

Prince Sultan Bin Abdul Aziz College for Emergency Medical Services  
King Saud University

Course Syllabus- EMS 224 Emergency Medications

<b>Course Name:</b>	<b>EMS Medications</b>
<b>Course Code:</b>	<b>EMS 224</b>
<b>Pre-requisites:</b>	<b>EMS 211- Emergency Medical Technician</b>
<b>Course language:</b>	<b>English language</b>
<b>Course level:</b>	<b>4th level</b>
<b>Credit hours:</b>	<b>3 hours (2+1=3)</b>

**Course Description:**

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.

**Module Aims:**

- To enhance the students ability to integrate comprehensive knowledge of pharmacology to formulate a treatment plan intended to mitigate emergencies and improve the overall health of the patient.
- To prepare students to safely and precisely access the venous circulation and administer medications.

**Indented Learning Outcomes (Objectives)**

At end of the course, student will be able to:

1. Discuss the term drug, pharmacokinetic, pharmacodynamics, indications, contraindication, side effects, various forms of drug, different routes of drug administration, and the factors that influence drug absorption, distribution and elimination. (Knowledge & Understanding 1.1)
2. Apply the knowledge of drug actions, interactions and special considerations while administering the pharmacological agents to various patients in terms of age, sex and medical conditions. (Skill 2.1)
3. Calculate the drug doses, drug volume and infusion rate of pharmacological agents in a given situation. (Skill 2.2)
4. Demonstrate proficiency to safely administer medications through intravenous, intraosseous, endotracheal, intramuscular and percutaneous routes and practice aseptic precautions and safe disposal of contaminated items and sharps. (Skill 2.3)

	Theory		Practical		
Weekly Schedule:	Monday	Wednesday	Monday	Tuesday	Wednesday
Time	<b>Group-B:</b> 08:00-10:00 AM <b>Group-C:</b> 13:00-15:00 PM	<b>Group-D:</b> 08:00 – 10:00 AM <b>Group-A:</b> 10:00-12:00 PM	<b>Group-B:</b> 08:00-12:00 PM	<b>Group-A:</b> 08:00-10:00 AM	<b>Group-C:</b> 10:00-12:00 PM <b>Group-D:</b> 10:00-12:00 PM

<b>Faculty members</b>	Dr. Sultan Alghadeer		
<b>Contact details of faculty</b>	<b>Office Location:</b>	Office # 123:, Almalaz building # 1 – PSCEMS - KSU	
	<b>Tel:</b>	+11- 8059204	
	<b>e-mail:</b>	<a href="mailto:salghadeer@ksu.edu.sa">salghadeer@ksu.edu.sa</a>	
	<b>Office Hours:</b>	By appointment	
Course Schedule			
Week#	Date	Topics and activities	
<b>Week-1</b>	MON 6/1/2025 6-7-1446	Theory	Syllabus, assignments, & textbooks discussion
	WED 8/1/2025 8-7-1445		Syllabus, assignments, & textbooks discussion
	MON, TU, WED 6, 7, 8/1/2025	Lab	NO LAB
<b>Week-2</b>	MON 13/1/2025 13-7-1446	Theory	1- General Principles of Pharmacology
	WED 15/1/2025 15-7-1446		1- General Principles of Pharmacology
	MON, TU, WED 13, 14, 15/1/2025	Lab	NO LAB
<b>Week-3</b>	MON 20/1/2025 20-7-1446	Theory	2- Pharmacokinetics and Pharmacodynamics
	WED 22/1/2025 22-7-1446		2- Pharmacokinetics and Pharmacodynamics
	MON, TU, WED 20, 21, 22/1/2024	Lab	<b>Practice &amp; Demonstration:</b> Administration of Medications (1) including: SC, IM, ID, ET, oral (sublingual, spray), and rectal routes
<b>Week-4</b>	MON 27/1/2025 27-7-1446	Theory	3- Administration of Medications
	WED 29/1/2025 29-7-1446		3- Administration of Medications
	MON, TU, WED 27, 28, 29/1/2025	Lab	<b>Practice:</b> Administration of Medications (2) including: IO, and Inhalation routes
<b>Week-5</b>	MON 3/2/2025 4-8-1446	Theory	4- Fluids, Electrolytes, and Intravenous Therapy
	WED 5/2/2025 6-8-1446		4- Fluids, Electrolytes, and Intravenous Therapy
	MON, TU, WED 3, 4, 5/2/2025	Lab	<b>Demonstration:</b> Administration of Medications (2) including: IO, and Inhalation routes
<b>Week-6</b>	MON 10/2/2025 11-8-1446	Theory	5- Medication Dosage Calculations-1
	WED 12/2/2025 13-8-1446		5- Medication Dosage Calculations-1
	MON, TU, WED 10, 11, 12/2/2025	Lab	<b>Practice:</b> Administration of Medications (3) including: IV bolus
<b>Week-7</b>	MON 17/2/2025 18-8-1446	Theory	6- Medication Dosage Calculations-2
	WED 19/2/2025 20-8-1446		6- Medication Dosage Calculations-2
	MON, TU, WED 17, 18, 19/2/2025	Lab	<b>Demonstration:</b> Administration of Medications (3) including: IV bolus

<b>Week-8</b>	MON 24/2/2025 25-8-1446	Theory	7- Autonomic nervous system	<b>In Class Assignment (Medication Calculation)</b>
	WED 26/2/2025 27-8-1446		7- Autonomic nervous system	
	MON, TU, WED 24, 25, 26/2/2025	Lab	<b>OPEN LAB for IO &amp; IV bolus</b>	
<b>Week-9</b>	MON 3/3/2025 3-9-1446	Theory	<b>MID-TERM EXAM</b>	
	WED 5/3/2025 5-9-1446			
	MON, TU, WED 3, 4, 5/3/2025	Lab	NO LAB	
<b>Week-10</b>	MON 10/3/2025 10-9-1446	Theory	8- Medications Used in the Treatment of Cardiovascular Emergencies-1	
	WED 12/3/2025 12-9-1446		8- Medications Used in the Treatment of Cardiovascular Emergencies-1	
	MON, TU, WED 10, 11, 12/3/2025	Lab	NO LAB	
<b>3 WEEKS OFF EID VACATION</b>				
<b>Week-11</b>	MON 7/4/2025 9-10-1446	Theory	9- Medications Used in the Treatment of Cardiovascular Emergencies-2	
	WED 9/4/2025 11-10-1446		9- Medications Used in the Treatment of Cardiovascular Emergencies-2	
	MON, TU, WED 7, 8, 9/4/2025	Lab	<b>Practice:</b> Administration of Medications (3) including: IV fluid/drug infusions and drug dose calculations using volumetric pumps or syringes	
<b>Week-12</b>	MON 14/4/2025 16-10-1446	Theory	10- Medications Used in the Treatment of Metabolic-Endocrine and Neurological Emergencies 11- Medications Used in the Treatment of Obstetrical and Gynecological Emergencies	<b>Quiz-2 (Topics 8 &amp; 9)</b>
	WED 16/4/2025 18-10-1446		10- Medications Used in the Treatment of Metabolic-Endocrine and Neurological Emergencies 11- Medications Used in the Treatment of Obstetrical and Gynecological Emergencies	
	MON, TU, WED 14, 15, 16/4/2025	Lab	<b>Demonstration:</b> Administration of Medications (3) including: IV fluid/drug infusions and drug dose calculations using volumetric pumps or syringes	
<b>Week-13</b>	MON 21/4/2025 23-10-1446	Theory	12- Drugs used in toxicological emergencies	
	WED 23/4/2025 25-10-1446		12- Drugs used in toxicological emergencies	
	MON, TU, WED 21, 22, 23/5/2025	Lab	<b>OPEN LAB FOR REVIEW UPON REQUEST</b>	

<b>Week-14</b>	MON 28/4/2025 30-10-1446	Theory	13- Medications Used in the Treatment of Behavioral and GI Emergencies 14- Sedation and Pain Management
	WED 30/4/2025 2-11-1446		13- Medications Used in the Treatment of Behavioral and GI Emergencies 14- Sedation and Pain Management
	MON, TU, WED 28, 29, 30/4/2025	Lab	
<b>Week-15</b>	MON 5/5/2025 7-11-1446	Theory	Course Review
	WED 7/5/2025 9-11-1446		Course Review
	MON, TU, WED 5, 6, 7/5/2025	Lab	NO LAB
<b>Week-16</b>	FINAL EXAMS		
<b>Week-17</b>	FINAL EXAMS		
<b>Education Methodologies:</b>			
<ul style="list-style-type: none"> <li>• Interactive Lectures with lots of AV use.</li> <li>• Case Discussions</li> <li>• Simulated Learning</li> <li>• Group Discussions</li> <li>• Computer Based Learning (CBL)</li> <li>• Animations, Illustrations, graphics and Cartoons etc.</li> <li>• <b>Readings</b>—Selected chapters, articles, and reports are assigned throughout the course.</li> <li>• <b>Psychomotor</b>—Students will engage in regularly scheduled hands-on lab sessions to apply knowledge with developing and demonstrating psychomotor skills and interventions as defined by national Paramedic Education Standards and Guidelines and the National Registry of Emergency Medical Technicians.</li> <li>• <b>Discussion</b>—Students will contribute regularly to discussions in program activities, which are designed to offer students opportunities to formulate substantive understanding and contributions to inquiry in the course.</li> <li>• <b>Feedback</b>—Students will receive regular feedback on their performance and progress throughout the course.</li> </ul>			
<b>Methods of evaluation:</b>			
<ul style="list-style-type: none"> <li>• Quizzes (2 quizzes; 2.5 point each) 5%</li> <li>• In-class assignments 5%</li> <li>• Lab Attendance &amp; Activities 5%</li> <li>• Final Practical Exam 15%</li> <li>• Midterm 30%</li> <li>• Final written exam 40%</li> </ul>			



Final grades will be awarded following the formula listed below:

A	90 - 100
B	80 - 89
C	70 - 79
D	60 - 69
F	59 or below

**Course Policies:**

- Kindly refer to the KSU *student handbook*

**Announcement and Correspondence:**

- It is daily responsibility of the student to check their King Saud University email and LMS/Blackboard account to receive the correspondence from the program and university.

**Books and references:**

1. Prehospital Emergency Pharmacology  
Bryan E. Bledsoe and Dwayne E. Clayden
2. Pharmacology for the Prehospital Professional  
Jeffrey S. Guy

**References :**

3. Mosby's Paramedic Text book with work book  
Mick J. Sanders, Kim D. McKenna
4. Paramedic Care: Principles & Practice  
Bryan E. Bledsoe, Robert S. Porter and Richard A. Cherry