

Prince Sultan Bin Abdul Aziz College for Emergency Medical Services

King Saud University

Bachelor of Science in Emergency Medical Sciences (BS EMS) – program

Study Plan

Overall length of the program: 5 years

Length of academic term in weeks: 15 weeks

Type of credits is: semester

First Common Year					
FIRST SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	Pre-requisite
CT 101	Computer Skills			3	
EPH 101	Health Education & Fitness			1	
CUR 101	University Skills			3	
ENGL 107/108/109	English			6	
STAT 109	Biostatistics	3			
SECOND SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
ZOOL 109	General Zoology			3	
PHYS 109	General Physics			4	
CHEM 109	Organic Chemistry for Health Sciences			3	
ENGL 114/115/116	English for Medical Purposes			6	
Total credit hours		32			
THIRD SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	Pre-requisite
EMS 211	Emergency Medical Technician	4	2	6	
EMS 212	EMS Communication and Documentation	2	0	2	
EMS 213	Anatomy & Physiology for Emergency Care	3	1	4	
EP 325	Fitness for Work Performance	2	0	2	
IC 107	Islamic course	2	0	2	
Total semester credit hours		16			
FOURTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 221	Introduction to Advanced Emergency Care	2	0	2	EMS 211
EMS 222	EMS Pulmonology and Airway Management	3	1	4	EMS 211
EMS 223	Patient Assessment	2	1	3	EMS 211
EMS 224	Emergency medications	2	1	3	EMS 211
EMS 227	Clinical Practice -I	0	3	3	EMS 211
EMS 226	Pathophysiology for Emergency Care	3	0	3	EMS 213
Total semester credit hours		18			

FIFTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	Pre-requisite
EMS 311	Medical Emergencies in EMS	5	1	6	EMS 223
EMS 312	EMS Cardiology	3	1	4	EMS 224
EMS 313	Public Health and Safety for EMS Specialists	2	0	2	EMS 221
EMS 314	Clinical Practice -2	0	3	3	EMS 227
IC 106	Islamic course	2	0	2	
Total semester credit hours		17			
SIXTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 321	Trauma Emergencies in EMS	4	2	6	EMS 223
EMS 322	Mental Health and Special Considerations in emergencies	4	1	5	EMS 311
EMS 324	Clinical Practice- 3	0	3	3	EMS 314
IC 100	Islamic course	2	0	2	
ARAB 103	Expository Writing	2	0	2	
Total semester credit hours		18			
SEVENTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 411	Neonatal and Pediatric Emergencies	2	1	3	EMS 322
EMS 412	EMS Operations and Rescue	1	1	2	EMS 321
EMS 413	Clinical Decision Making in EMS	0	2	2	EMS 223
EMS 414	Mass Gathering and Disaster Management	3	0	3	EMS 321
EMS 415	Clinical Practice- 4	0	3	3	EMS 324
IC 105	Islamic course	2	0	2	
Total semester credit hours		15			
EIGHTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 421	Critical and Intensive Care Practice	3	2	5	EMS 413
EMS 422	EMS Education	3	0	3	EMS 413
EMS 423	EMS Research and Evidence Based Practice	2	0	2	EMS 413
EMS 424	EMS Management & Leadership	2	0	2	EMS 414
EMS 425	Clinical Practice- 5	0	3	3	EMS 415
EMS 426	Mass Gathering Field Practice	0	4	4	EMS 227
Total semester credit hours		19			
Total Program credit hours		135 (125+10)			
First Common Year		32			
Total EMS subjects credits		93			
Islamic and Arabic language courses credits		10			
Note: At the end of 4 th year students will undergo one year internship at clinical and field settings					

Course Descriptions

THIRD SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	Pre-requisite
EMS 211	Emergency Medical Technician	4	2	6	
EMS 212	EMS Communication and Documentation	2	0	2	
EMS 213	Anatomy & Physiology for Emergency Care	3	1	4	
EP 325	Fitness for Work Performance	2	0	2	
IC 107	Islamic course	2	0	2	
Total semester credit hours		16			

EMS 211 (Emergency Medical Technician) (4+2+0=6 credits):

This course is designed to develop a student to entry level Emergency Medical Technician (EMT). This will cover knowledge, skills and attitude necessary for the individual to provide emergency medical care at a basic life support level with an ambulance service or other specialized service. This will also provide student clinical and field exposure necessary to qualify as an Emergency Medical Technician.

This course begins with *Basic Life Support (BLS) Provider* certification from *American Heart Association*

EMS 212 (EMS Communication and Documentation) (2+0+0=2credits):

This course will also discuss the systems, modes and techniques of effective EMS communications. This will also cover comprehensive knowledge of accurate Patient Care Report, communication with other health care professionals, team communication and dynamics and current trends in documentation and communication technology.

EMS 213 (Anatomy and Physiology for Emergency Care) (3+1+0=4 credits):

The Anatomy and Physiology course is specifically designed to introduce the fundamental terminology, structure and function of the human body. The main emphasis of this course will be on the major organ systems and their association with health and disease. After the completion of this course, the student will be able to identify and distinguish between the structures and functions of the body.

EP 325 (Fitness for Work Performance) (2+0+0=2 credits):

This course aims to provide students with the knowledge and skills necessary to improve performance while working in various careers by identifying the nature of the work and the minimum level of physical fitness required to perform the functions of different works including assessment and development.

FOURTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 221	Introduction to Advanced Emergency Care	2	0	2	EMS 211
EMS 222	EMS Pulmonology and Airway Management	3	1	4	EMS 211
EMS 223	Patient Assessment	2	1	3	EMS 211
EMS 224	Emergency medications	2	1	3	EMS 211
EMS 227	Clinical Practice -I	0	3	3	EMS 211
EMS 226	Pathophysiology for Emergency care	3	0	3	EMS 213
Total semester credit hours		18			

EMS 221 (Introduction to Advanced Emergency Care) (2+0+0=2 credits):

This course is the introductory phase into advanced emergency care from an EMS specialist's perspective. This course will include major topics such as the physical, mental and social health of the EMS professional, EMS systems, Roles and Responsibilities of the EMS specialist, Illness and Injury Prevention, Medico-legal and ethical aspects of advanced emergency care. A special focus is also given to professionalism and professional attributes in EMS practice. (Prerequisite is EMS 211).

EMS 222 (EMS Pulmonology and Airway Management) (3+1+0=4 credits):

This course will discuss the pulmonary system anatomy, physiology and pathophysiology. This course will cover advanced airway management, advance airway techniques, ventilation techniques and ventilation assisted devices. This course will also cover understanding and interpreting capnography and arterial blood gases. We will also explore and discuss current trends and special considerations in respiratory care and airway management. (Prerequisite is EMS 211).

EMS 223(Patient Assessment) (2+1+0=3 credits):

This course will introduce the student to the patient assessment including history taking and physical examination, ongoing assessment, and how to integrate gained information into a working field impression and summarize a treatment /disposition plan. (Prerequisite is EMS 211).

EMS 224 (Emergency medications) (2+1+0=3 credits):

This course will present the student with EMS pharmacology. This course will discuss principles of pharmacology, pharmacokinetics, and pharmacodynamics and pharmacology classifications. It also covers specific emergency medications and pharmacological management of pain. This course will prepare the student to safely administer medications by lecture, demonstration and practice. (Prerequisite is EMS 211).

EMS 226 (Pathophysiology for Emergency care) (3+0+0=3 credits):

This course includes fundamentals of general and systemic pathophysiology such as cellular environment, tissue injury, inflammation, hypoperfusion, self-defense mechanisms, most common systemic diseases, genetics and familial diseases, variances in immunity and inflammation, stress and disease. At the completion of this course, the student will be able to

apply the concepts of general and systemic pathophysiology for the assessment and management of emergency patients.

(Prerequisite is EMS 213)

EMS 227 (Clinical Practice I) (0+0+3=3 credits):

This course will consist of scheduled field rotations. The student will be able to participate in emergency health care at ambulance settings by applying hands on skills. The student will be expected to actively participate in and experience patient assessment and patient care based on scope of practice of an Emergency Medical Technician. (Prerequisite is EMS 211).

FIFTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	Pre-requisite
EMS 311	Medical Emergencies	5	1	6	EMS 223
EMS 312	EMS Cardiology	3	1	4	EMS 224
EMS 313	Public Health and Safety for Paramedics	2	0	2	EMS 221
EMS 314	Clinical Practice -2	0	3	3	EMS 227
IC 106	Islamic course	2	0	2	
Total semester credit hours		17			

EMS 311 (Medical Emergencies) (5+1+0=6 credits):

This course will discuss the pathophysiology, assessment and management of most common types of medical emergencies related to human body systems. This will cover Pulmonary emergencies, Neurological, Endocrinological, Allergic, Gastroenterological, Urological, Morphological and Toxicological Emergencies, Hematological, Environmental and Wilderness emergencies, Psychiatric, Behavioral emergencies. It will also cover Infections and Communicable Diseases, , current trends in emergency care and chief complaint based management of common medical complaints. Special emphasis is also given to the assessment and management of pain.

During this course the student will also prepared to be an *Advanced Medical Life Support Provider*. (Prerequisite is EMS 223).

EMS 312 (EMS Cardiology) (3+1+0=4 credits):

This course will discuss the cardiovascular system anatomy, physiology, pathophysiology and general assessment of a patient with cardiovascular diseases. This will also discuss monitory and 12 lead ECG interpretation and dysrhythmia management, assessment and management of common cardiovascular emergencies and diseases based on the evidence based practice in Emergency Cardiovascular Care.

During this course student will prepared to be an *Advanced Cardiovascular Life Support Provider*. (Prerequisite is EMS 224).

EMS 313 (Public Health and Safety for EMS Specialists) (2+0+0=2 credits):

This course will introduce the students to the fundamentals of public health and safety. This will prepare students to contribute to prevent disease and promote health by participating in public health promotion activities such as public health education for injury prevention and safety,

vaccination. This subject will also cover community health and rural health care including rural EMS and remote health care.
(Prerequisite is EMS 221).

EMS 314 (Clinical Practice II) (0+0+3=3 credits):

This clinical practice will specially focus on advanced airway management, medication administration and patient assessment skills. It consists of scheduled clinical rotations at Operation Room, Emergency Room and IV Room.

During this course students will be certified as *Advanced Cardiovascular Life Support Provider* from American Heart Association and *Advanced Medical Life Support Provider*. (Prerequisite is EMS 227).

SIXTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 321	Trauma Emergencies	4	2	6	EMS 223
EMS 322	Mental Health and Special Considerations in emergencies	4	1	5	EMS 311
EMS 324	Clinical Practice- 3	0	3	3	EMS 314
IC 100	Islamic course	2	0	2	
ARAB 103	Expository Writing	2	0	2	
Total semester credit hours		17			

EMS 321 (Trauma Emergencies) (4+2+0=6 credits):

This course will introduce the student to mechanisms of trauma and trauma systems. This will prepare the students to properly assess and manage various types of traumatic injuries, forms of shock (in terms of mechanisms and causes) and traumatic cardio-pulmonary arrest. This will also cover assessment and management of Head trauma, Facial trauma, and Neck trauma, Spinal trauma, Thoracic trauma, abdominal trauma and Shock Trauma Resuscitation.

During this course the student will also prepared to be a *Pre-Hospital Trauma Life Support provider*.

(Prerequisite is EMS 223).

EMS 322 (Mental Health and Special Considerations in emergencies) (4+1+0=5 credits):

This course will cover Mental Health Emergencies, Obstetrics and Gynecological Emergencies, Geriatric Emergencies, Abuse and Assault, Medico-legal and Forensic aspects of special reporting situations, Patients with special needs, the Acute Interventions for the Chronic Care Patient, chronic pain and pain management in palliative care.

During this course the student will also prepared to be a *Geriatric Education for Emergency Medical Services (GEMS)* provider. (Prerequisite is EMS 311).

EMS 324 (Clinical Practice III) (0+0+3=3 credits):

Clinical practice- III will focus on assessment and management of common medical emergencies, Advance Cardiac Life Support (ACLS) skills including ECG monitoring and

interpretation. It consist of scheduled clinical and field rotations including 6 weeks in ER, ICU, CCU and 6 weeks at ambulance settings.

During this course students will be certified as *Pre-Hospital Trauma Life Support* provider (PHTLS) and *Geriatric Education for Emergency Medical Services (GEMS)* provider. (Prerequisite is EMS 314).

SEVENTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 411	Neonatal and Pediatric Emergencies	2	1	3	EMS 322
EMS 412	EMS Operations and Rescue	1	1	2	EMS 321
EMS 413	Clinical Decision Making in EMS	0	2	2	EMS 223
EMS 414	Mass Gathering and Disaster Management	3	0	3	EMS 321
EMS 415	Clinical Practice- 4	0	3	3	EMS 324
IC105	Islamic course	2	0	2	
Total semester credit hours		15			

EMS 411 (Neonatology and Pediatric Emergencies in EMS) (2+1+0=3credits):

This course will introduce the students to pathophysiology, assessment, physical exam and emergency management of the neonatal and pediatric emergencies.

During this course the student will be prepared to be a *Pediatric Advance Life Support* provider, *Neonate Resuscitation Program* and *Pediatric Education for Prehospital Professionals* Providers.

(Prerequisite is EMS 322).

EMS 412 (EMS Operations and Rescue) (1+1+0=2 credits):

This course will introduce the students to fundamental principles of Ambulance Operations, Aero medical transportation, Mass Casualty Incidents, Principles of Triage, Rescue Operations, and Vehicle rescue, patient extrication, Highway Operations, Hazardous Materials Incidents, Crime Scene Awareness, Rural EMS, and Responding to Terrorist Acts.

During this course the student will also be certified as an *ITLS Gaining Access* provider.

(Prerequisite is EMS 321).

EMS 413 (Clinical Decision Making) (0+2+0=2 credits):

This course will build on student knowledge, skills and attitude involved in assessment based management, problem solving skills, critical thinking, formulating clinical impression and comprehensive treatment plan. Various case scenarios will illustrate how to integrate knowledge of pathophysiology, comprehensive assessment findings to make clinical decisions, diagnosis, differential diagnosis and protocol based management of patients

(Pre-requisite is EMS 223-Patient Assessment)

EMS 414- Mass gathering and Disaster Management (3+0+0=3 credits)

This course covers the theoretical and practical foundations necessary for pre-planning and management of mass gathering events with a special focus on Hajj. This will also cover management of incidents involving multiple casualties and multiple agencies. Topics include foundations of disaster planning, incident command, Weapons of Mass Destruction, response issues, and hazardous materials. During this course the student will also be prepared to be an *Advanced Disaster life Support* provider. (Prerequisite is EMS 321).

EMS 415 (Clinical Practice IV) (0+0+3=3 credits):

Clinical practice- IV will focus on assessment and management of trauma emergencies, obstetric and gynecologic emergencies and participation in EMS operations, Rescue operations, mass gathering and disaster management. It consists of scheduled clinical and field rotations including 6 weeks in ER, OR, Burn Unit, OBG/Gynecology wards and 6 weeks at ambulance settings. During this course students will be certified as *Pediatric Advanced Life Support provider (PALS)* and Advanced Disaster life Support provider. (Pre-requisite is EMS 324)

EIGHTH SEMESTER					
Course Code	Course Name	Theory	Practical	Total Credit	
EMS 421	Critical and Intensive Care Practice	3	2	5	EMS 413
EMS 422	EMS Education	3	0	3	EMS 413
EMS 423	EMS Research and Evidence Based Practice	2	0	2	EMS 413
EMS 424	EMS Management & Leadership	2	0	2	EMS 414
EMS 425	Clinical Practice- 5	0	3	3	EMS 415
Total semester credit hours		15			

EMS 421 –Critical and Intensive Care Practice (3+2+0=5):

This course will introduce student to the fundamentals of intensive and critical care transport including: operations, safety, advanced pharmacology, flight physiology, advanced airway management, ventilator operation, hemodynamic instability in the critical patient, cardiac assisted devices, chest tube management, maintenance of central lines and infusion pumps, necessary knowledge about functioning of intensive care units and other important areas of Intensive and Critical Care practice. (Pre-requisite is EMS 413)

EMS 422- EMS Education- (3+0+0=3)

This course presents theoretical and practical foundations necessary for entry level EMS instructors and coordinators. Topics include instructor roles and responsibilities, learning theory, lesson plan development, test writing and validation, and program evaluation. Additional emphasis will be placed on instructional techniques for the adult learner. Students are also expected to participate in public health education and mentorship of junior students. (Pre-requisite is EMS 413)

EMS 423- EMS Research and Evidence Based Practice (2+0+0=2)

This course is an introduction to basic research methods and statistical procedures used in Emergency Medical Services research. The course will focus on research planning, Literature review, methods of data collection, analysis, display, literature citation, interpretation and evaluation of articles in the emergency healthcare . This course will also cover fundamental concepts of evidence based practice and overcoming barriers in the implementation of evidence-based care; how to present new trends in EMS practice and disseminate evidence to other emergency care professionals. At end of this course student will prepare a research abstract. (Pre-requisite is EMS 413)

EMS 424- EMS Management & Leadership - (2+0+0=2)

This course is an introduction to management principles as they apply to the emergency medical services system. topics covered include information systems, team building, fiscal management, human resource management , quality improvement , and management of conflict and change. It also focuses on development of leadership skills such as listening, delegation of responsibilities, discipline, and decision making. (Pre-requisite is EMS 414)

EMS 425- Clinical Practice- V - (0+0+3=3 credits):

Clinical practice- V will focus on assessment and management of neonatal and pediatric emergencies, intensive care, and critical care transport including air-medical transport. It consist of scheduled clinical and field rotations including 6 weeks in ICU, CCU, PICU, NICU, and 6 weeks at ambulance settings including 3 weeks air medic transport facility.

During this course students will be certified as Pediatric Education for Prehospital Professionals Providers (Pre-requisite is EMS 415)

EMS 426- Mass Gathering Field Practice-(0+0+4 credits)

This Course is designed to gain mass gathering field experience during Hajj and Ramadan-Umrah seasons. It is mandatory for students to complete minimum 210 Hours (21 field working days) of emergency health duty during Hajj and Ramadan-Umrah seasons (2 Hajj season or 1 Hajj and 2 weeks of Ramadan Umrah). This will provide students practical experience about planning, organization, public health aspects, major health hazards, types of disasters and emergency situations of mass gatherings.

Internship year

After completion of the 4 years BS EMS program, the student will undergo clinical and field internship for one year. Student will spend 4 months in clinical settings and 8 months in the field settings including 2 months EMS aviation transport. 8 hours per day will be spending for clinical or field rotations for 5 days a week. This will provide opportunity for students for practical application of all the skills they learned during the course. Student will also participate in public health activities, mentoring and supervising junior students during field and clinical rotations