

Course Descriptions of Bachelor of Science in Emergency Medical Operation

1. General Educations

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

MUGE 102 Social Studies for Human Development

Pre-requisite -

Basic principles and theory in relation to events / situations / major problems of the Thai and global communities, for example, evolution of civilization; important events in historical, political and public administration systems; the economic and health systems, etc.; analysis of causes and consequences of events / situations / problems; synthesis of solutions to, precautions against, or improvements in those events / situations to benefit individuals and their community; and the application of knowledge to solve the problems of case studies.

MUGE 103 Arts and Science for Human Development

Pre-requisite -

Humankind in the past, present and future; events / situations / problems in relation to the evolution of the arts and sciences in the Thai and global communities; concepts of the sufficiency economy; analysis of causes and consequences of events / situations / problems; synthesis of solutions to, precautions against, or improvements in those events / situations to benefit individuals and their community; and the application of knowledge to solve the problems of case studies.

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

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 LAEN 103 English Level 1

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 LAEN 105 English Level 3

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

1.3 Science and Mathematics

SCID 111 Learning Techniques

Pre-requisite -

Group process, PBL process, PBL 1, PBL 2, TBL, Mind Mapping, Information retrieval from textbooks, journals and websites

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

SCMA 170 Applicable basic mathematics and statistics

Pre-requisite -

Mathematical and statistical concepts, skills and techniques applicable in everyday life: systems of linear equations, matrices, linear programming, sets and counting principles, probability and decision

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

2.1 Basic Profession Course 40 credits

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 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 308 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, basic clinical statistics

RAER 309 Epidemiology for Paramedic

Pre-requisite RAER 308 Research Methodology for Paramedic

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

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

SCBC 206 General Biochemistry

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

SCBI117 Foundation of Life

Pre-requisite -

Systematic classification of living organisms; reproduction and development in human and animals; comparative physiology of organ systems in human and animals, diseases and abnormalities, including nervous system, receptor and motor system, digestive system, endocrine system, gas exchange and excretory system, circulatory system and immune system; and basic biology laboratories

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

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

SCMI 206 Medical Microbiology & Parasitology

Pre-requisite -

Introduction to the basic principle of immunology, microbiology and parasitology including morphology and growth of microorganisms and parasites, methods of microbial genes transfer and drug resistant genes transfer, role of microorganisms in nature, sterile techniques, pathogenicity of microorganisms and parasites, host immune responses, medically important parasites, basic laboratory tests to detect microorganisms, virus, and parasites.

SCID 246 Basic Cell and Molecular Medic

Pre-requisite –

Structure and function of cell membrane, role of cell membrane receptors in medicine, intra- and intercellular communication, important medical mediators, cell life cycle, cell division, cellular structure changes, aging and dying and related drugs, fundamental principles in pharmacodynamics and pharmacokinetics

SCPA 202 Basic Pathology

Pre-requisite -

Introduction to Pathology of cell injury, cell death and adaptation, inflammation, healing and repair, disturbances of fluid and blood flow, immunoproliferative disorders, neoplasia, genetic diseases, bacterial infection, viral infection, fungal infection and parasitic infections, metabolic disorders, environmental pathology, nutrition pathology

SCPM 202 Basic Pharmacology

Pre-requisite -

Pharmacological principles, pharmacokinetics, pharmacodynamics, drugs use in the autonomic nervous system, cardiovascular system, and kidney. Drugs use in central nervous system, respiratory system, digestive system, endocrine and reproductive systems. Antimicrobial drugs, anticancer drugs, skin drugs, vitamin pills

SCPS 202 Basic Physiology

Pre-requisite -

The course covers basic concepts and principles of cell functions and the functions of various organ systems in the body. These include nervous, muscular, cardiovascular, respiratory, renal, gastrointestinal tract, endocrine and reproductive systems as well as temperature regulation. It also deals with the mechanisms of regulation of organ system integration and adaptations in order to keep the body in a homeostatic state

SCPY110 General Physics Laboratory

Pre-requisite -

Basic Physics experiments relating to Physics curriculums taught to the first year students in each faculty

RAER 201 Emergency Medical System

Pre-requisite -

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 202 History Interview and Physical Examination for Paramedic 1

Pre-requisite -

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 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 301 Emergency Medical Service 1

Pre-requisite RAER 201 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 Basic Life Support

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 310 Advanced Life Support 1

Pre-requisite RAER 305 Basic Life Support

Principles in advanced life support in adults, basic life support skills, advanced airway management, surgical cricothyrotomy 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 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 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 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 404 Advanced Life Support 2

Pre-requisite RAER 310 Advanced Life Support 1

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 403 Emergency Care in Trauma 2

Principles in mass casualty incidents and disasters, general management in mass casualty incidents and disasters; mass casualty 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 casualty management with models and simulations

RAER 406 Emergency Medical Field Work 2

Pre-requisite RAER 310 Advanced Life Support 1

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 402 Emergency Medical Care 2

RAER 311 Advanced Medical Procedure

RAER 401 Emergency Medical Service 2

RAER 402 Emergency Medical Care 2

RAER 404 Advanced Life Support 2

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 402 Emergency Medical Care 2

RAER 311 Advanced Medical Procedure

RAER 401 Emergency Medical Service 2

RAER 402 Emergency Medical Care 2

RAER 404 Advanced Life Support 2

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 402 Emergency Medical Care 2

RAER 311 Advanced Medical Procedure

RAER 401 Emergency Medical Service 2

RAER 402 Emergency Medical Care 2

RAER 404 Advanced Life Support 2

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