



Course: Anaesthesiology, Reanimatology and Intensive Care

Course Coordinator: Assoc. prof. Vlatka Sotošek, MD, PhD

Department: Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine

Study program: Integrated Undergraduate and Graduate University Study of Medicine in English

Study year: 5th

Academic year: 2021/2022

SYLLABUS

COURSE DESCRIPTION:

Anesthesiology, Reanimatology and Intensive Care Medicine is a compulsory course on the 5th year of the Integrated Undergraduate and Graduate Study of Medicine in English. It consists of 12 hours of lectures, 68 hours of practicals, and a total of 80 hours (4 ECTS credits). The course is held at the Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka and at The Institute of Emergency Medicine of the Primorje-Gorski kotar County.

Course objectives: The goal of this course is to encounter students with basic knowledge and skill of anesthesiology, reanimation and intensive care medicine. Further goal is to introduce to the students different anesthesia techniques, its indications and contraindications. Special attention is on training students to perform basic and advanced life support in adult and in children. Furthermore, the aim of the course is to encounter students with intensive care units, monitors of vital signs and treatment of critically ill patients. Additional goal is to introduce to the students different techniques of pain management.

Course content:

Anesthesiology: Historical review of the development of anesthesiology. Preoperative preparation of patients and operative risk assessment. Organization of anesthesia service and postoperative anesthesia care unit. General anesthesia, inhaled anesthetics, intravenous anesthetics and opioids, muscle relaxants. Regional anesthesia. Acute and chronic pain.

Reanimatology: Basic and advanced life support procedures. Approach to the patient with multiple injuries in outpatient emergency medical service. Approach to the patient with multiple injuries in the hospital emergency medical service.

Intensive care medicine: Organization of intensive care units. Vital signs monitoring in anesthesiology and intensive care medicine. Approach to the circulatory unstable patient. Sepsis and septic shock. Shock. Mechanical ventilation and Acute respiratory distress syndrome. Acute toxicity. Brain death and maintenance of a deceased organ donor for organ transplantation.

Teaching:

Classes are organized in the form of lectures and practicals. The estimated duration of course is 3 weeks. Lectures will be held on lecture room or on-line (MS Teams, Merlin platform) depending on epidemiological situation. Practicals are supervised by anesthesiologist and intensive care medicine physician, and the student are actively involved in practicals in accordance with epidemiological recommendations. Teaching staff will discuss with the students practicals. By completing all teaching activities, the students must pass obligatory test and final exam. By completing all teaching activities, the students will acquire 4 ECTS credits.

Assigned reading:

Šustić A, Sotošek V et al. Handbook of Anesthesiology, Reanimatology and Intensive Care Medicine for student of Medicine and Dental Medicine, Zagreb: Medicinska naklada; 2021.

Optional/additional reading:

Allman KG, Wilson IH. Oxford handbook of anaesthesia. Oxford: Oxford University Press; 2016.

COURSE TEACHING PLAN:

The list of lectures (with topics and descriptions):

L1 – Introduction to the course and historical review

Learning outcomes:

Understanding to the aims, contents, and requirements of the course. To know brief historical overview of anesthesiology, reanimatology and intensive medicine.

L2 - Shock

Learning outcomes:

To define shock. To distinguish different types of shock (cardiogenic, hypovolemic, distributive and obstructive shock). To know main principle of shock treatment.

L3 – Basic and advanced life support

Learning outcomes:

To define basic principles of basic and advanced life support. To recognize life threatening conditions. To know algorithms of basic and advanced life support.

L4 – Approach of the patient with multiple injuries in outpatient emergency medical service and in the hospital emergency medical service

Learning outcomes:

To know basic principles of the patient with multiple injuries in outpatient emergency medical service. To describe outpatient emergency medical service. To describe organization of hospital emergency medical service.

L5 – Preoperative preparation of patients and operative risk assessment

Learning outcomes:

To describe the procedure of preoperative preparation of patient for anesthesia. To describe ASA classification. To know the methods of operative risk assessment. To know about premedication procedures.

L6 - General anesthesia, inhaled anesthetics, intravenous anesthetics and opioids, muscle relaxants

Learning outcomes:

To know basic principles of general anesthesia. To describe different techniques of general anesthesia. To understand stages of general anesthesia. To know basic characteristic of inhaled and intravenous anesthetics. To describe anatomy and function of neuromuscular plate and mechanism of action for muscle relaxants. To describe pharmacokinetic and pharmacodynamics principles of muscle relaxants.

L7 – Regional anesthesia and local anesthetics

Learning outcomes:

To describe different techniques of regional anesthesia. To understand the basic principles of regional anesthesia. To describe indications and contraindications for regional anesthesia. To describe mechanism of actions and characteristics of local anesthetics.

L8 – Monitoring in anesthesia and intensive medicine

Learning outcomes:

To describe different types of monitors for anesthesia and intensive care medicine. To describe the purpose of electrocardiograph, pulse oximetry, device for invasive and noninvasive measurement, neuromuscular monitoring device etc.

L9 - Approach to the circulatory unstable patient

Learning outcomes:

To recognize and know how to treat circulatory unstable patient. To know the causes of hemodynamic instability.

L10 – Mechanical ventilation and ARDS

Learning outcomes:

To describe characteristics of mechanical ventilation. To know different modes of mechanical ventilation. To know the most common causes of ARDS, its diagnostic and treatment.

L11 – Acute poisoning

Learning outcomes:

To describe the most common causes of acute poisoning. To understand symptoms of acute poisoning. To know specific and symptomatic treatment of acute poisoning.

L12 - Acute and chronic pain treatment

Learning outcomes: To define acute and chronic pain. To understand pain pathway. To know different method of pain assessment. To know the most common causes of acute and chronic pain. To understand pharmacological and nonpharmacological methods of pain management.

The list of practicals with descriptions:

Practicals of Anesthesia and intensive care medicine are held at the Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, in Skills Lab Simulation Centre (Kabinet vještina) and at The Institute of Emergency Medicine of the Primorje-Gorski kotar County. Practicals of reanimatology are held in the Skills Lab Simulation Center (Kabinet vještina). Practicals of anesthesia are held in operating rooms and post-anesthesia care unite (PACU) at the Clinic of anesthesia, intensive medicine and pain treatment, Clinical Hospital Center Rijeka (Rijeka and Sušak). Practicals of intensive medicine are held at intensive care unit at the Clinic of anesthesia, intensive medicine and pain treatment, Clinical Hospital Center Rijeka (Rijeka and Sušak). At the The Institute of Emergency Medicine of the Primorje-Gorski kotar County practicals are held at the stationary and in ambulance.

Before practicals the students are required to know theoretical part of the course.

Practicals of basic and advanced life support are based on the European Resuscitation Council standards and performed on specialized manikins.

P1 BLS - Basic Life Support

Learning outcomes:

To know basic life support. To describe algorithm of basic life support. To know how to use automated external defibrillator.

P2 ALS - Advanced Life Support

Learning outcomes:

To know advanced life support. To describe algorithm of advanced life support.

P3 Approach of the patient in outpatient emergency medical service

Learning outcomes:

To describe the organization of outpatient emergency medical service. To know how to treat patients in outpatients emergency medical service.

P4 Basic of anesthesia

Learning outcomes:

To know basics of preoperative preparation of patient for anesthesia, to assess the risk for anesthesia an surgery. To know different techniques of general and regional anesthesia. To know different type of monitoring during anesthesia.

P5 Basic of intensive medicine

Learning outcomes:

To know basic characteristic of intensive care unit organization. To know basic principles of intensive care of critically ill patients. To describe different type of monitoring in intensive care unit.

Student's obligations:

Attendance on lectures and practicals is mandatory. Communication between the teaching staff and students will take place on Merlin e-learning system or by e-mail addresses (@uniri.hr)
For a detailed description of obligations during classes, see the section "Assessment"

Student assessment:

Student assessment is carried out in accordance with the current University of Rijeka Study Regulations and the Student Regulations at the Faculty of Medicine Rijeka (adopted by the Faculty Council of the Faculty of Medicine Rijeka).

Students' performance will be evaluated during the course and at the final exam. Out of a total of 100 credits, a student can earn 50 credits (50%) during the course, and 50 credits (50%) at the final exam.

Student assessment is performed using ECTS (A-F) and number system (1-5). Student assessments in ECTS system is carried out by is performed by absolute distribution, and according to graduate assessment criteria.

Out of a total of 50 credits that can be earn during the course, student must earn 25 credits to take final exam.

The student acquires grade points by completing the tasks as follows

I. During the course (maximum 50 credits):

Obligatory test (maximum 50 credits)

During the course students must take obligatory test of BLS and ALS and can earn maximum (range 25-50). The obligatory test is held the Skills Lab Simulation Center (Kabinet vještina).

During the obligatory test teacher grades knowledge and skills of each student as follows:

grade	credits
sufficient	25
good	33
very good	42
excellent	50

II. Final exam (maximum 50 credits):

Final exam is consist of obligatory written exam on Merlin platform. Student who earn 25 or more credits during the course can take final exam. Student who earn less than 25 credits during the course cannot take final exam. Final exam is scored maximal up to 50 credits. Final exam is consist of 24 questions and brings 50 credits (rage 25-50). To earn the credits student must pass 50% of final test. Correct answers are converted in credits by the following criteria:

CORRECT ANSWERS (%)	credits
50-54,99%	25
55-59,99%	30
60-64,99%	32,5
65-69,99%	35
70-74,99%	37,5
75-79,99%	40
80-84,99%	42,5
85-89,99%	45
90-94,99%	47,5
95-100%	50

For a passing grade during classes and on the final exam, student has to obtain minimum of 50 credits.

The ECTS grading system is defined by the following criteria:

- A (5) – 90 -100% credits
- B (4)– 75 - 89,9% credits
- C (3) – 60 - 74,9% credits
- D (2) -- 50 - 59,9% credits
- F (1) – 0 - 49,9% credits

Grades in ECTS grading system are converted in numerical system by the following criteria:

- A = excellent (5)
- B = very good (4)
- C = good (3)
- D = sufficient (2)
- F = insufficient (1)

Other remarks (related to the course) which are important for students:

Course content and all information related to the course as well as exam dates can be found on the Merlin e-learning system and on the web pages of the Department of Anesthesiology, Reanimatology, Emergency and Intensive care.

All student inquiries, regarding the course and possible problems, remarks and inquiries are provided exclusively using the official e-mail addresses (@medri.uniri.hr) or via the Merlin e-learning system. It is possible to arrange consultations with the teaching staff during working hours.

COURSE SCHEDULE (FOR ACADEMIC YEAR 2021./2022.) *

Date	Lectures (time and place)	Practicals (time and place)	Teacher
23 rd June 2022	L1+L2 (16:00-17:30, Lecture hall of Clinical Hospital Center Rijeka or online)		Prof. Alan Šustić, MD, PhD
23 rd June 2022		Practicals by groups: P1 (08-11:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 1 P2 (12-15:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 2 P3 (07 – 01) The Institute of Emergency Medicine of the Primorje-Gorski kotar County * - Group 3 P4 (8.15-15) Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka – location Rijeka – Group 4 - location Sušak – Group 5	Marko Milošević, MD Ivana Jurinčić, MD Anja Wolfand, MD Senka Kajčić, MD Janja Tarčuković, MD, PhD Danijel Knežević, MD Lara Valenčić, MD Mateo Tićac, MD
24 th June 2022	L3+L4 (16:00-17:30, Lecture hall of Clinical Hospital Center Rijeka or online)		Assoc. prof. Alen Protić, MD, PhD
		P1-P5 Practicals by groups: P1 (08-11:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 2 P2 (12-15:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 3 P3 (07 – 01) The Institute of Emergency Medicine of the Primorje-Gorski kotar County * - Group 4 P4 (8.15-15) Department of Anaesthesiology,	Marko Milošević, MD Ivana Jurinčić, MD Anja Wolfand, MD Senka Kajčić, MD

		Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka – location Rijeka – Group 5 - location Sušak – Group 1	Janja Tarčuković. MD, PhD Danijel Knežević, MD Lara Valenčić, MD Mateo Tićac, MD
27 th June 2022	L5+L6 (16:00-17:30, Lecture hall of Clinical Hospital Center Rijeka or online)		Assist. prof. Jadranka Pavičić-Šarić, MD, PhD
		P1-P5 Practicals by groups: P1 (08-11:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 3 P2 (12-15:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 4 P3 (07 – 01) The Institute of Emergency Medicine of the Primorje-Gorski kotar County * - Group 5 P4 (8.15-15) Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka – location Rijeka – Group 1 - location Sušak – Group 2	Marko Milošević, MD Ivana Jurinčić, MD Anja Wolfand, MD Senka Kajčić, MD Janja Tarčuković. MD, PhD Danijel Knežević, MD Lara Valenčić, MD Mateo Tićac, MD
28 th June 2022	L7+L8 (16:00-17:30, Lecture hall of Clinical Hospital Center Rijeka or online)		Assoc. prof. Vlatka Sotošek, MD, PhD
		P1-P5 Practicals by groups: P1 (08-11:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 4 P2 (12-15:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 5 P3 (07 – 01) The Institute of Emergency Medicine of the Primorje-Gorski kotar County * - Group 1	Marko Milošević, MD Ivana Jurinčić, MD Anja Wolfand, MD Senka Kajčić, MD

		P4 (8.15-15) Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka – location Rijeka – Group 2 - location Sušak – Group 3	Janja Tarčuković. MD, PhD Danijel Knežević, MD Lara Valenčić, MD Mateo Tićac, MD
29 th June 2022	L9+L10 (16:00-17:30, Lecture hall of Clinical Hospital Center Rijeka or online)		Prof. Željko Župan, MD, PhD
		P1-P5 Practicals by groups: P1 (08-11:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 5 P2 (12-15:30) Skills Lab Simulation Centre (Kabinet vještina) – Group 1 P3 (07 – 01) The Institute of Emergency Medicine of the Primorje-Gorski kotar County * - Group 2 P4 (8.15-15) Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka – location Rijeka – Group 3 - location Sušak – Group 4	Marko Milošević, MD Ivana Jurinčić, MD Anja Wolfand, MD Senka Kajčić, MD Janja Tarčuković. MD, PhD Danijel Knežević, MD Lara Valenčić, MD Mateo Tićac, MD
30 th June 2022	L11+L12 (16:00-17:30, Lecture hall of Clinical Hospital Center Rijeka or online)		Assist. prof. Vlasta Orlić Karbić, MD, PhD

*At The Institute of Emergency Medicine of the Primorje-Gorski kotar County students spend 8 teaching hours (6 real hours) and are allocated in group of two students (see the list of groups).

List of lectures, seminars and exercises:

	LECTURES (topics)	Teaching hours	Location
L1	Introduction to the course and historical review	1	Lecture hall of Clinical Hospital Center Rijeka or online on MS Teams
L2	Shock	1	Lecture hall of Clinical Hospital Center Rijeka or

			online
L3	Basic and advanced life support	1	Lecture hall of Clinical Hospital Center Rijeka or online
L4	Approach of the patient with multiple injuries in outpatient emergency medical service and in the hospital emergency medical service	1	Lecture hall of Clinical Hospital Center Rijeka or online
L5	Preoperative preparation of patients and operative risk assessment	1	Lecture hall of Clinical Hospital Center Rijeka or online
L6	General anesthesia, inhaled anesthetics, intravenous anesthetics and opioids, muscle relaxants	1	Lecture hall of Clinical Hospital Center Rijeka or online
L7	Regional anesthesia and local anesthetics	1	Lecture hall of Clinical Hospital Center Rijeka or online
L8	Monitoring in anesthesia and intensive medicine	1	Lecture hall of Clinical Hospital Center Rijeka or online
L9	Approach to the circulatory unstable patient	1	Lecture hall of Clinical Hospital Center Rijeka or online
L10	Mechanical ventilation and ARDS	1	Lecture hall of Clinical Hospital Center Rijeka or online
L11	Acute poisoning	1	Lecture hall of Clinical Hospital Center Rijeka or online
L12	Acute and chronic pain treatment	1	Lecture hall of Clinical Hospital Center Rijeka or online
	Total hours of lectures	12	

	SEMINARS (topics)	Teaching hours	Location
	Not applicable		
	Total hours of seminars		

	Practicals	Teaching hours	Location
P1	BLS - Basic Life Support	16	Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine (Skills Lab Simulation Center - Kabinet vještina)
P2	ALS - Advanced Life Support	16	Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine (Skills Lab Simulation Center - Kabinet vještina)
P3	Approach of the patient in outpatient emergency medical service	8	The Institute of Emergency Medicine of the Primorje-Gorski kotar County

P4	Basic of anesthesia	14	Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka (Rijeka and Sušak) (operating rooms)
P5	Basic of intensive medicine	14	Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka (Rijeka and Sušak) (intensive care units)
	Total hours of practicals	68	

	EXAM DATES
1.	1 st July 2022
2.	4 th July 2022
3.	6 th September 2022
4.	20 th September 2022