



Sveučilište u Rijeci • Fakultet dentalne medicine  
University of Rijeka • Faculty of Dental Medicine

**Course: Anaesthesiology, Reanimatology and Intensive Care Medicine**

**Course Coordinator: Prof. Željko Župan, MD, PhD**

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

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

**Study year: 3<sup>th</sup>**

**Academic year: 2022/2023**

## **SYLLABUS**

### **COURSE DESCRIPTION:**

Course "**Anaesthesiology, Reanimatology and Intensive Care Medicine**" is a compulsory course on the 3<sup>th</sup> year of the Integrated Undergraduate and Graduate Study of Dental Medicine in English. It consists of 12 hours of lectures, 8 hours of seminars, 15 hours of practicals, and a total of 35 hours (**2,5 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.

**The aim of the course are:** is the acquisition of the basic knowledge and skills as well as competencies in the field of anesthesiology and resuscitation related to the scope of dental medicine. The aim of the course is to acquaint students with the basic knowledge and techniques of performing certain degrees of sedation, analgesia and anesthesia in dental practice and dental anesthesiology. The goal of the course is also to train students to perform skills in the field of monitoring of the basic vital functions and basic and advanced resuscitation competencies that they can apply in their everyday dental clinics procedures.

#### **The Course content:**

**Anesthesiology:** to present the history of anesthesiology and connect it with today's development of dental practice. Clarify the basic methods of sedation and anxiety with pain control in everyday dental medicine. Explain conscious analgosedation and deep sedation and general anesthesia use in dental medicine. Describe inhalation sedation in dental medicine. Explain the need for patient preparation for sedation and anesthesia in dental medicine. Ensure the performance of dental procedures in patients on chronic anticoagulation peroral and antithrombotic therapy. To clarify some methods of regional anesthesia in dental medicine and to consider the problems associated with local anesthetics. Explain the approach of multimodal therapy of acute pain after dental procedures.

**Assigned reading:**

Allman KG, Wilson IH. Oxford handbook of anaesthesia. Oxford: Oxford University Press; 2016.  
Recent and relevant article from field of dental medicine

**Optional/additional 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.

**COURSE TEACHING PLAN:****Lectures:****P1. Introduction to the course and historical review****Learning outcomes:**

Understanding to the aims, contents, and requirements of the course. Describe historical overview of anesthesiology, reanimatology and intensive medicine and connect with today development of dental medicine.

**P2. Methods of sedation and anxiety with pain control in dental medicine****Learning outcomes:**

Name the most common causes of anxiety and pain in patients in dental practice.  
Describe and explain methods of anxiety and pain control in dental medicine.  
Differentiate anxiety and pain control procedures in dental practice.

**P3. Patients preparing for sedation and general anaesthesia in dental practice****Learning outcomes:**

Explain the preparing procedure for sedation and anaesthesia.  
Define ASA classification.  
Explain the methods of assessments for periprocedural risk.  
Describe and explain use medication for periprocedural premedication.

**P4. Deep sedation and general anaesthesia in dental medicine****Learning outcomes:**

Explain deep sedation.  
Describe and explain procedures in deep sedation.  
Describe the general anaesthesia and explanation of the methods of its performance.  
Name the stages of general anaesthesia.

**P5. Inhalation sedation in dental practice****Learning outcomes**

Describe basic pharmacodynamic and pharmacokinetics of inhalation anesthetics.  
Explain procedures to delivery general inhalation anesthetics.

**P6. Conscious sedation in dental practice****Learning outcomes:**

Name basic principles of conscious sedation in dental medicine.  
Describe and explain practical procedures of conscious sedation in dental medicine.

**P7. What are the techniques used in Basic Life Support?**

Learning outcomes:

Describe techniques in BLS.

Describe the signs of cardiac arrest, significant haemodynamic failure and respiratory distress.

Describe of signs of sudden cardiac arrest, heart attack, stroke, and foreign body airway obstruction, and the performance of cardiopulmonary resuscitation (CPR) and defibrillation with an automated external defibrillator.

**P8. What are the techniques used in Advanced Life Support?**

Learning outcomes:

Describe techniques in ALS.

Explain set of life-saving protocols and skills that extend beyond Basic Life Support (BLS) and used to provide urgent treatment to cardiac emergencies such as cardiac arrest, stroke, myocardial infarction, and other such conditions which can happen in dental procedures.

**P9. Dental procedure in patients with oral anticoagulation and antithrombotic therapy.**

Learning outcomes:

Describe and explain the mechanisms of action of antiplatelet and anticoagulation drugs.

Classify anesthetic techniques in patients on anticoagulation and antiplatelet therapy.

**P10. 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.

**P11. Local anesthetics and its toxicity**

Learning outcomes:

Define and analyse the pharmacodynamics and pharmacokinetics of local anesthetics.

Describe the problems related to the application of local anesthetics in dental practice.

Recognize the toxic effect of local anesthetics and apply appropriate treatment procedures.

**P12. Multimodal therapy of pain control in dental medicine**

Learning outcomes:

Define of acute pain in dental medicine.

Understand and analyze the pathways of pain transmission.

Describe and explain the methods of determining pain intensity.

Understand and explain pharmacological and non-pharmacological methods of treating acute pain after dental procedures.

**Seminars with explanation:**

The seminars are held in the building of the Department of Biotechnology in the Sušak Campus, in the available space. During the seminar, students will actively discuss topics of interest in the field of anesthesiology and resuscitation in dental practice with the leader.

**S1 and S2. Treatment of relevant topics of interest to students of dental medicine from recent literature**

Learning outcomes: discuss in the relevant topics in the field of anesthesiology and explain resuscitation in dental practice.

**List of practicals with explanation:**

Exercises from the course Anesthesiology, resuscitation and intensive care are performed at the Clinic for Anesthesiology and Intensive Care of the Rijeka Clinical Hospital Center in Sušak. Exercises in reanimation take place in the Simulation Center - Cabinet of Skills on the University campus in Sušak, building of the Department of Biotechnology.

During the exercises at the Clinic for Anesthesiology and Intensive Care of the Rijeka Clinical Hospital Center in Sušak, students will practice the procedures for assessing the state of consciousness, become familiar with and practice manual ventilation, monitor the patient's basic hemodynamic parameters, practice how to monitor the patient's basic life functions, and practice setting up intravenous times.

During exercises in resuscitation, students will practically perform the acquired knowledge of basic and advanced life support on mannequins and computer simulators.

**P1. Basic life support procedures, BLS (English Basic Life Support)**

Learning outcomes:

Master basic life support procedures.

List and analyze the algorithm of basic life support and learn to act according to its guidelines.

Describe the use of an automatic external defibrillator.

**P2. Procedures of advanced life support, ALS (English Advanced Life Support)**

Learning outcomes:

Demonstrate advanced life support procedures.

List and analyze with the algorithm of advanced life support and learn to act according to its guidelines.

**P3. Basics of anesthesiology, recognition of vital sign and function failure:**

Learning outcomes:

Analyze and explain pre-anesthesiological assessment of the patient and the procedures for reducing the client's risk for sedation and anesthesia.

Explain and apply basic knowledge and skills of monitoring the client's basic vital functions, state of consciousness, hemodynamic and respiratory stability, establishment of an intravenous route and interventions to maintain airway patency, oxygen therapy, assisted breathing, use of basic vasoactive drugs to raise blood pressure and administration of intravenous solution.

Demonstrate techniques of performing general and regional anesthesia.

Explain the operation of various devices for monitoring vital functions of clients during sedation and anesthesia.

**Student obligation:**

Students are obliged to regularly attend and actively participate in all forms of classes.

**Student assessment**

Student assessment is carried out in accordance with the current University of Rijeka Study Regulations.

Students' performance will be evaluated during the course and at the final exam. Out of a total of 60 credits, a student can earn 30 credits (50%) during the course, and 30 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.

The student acquires grade points by completing the tasks as follows.

Students are evaluated using a combination of ECTS grades and numerical grades ranging from 5A to 1F.

More than 50% of the grade points that could be obtained during classes through forms of continuous monitoring and evaluation of students in accordance with the Rules for taking the final exam must be collected.

The threshold for the final exam cannot be less than 50% of the successfully completed written exam.

The student acquires grade points by actively participating in classes, completing assigned tasks and taking midterm exams as follows:

**I. During the class, the following are assessed (maximum 30 points):**

**a) class attendance (up to 3 credits)**

**b) compulsory colloquium (up to 27 points)**

**a) Class attendance (up to 3 points) explanation:**

A student can miss 30% of classes solely for health reasons, which is justified by a doctor's excuse. Attendance at lectures and exercises is mandatory. Compensation for exercises is possible with prior agreement with the leader.

If a student, excused or unjustified, misses more than 30% of classes, he cannot continue following the course and loses the opportunity to take the final exam. With this, he collected 0 ECTS points and was graded F.

Grading of class attendance (lectures and exercises) will be done in the following way:

%	attendance grade points
70 - 85	1
86 - 100	3

**b) Mandatory colloquium (up to 25 points)**

During classes, all students are required to take a colloquium in basic and advanced life support, where they gain a maximum of 27 points (range of 14-27). The colloquium is conducted in the "Skills Cabinet" with the use of a simulation computer program.

During the colloquium, the leader evaluates the acquired knowledge and skills of each student and assigns points in the following way:

Credits	Grade
16	sufficient
20	good
25	vary good
27	excellent

**Final exam before writing test (max. 30 marks in total)****Who can take the final exam:**

Students who have obtained more than 15 points during classes take the mandatory final exam, where they can obtain a maximum of 30 points.

Students who achieved 0-49% of grade points during classes are graded F (failed), cannot gain ECTS points and must re-enroll in the course.

**Who cannot take the final exam:**

Students who have obtained 15 points or more (>50%) during the course have the right to sit for the final exam (they enroll in the second year course).

**The final exam is a written exam. It carries 30 evaluation points (range 15-30).**

**Success in the final exam is converted into grade points as follows:**

Correct answers	Evaluation points
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148-150	30
145-147	29
142-144	28
139-141	27
136-138	26
133-135	25
130-132	24
127-129	23
124-126	22
121-123	21
118-120	20
115-117	19
112-114	18
109-111	17
106-108	16
103-105	15
100-102	14
98-99	13
96-97	12
94-95	11
92-93	10
90-91	9
88-89	8
86-87	7
84-85	6
82-83	5
80-81	4
78-79	3
76-77	2
75	1

In order to pass the final exam and the final evaluation (including the addition of previously achieved evaluation points during classes), the student must be positively evaluated on the final exam and achieve a minimum of 15 evaluation points (50%).

Grading in the ECTS system is done by absolute distribution, that is, based on the final achievement:

**A – 90 - 100% points**

**B – 75 - 89.9%**

**C – 60 – 74.9%**

**D -- 50 - 59.9%**

**F – 0 - 49.9%**

Grades in the ECTS system are translated into a numerical system as follows:

**A = excellent (5)**

**B = very good (4)**

**C = good (3)**

**D = sufficient (2)**

**F = insufficient (1)**

**Other notes (related to the course) important for students:**

Teaching content and all information related to the course, as well as exam dates, will be available on the web sites of the Department of Anesthesiology, Reanimation and Intensive Care, Faculty of Dental Medicine, University of Rijeka.

The Number of students on the course 2022/2023: 8 students

They are divided into two groups: A/4 students and B/4 students according to alphabetical order of their last name

**COURSE SCHEDULE (FOR ACADEMIC YEAR 2022/2023)**

Date	Lecture (time and place)	Seminars (time and place)	Practicals (time and place)	Teachers
<b>6<sup>th</sup> March 2023</b>	<b>L1</b> (8:15-9:00) Hall S31, Kampus,			Prof Željko Župan, MD, PhD
<b>6<sup>th</sup> March 2023</b>	<b>L2</b> (9:15-10:00) Hall S31, Kampus			Prof Željko Župan, dMD, PhD
<b>6<sup>th</sup> March 2023</b>	<b>L3</b> (10:15-11:00) Hall S31, Kampus			Prof Željko Župan, MD, PhD



<b>6<sup>th</sup> March 2023</b>			Practicals by groups: <b>P1-P2</b> (12:00-16:00) Kabinet Kampus, <b>Groups A-B</b>	<b>"Kabinet" of the skills:</b>  <b>A</b> -asst Vuksan Ivan, MD med. <b>B</b> -asst Bura Matej, MD
<b>7<sup>th</sup> March 2023</b>	<b>L4-L5</b> (8:15-9:45) Hall S31, Kampus,			Prof Vlatka Sotošek MD, PhD
<b>7<sup>th</sup> March 2023</b>	<b>L6</b> (9:45-10:40) Hall S31, Kampus			Prof Vlatka Sotošek MD, PhD
<b>7<sup>th</sup> March 2023</b>	<b>L7</b> (10:45-11:30) Hall S31, Kampus <b>L8</b> (11:30-12:15) Hall S31, Kampus			Asst prof Janja Turčuković, MD, PhD
<b>7<sup>th</sup> March 2023</b>			Practical by groups: <b>P1-P2</b> (13:00-17:00) Kabinet Kampus, <b>Groups A-B</b>	<b>"Kabinet" of the skills:</b>  <b>A</b> - asst Vuksan Ivan, MD <b>B</b> - asst Bura Matej, MD
<b>8<sup>th</sup> March 2023</b>		<b>S1-S2</b> (8:15-11:15) Hall S31, Kampus,		Prof Vlatka Sotošek MD, PhD
<b>8<sup>th</sup> March 2023</b>	<b>L9</b> (11:20-12:10) Hall S31, Kampus			prof Željko Župan, MD, PhD
<b>8<sup>th</sup> March 2023</b>			Practical by groups:  <b>P3</b> (13:00-16:00) Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka Location Sušak, <b>Groups A-B</b>	<b><u>Clinic/ICU:</u></b>  <b>A</b> - prof Željko Župan, MD, PhD  <b>B</b> - asst Mirna Bobinac, MD, PhD
<b>9<sup>th</sup> March 2023</b>	<b>L10</b> (8:15-9:00) Hall S31, Kampus			Asst Vlasta Orlić Karbić, MD, PhD

<b>9<sup>th</sup> March 2023</b>	<b>L11</b> (9:10-10:00) Hall S31, Kampus			Asst Prof Vlasta Orlić, MD, PhD
<b>9<sup>th</sup> March 2023</b>	<b>L12</b> (10:15-11:00) Hall S31, Kampus			Asst Prof Vlasta Orlić, MD, PhD
		<b>S1-S2</b> (11:15-14:45) Hall S31, Kampus		Prof Vlatka Sotošek MD, PhD
<b>Mandatory colloquium from BLS and ALS after completion of V1 and V2</b>			<b>Kabinet Kampus, at the end of block of practicals</b>	asst Vuksan Ivan, MD asst Bura Matej, MD

#### List of lectures, seminars and exercises

	LECTURES	HOURS of TEACHING	PLACE of MAINTAINANCE
<b>L1</b>	Introductory lecture and a brief historical overview of the development of anesthesiology	1	Hall S31 or..., Kampus
<b>L2</b>	Methods of sedation and anxiety and pain control in dental medicine	1	Hall S31 or..., Kampus
<b>L3</b>	Conscious analgosedation in dental medicine	1	Hall S31 or..., Kampus
<b>L4</b>	Conscious analgosedation in dental medicine	1	Hall S31 or..., Kampus
<b>L5</b>	Inhalation sedation in dental medicine	1	Hall S31 or..., Kampus
<b>L6</b>	Preparation of patients for sedation and anesthesia in dental medicine	1	Hall S31 or..., Kampus
<b>L7</b>	What are the techniques used in Basic Life Support?	1	Hall S31 or..., Kampus
<b>L8</b>	What are the technique in Advanced Life Support?	1	Hall S31 or..., Kampus
<b>L9</b>	Dental procedures in patients on anticoagulation and antiplatelet therapy	1	Hall S31 or..., Kampus
<b>L10</b>	Regional anesthesia in dental medicine	1	Hall S31 or..., Kampus
<b>L11</b>	Multimodal therapy of acute pain after dental procedures	1	Hall S31 or..., Kampus
<b>L12</b>	Local anesthetics and toxicity of local anesthetics	1	Hall S31 or..., Kampus

	<b>Ukupan broj sati predavanja</b>	<b>12</b>	
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	<b>SEMINARS (the title of seminars)</b>	<b>HOURS of TEACHING</b>	<b>PLACE of MAINTAINANCE</b>
<b>S1</b>	Treatment of relevant topics from recent literature of interest to students of dental medicine	4	Hall S31 or..., Kampus
<b>S2</b>	Treatment of relevant topics from recent literature of interest to students of dental medicine	4	Hall S31 or..., Kampus
	<b>Ukupan broj sati seminara</b>	<b>8</b>	

	<b>PRACTICALS (exercise topics)</b>	<b>HOURS of TEACHING</b>	<b>PLACE of MAINTAINANCE</b>
<b>P1</b>	BLS (engl. Basic Life Support)	5	"Kabinet" Kampus
<b>P2</b>	ALS (engl. Advanced Life Support)	5	"Kabinet" Kampus
<b>P3</b>	The basics of monitoring and monitoring vital functions, setting up an intravenous line, releasing the airway, cyst therapy and non-invasive ventilation support, application of basic vasoactive drugs	5	Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Clinical Hospital Center Rijeka Location Sušak,
	<b>Ukupan broj sati vježbi</b>	<b>15</b>	

	<b>EXAM DATES</b>
<b>1.</b>	10 <sup>th</sup> March 2023 – students will be informed of the venue of the exam at the beginning of the course;
<b>2.</b>	11 <sup>th</sup> April 2023
<b>3.</b>	6 <sup>th</sup> July 2023