

Program Specification (TQF-2)



Curriculum

Bachelor of Science Program in Paramedicine (Revised program of calendar year 2019)

Name of Institution	Mahidol University
Campus / Faculty / Department	Faculty of Medicine Ramathibodi Hospital

Section 1 General Information

1. Code and Program Title

In Thai	หลักสูตรวิทยาศาสตรบัณฑิต สาขาวิชาฉุกเฉินการแพทย์
In English	Bachelor of Science Program in Paramedicine

2. Degree Offered and Field of Study

In Thai	Full Title : วิทยาศาสตรบัณฑิต สาขาวิชาฉุกเฉินการแพทย์ Abbreviation : วท.บ.(ฉุกเฉินการแพทย์)
In English	Full Title : Bachelor of Science Program in Paramedicine Abbreviation : B.Sc. (Paramedicine)

3. Major Subject (If Applicable)

No

4. Total Credits Required

Total 140 credits

5. Curriculum Characteristics

5.1 Degree Level	Bachelor's degree
5.2 Type of the program	Professional bachelor's degree
5.3 Language	Thai

5.4 Admission

Accepting only for Thai students in accordance with the regulations of the entrance examination for a higher education institution of the Office of the Higher Education Commission (OHEC), under the Ministry of Education and/or according to Regulations of Mahidol University on Diploma and Undergraduate Studies and/or as prescribed by the Faculty of Medicine Ramathibodi Hospital.

5.5 Collaboration with Other Institutions

5.5.1 Intra-University

1. Faculty of science
2. Faculty of Liberal Arts
3. Faculty of Social Sciences and Humanities

5.5.2 Extra-University

1. Phra Na Khoo Sri Ayutthaya Hospital
2. Chaophraya Abhaibhubejhr Hospital
3. Maharat Nakhon Ratchasima Hospital
4. Sisaket Hospital
5. Chumphae hospital
6. Udon Thani Hospital
7. Surat Thani Hospital
8. Maharaj Nakhon Si Thammarat Hospital
9. Trang Hospital
10. Uthaithani Hospital
11. Bangkok Hospital
12. Bangkok Emergency Medical Service Center (Erawan Center)
13. National Institute of Emergency Medicine (NIEMS)

5.6 Degree Offered

One degree of Bachelor of Science Program in Paramedicine

6. Record of Program Status and Approval / Endorsement

6.1 The program was initially established in 2015.

6.2 The program has been revised from the previous version of academic year 2015, and will be applied in the semester 1 academic year 2019.

6.3 The Faculty's Curriculum Development Committee approved the program in its meeting on December 12th, 2018.

6.4 The Bachelor's Curriculum Development Committee approved the program in its meeting on March 14th, 2019.

6.5 The MU Council approved the program in its meeting no. 545 on June 19th, 2019.

7. Expected Date for the Implementation of Program under the Thai Qualifications Register (TQR) Record

The program is ready to publicize its excellence and standardization based on Thai Qualifications Framework for Higher Education (TQF: HEd) in academic year 2022.

8. Career Opportunities after Graduation

Paramedic in public and private hospitals

9. Name, Surname, Academic position, Qualifications, and Academic works published in 5 years of the instructors responsible for the program

No.	Name-Surname	Academic position	Degree / Institute / Graduation year	Most recent academic works in 5 years
1	Mr. Chaiyaporn Yuksen	Assoc. Prof.	<ul style="list-style-type: none"> - Doctor of Philosophy in Clinical Epidemiology / Faculty of Medicine, Thammasat University / 2018 - Diploma of Thai Board of Emergency Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2010 - Doctor of Medicine / Faculty of Medicine, Prince of Songkhla University / 2004 	<ul style="list-style-type: none"> - Yuksen C, Sittichanbuncha Y, Patumanond J, Muengtaweepongsa S, Sawanyawisuth K. Clinical predictive score of intracranial hemorrhage in mild traumatic brain injury. Ther Clin Risk Manag. 2018;14:213-18.
2	Mrs. Yuwares Sittichanbuncha	Assoc. Prof.	<ul style="list-style-type: none"> - Diploma of Thai Board of Emergency Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2004 - Diploma of Thai Board of Family Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2003 - Diploma of Thai Board of Internal Medicine / Faculty of Medicine, Khon Kaen University / 2000 	<ul style="list-style-type: none"> - Yuksen C, Sittichanbuncha Y, Patumanond J, Muengtaweepongsa S, Sawanyawisuth K. Clinical predictive score of intracranial hemorrhage in mild traumatic brain injury. Ther Clin Risk Manag. 2018;14:213-18.

No.	Name-Surname	Academic position	Degree / Institute / Graduation year	Most recent academic works in 5 years
			- Doctor of Medicine (First-Class Honors) / Faculty of Medicine Siriraj Hospital, Mahidol University / 1996	
3	Mrs.Satariya Trakulsrichai	Assoc. Prof.	- Diploma of Thai Subspecialty Board of Clinical Pharmacology and Toxicology / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2012 - Diploma of Thai Board of Emergency Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2004 - Diploma of Thai Board of Family Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2003 - Diploma of Thai Board of Internal Medicine / Phramong kutklao College of Medicine / 2000 - Doctor of Medicine (Second-Class Honors) / Faculty of Medicine, Chulalongkorn University / 1996	- Tongpoo A, Sriapha C, Pradoo A, Udomsubpayakul U, Srisuma S, Wananukul W, Trakulsrichai S. Krait envenomation in Thailand. Ther Clin Risk Manag. 2018;14:1711-17.
4	Miss Kasamon Aramvanitch	Lecturer	- Diploma of Thai Board of Emergency Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2015 - Doctor of Medicine / Faculty of Medicine, Naresuan University / 2012	- Yuksen C, Prachanukool T, Aramvanitch K , Thongwichit N, Sawanyawisuth K, Sittichanbuncha Y. Is a mechanical-assist device better than manual chest compression? A randomized controlled trial. Open Access Emerg Med. 2017;9:63-7.

No.	Name-Surname	Academic position	Degree / Institute / Graduation year	Most recent academic works in 5 years
5	Mr. Karn Suttapanit	Lecturer	- Diploma of Thai Board of Emergency Medicine / Faculty of Medicine Ramathibodi Hospital, Mahidol University / 2018 - Doctor of Medicine / Medical Education Center, Ratchaburi Hospital / 2012	- Suttapanit K , Boriboon J, Sanguanwit P. Risk factors for non-invasive ventilation failure in influenza infection with acute respiratory failure in emergency department. Am J Emerg Med.

10. Study Site Location

10.1 Mahidol University Salaya Campus

10.2 Department of Emergency Medicine, Faculty of Medicine Ramathibodi Hospital

10.3 Chakri Naruebodindra Medical Institute, Faculty of Medicine Ramathibodi Hospital

10.4 Nine hospitals for field training.

Section 2

Specific Data of the Program

1. Philosophy, rationale, and objectives of the program

1.1 Philosophy

Mahidol University's educational philosophy is primary focus on educating the learners, as for them to attain academic achievement through learning-centered education, outcome-based education and Constructivism. To become a wisdom graduate, learners combine what they have learned so far with the new knowledge, and with experiential learning activities.

The program's educational philosophy is in line with the university which primary focuses on provide education for graduates to be emergency medical system personnel with knowledges, competencies, good behaviors and attitudes for emergency medical operation. Graduates are able to provide effective medical care to emergency patients, starting from awareness of an emergency illness conditions until the conduct of getting an emergency patient to receive definitive treatment and recover from such condition, autonomously or under medical oversight within paramedic scope of practice.

“**SSHHEC**” is mnemonic of program philosophy which constructed for easily to communicate to program's stakeholders, especially for current and prospective students. The mnemonic represents all of program's ELOs which stands for:

S: Social responsibility - possess public mind attitudes and responsibly in social and public in ways that are consistent with moral standards

S: Smart - be a professional paramedic with knowledge, competencies and trustworthy personalities or characteristics

H: Happy - be happy and having positive attitude in learning and professional practice

H: Healthy - possess and maintain both physical and mental performance which readiness for emergency medical operations

E: Ethical - demonstrate honesty and integrity, as well as act ethically in line with professional code of ethics

C: Competence - be competence in cognitive and psychomotor skills for providing emergency patient care and being both medical and educational professionalism

1.2 Program Objectives

1.2.1 Program Objectives

Program objectives aim to provide education for graduates to be knowledgeable, competent and attitudes of medical emergencies in out-of-hospital emergency operations, able to provide effective emergency care under the authority,

scope of responsibility and limitations in the emergency operations under the medical directions or oversights. Graduates should be able to apply science and arts holistically in emergency medical operations, starting from awareness of an emergency illness conditions until the conduct of getting an emergency patient to receive definitive treatment and recover from such condition which include assessments regarding management, coordination, communication, conveying or transportation, diagnosis and treatment of emergency patients both inside and outside the hospital as well as the operation or management of the emergency medical system at the local level.

1.2.2 Program–level Learning Outcomes: PLOs

PLOs 1 Apply fundamental knowledge of basic and clinical sciences for providing prehospital emergency care

PLOs 2 Communicate effectively with patients, their relatives, medical directors and other healthcare professions

PLOs 3 Conduct research or develop innovations related for solving the problems or development of emergency medical system

PLOs 4 Perform advanced emergency care appropriately during on scene care and transportation according to the national emergency operational standard and paramedic scope of practice

PLOs 5 Demonstrate in maintaining physical and mental fitness.

PLOs 6 Provide basic or advanced medical knowledge to other lay persons or healthcare professions effectively

PLOs 7 Operate and behave with morality and ethical, public mind, able to adapt to be part of the community and society and respect the dignity and human values

1.2.3 Program–level Learning Outcomes: PLOs and Sub Program–level Learning Outcomes: Sub PLOs

PLOs	Sub PLOs
<p>PLOs 1 Apply fundamental knowledge of basic and clinical sciences for providing prehospital emergency care</p>	<p>1.1 Use English for general conversation and knowledge/information searching.</p> <p>1.2 Apply general basic/clinical science for pre-hospital patient care.</p> <p>1.3 Apply social and behavioral science for pre-hospital patient care.</p> <p>1.4 Apply basic knowledge of emergency medical system (EMS) for pre-hospital patient care.</p> <p>1.5 Apply related laws and regulations for pre-hospital patient care.</p>

PLOs	Sub PLOs
<p>PLOs 2 Communicate effectively with patients, their relatives, medical directors and other healthcare professions</p>	<p>2.1 Use radio-communication with other health care provider. 2.2 Communicate online medical direction with medical director. 2.3 Communicate with emergency patient/family members. 2.4 Transfer pre-hospital clinical and treatment information/data to receiving hospital correctly. 2.5 Record Emergency Medical Service (EMS) sheet/record correctly and completely.</p>
<p>PLOs 3 Conduct research or develop innovations related for solving the problems or development of emergency medical system</p>	<p>3.1 Apply research methodology for clinical research. 3.2 Search and appraising evidence-based medicine. 3.3 Write proposal correctly along with the guidelines of institutional review board (IRB). 3.4 Understand and following with human subject research ethics. 3.5 Collect and analyzing research data. 3.6 Present research in national or international conference.</p>
<p>PLOs 4 Perform advanced emergency care appropriately during on scene care and transportation according to the national emergency operational standard and paramedic scope of practice</p>	<p>4.1 Perform history taking and physical examination in pre-hospital emergency patients appropriately. 4.2 Emergency medical care at scene 4.3 Emergency medical care during transport to definite care 4.4 Advanced cardiac life support at scene and during transport to definite care. 4.5 Basic and advanced emergency procedure 4.6 Lifting and moving emergency medical and trauma patients. 4.7 Apply forensic medicine in pre-hospital emergency care. 4.8 Manage mass casualty incident and disaster appropriately.</p>
<p>PLOs 5 Demonstrate in maintaining physical and mental fitness</p>	<p>5.1 Develop and maintaining physical fitness 5.2 Develop and maintaining mental fitness. 5.3 Manage paramedic life cycle</p>

PLOs	Sub PLOs
<p>PLOs 6 Provide basic or advanced medical knowledge to other lay persons or healthcare professions effectively</p>	<p>6.1 Apply learning technique for provide knowledge to other lay persons or healthcare professions. 6.2 Display presentation in classroom effectively. 6.3 Provide pre-hospital emergency care knowledge to lay persons or healthcare professions effectively</p>
<p>PLOs 7 Operate and behave with morality and ethical, public mind, able to adapt to be part of the community and society and respect the dignity and human values</p>	<p>7.1 Operate with professional code of ethics. 7.2 Operate and behave with morality. 7.3 Operate with public mind. 7.4 Role model for other healthcare provider in emergency medical operation and personnel behavior.</p>

Section 3

Educational Management System, Program Implementation and Structure

1. Educational Management System

- 1.1 System Semester system
- 1.2 Summer Sessions No
- 1.3 Credit Equivalence Ratio (In Reference to Semester System)
1. lecture 1 hour/week at least 15 hours as 1 credit whole semester.
 2. practice 2 hour/weeks during 30 - 45 hour as 1 credit whole semester.
 3. Clinical practice and field experience 3-6 hour/weeks as 1 credit whole semester.

2. Program Implementation

2.1 Academic Calendar

On official days and time for theory class. For practical training, at the emergency department and the emergency operation center, lessons may also be taken during off-service hours.

2.2 Admission Requirements

(1) being a graduate of the upper secondary education (grade 12) and having qualifications consistent with the regulations of the entrance examination for a higher education institution of the Office of the Higher Education Commission (OHEC), under the Ministry of Education and/or according to Regulations of Mahidol University on Diploma and Undergraduate Studies and/or as prescribed by the Faculty of Medicine Ramathibodi Hospital.

(2) Being a person of good behavior and must not be in the process of setting up an investigation committee in the event of an offense or defendant in a criminal case where a public prosecutor is a plaintiff.

(3) Having a healthy body and complete mental health, free from disease that will hinder education.

2.3 A Five-year Plan for Admission and Graduation

student	Academic year				
	2562	2563	2564	2565	2566
1 st year	40	40	40	40	40
2 nd year	35	40	40	40	40
3 rd year	29	35	40	40	40
4 th year	36	29	35	40	40
Total	140	144	155	160	165

2.4 Academic System

- In Class
- Distance Learning Mainly Through Printed Materials
- Distance Learning Mainly Through Broadcast Media
- Distance Learning Mainly Through Electronic Media (E-learning)
- Distance Learning Through the Internet
- Others (Please Specify) field work in emergency department and emergency dispatcher center

2.5 Credit Transfer and Cross-institutional Enrollment (If any)

The program has no policy to transfer courses acceptance of student transfer and acceptance of students in an international exchange program.

3. Curriculum and Faculty Members

3.1 Curriculum

3.1.1 Number of Credits no less than **140** credits

3.1.2 Curriculum Structure of Bachelor of Science Program in Paramedicine complies with the Standard of Undergraduate Programs of Study announced by the Ministry of Education 2015.

3.1.3 Course List

In each course code, credit numbers are shown before the parentheses, and teaching hours and/or practicing hours and self-study hours are shown in the parentheses. For example, xxxx xxx x(x-x-x) refers to a four-letter code of the course, three digits, and number of total credit hours (theory- practice- self-study). Below are how the course codes are set.

Course codes of the Bachelor of Science Program in Paramedicine, Faculty of Medicine Ramathibodi Hospital consist of 7 characters: 4 letters and 3 numbers.

A. Meaning of the 4 letters:

- The first 2 letters are the initials of the faculty/institution in charge, namely

MU	indicates that the course is jointly managed by different faculties in Mahidol University
RA	indicates Faculty of Medicine Ramathibodi Hospital
SC	indicates Faculty of Science
SH	indicates Faculty of Social Science and Humanities
LA	indicates Faculty of Liberal Arts

- The last 2 letters are the initials of the department/project in charge of teaching management. For example:

ER	indicates Department of Emergency Medicine
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B. The 3 digits after the course initials:

- The first digit indicates the year of study.
- The last 2 digits indicate the order of the course offered in each course category to avoid repetition.

C. Course Overall course administration being:

1. General Education	no less than	30	credits
1.1 Social Sciences and Humanities		9	credits
MUGE 100	General Education for Human Development		2 (2-0-4)
SHSS 125	Professional Code of Ethics		2 (2-0-4)
SHSS 250	Public Health Laws and Regulations		2 (2-0-4)
1.2 Languages		11	credits
LAEN 103	English Level 1		3 (2-2-5)
LAEN 104	English Level 2		3 (2-2-5)
LAEN 105	English Level 3		3 (2-2-5)
LAEN 106	English Level 4		3 (2-2-5)
LATH 100	Arts of Using Thai Language Communication		3 (2-2-5)
LAEN 262	Listening and Speaking for Communication		2 (1-2-3)
1.3 Science and Mathematics		10	credits
RAER 101	First Aid and Basic emergency care		2 (2-0-4)
RAGE 101	Contemporary Health		1 (1-0-2)
SCBI 116	Introductory Biology		2 (2-0-4)
SCGE 103	Elementary Physics for Health Science		3 (3-0-6)
SCGE 132	Decision Making Using Principles of Statistic		2 (1-2-3)
2. Core Courses	no less than	104	credits
2.1 Basic Profession Course		40	credits
SCAN 101	Basic Anatomy		3 (2-2-5)
SCCH 112	General Chemistry		3 (3-0-6)
SCCH 119	Chemistry Laboratory		1 (0-3-1)
SCCH 121	Basic Organic Chemistry		3 (3-0-6)
LAEN 272	English for Medical Professionals		2 (1-2-3)
RAER 102	Emergency Medical System		2 (2-0-4)
RAER 201	Research Methodology for Paramedic		3 (2-2-5)
RAER 202	History Interview and Physical Examination for Paramedic 1		3 (2-2-5)

RAER	203	Basic Medical Procedure	3 (2-2-5)
RAER	204	History Interview and Physical Examination for Paramedic 2	3 (2-2-5)
RAER	207	Basic Pathophysiology for Paramedic	3 (2-2-5)
RAER	208	Clinical Pathophysiology for Paramedic	3 (2-2-5)
RAER	209	Clinical Pharmacology for Paramedic	3 (3-0-6)
RAER	210	Introduction to Clinical Year for Paramedic	2 (2-0-4)
RAER	211	Basic Biochemistry for Paramedic	3 (3-0-6)

2.2 Specialized Courses **64** credits

RAER	205	Research Project for Paramedic 1	2 (0-4-5)
RAER	301	Emergency Medical Service 1	2 (1-2-3)
RAER	302	Emergency Medical Care 1	3 (2-2-5)
RAER	303	Emergency Care in Trauma 1	3 (2-2-5)
RAER	304	History Interview and Physical Examination for Paramedic 3	3 (2-2-5)
RAER	305	Life Support Management 1	2 (1-2-3)
RAER	306	ECG Interpretation for Paramedic	2 (2-0-4)
RAER	307	Lifting and Moving	2 (1-2-3)
RAER	308	Emergency Care in Trauma 2	3 (2-2-5)
RAER	309	Epidemiology for Paramedic	2 (2-0-4)
RAER	310	Life Support Management 2	3 (2-2-5)
RAER	311	Advanced Medical Procedure	3 (2-2-5)
RAER	312	Forensic Medicine for Paramedic	2 (2-0-4)
RAER	313	Emergency Medical Field Work 1	3 (0-12-3)
RAER	401	Emergency Medical Service 2	2 (1-2-3)
RAER	402	Emergency Medical Care 2	3 (2-2-5)
RAER	403	Research Project for Paramedic 2	1 (0-2-5)
RAER	404	Life Support Management 3	3 (2-2-5)
RAER	405	Emergency Care in Mass Casualty Incident	2 (1-2-3)
RAER	406	Emergency Medical Field Work 2	3 (0-12-3)
RAER	407	Emergency Medical Field Work 3	4 (0-16-4)
RAER	408	Emergency Medical Field Work 4	4 (0-16-4)
RAER	409	Emergency Medical Field Work 5	4 (0-16-4)
RAER	410	Introduction to Paramedic Simulation	3 (2-2-5)

3. Free Elective	no less than	6	credits
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RAER	206	Practice in Emergency Medical Field 1	2 (0-4-4)
RAER	315	Practice in Emergency Medical Field 2	2 (0-4-4)
RAER	411	Practice in Emergency Medical Field 3	2 (0-4-4)

3.1.4 Study Plan

Year 1 / Semester 1			Credits (lecture - practice - self-study)
MUGE	100	General Education for Human Development	2 (2-0-4)
RAER	101	First Aid and Basic emergency care	2 (2-0-4)
SCCH	112	General Chemistry	3 (3-0-6)
SCCH	119	Chemistry Laboratory	1 (0-3-1)
SCBI	116	Introductory Biology	2 (2-0-4)
LATH	100	Arts of Using Thai Language Communication	3 (2-2-5)
LAEN	103	English Level 1 OR	3 (2-2-5)
LAEN	105	English Level 3	
LAEN	262	Listening and Speaking for Communication	2 (1-2-3)
Total credits			18 credits

Year 1 / Semester 2			Credits (lecture - practice - self-study)
RAGE	101	Contemporary Health	1 (1-0-2)
RAER	102	Emergency Medical System	2 (2-0-4)
SCAN	101	Basic Anatomy	3 (2-2-5)
SCCH	121	Basic Organic Chemistry	3 (3-0-6)
SCGE	103	Elementary Physics for Health Science	3 (3-0-6)
SCGE	132	Decision Making Using Principles of Statistic	2 (1-2-3)
SHSS	144	Principle of Communication	2 (2-0-4)
LAEN	104	English Level 2 OR	3 (2-2-5)
LAEN	106	English Level 4	
Total credits			19 credits

Year 2 / Semester 1			Credits (lecture - practice - self-study)
RAER	201	Research Methodology for Paramedic	3 (2-2-5)
RAER	202	History Interview and Physical Examination for Paramedic 1	3 (2-2-5)
RAER	205	Research Project for Paramedic 1	2 (0-4-5)
RAER	207	Basic Pathophysiology for Paramedic	3 (2-2-5)
RAER	210	Introduction to Clinical Year for Paramedic	2 (2-0-4)
RAER	211	Basic Biochemistry for Paramedic	3 (3-0-6)
SHSS	250	Public Health Laws and Regulations	2 (2-0-4)
Total credits			18 credits

Year 2 / Semester 2			Credits (lecture - practice - self-study)
RAER	203	Basic Medical Procedure	3 (2-2-5)
RAER	204	History Interview and Physical Examination for Paramedic 2	3 (2-2-5)
RAER	205	Research Project for Paramedic 1	2 (0-4-5)
RAER	208	Clinical Pathophysiology for Paramedic	3 (2-2-5)
RAER	209	Clinical Pharmacology for Paramedic	3 (3-0-6)
SHSS	125	Professional Code of Ethics	2 (2-0-4)
LAEN	272	English Communication for Healthcare Providers	2 (1-2-3)
RAER	206	Practice in Emergency Medical Field 1	2 (0-4-4)
Total credits			20 credits

Year 3 / Semester 1			Credits (lecture - practice - self-study)
RAER	301	Emergency Medical Service 1	2 (1-2-3)
RAER	303	Emergency Care in Trauma 1	3 (2-2-5)
RAER	304	History Interview and Physical Examination for Paramedic 3	3 (2-2-5)
RAER	305	Life Support Management 1	2 (1-2-3)
RAER	306	ECG Interpretation for Paramedic	2 (2-0-4)
RAER	307	Lifting and Moving	2 (1-2-3)
RAER	311	Advanced Medical Procedure	3 (2-2-5)
RAER	315	Practice in Emergency Medical Field 2	2 (0-4-4)
Total credits			19 credits

Year 3 / Semester 2			Credits (lecture - practice - self-study)
RAER	302	Emergency Medical Care 1	3 (2-2-5)
RAER	308	Emergency Care in Trauma 2	3 (2-2-5)
RAER	309	Epidemiology for Paramedic	2 (2-0-4)
RAER	310	Life Support Management 2	3 (2-2-5)
RAER	312	Forensic Medicine for Paramedic	2 (2-0-4)
RAER	313	Emergency Medical Field Work 1	3 (0-12-3)
RAER	411	Practice in Emergency Medical Field 3	2 (0-4-4)
Total credits			18 credits

Year 4 / Semester 1			Credits (lecture - practice - self-study)
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RAER	401	Emergency Medical Service 2	2 (1-2-3)
RAER	402	Emergency Medical Care 2	3 (2-2-5)
RAER	403	Research Project for Paramedic 2	1 (0-2-5)
RAER	404	Life Support Management 3	3 (2-2-5)
RAER	405	Emergency Care in Mass Casualty Incident	2 (1-2-3)
RAER	406	Emergency Medical Field Work 2	3 (0-12-3)
RAER	410	Introduction to Paramedic Simulation	3 (2-2-5)
Total credits			17 credits

Year 4 / Semester 2			Credits (lecture - practice - self-study)
RAER	407	Emergency Medical Field Work 3	4 (0-16-4)
RAER	408	Emergency Medical Field Work 4	4 (0-16-4)
RAER	409	Emergency Medical Field Work 5	4 (0-16-4)
Total credits			12 credits

3.1.5 Curriculum Mapping

Following table illustrates curriculum mapping of courses and program's ELOs.

Courses	Credits	Program-level Learning Outcomes (PLO)						
		1	2	3	4	5	6	7
General Educations								
MUGE100 General Education for Human Development	2 (2-0-4)					I		I
SHSS125 Professional Code of Ethics	2 (2-0-4)							I
SHSS250 Public Health Laws and Regulation	2 (2-0-4)				I			I
LAEN103-106 English Level 1-3	3 (2-2-5)		I					
LATH100 Art of using Thai Language in Communication	3 (2-2-5)		I					
LAEN262 Listening and Speaking for communication	2 (1-2-3)		I					
RAER101 First Aid and Basic Emergency Care	2 (2-0-4)	I			I			
RAGE101 Contemporary health	1 (1-0-2)		I			I		I
SCBI116 Introductory Biology	2 (2-0-4)	I						
SCGE103 Elementary Physics for Health Science	3 (3-0-6)	I						
SCGE132 Decision Making Using Principles of Statistic	2 (1-2-3)	I		I				
Basic Profession Courses								
SCAN101 Basic Anatomy	3 (2-2-5)	I						

Courses	Credits	Program-level Learning Outcomes (PLO)						
		1	2	3	4	5	6	7
SCCH112 General Chemistry	3 (3-0-6)	I						
SCCH119 Chemistry Laboratory	1 (0-3-1)	I						
SCCH121 Basic Organic Chemistry	3 (3-0-6)	I						
LAEN272 English for Healthcare Professions	3 (3-0-6)		I					
RAER102 Emergency Medical System	2 (2-0-4)		I		I			
RAER201 Research Methodology for Paramedic	3 (2-2-5)			I			I	
RAER202 History Interview and Physical Examination for Paramedic 1	3 (2-2-5)	I	I		I, P		I	I
RAER203 Basic Medical Procedure	3 (2-2-5)				I, P			I
RAER204 History Interview and Physical Examination for Paramedic 2	3 (2-2-5)	I	R		I, P		I	I
RAER ₂₀₇ Basic Pathophysiology for Paramedic	3 (2-2-5)	I						
RAER ₂₀₈ Clinical Pathophysiology for Paramedic	3 (2-2-5)	R			I			
RAER ₂₀₉ Basic Pharmacology for Paramedic	3 (3-0-6)	R			I			
RAER ₂₁₀ Introduction to Clinical Year for Paramedic	2 (2-0-4)		R			R		
RAER ₂₁₁ Basic Biochemistry for Paramedic	3 (3-0-6)	I						
Specialize Courses								
RAER205 Research Project for Paramedic 1	2 (0-4-5)			I			R	
RAER301 Emergency Medical Service 1	2 (1-2-3)		R		R	R	R	
RAER302 Emergency Medical Care 1	3 (2-2-5)	R			R, P		R	R
RAER303 Emergency Care in Trauma 1	3 (2-2-5)	R			R, P		R	R
RAER304 History Interview and Physical Examination for Paramedic 3	3 (2-2-5)	R	R		R, P		R	R
RAER305 Life Support Management 1	2 (1-2-3)	R			R, P		R	R
RAER306 EKG Interpretation for Paramedic	2 (2-0-4)	R			R			
RAER307 Lifting and Moving	2 (1-2-3)	R			R, P			
RAER308 Emergency care in Trauma 2	3 (2-2-5)	R			R, P		R	R
RAER309 Epidemiology for Paramedic	2 (2-0-4)			R			R	
RAER310 Life Support Management 2	3 (2-2-5)	R			R, P		R	R
RAER311 Advanced Medical Procedure	3 (2-2-5)	R			R, P		R	R
RAER312 Forensic Medicine for Paramedic	2 (2-0-4)	R			R			R
RAER313 Emergency Medical Field Work 1	3 (0-12-3)		R		R, P		R	R

Courses	Credits	Program-level Learning Outcomes (PLO)						
		1	2	3	4	5	6	7
RAER401 Emergency Medical Service 2	2 (1-2-3)		M		M	M	M	
RAER402 Emergency Medical Care 2	3 (2-2-5)	M			M		M	M
RAER403 Research Project for Paramedic 2	1 (0-2-5)			M,A			M	
RAER404 Life Support Management 3	3 (2-2-5)	M			M		M	M
RAER405 Emergency Care in Mass Casualty Incident	2 (1-2-3)	M			M,A		M,A	M
RAER406 Emergency Medical Field Work 2	3 (0-12-3)		M,A		M,A		M	M,A
RAER407 Emergency Medical Field Work 3	4 (0-16-4)		M,A		M,A		M	M,A
RAER408 Emergency Medical Field Work 4	4 (0-16-4)		M,A		M,A		M	M,A
RAER409 Emergency Medical Field Work 5	4 (0-16-4)		M,A		M,A		M	M,A
RAER410 Introduction to Paramedic Simulation	3 (2-2-5)		M		M,A		M,A	M

I = ELOs is introduced
M = Level of mastery

R = ELOs is reinforced

P = ELOs is practiced

A = ELOs is assessed in achievement

3.1.6 Course Description

1. General Education

1.1 Social Sciences and Humanities

MUGE 101 General Education for Human Development **Pre-requisite -**

Well-rounded graduates, key issues affecting society and the environment with respect to one' particular context; holistically integrated knowledge to identify the key factors; speaking and writing to target audiences with respect to objectives; being accountable, respecting different opinions, a leader or a member of a team and work as a team to come up with a systematic basic research-based solution or guidelines to manage the key issues; mindful and intellectual assessment of both positive and negative impacts of the key issues in order to happily live with society and nature

SHHU 125 Professional Code of Ethics **Pre-requisite -**

Concepts and ethical principles of people in various professions, journalists, politicians, businessmen, doctors, government officials, policemen, soldiers; ethical problems in the professions and the ways to resolve them

SHSS 144 Principles of Communication
Pre-requisite -

The importance of communication; information transferring, understanding, language usage, behavior of sender and receiver personality and communication; effective communication problems in communication

SHSS 250 Public Health Laws and Regulations
Pre-requisite -

Introduction to law justice procedure; law and regulation for doctor and public health practitioners, medical treatment act, practice of the art of healing act, medical service act, food act, drug act, criminal code, civil and commercial code; ministerial regulation, rule and regulation relating to public health administration

1.2 Languages

LAEN 103 English Level 1
Pre-requisite -

English structure, grammar and vocabulary in the context of daily language use, dealing with integration in listening, speaking, reading, and writing skills; reading strategies, sentence writing, listening for the gist, pronunciation and classroom communication

LAEN 104 English Level 2
Pre-requisite -

Vocabulary, expressions, grammar, and contextualized social language; essential communicative skills in small groups; simulations in various situations; writing practice at a paragraph level; and reading and listening from various sources

LAEN 105 English Level 3
Pre-requisite -

Essential strategies for four language skills: reading and listening from various sources, speaking in everyday use and writing at a paragraph level and short essay, including sub-skills i.e., grammar, pronunciation, and vocabulary; focusing on English in everyday life and in academic reading and issues that enhance students world knowledge

LAEN 106 English Level 4
Pre-requisite -

Integrating four English skills by practicing reading news, research articles, commentary, and academic texts, for comprehension and critical thinking, from various sources focusing on the issues that enhance students world knowledge; listening to news, lecture, and speech via multimedia and the Internet; making conversations in various situations including speaking in public, giving oral presentations and making simulations; and writing essays in various types using citations and references; also practicing sub-skills such as grammar, pronunciation and vocabulary used in appropriate context

LATH 100 Arts of Using Thai Language in Communication
Pre-requisite -

Art of Thai language and of speaking, listening, reading, writing, and thinking skills in accurately and appropriately communicating

LAEN 272 English for Medical Professionals
Pre-requisite -

Vocabularies, expressions, and information about medical professionals; communicative practice in simulated work situations in speaking, listening, reading, and summarizing in various medical contexts

1.3 Science and Mathematics

RAER 101 First Aid and Basic Emergency Care
Pre-requisite -

Introduction to first aid and basic emergency care; hyperventilation syndrome, asthma, anaphylaxis, syncope, heat stroke, seizure and epilepsy, food poisoning, bleeding control, splint, wound dressing, basic chest compression and used of automatic electrical defibrillation in cardiac arrest patient, appropriate emergency call, development of general physical fitness in first aid and emergency care

RAGE 101 Contemporary Health
Pre-requisite -

Multi-professional viewpoints toward interesting contemporary health issues such as social media use, nutrition, exercise, emotion; skin care, relationship and sex, pitfall in common drugs use, and life-saving procedure; role of each health profession; adaptation and stress management; interprofessional project in common health problems

SCBI 116 Introductory Biology
Pre-requisite -

Chemistry of life and biomolecules, cellular biology, cell energy, genetic and genetic disease, DNA technology and its medical applications, evolution, human evolution, ecology and pollution problem and biodiversity

SCPY 159 Elementary Physics for Health Science
Pre-requisite -

Mechanics of motion and equilibrium, work and energy, elastic properties of matters, fluid mechanics and blood circulatory system, temperature, heat, gas law and respiratory system, waves and wave properties, ears and hearing, lights and vision, electricity, magnetism, electricity in human body, electronics, atoms, nuclei and nuclear medicine

2. Core Courses	no less than	104	credits
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2.1 Basic Profession Course **40** credits

SCCH 112 General Chemistry
Pre-requisite -

Atomic structure, chemical bonding; gases, liquids, solid, solutions, colloids; chemical thermo-dynamics; chemical kinetics; chemical equilibrium, ionic equilibrium, electrochemistry, the present of periodic table

SCCH 119 Chemistry Laboratory
Pre-requisite -

Experiments of general chemistry and basic organic chemistry include determinations of scientific errors, significant numbers, precision and accuracy, preparation of solution and titration, rate of reaction, chemical equilibrium, quantitative analysis using spectroscopy, solubility classification, use of models to study stereochemistry of organic substance, reaction of hydrocarbons, reaction of alcohols and phenols, reactions of aldehydes and ketones, reactions of carboxylic acids and derivatives, reaction of amines

SCAN 101 Basic Anatomy
Pre-requisite -

Structures and functions of cell and tissues of the integumentary system, skeletal system, muscular system, circulatory system, respiratory system, digestive system, excretory system, endocrine system, reproductive system and special sense organs of human beings

SCCH 121 Basic Organic Chemistry
Pre-requisite -

Molecular structure and classification of organic compounds, reactions of organic compounds, nomenclature and stereochemistry, syntheses and reactions of alkanes, cycloalkanes, alkenes, aromatic, hydrocarbons, halides, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, carboxylic acid derivatives, amines

LEAN 262 Listening and Speaking for Communication
Pre-requisite -

Practicing listening and speaking in everyday life situation; discussion; speech acts; interpretations; analyzing data from conversation, lectures, and reading academic issues, news, and reports from various sources

RAER 102 Emergency Medical System
Pre-requisite RAER 101 First Aid and Basic Emergency Care

The emergency medical system, definition, origin and significance; the development of the emergency medical system in Thailand and international; the role of the dispatch center, the level of emergency medical service, the role of the emergency operations at different levels; the Emergency Medical Act 2551, laws related to emergency medicine; established

procedures for emergency medical services; standard ambulance; prearrival instruction; scene size up; scene safety and dealing with unsafe situation at the scene; the emergency care at the scene; communications in the emergency medical system; aeromedical transportation; indicators and quality improvement; the emergency medical system in disaster situations

RAER 201 Research Methodology for Paramedic
Pre-requisite -

Introduction to clinical research methodology; types of data; research questioning; searching of literatures and researches; literature reviews; research designs in cohort study, cross-sectional study, case-control study, experimental study, diagnostic accuracy; introduction to STATA program version 16.0; basic clinical statistics

RAER 202 History Interview and Physical Examination for Paramedic 1
Pre-requisite RAER 101 First Aid and Basic Emergency Care

Emergency room triage, medical history interviewing for paramedic, physical exam and practice in the rapid physical assessment; medical records, performing and interpreting vital signs, history interview, physical examination and practicing examination in the respiratory and cardiovascular system; communication with patients, symptomatology in the respiratory and cardiovascular system, medical ethics and practice in medical history; interviewing and physical exam of emergency cases in the respiratory and cardiovascular system

RAER 203 Basic Medical Procedure
Pre-requisite RAER 202 History Interview & Physical Examination for Paramedic 1

Basic medical procedures, airway techniques, the oxygen delivery systems, suction, pain control and sedation; diagnostic procedures, genital/urinary procedures, head and neck procedures, ophthalmological procedures; drug administration techniques, principles of disease control and diffusion, preparation of patients for emergency surgery; collecting organ fragments, collecting clinical specimens; utilization and maintenance of medical tools, practice in basic procedure techniques with models and simulations

RAER 204 History Interview and Physical Examination for Paramedic 2
Pre-requisite RAER 202 History Interview & Physical Examination for Paramedic 1

Emergency room triage, history interview, physical examination and practicing examination in the neurological, musculoskeletal, dermatological system and pediatric patients, communication with patients; symptomatology in the neurological, musculoskeletal, dermatological system and pediatric, medical ethics and practicing in medical history interviewing and physical exam of emergency cases in the neurological, musculoskeletal, dermatological systems and pediatric patients

RAER 207 Basic Pathophysiology for Paramedic
Pre-requisite SCAN 101 Basic Anatomy

Basic knowledge of physiology connecting the functions of cells, organs, and systems of the body; basic knowledge of physiology describing the abnormalities occurred in the work of cells, organs, and systems of the body in the cardiovascular, respiratory, nervous, gastrointestinal, musculoskeletal, endocrine, immunology and genitourinary systems

RAER 208 Clinical Pathophysiology for Paramedic
Pre-requisite RAER 207 Basic Pathophysiology for Paramedic

Knowledge and principles which describing the pathophysiology changes of cells, organs and systems of bodies; mechanisms of diseases; signs and symptoms of diseases; acute myocardial infarction; pneumonia; cerebrovascular diseases; an application to clinical practices

RAER 209 Clinical Pharmacology for Paramedic
Pre-requisite SCCH 121 Organic Chemistry

Fundamental principles of pharmacokinetics and pharmacodynamics; Emergency drugs used for treatment in prehospital care, cardiac arrest, arrhythmia; emergency drugs used for treatment in respiratory system, cardiovascular system, neurological system, endocrine system, antibiotic, analgesic and sedative drug; drug complication; drug allergy and overdose

RAER 210 Introduction to Clinical Year for Paramedic
Pre-requisite -

The Thai public health system and the emergency medical service; principle of effective communication, risk assessment, situation awareness in pre-hospital care; professional code of ethics in pre-hospital care; medical instruments, basic investigation in emergency department

RAER 211 Basic Biochemistry for Paramedic
Pre-requisite -

Basic structures and functions of five biomolecules, carbohydrate, lipid, protein nucleic acid and hemoglobin; basic metabolic processes of five biomolecules, its regulation, detoxication and excretion; the flow of genetic information and gene regulation; basic role of biomolecules related to the normal physiological systems; miscellaneous topic of biochemical importance and its application to paramedic

2.2 Specialized Courses

RAER 205 Research project for paramedic 1
Co-requisite RAER 201 Research Methodology for Paramedic

Evidence searching and literature review; ethics in human research; sample size estimation; data collection planning; composition of the research proposal; writing research proposal and presenting findings

RAER 301 Emergency Medical Service 1
Pre-requisite RAER 102 Emergency Medical System

Principles of operation in the emergency medical system, physical and mental performance for paramedic, emergency vehicles, preparation and maintenance; principles of emergency vehicle driving and safe parking, devices on emergency vehicles, preparing and maintaining equipment on emergency vehicles, vehicles and equipment for air transportation; communications and information in the emergency medical system, radio communications equipment for emergency operations and maintenance; visiting the command center of the National Institute of emergency medicine and the Bangkok Emergency Medical Service Center (Erawan Center)

RAER 302 Emergency Medical Care 1
Pre-requisite RAER 203 Basic Medical Procedure
RAER 204 History Interview & Physical Examination for Paramedic 2

Principles of emergency medical care, initial patient assessment and evaluation at the scene; anatomy, pathophysiology; on scene medical care in respiratory emergency, cardiovascular emergency, neurological, gastrointestinal disorder, immunology, infectious diseases, endocrine disorder, and shock; practice in emergency medical care in the emergency department

RAER 303 Emergency Care in Trauma 1
Pre-requisite RAER 203 Basic Medical Procedure
RAER 204 History Interview & Physical Examination for Paramedic 2

Principles of prehospital care in trauma patients; mechanism of injury; scene safety and scene size up; initial assessment and management in trauma patients with shock, chest injury, abdominal and pelvic injury, musculoskeletal injury, traumatic brain injury, spinal injury; injury prevention; medical record in trauma; practicing with models and simulation; practicing in the emergency medical care in the emergency department and the ambulance unit

RAER 304 History Interview and Physical Examination for Paramedic 3
Pre-requisite RAER 204 History Interview & Physical Examination for Paramedic 2

History interviewing, physical examinations, symptomatology and practicing examination in the gastrointestinal system; obstetric and gynecologic, ocular emergency and other emergency conditions; medical recording and practice in the medical history; interviewing and physical examination of emergency cases in the gastrointestinal system, obstetric and gynecologic, ocular emergency and other emergency conditions

RAER 305 Life Support Management 1
Pre-requisite RAER 203 Basic Medical Procedure

Initial assessment in unconscious patients; the use and maintenance of automatic electrical device, high quality chest compression, ventilation in adults and pediatric cardiac arrest; steps of basic life support in infants, children, adults, management of foreign body obstruction in the respiratory tract; life supporting equipment maintenance and practice in basic life supports with models and simulations

RAER 306 ECG Interpretation for Paramedic
Pre-requisite RAER 203 Basic Medical Procedure

Mechanism of the electrocardiogram (ECG), equipment used in the ECG examination; basic interpretation of ECG, ventricular fibrillation, ventricular tachycardia, pulseless electrical activity, asystole, tachyarrhythmia, bradyarrhythmia; abnormal ECG in acute myocardial infarction, cardiomegaly, valvular disease, electrolyte imbalance, toxicology and the initial management of abnormal ECG patients

RAER 307 Lifting and Moving
Pre-requisite RAER 203 Basic Medical Procedure

Principles of lifting and moving in emergency patients; body mechanic, safety and prevention of injuries from lifting; lifting techniques, helmet removal in trauma, emergent, urgent and non-urgent lifting and moving techniques, lifting and moving equipment; patient position and stabilization, lifting and moving in car wreck, ruins and confined space, lifting and moving with a high level; marine transportation, air transportation and practice in lifting and moving in hospital transfer, on scene transfer and emergency room transfer

RAER 308 Emergency Care in Trauma 2
Pre-requisite RAER 303 Emergency Care in Trauma 1

Principles of prehospital care in trauma, mechanism of injury, scene safety, and scene size up; initial assessment in pregnancy patients, pediatric, elderly, cognitively impaired patients; maxillofacial injury, eye injury, environmental injury, animal bite, radiation injury, blast injury, multiple traumas, post exposure prophylaxis, trauma quality management; practicing with models and simulations and practicing in emergency medical care in emergency departments and trauma units

RAER 309 Epidemiology for Paramedic
Pre-requisite RAER 201 Research Methodology for Paramedic
RAER 205 Research Project for Paramedic 1

Epidemiological definitions, measurement and epidemiological tool; components of the etiology, health service research, health economic research; investigations of diseases, surveillance, control and prevention, assessment and testing equipment; an application of epidemiological information in the emergency medical service development

RAER 310 Life Support Management 2
Pre-requisite RAER 305 Life Support Management 1

Principles in advanced life support in adults, basic life support skills, advanced airway management, surgical cricothyroidotomy for emergency opened airway; pharmacology in advanced life support, interpretations of abnormal ECG; management of acute coronary syndromes, management of stroke, recognition and early management of peri-arrest conditions; advanced equipment maintenance and practicing in advanced life support with models and simulations

RAER 311 Advanced Medical Procedure
Pre-requisite RAER 203 Basic Medical Procedure

Airway techniques, adult ventilation-assisted mechanic, pediatric ventilation-assisted mechanic, mechanical ventilation-assisted; genital urinary procedures, hemodynamic techniques, hemodynamic monitoring; obstetrics procedures, skeletal procedures, other advanced procedures; utilizing and maintaining of emergency medical tools, other advanced emergency practices with models and simulations

RAER 312 Forensic Medicine for Paramedic
Pre-requisite SHSS 250 Public Health Laws and Regulations

Definition of forensic medicine for paramedic, laws, principles for an analysis of the cause of death; identification, unnatural death, autopsy, exhumation, writing reports, wound examination; sexual abuse, child abuse, collecting witnesses and evidences at the incidence site; an analysis of the cause of death, the change after death, dead body transferring and tools used in forensic medicine

RAER 401 Emergency Medical Service 2
Pre-requisite RAER 301 Emergency Medical Service 1

Principles of communication, co-operation, and receiving an emergency call; EMS record, phone triage, scene triage, prearrival instruction, online and offline medical command, scene size-up; ethics in the EMS operation, principles of emergency medical service operation with other agencies and practicing with simulations

RAER 402 Emergency Medical Care 2
Pre-requisite RAER 302 Emergency Medical Care 1

Principles of emergency medical care, initial patient assessment and evaluation at the scene; anatomy, pathophysiology, on scene medical care in toxicology, psychiatric and suicidal attempt patients; toxic bite and stings, obstetric, gynecological, neonatal care, pediatrics, geriatrics, palliative care; musculoskeletal disorders, genitourinary, renal, diseases of the eyes, ears, throat, and nose; hematological disorder and practice in the emergency medical care in the emergency department

RAER 403 Research project for paramedic 2
Pre-requisite RAER 205 Research Project for Paramedic 1

Research data collection, data analysis with Stata Version 16, research conclusions and discussions, research presentations, writing the research

RAER 404 Life Support Management 3
Pre-requisite RAER 310 Life Support Management 2

Principles in pediatric basic life support, pediatric and newborn advance life support, advance life support in pregnant patients, elderly patients, intoxication patients and trauma patient; advanced equipment maintenance, skill development in the advanced life supporting, practicing with models and simulations

RAER 405 Emergency Care in Mass Casualty Incident
Pre-requisite RAER 308 Emergency Care in Trauma 2

Principles in mass casualty incidents and disasters, general management in mass casualty incidents and disasters; mass causality triage, decontamination, the incident command system, natural and manmade disasters, disasters from blast injuries, biological disasters, chemical disasters; risk assessment and risk analysis, emergency response teams in disasters, hospital preparedness in disasters; recovery phase in disasters, psychological recovery and disaster prevention, practicing in mass causality management with models and simulations

RAER 410 Introduction to Paramedic Simulation
Pre-requisite RAER 302 Emergency Medical Care 1
RAER 308 Emergency Care in Trauma 2
RAER 311 Advanced Medical Procedure
RAER 313 Emergency Medical Field Work 1

Principles of operation in emergency situations; principles of emergency medical and trauma care; practicing in simulation training, principles of debriefing, principles of simulation design, principles of simulation evaluation

RAER 313 Emergency Medical Field Work 1
Pre-requisite RAER 301 Emergency Medical Service 1
RAER 302 Emergency Medical Care 1
RAER 303 Emergency Care in Trauma 1

Clinical experiences in the emergency room, phone triage, dispatching information, radio communication; priority dispatching, prearrival information, on scene management, on route management; lifting and moving, online medical direction, offline medical direction, practicing in operation room and labor room, normal labor, abnormal labor and neonatal resuscitation

RAER 406 Emergency Medical Field Work 2
Pre-requisite RAER 310 Life Support Management 2
RAER 311 Advanced Medical Procedure

Clinical experiences in on scene management, on route management; teaching skills to other EMS personnel, prehospital advanced cardiovascular life support; prehospital pediatric cardiovascular life support, prehospital neonatal resuscitation, prehospital trauma life support; work-life balance for paramedic, ethical issues in prehospital emergency care

RAER 407 Emergency Medical Field Work 3
Pre-requisite RAER 308 Emergency Medical Care 2
RAER 311 Advanced Medical Procedure
RAER 401 Emergency Medical Service 2
RAER 402 Emergency Medical Care 2
RAER 404 Life Support Management 3

Clinical experiences in the dispatching center (Phra Na Khon Sri Ayutthaya Hospital, Maharat Nakhon Ratchasima Hospital and Chaophraya Abhaibhubejhr Hospital); clinical practices in phone triage, dispatching information, radio communication; priority dispatch, prearrival information

RAER 408 Emergency Medical Field Work 4
Pre-requisite RAER 308 Emergency Medical Care 2
RAER 311 Advanced Medical Procedure
RAER 401 Emergency Medical Service 2
RAER 402 Emergency Medical Care 2
RAER 404 Life Support Management 3

Clinical experiences in prehospital care (Srisaket Hospital, Chumphae Hospital and Udon Thani Hospital) clinical practices in on scene management, on route management, lifting and moving, online medical direction, offline medical direction

RAER 409 Emergency Medical Field Work 5
Pre-requisite RAER 308 Emergency Medical Care 2
RAER 311 Advanced Medical Procedure
RAER 401 Emergency Medical Service 2
RAER 402 Emergency Medical Care 2
RAER 404 Life Support Management 3

Clinical experiences in emergency room (Trang Hospital, Surat Thani Hospital and Maharaj Nakhon Si Thammarat Hospital); clinical practices in resuscitation room, interfacility transfer, lifting and moving, online and offline medical direction

3. Free Elective

RAER 206 Practice in Emergency Medical Field 1
Pre-requisite -

Practicing in basic / advanced ambulance service center; ambulance preparedness; ambulance equipment preparedness; preparing team for operations; on scene care; lifting and moving; transport communication; operation data recording

RAER 315 Practice in Emergency Medical Field 2
Pre-requisite -

Practicing in the dispatch center (provincial or regional) notification; communications between the dispatching center and hospitals; phone triage, prearrival information, priority dispatching; operation data recording of the dispatching center

RAER 411 Practice in Emergency Medical Field 3
Pre-requisite -

Practicing in the resuscitation room (emergency department): emergency department triage; basic and advanced procedure; cardiac life support resuscitation in adults and pediatrics; care in transfer and referral patients; collectings and analyzing the emergency department data record

4. Components Related to Field Training Experience (Trainings or Multi-Activity Education)

The curriculum has provided the courses with required activities of practically field experiences and internship for increasing clinical skills. They are involved with education and profession practices in real situations, such as emergency medical dispatch centers or advanced life support operational unit.

4.1 Standard of Learning Outcome for Field Training Experience

The expected learning outcomes of experiences in internship / cooperative education of students is as follows:

- (1) Be competence in taking care of emergency patients in out-of-hospitals setting and during transportation, communicating and coordinating to definite facilities under medical directions or oversights.
- (2) Possess skills and abilities to conduct researches or to develop innovations with good quality which are about taking care of emergency patients in out-of-hospitals setting or developing emergency medical system of Thailand.
- (3) Possess good abilities to coordinate and work together with other emergency medical personnel or healthcare profession.
- (4) Be leadership in emergency medical operation and be able to solve facing problems or manage situations suitably.
- (5) Be able to keep key performance indicators of emergency medical operation and be able to analyze data leading to system development.
- (6) Be able to maintain physical and mental fitness readiness for emergency medical operation.
- (7) To propagate knowledge about emergency medication out of hospitals to officers in other emergency medical systems or general people well, to have teacher skills, and to be able to knowledge to others

4.2 Duration

Year	Course	Credits / hours	Details
3	RAER 313 Emergency Medical Field Work 1	3 (0-12-3) (180 hours)	- Year 3 / Semester 2 - Students are trained in emergency department, operating room and labor room at Uthaithani Hospital. - Students are trained in Emergency Operation Center, Trauma intensive care unit and observe ward at Ramathibodi Hospital

Year	Course	Credits / hours	Details
4	RAER 406 Emergency Medical Field Work 2	3 (0-12-3) (180 hours)	- Year 4 / Semester 1 - Students are trained in emergency department at Ramathibodi Hospital
4	RAER 407 Emergency Medical Field Work 3	4 (0-16-4) (240 hours)	- Year 4 / Semester 2 - Students are trained in emergency dispatch center and emergency department at Phra Na Khon Sri Ayutthaya, Chaophraya Abhaibhubejhr and Maharat Nakhon Ratchasima Hospital
4	RAER 408 Emergency Medical Field Work 4	4 (0-16-4) (240 hours)	- Year 4 / Semester 2 - Students are trained in emergency dispatch center and emergency department at Srisaket, Chumphae and Udon Thani Hospital
4	RAER 409 Emergency Medical Field Work 5	4 (0-16-4) (240 hours)	- Year 4 / Semester 2 - Students are trained in emergency dispatch center and emergency department at Surat Thani, Maharaj Nakhon Si Thammarat and Trang Hospital

4.3 Assessment

4.3.1 Evaluation Criteria

- | | |
|---------------------------------|------|
| 1. Clinical practice evaluation | 60 % |
| 2. Written final examination | 40 % |
| - SAQ | |
| - MEQ | |
| - OSCE | |

4.3.2 Assessment Processes of Students' Operation

1. Results of operation trainings through the rubric scale assessment
2. Exams after finished field experience training

5. Requirements for Project or Research Work

5.1 Brief Description

The curriculum has provided the courses requirements for project or research work in RAER 201 Research Methodology for Paramedic (3 credits), RAER205 Research Project for Paramedic 1 (2 credits) and RAER403 Research Project for Paramedic 2 (2 credits). 2-3 students in each research groups must conduct 1 research or innovation before graduation.

5.2 Standard of Learning Outcome

Students can practice in conducting medical research. Able to search for up-to-date and reliable clinical epidemiological data, able to write a research proposal, understand and follow research ethics, perform self-data collection and analysis of both quantitative and qualitative results and present research results at national or international conferences.

5.3 Duration

Year	Course	Duration
2	RAER 201 Research Methodology for Paramedic	Semester 1 Total 3 credits
2	RAER 205 Research Project for Paramedic 1	Semester 2 Total 2 credits
4	RAER 403 Research Project for Paramedic 2	Semester 1 Total 1 credit

5.4 Evaluation Procedure

1. Evaluate the progress of a research study using the research progression assessment form.
2. Evaluate the interest and responsibility of the research study by recording of the advisors
3. Evaluate research reports and presentation using rubric assessment scale

Section 4

Program-level Learning Outcomes, Teaching Methods, and Evaluation

Teaching and learning activities were designed constructively to achieve the ELOs. To gain cognitive knowledge, teaching and learning activities include lectures, interactive learning with several tools (i.e., Kahoot!), assigned reading and flipped classroom, problem-based discussion, project-based learning and journal club presentation. Technical skills are acquired through hands-on practice, bedside teaching and simulation training.

Alignment of program's ELOs with teaching and learning activities is described in the following table

Program ELOs	Teaching and Learning Processes	Assessment Methods
ELOs 1 Apply fundamental knowledge of basic and clinical sciences for providing prehospital emergency care	<ul style="list-style-type: none"> - Lecture - Group discussion - Laboratory work 	<ul style="list-style-type: none"> - Written examination: MCQ, SAQ, MEQ - Objective Structured Clinical Examination (OSCE)
ELOs 2 Communicate effectively with patients, their relatives, medical directors and other healthcare professions	<ul style="list-style-type: none"> - Lecture - Workshop - Bedside teaching - Simulation training - Field practice 	<ul style="list-style-type: none"> - Written examination: MCQ, SAQ, MEQ - Objective Structured Clinical Examination (OSCE) - Workplace-based assessment - Simulation evaluation
ELOs 3 Conduct research or develop innovations related for solving the problems or development of emergency medical system	<ul style="list-style-type: none"> - Lecture - Workshop - Journal club - Research project 	<ul style="list-style-type: none"> - Written examination: MCQ, SAQ - Proposal / Research presentation

Program ELOs	Teaching and Learning Processes	Assessment Methods
<p>ELOs 4 Perform advanced emergency care appropriately during on scene care and transportation according to the national emergency operational standard and paramedic scope of practice</p>	<ul style="list-style-type: none"> - Lecture - Workshop - Bedside teaching - Simulation training - Field practice 	<ul style="list-style-type: none"> - Written examination: MCQ, SAQ, MEQ - Objective Structured Clinical Examination (OSCE) - Workplace-based assessment - Simulation evaluation
<p>ELOs 5 Demonstrate in maintaining physical and mental fitness</p>	<ul style="list-style-type: none"> - Lecture 	<ul style="list-style-type: none"> - Physical fitness baseline and progression test
<p>ELOs 6 Provide basic/advanced medical knowledge to other lay persons or healthcare professions effectively</p>	<ul style="list-style-type: none"> - Lecture - Workshop 	<ul style="list-style-type: none"> - Teaching skill assessment - Direct observation
<p>ELOs 7 Operate and behave with morality and ethical, public mind, able to adapt to be part of the community and society and respect the dignity and human values</p>	<ul style="list-style-type: none"> - Lecture - Workshop - Bedside teaching - Simulation training - Field practice 	<ul style="list-style-type: none"> - Written examination: MCQ, SAQ, MEQ - Objective Structured Clinical Examination (OSCE) - Workplace-based assessment - Simulation evaluation

Section 5

Student Evaluation Criteria

1. Grading Rules / Guidelines

Follow by Regulations of Mahidol University on Diploma and Undergraduate Studies and Regulations announced by Faculty of Medicine Ramathibodi Hospital. Defining grading and student evaluation include that:

1. Theoretical evaluation i.e., Multiple Choice Question (MCQ), Modified Essay Question (MEQ), Constructed Response Question (CRQ) and Short Answer Question (SAQ)
2. Practical evaluation i.e., Objective Structured Clinical Examination (OSCE), direct observation and long case examination

In each evaluation will grade in scoring system 1-4:

1. Theoretical evaluation is written examination that students must achieve score in each evaluation not fewer than 2.0 (PASS).
2. Practical evaluation: students must achieve score in each evaluation not fewer than 2.0 (PASS).

And students must achieve score/grade (theory and practice) more than 2.00 (PASS) then multiply with weighted average, sum all score (cumulative score) and compare to grade as follows:

Cumulative Score	Grade
3.50 - 4.00	A
3.25 - 3.49	B+
3.00 - 3.24	B
2.50 – 2.99	C+
2.00 – 2.49	C
1.50 – 1.99	D+
1.00 – 1.49	D
< 1.00	F

3. Attitude evaluation: Direct observation (Rubric scale) from six components including responsibility, honesty, teamwork, appreciation, self-development, holistic care. Attitude evaluation uses OSMU symbol, not scoring system.

Symbol	Meaning
O	Outstanding
S	Satisfactory
M	Marginal
U	Unsatisfactory

Study Results

1. Students should not have study time fewer than 80% of total study time, So If students have study time fewer than 80%, students will be disqualified in final exam except case of necessity.

2. If result of ethics and moral evaluation is U (not pass), Department / Faculty / University will not consider other scores and not pass in this course (grade F). So, students must re-register the course again.

3. Judgment

3.1 Students must be achieved score/grade (theory and practice) more than 2.00 (PASS) and each evaluation must pass together.

(1) Theoretical evaluation is written examination that students must achieve score in each evaluation not fewer than 2.0 (PASS)

(2) Practical evaluation: students must achieve score in each evaluation not fewer than 2.0 (PASS). All score must not fewer than 2.00 and compare to grade A, B+, B, C+, C, D+, D and F. Student must be achieved grade more than C.

3.2 If students have total score equal or more than 2.00 but each test not pass (< 2.00), department will show grade in X and give opportunity for retake the exam 1 time within the duration that department defines. If students pass in retaking the exam, students can get actual total score. And, if student not pass in retaking the exam, students will get D+ and must re-register the course again.

3.3 If students have total score equal or more than 2.00 but practical evaluation not pass (< 2.00), department will show grade in X and give opportunity for more practice appropriately. If students pass in re-practice, students can get actual total score. And, if student not pass in re-practice, Students will get D+ and must re-register the course again.

3.4 If students have total score fewer than 2.00, students will not have opportunity in retake the exam. Students will get D+, D, and F (from actual total score) and must re-register the course again.

Criterion for retaking the exam is shown in the diagram below

2. Graduation Requirements

2.1 Being a person of good behavior appropriate for the dignity of the Bachelor of Science Program in Paramedicine

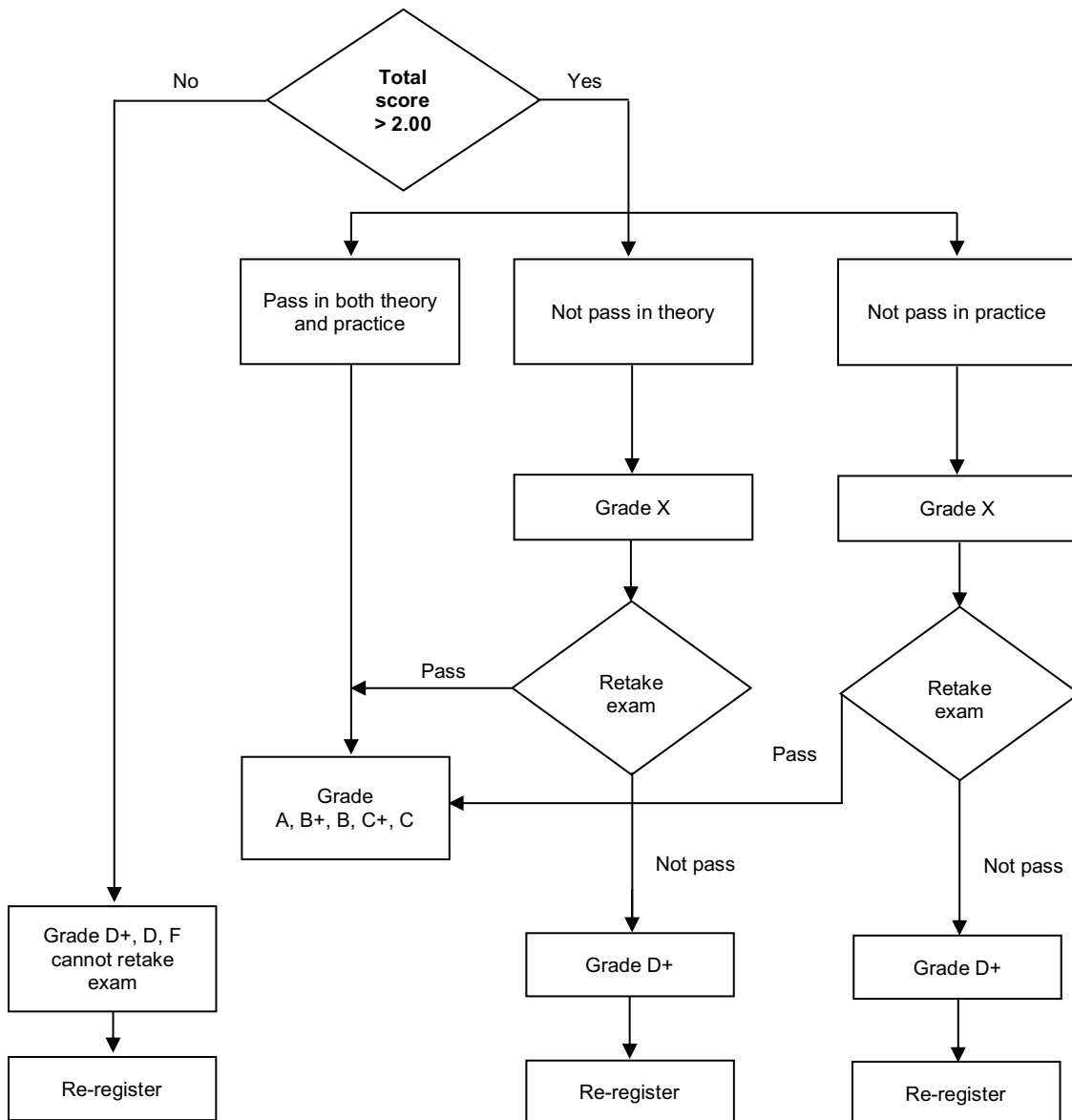
2.2 Pass examinations for all courses and complete the curriculum.

2.3 Obtain a cumulative grade point average throughout the course of not less than 2.00

2.4 Must pass the program's comprehensive examination

2.5 Must pass the English proficiency score test according to the Announcement of Mahidol University on the English Language Proficiency Standard of Bachelor Degree Students 2017.

Criterion for retaking the exam



4. Students' Appeals

In the event that students concern about an assigned grade or an imposed academic action is incorrect or not appropriate, students can raise and inform any concern by submitting a written and signed appeal form provided at the program office. The appeal procedure has 4 levels as described in following table. Chair of the investigating committee in each appeal level is responsible to investigate and decide the outcome. Students wishing to appeal are entitled to see the investigative report. However, after a decision is rendered, if the students believe that their concerns have not been adequately resolved or there are dissatisfy in decided outcome so they can appeal to next level of the investigating committee.

Appeal process classification in 4 levels

Level	Person responsible	Process
1	Course Coordinator	Appeal process must be appeal in step by step from Level 1. Student will be submitting an appeal at the Department of Emergency, Faculty of Medicine Ramathibodi Hospital.
2	Program Director	
3	Deputy Dean for Undergraduate Education	
4	Vice President for Academic Affair	

Any student who is punished under the disciplinary procedures regulations and disagrees with such punishment is entitled to an appeal according to the rules stipulated in regulations. An appeal against any order for punishment shall be submitted to the Committee which consists of legal officers or graduates of law and persons are appointed by the President within 15 days from the acknowledged date of the punishment. Committee will make a judgment within 30 days from the date on which the appeal was received. An extension of time may be granted, provided it is recorded as evidence, and shall not exceed 60 days.