a quality manpower for providing emergency care in emergency situations. Getting it centralized, recognized and standardized will also solve the problem of lacking licensed paramedics in the country but it requires the clearance from central government which requires more time to indulge in this process and is not the scope of this study. At the societal level uniformity or equity of care could be provided to the patients which is at present lacking in the country.

This curriculum focuses on overall development of the participants as paramedics. Apart from knowing the subject well paramedics need to have qualities like flexibility, good communication, good interpersonal skills, critical thinking, problem solving skills, physically fit and strong, ability to be calm in stressful situations and many more. Paramedics need to have updated knowledge of procedures and skills they need to perform in emergency situations thus continuing education is stressed during the last two semesters of the course. We discussed about the problems in current EMS system in India, young brains will be exploring the criticalities and problems in the field during their clinical rotation might be best candidates to find out its solutions too. Innovative solutions with the involvement of young brains is possible keeping that in mind candidates will also be introduced to EMS research in the form of thesis project.

Understanding findings with literature framework:

The main findings of the research discussed above describes that although this curriculum has a set outline in the beginning nevertheless in the end it becomes dynamic and teachers & students becomes the co-constructors of knowledge. Slowly and gradually during the period of three years education we can see the shift in interest from technical interest to practical interest and from practical interest to emancipatory interest as described in one of the studies (Fraser & Bosanquet 2006: 277).

**Table 3:** Variation amongst interests in three years period within the set curriculum.

S.No	Year	Level	Interest	Specification	Outcome
1.	Year 1	Awareness	Technical Interest	Students learns as per unit outline to gain graduate outcomes.	EMT- B
2.	Year 2	Proficiency	Practical Interest	Students understands the discipline in deeper context & respond to needs and specific interests.	EMT Paramedic
3.	Year 3	Mastery	Emancipatory Interest	Students transform as a person and has control for own learning.	Paramedic professional



This change in interest is very important as we are trying to reform a fresh learner to a complete professional who can handle any situation at any time all on his own within a short period of three years. This can also be stated as described by Parker (2003: 531) a shift from traditional curriculum to emerging curriculum.

One of the main objectives for conceptualizing this curriculum is to get licensed paramedics which in turn means that we are trying to prepare fresh students for job market and to do that we are also focusing on developing transferable skills such as English language proficiency, computer literacy, presentation skills, soft skills etc. this indicates a shift from traditional curricula to emerging curricula. Traditional curricula highlights on 'knowing that', 'disciplinary skills' 'knowledge-based', and pure rather emerging curricula highlights on 'knowing how', 'transferable skills', 'task-based' and 'applied' (Barnett et al 2001: 437).

Most of the curriculums just focus on building knowledge and skills but this study focuses on three major components: knowledge, skills and performativity as discussed by Barnett et al (2001: 439). Paramedics need to be highly efficient when it comes to performance just having knowledge and skills is not enough. Right person needs to perform right intervention or give right treatment at the right time to the right patient in confined space thus performance is must in this area. Concept of being is also kept in mind. For a being it important to have daring, flexibility, carefulness, truthfulness, self-discipline, limitation, respect for others, directness, generosity and reality as qualities which are all quite important qualities for the paramedic also. Two complete semesters of continuing education in the set curriculum are kept with the purpose of preparing students as being. (Kawser 2014: 12).

### **6.1 Trustworthiness of the Study**

This curriculum will bring positive changes in current Indian EMS studies and is based on four pillars which are indeed major standards considered while developing the curriculum which are best attained by a repeated approach alternating analysis, design, and assessment activities:

- Significance- Assessing the need of the curriculum and its design is based on core scientific knowledge.
- Uniformity- The curriculum is structured in consistent and interconnected way.

- Practicality - Functioning curriculum as per Indian scenarios.
- Effectiveness- Curriculum is designed to implement and get the desired outcomes.

To develop a high-quality curriculum, evaluation is of great importance. Three types of evaluations are considered to generate a structured curriculum.

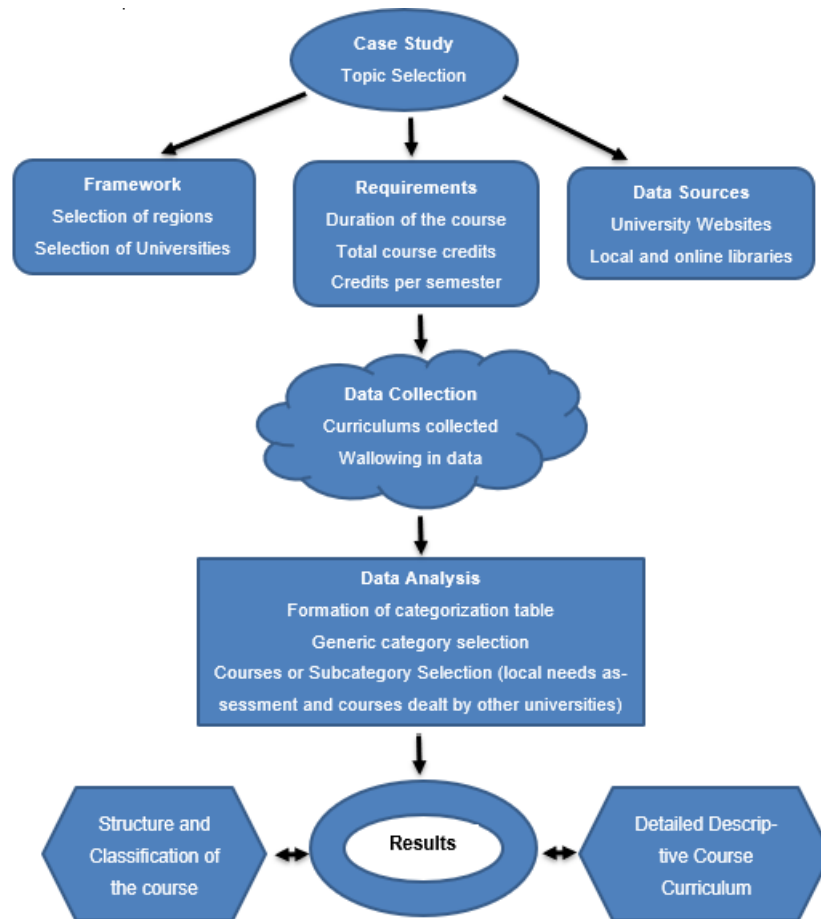
- 1) Self-evaluation- During the early stage it is important that curriculum developer evaluates the work. This could be done at any desired time as it has no dependency and can lead to quick incorporation of modifications in the desired product.
- 2) Peer Evaluation- Starting from the early stages till the end the work is also evaluated by peer for any further improvements and incorporation of new ideas and to make objective assessment of shortcomings in the design. This is also helpful for developer to avoid expected inclination to get attached to their project.
- 3) Expert Evaluation- During the later developmental stages when the product is ready, it is advisable to get evaluators perspective, to evaluate the actual effectiveness of the curriculum (ACARA 2012).

As this study is qualitative case study thus from the research point of view, I have tried to bridge up the gap between research and practicality by considering three major aspects credibility, transferability, and confirmability to enhance the trustworthiness of the research and to promote the standard of effectiveness.

- 1) To increase the credibility of the research the data collected from different university and colleges is studied thoroughly and its been found that the universities are dealing with same type of modules in practice. Thus, we can say the major content dealt by various universities to allow successful running of such type of programs is the same only variation is seen in the way and time it is dealt during the program thus, the data which is considered for the research is credible. Moreover, to avoid personal bias with owns work peer debriefing and frequent debriefing sessions with the thesis supervisor are also done. Questions and observations during peer debriefing help me to refine the work and develop greater explanation of the research design. Frequent debriefing sessions gave a platform

to discuss alternative approaches and widened vision of thesis supervisor helped to recognise own biases and preferences.

- 2) Emergency care need to reach to the appropriate level not only in India but in many other countries around the world. The finding of this research is the curriculum which is completely transferable in those countries where there is the need of improvement keeping their local environments and limitations in mind. However, this needs to be applicable with caution and only if practitioners, service providers and service receivers believe that their situations are analogous to that defined in the study and they can relate and are satisfied with the findings then only such a transfer can be made.
- 3) To enhance the confirmability of the work I worked on actual findings from the data rather than the characteristics and preferences of my own. Figure 4 is the diagrammatic representation to trace the course of the research step by step. Flexibility is considered as the major characteristic of this research wherein I wanted to be open for alterations, avoid any overlaps and consider categories which were unavailable previously. As a part of these new categories I tried to devise rules for each generic category and as per the rule's subcategories are planned in each category.



**Figure 4:** The step by step course of the research study.

## 6.2 Ethical Considerations

While developing the curriculum the ethical aspects of this research were also considered carefully by gathering the data which is publicly available online over the specific college or university website and then after carefully referencing them (TENK, 2009). Other ethical considerations include how this curriculum might promote EMS education in Indian context and how the societal and practical abilities of the miscellaneous students can be mostly leveraged to report and find solutions to complications that take place in local user communities. Curriculum must not create any false expectations about challenges of the EMS field and curriculum should be able to create technicians having good skills and situational thinking ability.

In this research, the product is a curriculum for three years degree program in emergency care. Curriculum analysis has three magnitudes Design (course specifications), impact (career placements), and policy (vision) whereas, in this research we just focussed on curriculum design. However, if we focus at the design dimension the curriculum analysis seems incomplete as we are not reviewing the influence by other course components such as lesson maps, course delivery, assessments, resources and many more. This analysis is left out for the future researchers to perform studies in this area. The objectives of the research involve the role of Indian government for applying the curriculum nationwide for paramedic studies which will need extra time and effort for curriculum validation by experts in the area and to create a business plan for promoting and implementing this curriculum as a formal EMT studies to generate a licenced paramedic in India.

## **7 Conclusion**

Designing a curriculum is challenging in terms of drawing a conclusion on which data is or is not correlate with the best EMS practices. This curriculum acquires and discover data pertinent to student learning, progress, and retention so that students must have both confidence and skills to deal with emergency situations on scene, serve community in a better way and increase the number of lives saved. Faculty members also have a complete picture of student's performance during the academic phase, so they can innovate both in educational approaches, and ways to

discover and file various factors that play an important role in student learning, progress, and retention. This curriculum is designed and developed with the belief that this will increase student achievement both in terms of confidence and skills through the entire journey of the course. EMS leaders need to play an active role in supporting EMS facilitators and in bringing clarity to their thinking and practices. A new era of emergency care in India can be established by three pronged approaches: Trained prehospital care staff, Licensing of EMTs and forming a single telephone number across the country for all emergency calls.

India being one of the most populated country in the world, we can learn from the established systems in the world, but simply copying them will not work as our requirements and resources are different than that of other countries being a developing nation. This study is an innovative education avenue which can help to enhance the confidence and skills in EMS personal. This will in turn enhance the quality of Emergency care within the country and the reliability of EMS personal in general public. By incorporating these professional courses an effort of collaborating with EMS agencies worldwide (American Heart Association, American Academy for Family Physicians and International Trauma Life Support) is made to bring essential technical expertise and reform the EMS system in the country. However, government of India need to ensure continuous quality improvement and insistent prominence for patient welfare and safety and invest heavily to create a strong and sustainable EMS System that is built on foundations and standards in the area.

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## Course structure and Classification

<b>Curriculum Structure and Classification for Three Years Bachelor's Degree Program in Pre-hospital Emergency Care</b>					
Credit Hours- 141 (Instructions and Self Study 27hrs/credit) + 39 ECTs (Clinical Rotations 44 hours/credit)					
Student Workload in total number of hours of study- 3807 + 1716 = 5523 hours					
<b>First Year (Awareness)</b>	<b>Credit Hours</b>	<b>Second Year (Proficiency)</b>	<b>Credit Hours</b>	<b>Third Year (Mastery)</b>	<b>Credit Hours</b>
<b>Semester 1</b> <b>Foundation Studies</b> <ul style="list-style-type: none"> <li>• Courses               <ul style="list-style-type: none"> <li>❖ Anatomy and Physiology</li> <li>❖ Medical Terminology</li> <li>❖ Pharmacology</li> <li>❖ Language Classes</li> <li>❖ Emergency Medical Responder</li> <li>❖ Biomedical waste disposal protocols</li> <li>❖ Computer and IT Skills</li> </ul> </li> </ul>	 5 5 5 5 5 2 3	<b>Semester 3</b> <b>Core EMT Studies</b> <b>EMT- Advance or Intermediate</b> <ul style="list-style-type: none"> <li>• Modules               <ul style="list-style-type: none"> <li>❖ Advance Airway Management</li> <li>❖ Patient Assessment</li> <li>❖ Medical Emergencies II</li> <li>❖ Trauma Emergencies II</li> <li>❖ Special Considerations</li> <li>❖ Ambulance Operations</li> </ul> </li> <li>• Practical skills               <ul style="list-style-type: none"> <li>❖ EMT Basic Skills</li> <li>❖ Advance Airway Management without endotracheal placement.</li> <li>❖ Medication Administration Skills</li> </ul> </li> </ul>	 5 3 4 4 5 3	<b>Semester 5</b> <b>Continuing Education</b> <ul style="list-style-type: none"> <li>• Provider Certification Courses               <ul style="list-style-type: none"> <li>❖ Basic Life support</li> <li>❖ Advance Cardiovascular Life Support</li> <li>❖ International Trauma Life Support</li> <li>❖ Paediatric Advance Life Support</li> <li>❖ Advance Life Support in Obstetrics</li> <li>❖ Assessment Based Management</li> </ul> </li> <li>• Supporting Courses               <ul style="list-style-type: none"> <li>❖ Research Skills and Methods</li> </ul> </li> <li>• Practical Provider skills</li> </ul>	 1 2 2 2 2 3 5

<ul style="list-style-type: none"> <li>• Practical skills             <ul style="list-style-type: none"> <li>❖ Anatomy practical</li> <li>❖ Emergency medical responder skills</li> <li>❖ CPR &amp; AED</li> </ul> </li> <li>• Assignments Individual and Group tasks</li> </ul> <p><b>Evaluation:</b></p> <ul style="list-style-type: none"> <li>• Attendance</li> <li>• Theoretical Examination</li> <li>• Practical Examination</li> <li>• Study Visits</li> <li>• Group Tasks</li> <li>• Individual tasks</li> </ul>		<ul style="list-style-type: none"> <li>❖ Intravenous Access Skills</li> <li>❖ Basic ECG Interpretation</li> <li>• Assignments Individual and Group tasks</li> </ul> <p><b>Evaluation</b></p> <ul style="list-style-type: none"> <li>• Attendance</li> <li>• Theoretical Exam</li> <li>• Skill based Evaluation</li> <li>• 1 Month Hospital rotations</li> <li>• 1 Month Ambulance rotations</li> <li>• Hospital rotation report</li> <li>• Ambulance rotation report</li> </ul>	<p>3 3</p>	<ul style="list-style-type: none"> <li>❖ Basic Life Support</li> <li>❖ Advance Cardiovascular Life Support</li> <li>❖ International Trauma Life Support</li> <li>❖ Paediatric Advance Life Support</li> <li>❖ Advance Life Support in Obstetrics</li> <li>• Bachelor's Thesis Compilation</li> </ul> <p><b>Evaluation:</b></p> <ul style="list-style-type: none"> <li>• Attendance</li> <li>• Evaluation of Individual certification courses depends upon the evaluation criteria of course governing body.</li> <li>• Group and Individual Assignments of supporting courses</li> <li>• 2 Months Ambulance rotations</li> <li>• Ambulance rotations report</li> </ul>	<p>6</p>
<p><b>Semester 2</b></p> <p><b>Core EMT Studies</b></p> <p><b>EMT- Basic</b></p> <ul style="list-style-type: none"> <li>• Modules             <ul style="list-style-type: none"> <li>❖ EMT Preparatory</li> <li>❖ Basic Airway Management</li> </ul> </li> </ul>	<p>4</p>	<p><b>Semester 4</b></p> <p><b>Core EMT Studies</b></p> <p><b>EMT -Paramedic</b></p> <ul style="list-style-type: none"> <li>• Modules             <ul style="list-style-type: none"> <li>❖ Paramedic Preparatory</li> </ul> </li> </ul>	<p>4 5</p>	<p><b>Semester 6</b></p> <p><b>Continuing Education</b></p> <ul style="list-style-type: none"> <li>❖ Instructor Certification Courses (optional)</li> <li>❖ Basic Life support</li> </ul>	

<ul style="list-style-type: none"> <li>❖ Patient Assessment 5</li> <li>❖ Medical Emergencies 1 4</li> <li>❖ Trauma Emergencies 1 4</li> <li>❖ Ambulance Operations 3</li> <li>❖ Paramedic Soft Skills 2</li> </ul>		<ul style="list-style-type: none"> <li>❖ Advance Airway Management and Ventilation 2</li> <li>❖ Patient Assessment 4</li> <li>❖ Medical Emergencies III 4</li> <li>❖ Trauma Emergencies III 5</li> <li>❖ Special Considerations 4</li> <li>❖ Ambulance Operations</li> <li>• Practical skills           <ul style="list-style-type: none"> <li>❖ EMT Basic Skills</li> <li>❖ EMT Intermediate Skills</li> <li>❖ Advance Airway Management with endotracheal placement.</li> <li>❖ Medication Administration Skills</li> <li>❖ Intravenous Access Skills</li> <li>❖ Cardiac Skills Competencies</li> <li>❖ Obstetric Skills Competencies</li> </ul> </li> <li>• Assignments Individual and Group tasks</li> </ul>		<ul style="list-style-type: none"> <li>❖ Advance Cardiovascular Life Support</li> <li>❖ International Trauma Life Support</li> <li>❖ Paediatric Advance Life Support</li> <li>❖ Advance Life Support in Obstetrics</li> <li>❖ 6 Months Ambulance rotations 18</li> <li>❖ Final Thesis Compilation and Submission 15</li> <li>❖ Practical Provider and Instructor Skills</li> <li>❖ Basic Life Support</li> <li>❖ Advance Cardiovascular Life Support</li> <li>❖ International Trauma Life Support</li> <li>❖ Paediatric Advance Life Support</li> <li>❖ Advance Life Support in Obstetrics</li> </ul>	
<ul style="list-style-type: none"> <li>• Practical skills           <ul style="list-style-type: none"> <li>❖ Emergency medical responder skills.</li> <li>❖ Basic Airway Management</li> <li>❖ Base Line Vital signs</li> <li>❖ Patient Assessment (Medical and Trauma Patients)</li> <li>❖ Assisting an ALS Provider</li> <li>❖ Lifting and Moving patients</li> <li>❖ Placement of PASG</li> <li>❖ Triage and patient transfer</li> </ul> </li> <li>• Assignments</li> </ul>		<p><b>Evaluation</b></p> <ul style="list-style-type: none"> <li>• Attendance 3</li> <li>• Theoretical Examination 3</li> <li>• Skill based Evaluation</li> </ul>		<p><b>Evaluation</b></p> <ul style="list-style-type: none"> <li>❖ Attendance</li> <li>❖ Evaluation of Individual certification courses depends upon the evaluation</li> </ul>	

<p>Individual and Group tasks</p> <p><b>Evaluation</b></p> <ul style="list-style-type: none"> <li>❖ Attendance</li> <li>❖ Theoretical Exam</li> <li>❖ Skill based Evaluation</li> <li>❖ 1 Month Ambulance rotations</li> <li>❖ Ambulance rotation report</li> </ul>	<p>3</p>	<ul style="list-style-type: none"> <li>• 1 Month Hospital rotations</li> <li>• 1 Month Ambulance rotations</li> <li>• Hospital rotation report</li> <li>• Ambulance rotation report</li> </ul>		<p>criteria of course governing body.</p> <ul style="list-style-type: none"> <li>❖ Final thesis report</li> <li>❖ Ambulance rotation report</li> </ul>	
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**Abbreviations:**

- CPR - Cardio Pulmonary Resuscitation
- AED - Automated External Defibrillator
- EMT- Emergency Medical Technician
- ALS - Advance Life Support
- ECG - Electro Cardio Gram

**Important Note:**

- Number of working hours/ credit are extended for clinical rotations because students will not be learning for the complete time during that period.

## Detailed Curriculum

### **Complete Curriculum of Three Year's Bachelor's Degree Course in Pre-hospital Emergency Care**

**Program-** Paramedic Education (In English)

**Degree-** Bachelor's in Pre-hospital Emergency care

**Degree Title-** Registered Paramedic

**ECT Credits-** 180 credits

**Duration-** 3 years

### **Program Objectives**

Upon graduation from the Program, the Emergency Medical Technician Paramedic will demonstrate the following competencies:

1. Ensuring Physical, mental, and emotional ability enhancement for providing Emergency Medical Care; reaching the scene in a benign, safe and timely manner and performing scene assessment for medical or trauma emergency while ensuring scene safety.
2. To increase the community involvement in EMS and improvement in primary care he/she needs to stay active taking leadership role by awareness building in local community.
3. Take active part in personal and professional advancement programs.
4. Decision making for providing treatment when medical direction get disconnected due to technology or communication failure or in case of immediate threat to life.
5. Demonstrate accurate and appropriate communication skills with patients, peers, medical direction that are well suited as an Emergency Medical Technician- Paramedic.



**EMS Personnel Scope of Practice:**

The knowledge and skills required by an EMS personnel are both complex and risky. Communities need to find out their requirements in order to invest in pre-hospital care. There are four levels of emergency care providers and each level is quite diverse from other in terms of skills, knowledge, qualifications, critical thinking, services provided, risks, practice environment, and decision making. These four levels are as follows:

- **Emergency Medical Responder (EMR)-** Emergency medical responder is the inclusive part of EMS system and is also a primary link with the patient. They provide life-saving, effective and simple skills in case of acute illness or injury under medical supervision within the scope of their basic knowledge and skills while awaiting EMS response on scene and assist while transporting the patient to medical facility.

**Psychomotor Skills**

The following are the least psychomotor skills of the EMR:

- ❖ Airway and Breathing
  - Oropharyngeal airway adjuncts.
  - Bag-valve-mask ventilation
  - Upper airway suctioning
  - Supplemental oxygen therapy
- ❖ Pharmacological Interventions
- ❖ Demonstrating the use and administering life-saving medications with unit dose auto-injectors.
- ❖ Cardiac Care
  - When dealing with cardiac arrest patients using AED.
- ❖ Trauma Care
  - Manual cervical spine stabilization
  - Bleeding control
  - Stabilizing limb fractures
  - Emergency moves

- **Emergency Medical Technician Basic (EMT-B)-** With the basic knowledge and skills required to provide basic non-invasive emergency medical care and transportation to the hospital, EMT-B is the basic level needed to work on an ambulance and is a connection between scene to the definite emergency medical care at the hospital.

#### **Psychomotor Skills**

In addition to all the skills known by EMR following are the additional least psychomotor skills that must be known to EMT-B:

- ❖ Airway and Breathing
  - Oropharyngeal and Nasopharyngeal airway adjuncts insertion
  - Positive pressure ventilation and its devices.
- ❖ Pharmacological Interventions
  - Patients previously prescribed medications administration.
  - Administration of oral glucose for suspected hypoglycemia under medical supervision.
  - Administration of aspirin to patient experiencing chest pain of suspected ischemic origin under medical supervision.
- ❖ Trauma Care
  - Use of pneumatic anti-shock garment (PASG).

- **Emergency Medical Technician Advance (EMT-A)-** With the focus on patient care and transportation to the appropriate medical facility, EMT-A provide basic and limited advance and pharmacological interventions and care from the equipment's available in the ambulance.

#### **Psychomotor Skills**

In addition to all the skills acquired by EMR and EMT-B the following are the least psychomotor skills for an AEMT:

- ❖ Airway and Breathing
  - Non tracheal Airways insertion
  - Tracheobronchial suctioning of an intubated patient.
- ❖ Medical and Trauma Patient Assessment
- ❖ Advance pharmacology
  - Extremity IV access its establishment and maintenance.
  - Intraosseous access in a young patient its establishment and maintenance.

- Administer a narcotic antagonist to a patient suspected of narcotic overdose.
  - IV fluid therapy (Nonmedicated)
  - Sublingual NTG administration for chest pain with ischemic origin
  - Administration of epinephrine in case of anaphylaxis by SC or IM route of administration
  - Administration of glucagon for hypoglycemia
  - IV D50 administration for hypoglycemia
  - Nebulization
  - Relieving patients pain by administering nitrous oxide
- **Paramedics-** Being a highest level of pre-hospital care providers, paramedics are skilled to deliver advance emergency care and transporting the patient to definite medical facility with the basic and advance equipment's available in the ambulance. Paramedics are skilled to reduce morbidity and mortality by efficiently performing invasive treatment and pharmacologically supporting the current status of the patient.

### **Psychomotor Skills**

In addition to all the skills acquired by EMR, EMT-B and EMT-A the following are the least psychomotor skills required as a Paramedic:

- ❖ Airway and Breathing
  - Endotracheal intubation its indications and contraindications
  - Percutaneous cricothyrotomy in case of difficult airway management
  - Perform needle decompression for pneumothorax
  - Perform gastric decompression
- ❖ Pharmacological Interventions
  - Intraosseous cannulation and drug administration
  - Enteral and parenteral medication administration for medications already prescribed by the physician.
  - Peripheral IV cannulation and central IV cannulation along with medication and fluid administration.
  - IV infusion and medication administration
  - Transfusion of blood and its products
- Emergency cardiovascular care

- Cardioversion
- Manual and automatic defibrillation
- Transcutaneous pacing

**Description:**

This curriculum is developed with the long-term vision to improve the future of Emergency Medical Services and its provider in the less developed corners of the world. This curriculum contains improved strategically structured core competencies to develop and educate the coming generations and create efficient EMS professionals. The core content is alienated into levels of practice, corresponding skills, and knowledge for each level of care provider.

Emergency Medical Services (EMS) is basically a community-based health management that is completely connected with health care system and is based on skill based training courses. To increase the confidence while performing particular skills of EMS professionals and also to impart skill to pupils who have no formal qualification of the subject development of skill based courses came into occurrence.

Emergency Medical Services is a different and complicated system. Millions of patients are treated worldwide facing medical as well as traumatic emergencies through this system. Thus, it is important that people serving the society in the system should have adequate knowledge, skills and decision making capabilities to treat the victims on scene. Care provided by EMS professionals can make a huge difference in patient outcomes. High quality on field Emergency Care is an integral part of health care system.

This program is intended to transform fresh students in an Emergency Medical Technician Paramedics. The program aims to impart the basic course knowledge in the first semester with an aim to bring all students to the same educational level and later develop student competencies in airway management, patient assessment of medical and trauma victims, basic and advanced cardiovascular life support, dealing with medical and trauma patients, and emergency vehicle operation, obstetric emergencies, geriatric emergencies, drug overdose, neonatal and

pediatric emergencies and many more. Students are expected to recognize the signs and symptoms patient is presenting, identify illness or injury to deliver appropriate emergency care to the sick or needy.

The students will obtain open-minded thorough education and skills to assess patients, providing differential diagnosis and provide emergency care needed by the patients. Students will receive hands on training in the following subjects:

- Anatomy and physiology-5
- Medical Terminology-5
- Pharmacology-5
- Emergency Medical Responder-5
- Biomedical Waste Disposal Protocols-2
- EMT Preparatory-8
- Basic and advanced Airway Management-15
- Patient Assessment (Medical and Trauma patients)-10
- Medical Emergencies-12
- Trauma Emergencies-12
- Special Considerations-10
- Ambulance Operations-10
- Assessment Based Management-3

Apart from these students will also receive a working knowledge on:

- English language-5
- Research Skills and Methods-5
- Paramedic Soft Skills-2
- Computer and IT Skills-3

International accredited certification courses of the following studies are incorporated into final semesters courses for reason of continuance toward overall understanding of course material and to increase the student's ability of providing the highest possible level of expertise in the field of Pre-Hospital care. Provider certification courses are incorporated under the following guidelines:

- Basic life support-1
- Advance cardiovascular life support-2

- International trauma life support-2
- Pediatric advance life support-2
- Advance life support in Obstetrics-2

84% Grade is the pass mark for these courses, but if a student was not able to pass the practical or theoretical part, he will not fail the overall course, but an incomplete grade will be awarded until he retakes the certification course at its next available scheduling and pass. All rules and regulations mandated by the governing body of said certification course will be followed regarding all aspects of the certification course.

Instructor courses for life support training is for the candidates having an instructor potential to be able to teach these courses. Instructor certification will be provided after successful completion of the program:

- Basic life support
- Advance cardiovascular life support
- International trauma life support
- Pediatric advance life support
- Advance life support in Obstetrics

All rules and regulations mandated by the governing body of said instructor certification course will be followed regarding all aspects of the certification course. These courses are a part of continuous education program and are optional for students to do for future development as a faculty member for these programs.

**Clinical Rotations-** This course provides the student with a concentrated period of practical clinical experience within an institutional environment. The focus is to further develop the student's ability to assess and meet the needs of a patient, in emergency situations. Under the direct supervision of a full-time staff member, nurse, instructor or technician the student will practice skills, progressively acquire more responsibility in patient care and will learn to communicate with patients.

Throughout this clinical experience, the student will develop their own observational and practical skills specific to this program i.e. – patient

assessment, evaluation of vital signs, breath sounds, airway management and communication skills with patients. This clinical experience also allows the student the opportunity familiarize himself with the various institutions and units they will work with.

Attitude, commitment, dedication, skills competency and demonstrating initiative are the major factors, which will influence successful completion of the field experience. By performing well during the period of clinical rotations students will be completing 39 course credits.

**Bachelors Thesis-** Bachelor's thesis gives a platform to students to choose their topic of interest for research and find out adequate information about the topic that interests them the most. Students will develop the topic by their own personal experience. The thesis work can highlight improvement proposals, recommendations, probable solutions and suggestions. To make sure that overall research runs smoothly and for guiding new students a qualified person will help them to prepare them for the studying environment, acquaint them with practices and habituate the new learning environment. This course goes hand in hand with Research Methods and Skills course to give students familiarity and provide them with knowledge and skills to conduct the thesis work. Total course credits are 15 credits which students will receive after successful completion of the course. Evaluation criteria for thesis will be divided into four main areas and based on these four areas thesis will be graded on a 1-5 scale. These four criteria are as follows:

**1. Topic Selection-**

- a) Justification of the choice of topic.
- b) Well defining the objectives of the research.
- c) Acceptance with the field of emergency studies or healthcare.
- d) Defining the point of view of the research.

**2. Familiarity with the field-**

- a) Prior research with the field.
- b) Source of literature.

**3. Choice and application of research methods-**

- a) Reaching the goal of the research.
- b) Limitations of the research.
- c) Increase in the value of research is possible if:

- i. Further research topics can be taken out.
- ii. By analyzing the significance of the findings.

#### 4. **Scientific manner of writing and quality of reporting-**

- a) Referencing.
- b) Logical structure of writing.
- c) Grammatical correctness.
- d) Mastery of argumentative language.
- e) Presentation aspects.

As a starting point for learning, the focus is on situations and problems arising from professional practices, and the learning process aims to find evidence-based solutions for them. Project work including development work and projects of the student's field of study is employed as the main learning method. Various learning environments supporting learning are used to deepen understanding and develop competence, for example in the learning environments of Anatomy and Physiology, Medical Terminology, Pharmacology, Assessment Based Management, Simulation Practices etc. As for the learning environments of independent study, they offer students the opportunity to practise clinical skills. Throughout the learning process, students assume the responsibility for their learning. Their competence in studies is evaluated by an evaluation framework, which consists of competence areas including professional knowledge base, professional skills and actions as well as ethics, cooperation and development. Students become proficient in continuous development of their competence and further studies. The curriculum meets the demands of degree requirements, competence and development needs of the working environment as well as the requirements for the national and international cooperation. It also reflects a student-oriented and learning- and competence-based foundation.

### **Detailed Syllabus**

#### **Semester 1**

This semester is focused mainly to prepare candidates and build up the foundation level to study the complete course effectively. There are five major courses and two supporting courses which students will be studying during this semester:



- **Course -Anatomy and Physiology**

**Code-** EANP 01

**Prerequisites-** None

**Credit Hours-** 5

**Objective of the course-** The main objective of this course is to provide a broad, elementary introduction to the structural and functional measures of a normal human body systems as it relates to the Paramedic profession. It will focus on the following areas of the human body:

**Course Content:**

**Unit-I**

- Anatomical Definitions
- Cell, tissues, and organs
- Cardiovascular system
- Respiratory system

**Unit-II**

- Gastrointestinal System
- Endocrine system
- Genito urinary system
- Reproductive system

**Unit-III**

- Skeletal System
- Nervous System
- Muscular System
- Head neck and face

**Unit-IV**

- Lymphatic System
- Spine and thorax
- Integumentary system
- Sensory system

- **Course -Medical Terminology**

**Code-** EMET 01

**Prerequisites-** None

**Credit Hours-** 5

**Objective of the course-** This course provides students an introduction to the language of medicine and overview of medical terminology, with emphasis on basic, practical terms. Basic word structure and analysis in recognizing the competent parts of medical terms. Organization of the body, suffixes, prefixes, medical specialists, and care reports, with an emphasis on commonly used medical terms and their correct spelling and punctuation. This course covers the following topics:

**Course Content:**

**Unit-I**

- Introduction, combining forms, prefixes, and suffixes
- Anatomical Positions
- Medical Directions and prefixes

**Unit-II**

- Numbers, colours
- Terminology for different human body systems

**Unit-III**

- Medical Instruments
- Medical Procedures
- Surgical Suffixes and Prefixes

**Unit-IV**

- Diseases and conditions
- Specialties and specialist
- Audiotapes list

- **Course -Pharmacology**

**Code-** EPMY 01

**Prerequisites-** None

**Credit Hours-** 5

**Objective of the course-** This course is designed to introduce the students to the principles of pharmacology, pharmacodynamics, and pharmacokinetics. It also covers drug interaction, various routes of drug administration, various types of IV fluids and its administration, blood and its products, classes of drugs by different body system, anesthetics, emergency drugs and various other medications, vaccines and children immunizations, and chemotherapy agents. The course covers the following topics:

**Course Content:****Unit-I**

- Introduction and general principles of pathophysiology
- Cellular physiology
- Cellular injury and disease

**Unit-II**

- Historical trends in Pharmacology
- Mechanism of drug action
- Drug form, preparation, and storage
- Special considerations in drug therapy

**Unit-III**

- Drugs that effects on different body systems
- Drugs that effects blood
- Drugs used in infectious disease and inflammation

**Unit-IV**

- Drugs used by pre-hospital care providers
- Indications, contraindication, and mechanism of action
- Drug interactions with other drugs

- **Course-** Language Classes (General English)

**Code-** ELGE 01

**Prerequisites-** None

**Credit Hours-** 5

**Objective of the course-** To develop the students skills of reading ,writing and listening skills necessary to decode and encode the information contained in the variety of formats grammatical structures , devices and sub-technical vocabulary items common to develop in students those English Language Skills necessary to serve as an initial foundation for future study in more complex Health Care specialties.

**Course Content:****Unit-I**

- Basic of English grammar
- Vocabulary and dictionary skills
- Understanding medical comprehensions

**Unit-II**

- Developing understanding language skills
- Comprehension check
- Making an outline
- Rephrasing and summarising

#### **Unit-III**

- Developing writing language skills
- Giving appropriate instructions
- Accurate medical reporting

#### **Unit-IV**

- Writing sample composition
- Guided and unguided writing
- Filling Patient care report form

- **Course- Emergency Medical Responder**

**Code-** EEMR 01

**Prerequisites-** None

**Credit Hours-** 5

**Objective of the course-**To build the foundation for the upcoming courses and to equip the students with skills to provide emergency care with minimal equipment's. After the successful completion students will earn 5 credits and will be able to administer suitable emergency care in case of acute illnesses or injuries.

#### **Course Content:**

##### **Unit-I- Introduction to the course**

- Overview to EMS system
- Welfare of the Emergency medical responder
- Ethical and legal issues
- Lifting and moving patients

##### **Unit-II- Basic Airway**

- Introduction and manual airway opening techniques
- Ventilation
- Suctioning
- Foreign body airway obstruction

##### **Unit-III- Patient Assessment**

- Scene size up

- Assessing mental status for patients of all ages
- Assessing adequate and inadequate breathing
- Checking pulse in all age groups, external bleeding
- SAMPLE and OPQRST history
- Ongoing assessment

#### **Unit-IV-Basic Life Support**

- Chain of Survival
- 1 rescuer adult Cardio Pulmonary Resuscitation
- 2 rescuer adult Cardio Pulmonary Resuscitation
- Cardio Pulmonary Resuscitation in children
- Cardio Pulmonary Resuscitation in infant
- When to stop Cardio Pulmonary Resuscitation

#### **Unit-V- Illness and Injury**

- Medical Emergencies
- Injuries to bones and muscles
- Soft tissue injuries

#### **Unit-VI- Childbirth and Children**

- Normal childbirth procedure
- Care of a new born
- Seizures and respiratory problems
- Child abuse and neglect

#### **Unit-VII- EMS Operations**

- Hazardous scene
- Multicausality Incident
- Basic Triage

- **Course-** Biomedical Waste Disposal

**Code-** EBWD 01

**Prerequisites-** None

**Credit Hours-** 2

**Objective of the course-** To familiarize students with different waste types, their proper disposal protocols with appropriate procedures, their collection policies and protocols for various waste products. This is a short course of 2 credits and is included as it is an integral part of EMS systems.

**Course Content:****Unit-I- Introduction**

- What is Bio- medical waste generated during patient care
- Various types of Bio-medical waste
- Sources of Biomedical waste
- Importance of Bio- medical waste management during home health aide (care)

**Unit-II- Biomedical waste**

- Need for safety treatment
- Disposal of Biomedical waste
- Risk of Biomedical waste

**Unit-III- Treatment Protocols**

- Colour coding
- Types of containers
- Waste categories
- Treatment option

**Unit-IV- Treatment and disposal methods**

- Autoclaving
- Incineration
- Shredding
- Disposal option

- **Course-** Computer and IT Skills

**Code-** CIT 01

**Prerequisites-** None

**Credit Hours-** 3

**Objective of the course-** To build the confidence and skills in students for using computer systems. This course is of 3 course credits and will also help students with additional skills of computer to complete the full course effectively.

**Course Content:****Unit-I- Introduction**

- Computer and its parts

- Basic vocabulary and terminology of computers
- Basic rules for proper computer operations

#### **Unit-II- Introduction to Microsoft Word**

- Understand the features of Microsoft Office
- Use a template to create a business cover letter and a resume
- Use the mail merge feature in Microsoft Word

#### **Unit-III- Introduction to Microsoft PowerPoint**

- Using the PowerPoint presentation
- Special features to make presentations attractive

#### **Unit-IV- Overview to Microsoft Excel**

- Identify components of the spreadsheet
- Editing and Improvement features
- Enter text, numbers, formulas, and functions
- Create, insert, modify, and position appropriate graphics

#### **UNIT-V- Overview to the Intranet, Internet, and E-mail**

- Understanding internet, intranet, and e-mail
- Search engines and comparing information from different websites.

#### **Student Reference Material-**

**Anatomy and Physiology:** Jones & Bartlett, Anatomy And Physiology Paramedic, Elling, Elling, Rothenberg 2004: ISBN 10: 0-7637-3792-5

**Medical terminology:** Understanding And Using Medical terms Elementary Level *By Medical Consultant Professor David A. Price Evans ,MD,DSC,PHD,FRCP & Suleiman Saleem Mazyad ,Ph.D. University of Durham ,U.K*

**General English:** English For Health Sciences: Reading Skills Lower Intermediate Level *By Medical Consultant Professor David A. Price Evans ,MD,DSC,PHD,FRCP & Suleiman Saleem Mazyad ,Ph.D. University of Durham ,U.K*

English For Health Sciences Writing Skills Lower Intermediate Level *By Medical Consultant Professor David A. Price Evans ,MD,DSC,PHD,FRCP & Suleiman Saleem Mazyad ,Ph.D. University of Durham ,U.K*

Writing skills for science and technology Elementary Level *By Suleiman Saleem Mazyad ,Ph.D. University of Durham ,U.K*

**Pharmacology:** Mosby's Paramedic Textbook, Sanders, Elsevier Mosby, 4<sup>th</sup> Edition

**Emergency Medical Responder:** Mosby's EMT-Basic Textbook, Stoy Platt, Lejeune

Elsevier Mosby, 2011

AAOS, Standard First Aid, CPR, and AED 7<sup>th</sup> Edition

## Semester 2

This course introduces the student to the psychological and physical demands of an Emergency Medical Technician. Course content provides information in preparation for the student's progress throughout the entire paramedic program. This course is divided in seven modules. Six modules are a part of EMT Basic curriculum and one module is supportive course module.

- **Module 1-** EMT Preparatory

**Code-** EMTP 02

**Prerequisites-** Foundation level

**Credit Hours-** 4

**Objective of the Module-** To familiarize the EMT-Basic student with the overview of emergency medical care. These aspects can be emotional, legal, ethical and are important for EMT-B to understand. Apart from these taking base line vital signs, understanding body mechanics, equipment familiarization and lifting and moving techniques are also covered. After successful completion of the module students will be able to obtain 4 credits.

### Course Content:

#### UNIT-I- Introduction to Emergency Medical care

- EMS System
- Levels of Education
- Roles and Responsibilities of EMT-B
- Professional Attributes EMT-B
- Quality Care

#### UNIT-II-The Well-Being of the EMT-Basic

- Scene Safety



- Emotional Aspects of Emergency Care
- Body Substance Isolation Precautions
- Personal Protection
- Comprehensive Critical Incident Stress Management
- Advance Safety Precautions

### **UNIT-III-Medicolegal and Ethical Issues**

- Scope of Practice
- Legal Duties and ethical responsibilities concerning Patient, physician on call, and community
- Duty to Act
- Refusal, Consent, Assault and Battery
- Patient Confidentiality, reporting of an special case
- Special Situations
- Health Insurance Portability and Accountability Act (HIPAA)
- Considerations at Possible Crime Scenes
- Potential Organ Donors

### **UNIT-IV-Baseline Vital Signs and SAMPLE History**

- Baseline Vital Signs
- Vital Sign Reassessment
- SAMPLE History
- OPQRST History

### **UNIT-V-Lifting and Moving Patients**

- Body Mechanics
- Lifting
- Carrying
  - Reaching
  - Pushing and Pulling
- Principles of Moving Patients
  - Emergency Moves
  - Urgent Moves
  - Nonurgent Moves

- Equipment
  - Stretchers and Cots
  - Patient Positioning

#### **UNIT-VI-Assisting the ALS Provider**

- The Team Concept
- ALS Procedures and Equipment
  - Electrocardiogram Monitoring
  - Intravenous Therapy
  - Endotracheal Intubation

- **Module 2- Basic Airway Management**

**Code-** EBAM 01

**Prerequisites-** Foundation level

**Credit Hours-** 5

**Objective of the Module-** To familiarize students with basic psychomotor skills for securing patients airway as well as proper use of airway adjuncts with supplemental oxygen therapy, suction equipment, and resuscitation devices is also included. This is most important skill set to be performed by the EMT- B on scene and this module is of total 5 credits after successful completion.

#### **Course Content:**

##### **UNIT-I- Introduction**

- Anatomy and physiology of respiratory system

##### **UNIT-II- Supplemental Oxygen Therapy**

- Oxygen Sources
- Various Oxygen Delivery equipments

##### **UNIT-III-Airway Maintenance**

- Manual Positioning
- Different types of Airway Adjuncts
- Suctioning

##### **UNIT-IV- Artificial Ventilation**

- Mouth-to-Mask with Supplemental Oxygen Technique

- Bag-Valve-Mask Technique with one person
- Bag-Valve-Mask Technique with two persons
- Flow-Restricted, Oxygen-Powered Ventilation Device
- Important considerations in Trauma Patients
- Artificial Ventilation and its adequacy

#### **UNIT-V- Special Situations in Airway Management**

- Laryngectomies
- Infants and Children ventilation
- Ventilation in case of Facial Injuries
- Airway obstructions
- Dental Appliances

- **Module 3- Patient Assessment**

**Code-** EPAM 01

**Prerequisites-** Foundation level

**Credit Hours-** 5

**Objective of the Module-** To describe and demonstrate the assessment of patients with medical illness and traumatic injuries also it provides them with the knowledge and skills for care provided till the time they are safely transferred to a medical facility. This module is of totally five credits after successful completion.

#### **Course Content:**

##### **UNIT-I- Scene Size-Up**

- Body Substance Isolation Precautions
- Ensuring Scene Safety
- Nature of Illness and Mechanism of Injury
- Determining number of Patients
- Need for Additional Help

##### **UNIT-II-: Initial Assessment**

- Assessing General Impression
- Mental status assessment
- Airway

- Breathing
- Circulation
- Identifying immediate care Patients

### **UNIT-III- Focused History and Physical Examination for Trauma Patients**

- Mechanism of Injury
- Significant Mechanisms of Injury
  - Rapid Trauma Assessment
  - Baseline Vital Signs and SAMPLE History
- Non-Significant Mechanism of Injury

### **UNIT-IV- Focused History and Physical Examination for Medical Patients**

- Assessing nature of illness
- Responsive Medical Patients
  - The Patient's History
  - Rapid Assessment
  - Vital Signs
  - Emergency Care
- Unresponsive Medical Patients

### **UNIT-V- Detailed Physical Examination**

- Detailed Physical Examination
  - Patients Needing a Detailed Examination
  - Examination Procedure
- Assessing Vital Signs

### **UNIT-VI- Ongoing Assessment**

- Ongoing Assessment
- Repeat
  - Initial Assessment
  - Vital Signs
  - Focused Assessment
- Check Interventions

**UNIT-VII Communications**

- Communication Systems and Components
- Procedures for Radio Communications
  - Communication with Dispatch
  - Communication with Medical Direction
- Interpersonal Communication
  - General Principles
  - Tips for Effective Communication
  - Special Populations

**UNIT-VIII-Documentation**

- The Prehospital Care Report
- Writing in PCR about the errors in patient care
- Documentation of Patient Refusal
- Documentation Errors and its corrections
- Documentation of Special Situations
  - Mass Casualty Incidents
  - Special Situation Reports

- **Module 4- Medical Emergencies I**

**Code-** EMEI 01

**Prerequisites-** Foundation level

**Credit Hours-** 4

**Objective of the Module-** To provide instruction on assessment of medical emergencies and the administration of prescribed and standardized emergency medical care for specific medical condition. In total this module comprises of 4 credits hours.

**Course Content:**

**UNIT-I- Respiratory Emergencies**

- Respiratory System Review
- Breathing Assessment
  - Adequate Breathing

- Breathing Difficulty
- Chronic Obstructive Lung Disease
- Focused History and Physical Examination
- Emergency Medical Care
  - Oxygen
  - Position and Transport
  - Artificial Ventilation
  - Inhalers

### **UNIT-II- Cardiovascular Emergencies**

- Review of the Circulatory System
- Cardiac Compromise
  - Assessment
  - Emergency Medical Care,
- The Automated External Defibrillator
  - Overview of the Automated External Defibrillator
  - Advantages of the Automated External Defibrillator
  - Operation of the Automated External Defibrillator
  - Post resuscitation Care
  - Automated External Defibrillator Maintenance
  - Automated External Defibrillator Skills

### **UNIT-III-Diabetes and Altered Mental Status**

- Altered Mental Status and its causes
  - Diabetic Emergency
  - Seizures
  - Stroke
  - Other Possible Causes
- Emergency Care of Patients with Altered Mental Status
  - Assessing the patient
  - Challenging Airway Management
  - Treating hypoglycemia and hyperglycemia

### **UNIT-IV- Allergic Reactions**

- Allergic reaction and its assessment

- Common reasons for Allergic Reactions
- Common presentations in allergic reaction
- Emergency Care for Allergic Reactions
  - Airway Management
  - Immediate medication administration

#### **UNIT-V- Poisoning and Overdose**

- History of Poisoning
- Types of Toxins
  - Ingested Toxins
  - Inhaled Toxins
  - Injected Toxins
  - Absorbed Toxins
- Airway Management
- Use of Activated Charcoal

#### **UNIT-VI- Environmental Emergencies**

- Thermoregulatory Emergencies
  - Temperature Regulation in the Body
  - Exposure to the Cold
  - Exposure to Heat
- Drowning and Near Drowning
  - Emergency Medical Care of the Near-Drowning Patient
- Bites and Stings
  - Signs and Symptoms
  - Emergency Medical Care for Bites and Stings

#### **UNIT-VII- Behavioural Emergencies**

- Behaviour
  - Behavioural Changes
  - Psychological Crises
  - Suicidal Gestures
- Assessment and Emergency Care
  - Scene Size-Up
  - Communication and Emergency Medical Care

- Calming the Patient Restraints
- Medical and Legal Considerations
  - Consent
  - Resistance to Treatment
  - Use of Force
  - Documentation

### **UNIT-VIII-Obstetrics and Gynaecology**

- Reproductive Anatomy and Physiology review
- Contents of the Childbirth Kit
- Predelivery Emergencies
  - Miscarriage
  - Seizure during Pregnancy
  - Vaginal Bleeding Late in Pregnancy
  - Trauma
- Normal Delivery
  - Predelivery Considerations
  - Precautions
  - Delivery Procedure
  - Initial Care of the new born
- Abnormal Deliveries and Complications
  - Prolapsed Cord
  - Breech Presentation
  - Limb Presentation
  - Multiple Births
  - Meconium
  - Premature Birth

- **Module 5- Trauma Emergencies I**

**Code-** ETEI 01

**Prerequisites-** Foundation level

**Credit Hours-** 4

**Objective of the Module-** To provide instruction on assessment of traumatic emergencies and the administration of prescribed and standardized emergency care for specific traumatic injuries. In total this module comprises of 4 credits hours.



**Course Content:****UNIT-I- Bleeding and Shock**

- Review of the Cardiovascular System
- Shock
  - Assessing Shock
  - Emergency Care for Shock
- External Bleeding
  - Body Substance Isolation Precautions
  - Assessing Blood Loss
  - Types of Bleeding
  - Emergency Care for External Bleeding
  - Bleeding from the Ears, Nose, and Mouth
- Internal Bleeding
  - Assessing Blood Loss
  - Signs and Symptoms of Internal Bleeding
  - Emergency Care for Internal Bleeding

**UNIT-II- Soft Tissue Injuries**

- The Skin
  - Function
  - Layers
- Injuries
  - Closed Injuries
  - Open Injuries
  - Emergency Medical Care for Patients with Soft-Tissue Injuries
- Burns
  - Classification of Burns
  - Severity of Burns
  - Emergency Medical Care for Burn Victims
  - Special Considerations in Burn Care

**UNIT-III- Injuries to muscles and bones**

- Review of muscular system and skeletal system
- Injuries to Bones and Joints
  - Determination of MOI
  - Appropriate care for Bone or Joint Injuries
- Dealing with bone and muscle injury
  - Splinting it reasons and principles
  - Equipment and Techniques for Splinting
  - Common risk happens with splinting

**UNIT-IV- Injuries to the Head and Spine**

- Review of the Nervous and Skeletal Systems
  - The Nervous System
  - The Skeletal System
- Devices for Immobilization
  - Cervical Spine
  - Short Backboards
  - Long Backboards (Full-Body Spinal Immobilization Devices)
- Injuries to the Spine
  - Mechanism of Injury
  - Assessment
  - Complications
  - Emergency Medical Care of the Spine-Injured Patient
- Injuries to the Brain and Skull
  - Head and Skull Injuries
  - Emergency Medical Care of the Head-Injured Patient
- Special Considerations
  - Rapid Extrication
  - Helmet Removal
  - Infants and Children
  - Geriatric Patients

- **Module 6- Ambulance Operations**

**Code-** EAOI 01

**Prerequisites-** Foundation level

**Credit Hours- 3**

**Objective of the Module-** To present an overview of the skills and information needed to work in work space environment, overview of rescue operations and Overview to assess and perform in special response situations. This module comprises of 3 credit hours.

**Course Content:****UNIT-I- Ambulance Operations**

- Ambulance Call and its phases
  - Call preparation
  - Dispatch
  - Going to Scene
  - Arriving the incident spot
  - Transferring the Patient to the Ambulance
  - On the way to hospital
  - In hospital
  - On the way to base station
  - Postern Phase
- Air Medical Transport
  - Use of Air Medical Transport
  - Landing Zones
  - Safety

**UNIT-II- Gaining Access**

- Fundamentals of Extrication
- Safety and Equipment
  - Personal Safety
  - Patient Safety
  - Other Safety Issues
- Accessing the Patient
- Removing the Patient

**UNIT-III- Overviews: Special Response Situations**

- Hazardous Materials
  - Identifying the severity of the Problem
  - Scene safety
  - Reaching the incident spot
  - Information Resources
  - Treatment to be given
  - Education for Emergency Medical Services Responders
- Incident Management Systems
  - Structure of Responsibilities
  - Role of the Emergency Medical Technician
- Mass casualty incident
  - START Triage
  - Treatment provided on scene

- **Module 7- Paramedic Soft Skills**

**Code-** EPSS 01

**Prerequisites-** None

**Credit Hours-** 2

**Objective of the Module-** Objective of this course is to make students confident as they have limited prior experience with the development and application of soft skills. Everyday an EMT need to directly deal with its customers and this module is going to make customer dealing easier for upcoming students.

**Course Content:**

**UNIT-I- Oral and written communication**

- Selection of suitable communication style for presenting effective communication.
- Selecting suitable Language and type of communication for different listeners and methods.

**UNIT-II-Critical thinking**

- Examination and identification of different problems and solutions
- Analyzing and evaluating decisions in various arenas with differing assumptions
- Contents and methods.

**UNIT-III- Leadership**

- Ways of Inspiring
- Critical and systematic thinking
- Concept of sharing responsibility.

#### **UNIT-IV- Problem solving**

- Presenting the problem clearly
- Finding probable solutions
- Approaches for problem solving
- Solution selection to increase positive and decrease negative outcomes.

#### **UNIT-V- Interpersonal relations**

- Controlling emotions in public space
- Understanding the requirements and determining emotional needs of people with respect to their culture
- Backgrounds and capabilities
- Interact respectfully

#### **UNIT-VI-Inter-professional teamwork**

- Working an understanding as a team player and as a leader
- Respecting people
- Giving constructive feedback
- Ethically and efficiently locate and use information by evaluating its sources.
- Referencing

**Clinical Ambulance Rotations-** Familiarization with work environment is important to perform effectively in any field, thus the se clinical ambulance rotations are planned to get the candidates familiarized with their working environment. Candidates will be observing the patients closely and helping the senior EMT on duty. Candidates are expected to practice and use the effective ways to communication with patients, peers and varous people working in the field of to establish healthy work relationships. It will also enable them to undergo any psychological and ethical issues arrising in work space environment. These rotations are planned for a short period of one month and candidates will be asked to submit a short report of their experiences during the clinical rotations and discuss the interesting cases arrived during their duty hours. This activity will be conducted as a part of knowledge sharing practice among the whole group and will give them an opportunity to learn from their peer experiences.

**Student Reference Material:**

Mosby's EMT-Basic Textbook, Stoy Platt, Lejeune Elsevier Mosby, 2011

AAOs, Standard First Aid, CPR, and AED 7<sup>th</sup> Edition

Brady's Pre-hospital Emergency Care, [Joseph J. Mistovich](#), [Keith J. Karren](#), 11<sup>th</sup> Edition

AAOs Emergency Care on Transportation Skills

**Soft Skills:**

The Quick and Easy Way to Effective Speaking. D Carnegie

How to Develop Self and Influence People. D Carnegie

Skilled Facilitator: Practical Wisdom for Developing Effective Groups. Roger M Swartz

Learn-To-Think: Course book and Instructors Manual . Edward de Bono

Soft Skills Training: A Workbook to Develop Skills for Employment by Frederick H. Wentz

**Semester-3**

This module will take candidates clearing the basic EMT course to the next level. They will learn and practice more advance skills of an advance EMT, have basic understanding of interpreting ECG and will also have their clinical rotation for one month in the hospital to get experience of critical cases and their management in hospital settings and later on in one month ambulance rotation they will be posted in ambulances to learn the management of critical cases on scene and while on the way to the hospital.

- **Module 1-** Advance Airway Management

**Code-** EAAM 03

**Prerequisites-** Successful completion of semester 2

**Credit Hours-** 5

**Objective of the Module-** The objective of this course is to successfully manage a patient with a compromised airway using basic airway devices and advance supraglottic airways, inserting nasogastric and orogastric tubes and performing oral and tracheal suctioning. Candidates must also be able to discuss and demonstrate a successfully secure and place an advanced airway device into a patient. Successful completion of this course will award 5 course credits.

**Course Content:**

**UNIT-I-Sellick Maneuver**

- Purpose
- Anatomic Location
- Technique
- Special Considerations

**UNIT-II-Advanced Airway Management of Adults**

- Laryngeal Mask Airways
- Combi tubes
- Tracheal Suctioning
- Nasogastric Tubes
- Orogastric Tubes

**UNIT-III-Advanced Airway Management of Children and Infants**

- Laryngeal Mask Airways
- Combi tubes
- Tracheal Suctioning
- Nasogastric Tubes
- Orogastric Tubes

- **Module 2- Patient Assessment**

**Code-** EPAM 03

**Prerequisites-** Successful completion of semester 2

**Credit Hours-** 3

**Objective of the Module-** This module is to explain the concepts of therapeutic communication, history taking, physical examination, radio communications, medical communications, and proper documentation in patient care report form. This course will help candidates to understand the importance of taking proper history, physical examination and then proper documentation in EMTs carrier and successful completion will provide 3 course credits.

**Course Content:**

**UNIT-1-Therapeutic Communication**

- Communications

- Internal Factors in Effective Communication
- External Factors in Effective Communication
- Patient Interview
  - Strategies for Obtaining Information
- Methods of Assessing Mental Status during the Interview
- Special Interview Situations

#### **UNIT-II-History Taking**

- Content of the Patient History
- Techniques of History Taking
- Dealing with special situations

#### **UNIT-III- Methods of Physical Examination**

- Physical Examination: Method and introduction
  - Assessing the Mental Status
  - Performing a General Survey
- Structural Regions
- Performing physical examination in Infants and Children
- Performing physical Examination in geriatric patients

#### **UNIT-IV- Communications**

- Phases of Communications during a Typical Emergency Medical Services Event
- Role of Communications in Emergency Medical Services
- Communications Systems
- Components and Functions of Dispatch Communications Systems
- Regulation
- Procedures for Emergency Medical Services Communications

#### **UNIT-V-Documentation**

- Documentation and its importance
- General Considerations
- Fundamentals for properly writing emergency medical Services Document
- Classifications of description Writing



- Special Considerations for Documentation
- Document Revision/Correction
- Consequences of Inappropriate Documentation

- **Module 3- Medical Emergencies II**

**Code-** EMEII 03

**Prerequisites-** Successful completion of semester 2

**Credit Hours-** 4

**Objective of the Module-** The objective is to focus on assessing and managing patients with specific medical needs and discuss the pathophysiology, symptomatology, and prehospital treatment of specific medical conditions. To discuss the mechanism of action, side effects, indications, contraindications, and dosage for a variety of medications related to specific medical emergencies is also one of the key objectives of the course. This course is of 4 course credits.

**Course Content:**

**UNIT-I-Pulmonary Emergencies**

- Pathophysiology
- Scene size up and Rescuer Safety
- Chronic Obstructive Pulmonary Disease
- Pneumonia
- Pulmonary Thromboembolism
- Adult Respiratory Distress Syndrome
- Spontaneous Pneumothorax
- Upper Respiratory Infection
- Lung Cancer
- Hyperventilation Syndrome

**UNIT-II-Cardiovascular Emergencies**

- Anatomy and Physiology of the Heart
  - Anatomy
  - Physiology
- Electrophysiology of the Heart
  - Learning electrical activity and membrane potentials with respect to cardiac cells

- Cell Excitability
- Electrical Conduction System of the Heart
- Assessment of the Patient with Cardiac Disease
- Electrocardiogram Interpretation
  - Steps in Rhythm Analysis
- Recognition and management of cardiac arrest rhythms
  - Cardiac Arrest and Sudden Death
  - Termination of Resuscitation

### **UNIT-III- Neurological Emergencies**

- Nervous System Anatomy and Physiology
- Neurological Pathophysiology
- Specific Central Nervous System Disorders
  - Pathophysiology
  - Management

### **UNIT-IV- Endocrinology**

- Endocrine System Anatomy and Physiology
- Endocrine system and its disorders
  - Disorders of the Pancreas: DM
  - Hyper and hypothyroidism
  - Disorders of the Adrenal Glands

### **UNIT-V- Allergies and Anaphylaxis**

- Bodily response to Antigen-Antibodies
- Allergic Reaction
  - Localized Allergic Reaction
- Anaphylaxis
  - Management

### **UNIT-VI- Gynaecology**

- Organs of the Female Reproductive System
- Menstruation and Ovulation
- Common gynaecological problems
  - Recognition

- Pre-hospital emergency management
- Gynaecologic Emergencies
  - Vaginal Bleeding
  - Trauma to External Genitalia
  - Sexual Assault

#### **UNIT-VII- Obstetrics**

- Normal pregnancy presentations
- Structures specific to Pregnancy
- Fetus development inside the womb
- Obstetric Terminology
- Assessment of pregnant women
- Complications of Pregnancy
  - 1<sup>st</sup> trimester complications
  - Complications later in the pregnancy
- Delivery Complications
  - Different fetus presentations
  - Meconium
  - Shoulder dystocia
  - Vaginal bleeding

- **Module 4- Trauma Emergencies II**

**Code-** ETEII 03

**Prerequisites-** Successful completion of semester 2

**Credit Hours-** 4

**Objective of the Module-** The primary objective of this course is to prepare the student to respond to, assess, and manage a variety of patients and differentiate mechanism of injury resulting from either blunt or penetrating trauma. One of key objectives of this course is also to give candidates the skills and confidence to manage shock and hemorrhage in trauma patients. This course is completely of 4 course credits.

#### **Course Content:**

##### **UNIT-I- Trauma Systems and Mechanism of Injury**

- Epidemiology of Trauma

- Kinematics
- Energy
- Blunt Trauma
  - Restraints
  - Injuries occurring due to organ collision
  - Different type of motor vehicle collisions
  - Pedestrian Injuries
- Penetrating Trauma
  - Management

### **UNIT-II- Haemorrhage and Shock**

- Haemorrhage
  - Tissue Oxygenation
- Shock
  - Capillary-Cellular Relationship in Shock
  - Classifications of Shock
  - Stages of Shock
  - Uncompensated Shock
- Management and Treatment Plan for the Patient in Shock
- Integration of Patient Assessment and the Treatment Plan

### **UNIT-III- Soft Tissue Trauma**

- Anatomy and Physiology
  - Pathophysiology
- Assessment of Soft Tissue Injuries
  - Management Principles for Soft Tissue Injuries
- Haemorrhage and Bleeding control
  - Dressing Materials Used with Soft Tissue Trauma
- Management of Specific Soft Tissue Injuries Not Requiring Closure
- Special Considerations for Soft Tissue Injuries

### **UNIT-IV- Burns**

- Incidence and Patterns of Burn Injury
- Classifications of Burns
  - Degrees of burn injury

- Pathophysiology of Burn Shock
  - Management of burn shock
- Assessment of the Burn Patient
  - Percentage of body surface area burned
- General Principles in Burn Management
- Types of burn injury
  - Burn due to liquids and solids
  - Inhalation Burns
  - Chemical Burns
  - Electrical Burns
  - Radiation Exposure

#### **UNIT-V-Head and Facial Trauma**

- Maxillofacial Injury
- Ear, Eye, and Dental Trauma
- Nose Bleeding
- Anterior Neck Trauma
- Head Trauma
- Brain Trauma
- Injury Management

- **Module 5- Special Considerations**

**Code-** ESCM 03

**Prerequisites-** Successful completion of semester 2

**Credit Hours-** 5

**Objective of the Module-** The objective is to the pathophysiology, symptomatology, and prehospital treatment for neonates, pediatrics and geriatric patients. Care of the neonatal patient, pediatric patients and various illnesses across the age developmental spectrum, and illnesses associated with the aging patient are some of the major objectives of this course. Successful completion of this course will offer 5 course credits to the candidates.

**Course Content:**

#### **UNIT-I- Neonatology**

- Risks for Resuscitation
- Physiological Adaptation at Birth
- Neonatal Assessment & Management
  - Resuscitation of the Distressed Neonate
- Route of Drug Administration
  - IO Access
- Post resuscitation Care
  - Neonatal Transport
- Specific Situations
  - Psychological and Emotional Support

#### **UNIT-II- Paediatrics**

- The Paramedics role in caring for paediatric patients
- Emergency medical services for children
- Review of Anatomy and physiology
- General principles of paediatric assessment and management
- Specific Pathophysiology, Assessment, and Management
- Infants and Children with Special Needs
- Recommended Childhood Immunization Schedule

#### **UNIT-III-Geriatrics**

- Demographics, Epidemiology, and Societal Issues
- Living Environments and Referral Sources
- Functional Changes occurring while Aging
- Principles of Assessment in Geriatric Patient

- **Module 6- Ambulance Operations**

**Code-** EAOM 03

**Prerequisites-** Successful completion of semester 2

**Credit Hours-** 3

**Objective of the Module-** The objective of this module is to accelerate skill development. This course helps in building work-oriented approach by issue-based information. Responding to multi casualty incident scenario and rescue operations are also the objectives to be learned from this module. This course could give 3 course credits to the students.

**Course Content:****UNIT-I-Ambulance Operations**

- Ambulance Morals
- Physical check of ambulance
- Ambulance Stationing
- Safe Ambulance Operation
- Aeromedical Transportation

**UNIT-II-Medical Incident Command system**

- Incident Command System
- Mass Casualty Incidents
- Principles and Technology of Triage
- Critical Incident Stress Management

**UNIT-III-Rescue Awareness and Operations**

- Measures of rescue operations
- Stages of a rescue operations
- Care providers safety
- Hazardous Atmospheres
- Highway Operations
- Hazardous Terrain
- Assessment Procedures during rescue

**Clinical Hospital Rotations:** Documentation is a very important skill a paramedic needs to practice and work upon. During this hospital clinical training in different departments including Adult Emergency Room, Pediatric Emergency Room, Psychiatric Unit, Anesthesia, Operating Room, Intensive Care Unit, Pediatric Operating Room, Post Anesthesia Recovery Room, Laboratory, Blood Bank, IV Team and Burn Care Unit candidates are expected to attain good document habits, with concise recording of patient history and physical examination and including pertinent positives and negatives. They are also expected to get familiarized with the terminologies used in hospital documentation of a case and in the Patient care report (PCR). Observation of the

psychosocial and ethical issues and their management which commonly arise in the ED and may arise in the ambulances is also expected within this clinical rotation period. Successful completion will provide them 3 course credits.

**Clinical Ambulance Rotations-** This clinical Ambulance rotation are planes to give candidates an opportunity to strengthen their soft skills while working with patients, peers and medical professionals in the hospital. Besides this they are also expected to do initial assessment on patients with a various of presentations ranging from medical and surgical to social and psychological. In the ambulance settings, this requires a rapid, appropriate and focused history and physical examination based on the patient's chief complaint to make differential diagnosis. Fast recognition of acute illnesses or injuries in prehospital emergency care environment. Performance of basic and advanced skills pertaining to Pre-hospital emergency care. Successful completion will provide them with 3 more course credits.

**Student Reference Material:**

AAO's Nancy Caroline in Emergency care in the street text book  
AAO's Nancy Caroline in Emergency care in the street skills work book  
A.A.O's Airway Management Paramedic  
A.A.O's Trauma Case studies for the Paramedic  
A.A.O's Pediatric Case studies for the Paramedic  
A.A.O's Anatomy and Physiology paramedic  
Case Based Approach to ECG Interpretation  
Pediatric Education for Pre-hospital Professionals  
Simulations Health Care Training Aids  
Intermediate Emergency care and transportation Student work  
PHTLS Sixth Edition  
Mosby's Paramedic Text Book Revised Fourth Edition  
Mosby's Paramedic Work Book Revised Fourth Edition  
A.A.O's Pathophysiology Paramedic  
Emergency Procedures and techniques second edition  
Rosin Emergency Medicine  
Emergency Medicine A Comprehensive study guide  
AAO'S Weapons of Mass Casualties (Field Guide)



EMS Documentation Second Edition (Field Guide)

Brady's Pre-hospital Emergency Care, Joseph J. Mistovich, Keith J. Karren, 11<sup>th</sup> Edition

Paramedic Care: Principles and Practice, Volume 5, 5<sup>th</sup> Edition, Bryan E. Bledsoe, Robert S. Porter, Richard A. Cherry

### **Semester-4**

This module consists of core paramedic studies and is designed to provide candidates with psychomotor and practical skills to work as paramedics and achieve the highest level of knowledge and skills performed in prehospital care. One-month hospital and one-month ambulance clinical rotations are planned after completion of studies to give them hands on experience to work as a paramedic.

- **Module 1-** Paramedic Preparatory

**Code-** EPPM 04

**Prerequisites-** Successful completion of semester 3

**Credit Hours-** 4

**Objective of the Module-** The objective of this course is to introduce EMT students to the vital foundations of the field. Provider wellness, roles and responsibilities of the paramedic, professionalism, injury prevention, medico-legal and ethical considerations, and life span development are among the topics to be discussed. After the successful completion student will obtain 4 course credits.

#### **Course Content:**

##### **UNIT-I- EMS Systems**

- Development of EMS System
- Current Emergency Medical Services Systems
- National Emergency Medical Services Group Involvement
- Learning about paramedic education
- Roles and Responsibilities of the Paramedic
- Paramedic Licensure, Certification, and Registration
- Medical Direction for Emergency Medical Services
- Professionalism
- Improving System Quality

- Emergency Medical Services Research

### **UNIT-II- The Well-Being of the Paramedic**

- Paramedic welfare
- Dealing with stressful situations
- Dealing with Grief, death, and Loss
- Transmitting disease and its prevention

### **UNIT-III-Injury Prevention**

- Injury Epidemiology
- Overview of Injury Prevention
- Feasibility of Emergency Medical Services Involvement
- Leading awareness programs

### **UNIT-IV-Medical/Legal Issues**

- Legal Duties
- The Legal System
- Legal Responsibility of the Paramedic
- Patient paramedic Relations
- Problems with resuscitation
- Crime Scene Responsibilities
- Documentation of legal cases

### **UNIT-V-Ethics**

- Introduction to ethics
- Ethical Responsibilities
- Paramedic approach for ethical issues
- Ethical Tests in Health Care
- Resolving Ethical Dilemmas
- Ethical Issues in current Paramedic work

### **UNIT-VI- Life Span Development**

- Newborn
- Toddler and Preschool Years
- School-Age Years

- Adolescence
- Adults
- Geriatrics

- **Module 2-** Advance Airway Management and Ventilation

**Code-** EAAMV 04

**Prerequisites-** Successful completion of semester 3

**Credit Hours-** 5

**Objective of the Module-** Recognition of compromised airway, establishment and maintenance of the airway, tracheal intubation and rapid sequence intubation. This course is of total 5 course credits.

**Course Content:**

**UNIT-I-Respiration**

- Respiratory Physiology
- Mechanism of Respiration
- Measurement of Gases
- Pulmonary Circulation

**UNIT-II- Pathophysiology and complications**

- Respiratory Pathophysiology
- Foreign Body Airway Obstruction
- Aspiration by Inhalation

**UNIT-III- Airway Management and Ventilation**

- Basic Airway Management Procedures
- Supplemental Oxygen Therapy
- Artificial Ventilation
- Suctioning
- Airway adjuncts
- Advanced Airway Management Procedures
- Airway management pharmacologically
- Trans laryngeal Cannula Ventilation
- Cricothyrotomy

**Module 3- Patient Assessment****Code-** EPAM 04**Prerequisites-** Successful completion of semester 3**Credit Hours-** 2

**Objective of the Module-** This module is to review the patient assessment completely and will help candidates to understand the importance of proper clinical decision making and performing a case-based assessment of various medical emergencies that can encounter in EMTs carrier and successful completion will provide 2 course credits.

**Course Content:****UNIT-I- Patient Assessment**

- Sizing the scene
- Priority in patient assessment
- Initial Assessment
- Focused History and Physical Examination: Medical Patients
- Focused History and Physical Examination: Trauma Patients
- Performing Rapid Trauma Assessment
- Detailed Physical Examination
- Ongoing Assessment
- Care of Medical versus Trauma Patients

**UNIT-II-Clinical Decision Making**

- Prehospital environment
- Vital essentials of critical thinking for Paramedics
- Assessment Based Patient Management in field
- Putting it All Together: The Six R's

**UNIT-III- Assessment-Based Management**

- Effective Assessment
- The Right Stuff
- Optional Take-in Equipment
- Basic way to approach patient
- Dealing with patient

- Handing over patient to hospital

- **Module 4- Medical Emergencies III**

**Code-** EMEIII 04

**Prerequisites-** Successful completion of semester 3

**Credit Hours-** 4

**Objective of the Module-** The objective of this module is to familiarize candidates with the advance treatment for cardiovascular emergencies, urology, gastroenterology, hematology, environmental emergencies, behavioral and psychiatric emergencies, and infectious and communicable diseases. Successful completion of this module will give 4 course credits to the students.

**Course Content:**

**UNIT-I-Cardiovascular emergencies**

- Electrocardiogram Monitoring
  - Basic Concepts of Electrocardiogram Monitoring
  - Relationship of the Electrocardiogram to Electrical Activity
- Introduction to Dysrhythmias
  - Classification of Dysrhythmias
  - Dysrhythmias: Originating in the Sinoatrial Node
  - Dysrhythmias: Originating in the Atria
  - Dysrhythmias: Sustained or Originating in the Atrioventricular Junction
  - Dysrhythmias: Originating in the Ventricles
  - Dysrhythmias: That Are Disorders of Conduction
- Specific Cardiovascular Diseases
  - Pathophysiology
  - Management of Cardiovascular Disease
- Handling Cardiac Emergencies
  - Basic Cardiac Life Support
  - Defibrillation
  - Implantable Cardioverter Defibrillators
  - Synchronized Cardioversion
  - Transcutaneous Cardiac Pacing
  - Cardiac Arrest and Sudden Death

- Termination of Resuscitation

### **UNIT-II-Gastroenterology**

- Gastrointestinal Anatomy
- Examination of the patient with abdominal pain and emergency
- Specific Abdominal Emergencies
- Nasogastric Tube Insertion
  - Necessary Equipment
  - Procedure
  - Possible Complications

### **UNIT-III- Urology**

- Anatomy and Physiology Review
- Assessing the patient with Genitourinary Disorders
- Management and Treatment Plan

### **UNIT-IV-Haematology**

- Blood and its products
- Specific Haematological Diseases
- Examination and Management of haematological disorders

### **UNIT-V-Environmental Conditions**

- Thermoregulation
- Hyperthermia
- Hypothermia
- Frostbite
- Submersion
- Diving Emergencies
- High-Altitude Illness

### **UNIT-VI- Infectious and Communicable Diseases**

- Public awareness for Infectious Diseases
- Pathophysiology of Infectious Disease
- Physiology of the Human Response to Infection
- Stages of Infectious Diseases

- Viral Diseases of Childhood
- Other Viral Diseases
- Sexually Transmitted Diseases
- Bacterial diseases
- Reporting a paramedic exposure
- Paramedic's Role in Preventing Disease Transmission

#### **UNIT-VII- Behavioural and Psychiatric Disorders**

- Understanding Behavioural Emergencies
- Assessment and Management of Behavioural Emergencies
- Specific Behavioural and Psychiatric Disorders
- Special Considerations for Patients with Behavioural Problems

- **Module 5- Trauma Emergencies III**

**Code-** ETEIII 04

**Prerequisites-** Successful completion of semester 3

**Credit Hours-** 4

**Objective of the Module-** The objective is to familiarize candidates with the advance procedures in taking care of patients with different kind of trauma injuries. Successful candidates will provide 4 course credits to the candidates.

#### **Course Content:**

##### **UNIT-I-Spinal Trauma**

- Spinal Trauma: Incidence, Morbidity, and Mortality
- Traditional Spinal Assessment Criteria
- Review of Spinal Anatomy and Physiology
- General Assessment of Spinal Injury
- Classifications of Spinal Injury
- Evaluation and Assessment of Spinal Cord Injury
- General Management of Spinal Injuries
- Cord Injury Presentations
- Nontraumatic Spinal Conditions
- Assessment and Management of Nontraumatic Spinal Conditions

**UNIT-II-Thoracic Trauma**

- Skeletal Injury
- Open and Closed Pneumothorax
- Tension Pneumothorax
- Heart and Great Vessel Injury
- Other Thoracic Injuries

**UNIT-III-Abdominal Trauma**

- Mechanisms of Abdominal Injury
- Specific Abdominal Injuries
- Vascular Structure Injuries
- Assessment of Abdominal Trauma
- Management of Abdominal Trauma

**UNIT-IV-Musculoskeletal Trauma**

- Classification of Musculoskeletal Injuries
- Infectious and worsening Conditions
- Recognizing extremity Trauma
- Assessment and Management of Musculoskeletal Injuries
- Injuries to upper extremities
- Lower Extremity Injuries
- Open Fracture
- Straightening Angular Fractures and Reducing Dislocations
- Referral of Patients with Minor Musculoskeletal Injury

**• Module 6-Special Considerations**

**Code-** EMEIII 04

**Prerequisites-** Successful completion of semester 3

**Credit Hours-** 5

**Objective of the Module-** The objective of this module is to provide candidates with the mental stability and strength while handling patients with abuse and neglect, patients with special challenges and home health care patients. These situations can be emotionally quite disturbing thus special training is required to be able to tackle with them. This module will help students to complete another 5 credits of the course.



**Course Content:****UNIT-I-Abuse and Neglect**

- Battering
- Elder Abuse
- Child Abuse
- Sexual Assault

**UNIT-II-Patients with Special Challenges**

- Physical Challenges
- Mental Challenges
- Pathological Challenges
- Patients with different cultures
- Critically ill Patients
- Dealing with patients suffering from Communicable Diseases
- Money matters

**UNIT-III- Acute Interventions for the Home Health Care Patient**

- Introduction to Home Health Care
- General Principles of Management
- Important Home Health Care procedures
- Special situations

- **Module 7- Ambulance Operations**

**Code-** EAOM 04

**Prerequisites-** Successful completion of semester 3

**Credit Hours-** 4

**Objective of the Module-** The objective is to familiarize candidates with precautions and actions to be taken at crime scenes, hazardous material incidents and at mass destructions. Special training and thinking are required as per the criticality of the scene situation. This module will help them to complete another 4 course credits.

**Course Content:**

**UNIT-I- Crime Scene Awareness**

- Approaching the Scene
- Dangerous Residence
- Dangerous Highway Encounters
- Violent Street Incidents
- Violent Groups and Situations
- Safety Tactics
- Tactical Patient Care
- EMS at Crime Scenes

**UNIT-II- Hazardous Materials Incidents**

- Scope of Hazardous Materials
- Laws and Regulations
- Identification of Hazardous Materials
- Personal Protective Clothing and Equipment
- Health Hazards
- Response to Hazardous Materials Emergencies
- Medical Monitoring and Rehabilitation
- Emergency Management of Contaminated Patients
- Decontamination of Rescue Personnel and Equipment

**UNIT-III-Bioterrorism and Weapons of Mass Destruction**

- History of Biological Weapons
- Serious Biological Mediators
- Ways of spreading to other healthy individuals
- Important biological difficulties
- Explosive Threats
- Department of Homeland Security
- General Guidelines for Emergency Response
- Personal Protective Equipment for Chemical, Biological, Radiological, and Nuclear Agents

**Clinical Hospital Rotations:** Documentation is a very important skill a paramedic needs to practice and work upon. During this hospital clinical training

in different departments including Adult Emergency Room, Paediatric Emergency Room, Psychiatric Unit, Anaesthesia, Operating Room, Intensive Care Unit, Paediatric Operating Room, Post Anaesthesia Recovery Room, Laboratory, Blood Bank, IV Team and Burn Care Unit candidates and expected to attain good document habits, with concise recording of patient history and physical examination and including pertinent positives and negatives. They are also expected to get familiarized with the terminologies used in hospital documentation of a case and in the Patient care report (PCR). Observation of the psychosocial and ethical issues and their management in work space environment is also expected within this clinical rotation period. Performance of basic and advance care techniques is a must and performance will be judged by duty doctor and instructor in charge for clinical hospital rotations. Successful completion will provide them 3 course credits.

**Clinical Ambulance Rotations-** This clinical Ambulance rotation are planned to give candidates an opportunity to strengthen the skills of basic, advance and paramedic EMT as a whole. Understanding the critical concept of paramedic day to day life like handling the most critical emergencies on scene and enroute to the hospital and providing basic and advance emergency care required to the patient, formulating a differential diagnosis as per patient condition, triaging and prioritization of care while managing multiple patients, systematic approach to resuscitate and stabilize a medical, trauma or surgical patients in prehospital care environment. Performance is measured by senior EMT on duty and by duty in charge instructor. Successful completion will help candidates to gain 3 more course credits.

**Student Reference Material:**

AAO's Nancy Caroline in Emergency care in the street text book

AAO's Nancy Caroline in Emergency care in the street skills work book

A.A.O's Airway Management Paramedic

A.A.O's Trauma Case studies for the Paramedic

A.A.O's Pediatric Case studies for the Paramedic

A.A.O's Anatomy and Physiology paramedic

Case Based Approach to ECG Interpretation

Pediatric Education for Pre-hospital Professionals

Simulations Health Care Training Aids

Intermediate Emergency care and transportation Student work

PHTLS Sixth Edition

Mosby's Paramedic Text Book Revised Fourth Edition

Mosby's Paramedic Work Book Revised Fourth Edition

A.A.O's Pathophysiology Paramedic

Emergency Procedures and techniques second edition

Rosin Emergency Medicine

Emergency Medicine A Comprehensive study guide

AAO'S Weapons of Mass Casualties (Field Guide)

EMS Documentation Second Edition (Field Guide)

Brady's Pre-hospital Emergency Care, Joseph J. Mistovich, Keith J.

Karren, 11<sup>th</sup> Edition

Paramedic Care: Principles and Practice, Volume 5, 5<sup>th</sup> Edition, Bryan E.

Bledsoe, Robert S. Porter, Richard A. Cherry.

### **Semester 5**

This module is a special module which teaches candidates something which they should follow lifelong when working as a paramedic i.e. continuous education. Updating your current knowledge in EMS is very important aspect while working as paramedic and this module completely focus on continuous education. Starting with various certification courses this module give candidates an insight on EMS research by starting with their bachelor's thesis.

- **Module 1-** AHA Basic Life Support

**Code-** EBLS 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 1

**Objective of the Module-** The objective is to equip candidates with prompt recognition of acute emergencies, delivering effective CPR, timely application and shock delivery using AED. This course is just of 1 course credit but will help the students to build the foundation of paramedic studies.

#### **Course Content:**

- Measures for an effective CPR

- One and two rescuer CPR for all ages
- The AHA Chain of Survival with respect to BLS course
- Using AED
- Barrier devices and providing effective ventilation using them
- Significance of team work, team member and team leader
- Chocking in adults, children and infants

- **Module 2-** AHA Advance Cardiovascular Life Support

**Code-** EACLS 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 2

**Objective of the Module-** The objective is to emphasize the importance of all the skills included in BLS course. Apart from that this course also deals with importance of team dynamics and clear instructions to the team member, recognizing and treating cardiopulmonary arrest, treatment protocols of serious dysrhythmias, post cardiac arrest care, Acute coronary syndrome and stroke. This course is of 2 course credits.

**Course Content:**

- Review of BLS skills
- Respiratory arrest versus cardiac arrest- assessment and management
- Peri-arrest conditions- assessment and management
- Basic and advance airway management
- Pharmacological intervention
- Stroke assessment and management
- ACS assessment and management
- Team dynamics- Role as team member and as a team leader

- **Module 3-** AHA Pediatric Advance Life Support

**Code-** EPALS 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 2

**Objective of the Module-** The objective is to indulge a structured approach to pediatric assessment, BLS skills for effective resuscitation, to follow PALS care algorithms, and team dynamics. Course goal to increase improved outcomes by

providing high quality emergency care to children and infants. This course gives an opportunity to complete 2 more course credits.

**Course Content:**

- BLS skills- Children and infants
- Recognizing seriousness if illness
- CPR and AED application in case of cardiac arrest
- Team dynamics- Role as team member and also as a leader
- Respiratory distress versus respiratory failure- recognition and early interventions
- Compensated and decompensated shock- recognition and early interventions
- Unstable and stable patient-clinical presentation and treatment protocols of various dysrhythmias
- Post cardiac arrest care

• **Module 4-** International Trauma Life Support

**Code-** EITLS 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 2

**Objective of the Module-** The objective of this course is to impart basic knowledge for safe transfer of trauma victim from scene to medical facility. Apart from that course also focus on the recognition of MOI, Rapid trauma assessment, treatment strategies for trauma patients, appropriate stabilization and transportation of trauma victim, recognizing “load and go” patients and “stay and play” patients and this course allows students to complete 2 more course credits.

**Course Content:**

- Introduction
  - Scene safety
  - Rapid trauma assessment and immediate management of life or limb threatening presentations
- Basic and advance airway management
- Types of shocks and treatments in trauma patients

- Miscellaneous trauma presentations
  - Head Trauma
  - Spinal Trauma
  - Thoracic Trauma
  - Abdominal Trauma
  - Extremity Trauma
- Assessment and Management of burns patient
- Special Situations
  - Trauma in Pregnancy
  - Trauma in paediatrics
  - Trauma in geriatrics
  - The Impaired Patient
  - Traumatic Arrest- recognition and management

- **Module 5- Advance Life support Obstetrics**

**Code-** EALSO 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 2

**Objective of the Module-** The objective of this course is to equip the candidates with the skills for effective management of obstetric emergencies. This course also encourages a standardized team-based approach amongst health care providers and other members of the maternity care team to improve patient safety and positively impact maternal outcomes. This course is of 2 course credits.

**Course Content:**

- Pregnancy complications
- First trimester complications
- Complications late in pregnancy
- Medical complications of pregnancy
- Labour dystocia
- Shoulder dystocia
- Malpresentations
- Multiple gestations
- Assisting in vaginal delivery

- Intrapartum fetal surveillance
- Postpartum haemorrhage
- Maternal resuscitation and trauma
- Safety in maternity care
- Third and fourth degree perineal lacerations
- Diagnostic ultrasound in labour and delivery
- Neonatal Resuscitation
- Caesarean delivery
- Birth Crises

- **Module 6- Assessment Based Management**

**Code-** EABM 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 3

**Objective of the Module-** The objective is to review everything read during the period of 2.5 years in a skill-based learning environment with the help of role plays and scenario-based simulation learning. This course also gives candidates a platform to discuss the cases handled during hospital and ambulance rotations and allows them to complete another 3 course credits.

**Course Content:**

Course content of this course is the study and management of emergencies of various types. Just to name a few important one are listed as follows:

- Respiratory emergencies
- Cardiovascular emergencies
- Allergic reactions
- Poisoning and overdose emergencies
- Gynaecological emergencies
- Obstetric emergencies
- Neurological emergencies
- Behavioural emergencies
- Infectious and communicable emergencies
- Environmental emergencies
- Spinal trauma



- Head and neck injuries
- Musculoskeletal injuries
- Soft tissue injuries
- Thoracic injuries
- Abdominal injuries
- Extremity injury
- Pelvic dislocation.
- Multicausality incident
- Miscellaneous emergencies

- **Module 7- Research Skills and Methods**

**Code-** ERSM 05

**Prerequisites-** Successful completion of semester 4

**Credit Hours-** 5

**Objective of the Module-** To recognize the fundamentals of research and conduct a structured study. To determine the importance and usability of scientific text and yield an academic text. To know process research knowledge in the research report format and illustrate research findings in a proficient style.

**Course Content:**

- Ethical issues & measures of good research project
- Methods of conducting research
- Policies and tactics of research
- Quantitative research methods
- Qualitative research methods
- Action research; Case study
- Progression of the research
- Research discourse
- Process writing

**Student Resource Materials:**

Log books

AHA BLS Healthcare Providers Manual

AHA ACLS Providers Manual

ITLS for the Advanced Provider Manual

AHA PALS Providers Manual

ALSO Providers Manual

Quantitative Research and Evaluation Methods, 3<sup>rd</sup> edition by Michael Quin Patton.

### **Clinical Ambulance Rotations:**

These clinical ambulance rotations are planned for complete two months to give them confidence and hands on experience to handle any emergency and provide an appropriate emergency care. Candidates will be working with another EMT on duty but will be working towards improvement of their skills as a paramedic. They are expected to work on their soft skills, basic and advance care skills, coming up with differential diagnosis etc. With the successful completion candidates will be able to complete 6 more course credits.

### **Semester 6**

This module is also a part of continuing education and is designed to give candidates an opportunity to excel their upcoming carrier as EMS faculty. Candidates can excel and get experience in tutoring by tutoring for these five specific courses and once they finish the program successfully interested and eligible candidates can work as a faculty member in different organizations. Also, they need to submit their bachelor's thesis before getting the course completion certificate.

### **Instructor Certification Courses:**

These courses are for professionals to conduct training in specific field of intrust. If the candidate is passionate about saving lives, motivated to facilitate learning, feel comfortable in group settings, and find it easy to make complex concepts understandable to others, (having an instructor potential) then he/she is a perfect candidate for the instructor courses. Candidate must complete a provider status in the specific discipline and then after should pass discipline specific instructor course in the classroom. After the successful completion of the instructor program candidate must be successfully monitored tutoring the same course within the timeframe of 6 months.

These courses are optional courses and doesn't add any academic value but are good for candidates wanting to make their professional carrier in the field of learning and development. All the terms and conditions of the governing body necessary to complete the instructor courses will be followed and only suitable candidates will be issued with instructor completion certificate. Instructor courses are available in all the mentioned five discipline and candidates can choose to do all the instructor courses or even can choose the specific area of individual intrust.

### **Six Months Clinical Rotation:**

The clinical internship program is designed to evaluate the student's abilities and knowledge with the practices and procedures of Emergency Medical Technician (Paramedic), allowing them to perform, under supervision, in routing medical emergencies. In final semester clinical rotation is only in the ambulance however ambulance drive in BLS and ALS units will be rotating over a period to provide exploration of all types of cases to all candidates. During the six months rotations candidates shall focus to get expertise in following core skill competencies of a paramedic and can complete their 18 course credits:

#### **Skills Competencies**

- Breathing Assessment
  - Lung sounds
    - Normal
    - Wheezing
    - Coughing
    - Rales
    - Rhonchi
  - Bilateral presence
  - Rate
  - Quality
- Pulse Assessment
  - Radial
  - Brachial
  - Femoral

- Pedis Dorsalis
    - Rate
    - Quality
- Pupil Assessment
  - Size
  - Reactivity
- Skin Assessment
  - Colour
  - Temperature
  - Texture
- Blood Pressure Assessment
- Long Spine Board
- Patient transfer
- Applying Cardiac Electrodes
- IV Fluid Set-up
- Bag Valve Ventilation
  - Oropharyngeal Airway Insertion
  - Nasopharyngeal Airway Insertion
  - Supplemental Oxygen Administration
- Basic Airway Control
  - Head-tilt, Chin Lift
  - Oxygen Administration – Adults – Children – Infants
    - Various masks and concentrations
    - Stoma oxygen administration
- Suctioning
  - Oropharyngeal Technique
  - Stoma Technique
- CPR
- Patient Assessment
  - Level of Consciousness
  - Asking for patients chief complaints
  - Duration and severity of present illness
  - History taking
  - Allergies
  - Current medications

- Physical examination
- SAMPLE history
- Bleeding Control
- Bandaging and Splinting
- Spinal Immobilization
- Triage
- Rapid Trauma Assessment
- AED application and operation
- Assisted Medication Administration
- OB Assessment
- Delivery
- Neonatal management
- Control Sucking Chest Wounds
- Amputation Management
- Diabetic Emergencies
  - Administration of oral glucose
  - Manage hypoglycaemic emergencies
- Poisoning Assessments
- Heat Exposure Emergencies
- Near Drowning Emergencies
- OB Emergencies
- Post Delivery Care
- Internal Bleeding Management
- Haemorrhagic Shock Management
- Allergic Reaction Management
- Abdominal Injury Management
- Neck and Back Injury Management
- Glucometer
- Temperature Monitoring
- Pulse oximetry

**Advanced Airway Skills Competencies**

- Assessing Patients for Adequate Ventilation
- Insertion of Oral and Nasal Airway
- Identification of Intubations Equipment

- Identification of Appropriate Anatomical Landmarks
- Perform Endotracheal Intubation
- Assess Lung Sounds for Proper Placement Verification
- Monitor Adequate Ventilation for Intubated Patients
- Use Sellick Maneuver
- End-tidal CO<sub>2</sub> Detection
- Extubation
- Placement of Multi-lumen Airway
- Use of automatic Ventilation Systems
- Cricothyroidotomy
- Trans-tracheal Jet Ventilation
- Needle Decompression of Chest

#### **Medication Administration Skills Competencies**

- Assessing Patients for Adequate Percussion
- Perform Drug Administration Calculation and Conversions
- Perform Enteral Drug Administration
  - Oral
  - Gastric Tube
  - Rectal
- Perform Parenteral Drug Administration
  - IV Bolus
  - SQ
  - IM
  - ID
  - IO
    - Mix
    - Prepare
    - Administer
- Percutaneous Medication Administration
  - Topical
  - Sublingual
  - Buccal
  - Inhaled
    - Metered Dose Inhaler
    - Hand-Held Nebulizer

- Monitor Patients following Drug Administration

### **Intravenous Access Skills Competencies**

- Assessing Patients for Adequate Perfusion
- Calculate Infusion Rates using Mini and Macro Drip Sets
- Prepare IV Fluids for Administration
- Insertion of KVO Line
- Insertion of Administration Line
- Insertion of External Jugular Line
- Insertion of IO Line
- Insertion of Saline Lock
- Establishment of Piggyback Medications
- Operation of IV Pump
- Operation of Syringe Pump

### **Cardiac Skills Competencies**

- Assessing Patients for Cardiac Monitoring
- Place Patients on 3 or 4 lead Monitors
- Place patient on 12 Lead Monitor
- Identify Arrhythmias and Abnormalities
- Perform Defibrillation
- Perform Synchronous-Cardioversion
- Perform Transcutaneous-Pacing
- Identify Proper Treatment For:
  - Ventricular Fibrillation
  - Ventricular Tachycardia
  - Symptomatic Bradycardia
    - Sinus Bradycardia
    - General Heart Blocks
  - Stable – Unstable SVT
  - PEA
  - Chest Pain – MI patients

### **Obstetrics Skills Competencies**

- Assessing OB Patients Pre-delivery
- Perform Delivery Skills – Uncomplicated Pregnancy
- Identify Proper Intervention for Abnormal Delivery

- Perform Postpartum Care
- Perform Neonatal Support Post Delivery
  - APGAR Scoring
  - Perfusion assessment
  - Ventilation Support
- Identify Proper Treatment for Neonatal Distress
  - Resuscitative Interventions
  - Breathing Inadequacies

### **Final Thesis Compilation and Submission:**

Candidates will get a complete year to choose the topic of individual interest and work on it. During the period of developing the thesis project the thesis supervisor will guide them through face to face meetings and online discussions and again before the final submission an instructor will review the thesis project to complete it successfully and obtain 15 more course credits. The evaluation criteria discussed earlier in the curriculum will be followed for grading the thesis project.

### **Instructional Methods:**

1. Classroom lectures
2. Practical sessions
3. Simulation Sessions
4. Role plays
5. Classroom Quizzes
6. Demonstrations (incl., video/visual aids)
7. Group and individual assignments
8. Study Visits (Cadaver lab, BLS and ACLS ambulances)
9. Hospital rotations
10. Ambulance Rotations

### **Evaluation**

The final grades for all the courses will be based on:

1. Attendance

10%



2. Group Assignment	15%
3. Individual Assignments	10%
4. Conduct and Class Engagement	5%
5. Theoretical Examination	25%
6. Practical Examination	25%
7. Study visits, ambulance and hospital rotations	10%

Evaluation of the fifth semester courses (BLS, ACLS, PALS, ITLS and ALSO) will be based on evaluate on criteria of course specific training body. All the rules and regulations of governing training body will be followed, and only successful candidates will be awarded with the completion card and certificate. Candidates who need more improvement in the skills need to retake the examinations after studying it for one month. In case if few candidates still don't meet the requirement of the course they need to retake the whole course again.

Research skills and methods course (semester 5) will be evaluated on the basis on group and individual assignments and doesn't requires any written or practical examination. This course is to assist the candidates to complete their thesis effectively.

## Course Structure of Eleven Different universities and Colleges.

**Table 1:** Course Structure of Victoria University, Australia.

<b>Victoria university, Australia (001)</b>	
Year 1	<ul style="list-style-type: none"> <li>• Anatomy Physiology-1</li> <li>• Anatomy Physiology-2</li> <li>• Principles of pharmacology</li> <li>• Foundations of Professional Paramedic Practice</li> <li>• Prehospital Ethical and Legal issues</li> <li>• Australian Health and Social Care Systems and Policy</li> <li>• EMT- Paramedic Medical Training 1</li> <li>• EMT- Paramedic Medical Training 2</li> </ul>
Year 2 Sem 1	<ul style="list-style-type: none"> <li>• Introduction to Research Methods</li> <li>• Social Epidemiology</li> <li>• Medical Emergencies-1</li> <li>• EMT-Paramedic Medical Training 3</li> </ul>
Sem 2	<ul style="list-style-type: none"> <li>• Evidence Based Practice</li> <li>• Trauma Emergencies</li> <li>• Medical Emergencies-2</li> <li>• Paramedic Medical Training 4</li> </ul>
Year 3 Sem 1	<ul style="list-style-type: none"> <li>• Mental Health and Mental Illness</li> <li>• Special Populations</li> <li>• Paramedic Medical Training 5</li> <li>• Health Promotion</li> <li>• Career and Professional Development</li> <li>• Pinnacle Venture</li> </ul> <div style="text-align: right; margin-right: 20px;"> <span style="font-size: 2em;">{</span> Any One <span style="font-size: 2em;">}</span> </div>
Sem 2	<ul style="list-style-type: none"> <li>• Health and Welfare of paramedic</li> <li>• Major Incidents</li> <li>• Paramedic Medical Training 6- Prolonged Training</li> <li>• Health Program Planning &amp; Evaluation</li> <li>• Career and Professional Development</li> <li>• Pinnacle Venture</li> </ul> <div style="text-align: right; margin-right: 20px;"> <span style="font-size: 2em;">{</span> Any One <span style="font-size: 2em;">}</span> </div>

**Table 2:** Course Structure of Whitireia university, New Zealand.

<b>Whitireia university, New Zealand (002)</b>	
Year 1	<ul style="list-style-type: none"> <li>• Anatomy and physiology 1</li> <li>• Anatomy and physiology 2</li> <li>• Introduction to Healthcare in AotearoaNZ</li> <li>• Trauma/ Medical 1</li> <li>• Introduction to Paramedic Practice</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Trauma/ Medical 2</li> <li>• Altered Cognitive States (Special Populations)</li> <li>• Trauma/ Medical 3</li> <li>• Research and Evidence Based Practice</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Trauma/ Medical 4</li> <li>• Professional Practice</li> <li>• Cardiology</li> <li>• Integration/ Transition</li> </ul>

**Table 3:** Course Structure of St. George's University of London.

<b>St. George's University of London (003)</b>	
Year 1	<ul style="list-style-type: none"> <li>• Paramedic science</li> <li>• Introduction to medical care provided by paramedics</li> <li>• Practical medical Care for Paramedics</li> <li>• Clinical training 1</li> <li>• Hospital Placement</li> <li>• Ambulatory Placement</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Practical Paramedic science</li> <li>• Serious illnesses and their management</li> <li>• Prehospital care approach towards mental health</li> <li>• Clinical Training 2</li> <li>• Ambulatory Placement</li> <li>• Hospital Placement</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Paramedic Approach and Management for Hospital Avoidance</li> <li>• Paramedic Practice</li> </ul>

	<ul style="list-style-type: none"> <li>• Evidence Based Training</li> <li>• Non serious medical conditions- Assessment and management</li> <li>• Ambulatory Placement</li> <li>• Community Placement</li> </ul>
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**Table 4:** Course Structure of Greenwich University, UK.

<b>Greenwich University, UK (004)</b>	
Year 1	<ul style="list-style-type: none"> <li>• Courses NOT found</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Learning while training 1</li> <li>• Enhanced Patient Assessment</li> <li>• Leadership in Practice</li> <li>• Research skills and methods</li> <li>• Ethical, Legal and Psychosocial Aspects of Paramedic Practice</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Learning while training 2</li> <li>• Research Project</li> <li>• Minor illness and injury- Assessment and Management</li> <li>• Transition to Autonomous Paramedic Practice</li> </ul>

**Table 5:** Course Structure of Western Carolina University, USA.

<b>Western Carolina University, USA (005)</b>	
Year 1	<ul style="list-style-type: none"> <li>• English or Physics</li> </ul>
Sem 1	<ul style="list-style-type: none"> <li>• Human Anatomy &amp; Physiology I</li> <li>• General Chemistry</li> <li>• Math or Higher</li> <li>• General Psychology Recommended</li> </ul>
Sem 2	<ul style="list-style-type: none"> <li>• English or Physics</li> <li>• Human Anatomy &amp; Physiology II</li> <li>• Advanced General Chemistry</li> <li>• Intro. to Emergency Medical Care</li> <li>• Basic Emergency Medical Techniques</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• English or foundation communication</li> </ul>

Sem 1          Sem 2	<ul style="list-style-type: none"> <li>• Organic Chemistry I</li> <li>• Introductory Physics I</li> <li>• Liberal Studies</li> <li>• Liberal Studies</li> <li>• English or foundation communication</li> <li>• Organic Chemistry II</li> <li>• Introductory Physics II</li> <li>• Med. Term. Recommended</li> <li>• Liberal Studies</li> </ul>
Year 3 Sem 1          Sem 2	<ul style="list-style-type: none"> <li>• Introduction to Pharmacology</li> <li>• Pharmacology Techniques</li> <li>• Introduction to Clinical Medicine</li> <li>• Introduction to Clinical Medicine Lab</li> <li>• Basic ECG Interpretation Clinical Practicum I</li> <li>• Liberal Studies</li> <li>• Health, Nutrition, &amp; Wellness</li> <li>• Cardiology</li> <li>• Cardiology Lab</li> <li>• Fluids &amp; Respiratory Emergencies</li> <li>• Advanced Emergency Medical Tech.</li> <li>• Medical Emergencies</li> <li>• Clinical Practicum II</li> <li>• Legal &amp; Legislative Aspects of HC</li> <li>• Liberal Studies</li> </ul>
Year 4 Sem 7          Sem 8	<ul style="list-style-type: none"> <li>• Trauma Management</li> <li>• Maternal Child Emergency Care</li> <li>• Maternal Child Emergency Care Lab</li> <li>• Special Needs Patients</li> <li>• Advanced ECG Interpretation</li> <li>• Critical Cardiac &amp; Resuscitation Management.</li> <li>• Clinical Practicum III</li> <li>• Research Methodology &amp; Analysis</li> <li>• Simulation Lab</li> </ul>

	<ul style="list-style-type: none"> <li>• MICU Practicum</li> <li>• Senior Seminar</li> <li>• Electives</li> </ul>
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**Table 6:** Course Structure of University of South Alabama, USA.

<b>University of South Alabama, USA (006)</b>	
Year 1	<ul style="list-style-type: none"> <li>• Language learning- English I</li> <li>• Language learning- English II</li> <li>• Soft skills</li> <li>• Lab Science Elective</li> <li>• Fine Arts</li> <li>• Finite Math</li> <li>• General Psychology</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Medical Terminology</li> <li>• Intro to EMS Systems</li> <li>• EMT Emergency Care</li> <li>• Advanced EMT</li> <li>• Human Systems and Pathology</li> <li>• Disaster Management</li> <li>• EMT and Advance EMT Skills Lab</li> <li>• EMT and Advance EMT Clinical Internship</li> <li>• Elective Studies</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Foundations of Paramedicine</li> <li>• Intro to EMS Cardiology</li> <li>• Patient Assessment &amp; Operations</li> <li>• Paramedical Clinical I &amp; 2</li> <li>• EMS Administration</li> <li>• Special Populations in EMS</li> <li>• Paramedic Emergency Care I &amp; II</li> <li>• Paramedic Skills Lab</li> <li>• Laws and Legal Issues</li> <li>• Issues and Trends in EMS</li> <li>• Health Insurance</li> </ul>

	<ul style="list-style-type: none"> <li>• Intro to Computer Applications</li> <li>• Paramedic Internship</li> </ul>
Year 4	<ul style="list-style-type: none"> <li>• Instructional Methods in EMS</li> <li>• EMS Research</li> <li>• Internship</li> <li>• Management Theory</li> </ul>

**Table 7:** Course Structure of Wisconsin Indianhead Technical College (W.I.T.C), USA.

<b>Wisconsin Indianhead Technical College (W.I.T.C), USA (007)</b>	
Year 1	<ul style="list-style-type: none"> <li>• EMS Fundamentals</li> <li>• Paramedic Medical Principles</li> <li>• Pharmacology for paramedics</li> <li>• Respiratory emergency assessment and management</li> <li>• Cardiology for paramedics</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Advance Patient Assessment Principles</li> <li>• Resuscitation protocols- Basic and advance</li> <li>• Medical Emergencies</li> <li>• Trauma Emergencies</li> <li>• Special Populations</li> <li>• Paramedic Portfolio 1</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• EMS Operations</li> <li>• Paramedic Portfolio 2</li> <li>• Paramedic Capstone</li> <li>• Paramedic Clinical/Field 2</li> </ul>
	<p><b>Additional Courses:</b></p> <ul style="list-style-type: none"> <li>• Medical Terminology</li> <li>• English Composition 1</li> <li>• Intro to College Writing</li> <li>• Math for Health Professionals</li> <li>• PreAlgebra</li> <li>• General Anatomy and Physiology</li> </ul>

	<ul style="list-style-type: none"> <li>• Introduction to Sociology or Introduction to Diversity Studies</li> <li>• Advanced Anatomy and Physiology</li> <li>• Introduction to Psychology</li> <li>• Oral/Interpersonal Communication OR Technical Reporting OR Speech</li> <li>• Microbiology</li> </ul>
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**Table 8:** Course Structure of Emergency management and Research Institute (EMRI), India.

<b>Emergency management and Research Institute (EMRI), India (008)</b>	
Year 1 Sem 1	<ul style="list-style-type: none"> <li>• Human Anatomy, Physiology and Clinical Biochemistry</li> <li>• History and Physical Examination</li> <li>• Patient Assessment</li> <li>• Pharmacology</li> <li>• Basic Airway Management</li> <li>• Communication skills in English</li> <li>• Fundamentals of Information Technology</li> <li>• Soft Skills</li> </ul>
Sem 2	<ul style="list-style-type: none"> <li>• Trauma and orthopaedic Emergencies</li> <li>• Cardiovascular Emergencies</li> <li>• Gynaecology and Obstetrics Emergencies</li> <li>• Paediatric Emergencies</li> <li>• Psychiatric Emergencies</li> <li>• Advance Airway Management</li> </ul>
Year 2 Sem 1	<ul style="list-style-type: none"> <li>• Medical Emergencies</li> <li>• Patients with Special Needs</li> <li>• EMS Operations</li> <li>• EMS Research and Management</li> </ul>
Sem 2	<ul style="list-style-type: none"> <li>• Hospital Clinical Posting 1</li> <li>• Hospital Clinical Posting 2</li> </ul>



	<ul style="list-style-type: none"> <li>• Ambulance Clinical Posting 1</li> <li>• Ambulance Clinical Posting 2</li> </ul>
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**Table 9:** Course Structure of Glasgow Caledonian University, Scotland.

<b>Glasgow Caledonian University, Scotland (009)</b>	
Year 1	<ul style="list-style-type: none"> <li>• Basics of paramedic studies (Ambulance orientation and awareness)</li> <li>• Interprofessional communication</li> <li>• Human physiology</li> <li>• Evidence based learning</li> <li>• Clinical rotations 1</li> <li>• Fundamentals of emergency care</li> </ul>
Year 2	<ul style="list-style-type: none"> <li>• Clinical Life Sciences in Paramedic Practice</li> <li>• Clinical rotations 2</li> <li>• Structured Care in Paramedic Science</li> <li>• Medical emergencies- paramedic management</li> <li>• Evidence based learning</li> <li>• Paediatrics and Obstetrics- paramedic management</li> <li>• Mental Health Care – paramedic management</li> </ul>
Year 3	<ul style="list-style-type: none"> <li>• Evidence based practical learning</li> <li>• Clinical assessment and decision making</li> <li>• Clinical rotation 3</li> <li>• Trauma Emergencies</li> <li>• Paramedic as an mentor or leader</li> </ul>

**Table 10:** Course Structure of Jefferson College, Florida.

<b>Jefferson College, Florida (010)</b>	
Year 1 Sem 1	<ul style="list-style-type: none"> <li>• Intro to College: Strategies for Academic Success</li> <li>• Anatomy and Physiology for Pre-Hospital Healthcare</li> <li>• Fundamentals of Communications</li> </ul>

Sem 2	<ul style="list-style-type: none"> <li>• Basic - Emergency Medical Technician I</li> <li>• Advance- Emergency Medical Technician II</li> <li>• Emergency Medical Technician Clinical/Internship I</li> <li>• English Composition</li> <li>• US History I</li> <li>• US History II</li> <li>• US and MO Governments and Constitutions</li> <li>• BIO; CHM: PHY</li> <li>• General Psychology</li> <li>• Computer Concepts and Applications</li> <li>• Pre-Paramedic Training</li> </ul>
Year 2 Sem 1       Sem 2	<ul style="list-style-type: none"> <li>• Paramedic Advanced Care and Terminology</li> <li>• Paramedic Pharmacology</li> <li>• Paramedic Medical Emergencies</li> <li>• Paramedic Advanced Cardiology</li> <li>• Paramedic Clinical Practicum I</li> <li>• Paramedic Internship I</li> <li>• Paramedic Trauma Emergencies</li> <li>• Paramedic Special Considerations</li> <li>• Paramedic Ambulance Operations</li> <li>• Paramedic Clinical Practicum II</li> <li>• Paramedic Internship II</li> </ul>

**Table 11:** Course Structure of National Highway Traffic Safety Administration, USA.

