Medicinski fakultet u Rijeci

# IZVEDBENI NASTAVNI PLAN
# 2021/2022

Za kolegij

# Simulation of Clinical Skills

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|---|---|
| Studij: | **Medical Studies in English (R)**<br>Sveučilišni integrirani prijediplomski i diplomski studij |
| Katedra: | **Katedra za anesteziologiju, reanimatologiju i intenzivnu medicinu** |
| Nositelj kolegija: | **doc. dr. sc. Tarčuković Janja, dr. med, DESAIC** |
| Godina studija: | **6** |
| ECTS: | **6** |
| Stimulativni ECTS: | **0 (0.00%)** |
| Strani jezik: | **Mogućnost izvođenja na stranom jeziku** |

## Podaci o kolegiju:

**Course information (short description of the course, general information, and instructions, where and in which form is the course organized, necessary tools, instructions on class attendance and preparation, student obligation, etc):**

Simulation of Clinical Skills is a mandatory course in the sixth year of the Integrated Undergraduate and Graduate University Study of Medicine in English. Comprising 8 hours of lectures and 125 hours of practicals, the course totals 133 hours, accounting for 6 ECTS.

The course is held by an experienced team of medical educators and physicians from different departments, including Anaesthesiology, Resuscitation, Emergency, and Intensive Care Medicine, Surgery, Urology, and Paediatrics. These educators are based at the Faculty of Medicine, University of Rijeka, and Clinical Hospital Centre Rijeka. On top of live lectures and workshops, the course is comprised of obligatory online asynchronous written materials and video-tutorial and demonstrations.

The primary objective of this course is to equip sixth-year medical students with the essential skills and knowledge required to respond effectively to diverse emergency medical conditions. The course employs advanced simulation techniques to enhance students' decision-making skills, practice their clinical judgement, and develop effective communication and teamwork. This is achieved through a combination of concise theoretical overviews of specific medical skills and/or emergency medical conditions, and the practical application of this knowledge in simulations of real-world scenarios.

**COURSE LEARNING OUTCOMES**

*After finishing the course, the student should be able to:*

A. **COGNITIVE DOMAIN – KNOWLEDGE**

1. List the most common medical emergencies, including various causes of acute respiratory and circulatory failure, acute coronary syndrome and malignant arrhythmias, sudden neurological deterioration, sepsis and septic shock, fluid and electrolyte imbalances, hypovolemic shock, acute poisoning, burns, polytrauma, and paediatric emergencies.
2. Describe the typical clinical presentation and diagnostic tools for evaluating common medical emergencies.
3. Describe the necessary medication, procedures, and equipment for the management of the most common medical emergencies.

A. **PSYCHOMOTOR DOMAIN – SKILLS**

1. Recognize and manage cardiorespiratory arrest according to advanced life support guidelines.
2. Conduct a structured assessment (ABCDE, SAMPLE) of simulated patients experiencing medical emergencies, identify pathological findings, and apply this knowledge to create a differential diagnosis and propose diagnostic plan.
3. Analyse results of basic diagnostic tests: laboratory tests (blood count, glucose and electrolyte values, urea, creatinine, cardiac and inflammatory biomarkers, BGA), coagulation tests, microbiology cultures, ECG, and chest x-ray.
4. Manage a simulated patient with a medical emergency, including selecting appropriate treatment and emergency procedures based on clinical findings and diagnostic results.
5. Communicate effectively with team-members during clinical scenarios and other medical personnel during patient hand-over, fusing a structured approach (e.g. SBAR).

A. **AFFECTIVE DOMAIN – VALUES AND ATTITUDES**

1. Recognize the importance of structured patient assessment in high-stress situations.
2. Acknowledge the importance of early recognition of deteriorating patient and the need for prompt intervention planning.
3. Understand the significance of effective communication among medical personnel during medical emergencies.

**COURSE CONTENT**

To achieve the learning outcomes, classes are organized in 10 thematic units that utilize simulation medicine to bridge the gap between theoretical knowledge and practical application:

1. **FOUNDATIONS OF SIMULATION MEDICINE: TECHNIQUES AND BEST PRACTICES**

*(How can simulation-based learning enhance the acquisition and application of clinical skills in medical practice?)*

L1 Introduction to the simulation medicine

eP. Introduction to simulation medicine: learning techniques and best practices

1. **STRUCTURED APPROACH TO MEDICAL EMERGENCIES**

*(How to assess, recognize, and manage a deteriorating patient in daily practice?)*

L2 Cardiopulmonary resuscitation algorithm

L3 Initial assessment and hand-over of acutely ill patients (ABCDE, SAMPLE and SBAR)

L4 Essentials for interpretation of 12-lead ECG in medical emergencies

L5 Initial assessment and management of a patient with cardiac arrhythmias

P1 Recognition and management of a deteriorating patient; cardiopulmonary resuscitation algorithm: onsite workshop in conjunction with educational materials provided via the Merlin e-learning platform

1. **CARDIAC EMERGENCIES**

*(How to effectively recognize, assess, and manage life-threatening cardiac emergencies in daily practice?)*

P2 Cardiac emergencies – background, assessment, recognition, and management: onsite workshop in conjunction with educational materials provided via the Merlin e-learning platform

1. **ACUTE RESPIRATORY FAILURE**

*(How to assess, recognize and manage a patient in acute respiratory failure in daily practice?)*

P3 Acute respiratory failure – background, assessment, recognition, and management: onsite workshop in conjunction with educational materials provided via the Merlin e-learning platform

1. **SUDDEN NEUROLOGICAL DETERIORATION**

*(How to assess, recognize and manage a patient with sudden deterioration in neurologic status in daily practice?)*

P4/part I Sudden deterioration in neurologic status: onsite workshop in conjunction with educational materials provided via the Merlin e-learning platform

1. **SEPSIS AND SEPTIC SHOCK**

*(How to assess, recognize and manage a patient with suspected sepsis/septic shock in daily practice?)*

P4/part II Sepsis and septic shock: onsite workshop in conjunction with educational materials provided via the Merlin e-learning platform

1. **COMPREHENSIVE MANAGEMENT OF ACUTE MEDICAL EMERGENCIES**

*(How to assess, recognize and manage a patient with haemorrhage and haemorrhagic shock, electrolyte disturbances, acute poisoning, and burns in daily practice?)*

P5 Haemorrhage and haemorrhagic shock, electrolyte disturbances, acute poisoning, burns

1. **INJURIES AND TRAUMA LIFE SUPPORT**

*(How to assess and manage an injured patient in daily practice?)*

L6 Trauma life support

P6 Essential surgical clinical skills: suturing, splints, repositions, urinary bladder catheterisation

P7 Trauma assessment and management: onsite workshop in conjunction with educational materials provided via the Merlin e-learning platform

**9. CLINICAL SKILLS IN PAEDIATRICS**

*(How to assess, recognize and manage paediatric emergency in daily practice?)*

L7 Initial assessment and management of paediatric emergencies

P8 Paediatric emergencies and life support

**10. THINKING IN PATERNS OF CLINICAL FEATURES IN WIDE DIFFERENTIAL DIAGNOSIS**

*(How to properly integrate acquired theoretical and practical knowledge in a wide variety of different medical scenarios and perform an effective communication between medical personnel?)*

P9 Integrated simulation of all clinical skills – part 1

P10 Integrated simulation of all clinical skills – part 2

**COURSE CONCEPT**

The primary objective of the course “Simulation of Clinical Skills,” held at the Skills Lab Simulation Centre (Kabinet vještina), is to equip sixth-year medical students with the essentials skills and knowledge required to respond effectively to diverse emergency medical situations. The course employs advanced simulation techniques to enhance decision-making abilities, refine clinical judgement, and foster effective communication and teamwork.

Innovatively using the flipped classroom model, students independently study theoretical overviews of essential medical skills and specific emergency conditions via Merlin e-learning platform, prior to onsite classes. This independent study is followed by highly interactive in-class sessions, where the theoretical knowledge is tightly interwoven with practical simulation exercises. These theoretical segments aim to equip students with the robust skillset necessary to properly recognize, assess, and manage varying medical emergencies.

Upon mastering the theoretical aspects, students are introduced to a range of simulation scenarios that mimic diverse clinical conditions. These scenarios provide an ideal platform for students to implement the theoretical knowledge they have acquired throughout the medical school and summarized during the theoretical parts of the classes. Each simulation is run by a team of students, consisting of one team-leader and 2-3 team members, and is moderated by a teacher. This structure ensures that students receive ample hand-on experience while also promoting effective team communication.

As a conclusion to each simulation scenario, a teaching discussion is held where personalized feedback is provided to each student. This feedback mechanism is integral to the learning process, enabling students to reflect on their performance and make necessary adjustments for future simulations.

## Popis obvezne ispitne literature:

**List of mandatory literature:**

“Simulation of Clinical Skills – a practical guide” and educational materials available on Merlin e-learning platform (available to students two weeks prior to beginning of this course)

## Popis dopunske literature:

**Additional (optional) literature:**

European Resuscitation Council Guidelines 2021 - available at: https://www.cprguidelines.eu/
- Basic Life Support
- Adult Advanced Life Support
- Cardiac Arrest in Special Circumstances
- Newborn Resuscitation and Support of Transition of Infants at Birth
- Paediatric Life Support

Alson LA, Han KH, Campbell JE. International Trauma Life Support for Emergency Care Providers, 9ed. Pearson 2019.
Šustić A, Sotošek V. Handbook of Anaesthesiology, Reanimatology, and Intensive Care Medicine for students of medicine and dental medicine, 1ed. Zagreb: Medicinska naklada, 2021.

## Nastavni plan:

## Obveze studenata:

**Student obligations:**

All information regarding the course, as well as the obligatory materials needed to prepare for the course, will be available on the Merlin e-learning platform. Students should visit the mentioned platform regularly in order to be informed in a timely manner of any facts or changes concerning the course. Furthermore, students should regularly fulfil the obligations related to course attendance and active participation in classes.

**COURSE ATTENDANCE:**

Classes are organized according to the schedule published on the Merlin e-learning platform. Attendance of all lectures and practicals is mandatory, and attendance records are kept separately for each student. All classes start exactly at the scheduled time, and being late is treated as an absence from the class. Entries and exits during classes are not allowed. A student may justifiably miss up to 30% of the hours provided separately for lectures and practicals, solely for health reasons, which must be confirmed by a medical certificate. If a student is unjustifiably absent from more than 30% of class hours for each class type, the student cannot continue to attend the course and does not meet the mandatory requirement for passing the course. In case of justifiably missed class, individual appointment should be arranged between the student and kabinet.vjestina@gmail.com for the purpose of fulfilling mandatory requirements.

In the event that a student is found to have misused the inp.medri.uniri. hr application for attendance purposes, such actions will be considered a serious violation of academic integrity. Consequently, the matter will be referred to the Ethics Committee of the Medical Faculty for a comprehensive review and appropriate disciplinary action.

**ACTIVE PARTICIPATION IN CLASSES:**

Predominantly comprised of highly interactive classes, the course “Simulation of clinical skills” is structured around a flipped classroom model, encouraging pre-class preparation and active in-class participation. Teachers provide a succinct theoretical overview at the beginning of each session, and students – lead by a designated team-leader – apply this knowledge by engaging in running a clinical scenario with support from their team members.

In each scenario, the team-leader is tasked with patient assessment, formulation of differential diagnoses based on findings, deciding on appropriate diagnostic tests, determining necessary procedures and therapies, and making the final decision on patient discharge or hospital admission. In cases of hospital admission, students are encouraged to deliver a structured patient hand-over to another simulated medical specialist. Teachers moderate the course of the clinical scenario, providing insightful teaching discussion and feedback to all team members once the scenario concludes.

**The benefits of this course are intrinsically linked to the level of student engagement and preparation.** Optimal learning outcomes are achieved when clinical scenarios run seamlessly, with students accurately identifying pathological findings, incorporating them into differential diagnoses, and informing subsequent patient management. Therefore, **students are expected to come to each session well-prepared and proficient in the ABCDE approach and cardiopulmonary resuscitation guidelines, with prior theoretical knowledge of managing medical emergencies. In particular, this means that the student is obligated to thoroughly study the “Simulation of Clinical Skills – a practical guide” and other educational materials on the Merlin e-learning platform before attending the practical workshops. Additionally, as this course is on the final year of medical school and serves to integrate all the previous knowledge from prior years, the student is expected to have a solid theoretical background in all major clinical courses, such as internal medicine, neurology, surgery, and other relevant disciplines.** Students are encouraged to refer to the provided (obligatory and additional) educational materials during the practicals for a deeper understanding and better application of the skills under study. All of the educational materials on Merlin e-learning platform will be available before the beginning of the course.

## Ispit (način polaganja ispita, opis pisanog/usmenog/praktičnog dijela ispita, način bodovanja, kriterij ocjenjivanja):

**Assessment (types and description of assessment etc):**

Student assessment in the course “Simulation of Clinical Skills” is designed to provide regular feedback and evaluate students’ growth over time. The assessment strategy incorporates both formative and summative assessments.

**FORMATIVE ASSESSMENT**

Formative assessments are strategically incorporated throughout the duration of the course. These assessments take shape in teaching discussions, succeeded by personalized feedback upon the completion of each simulated scenario. The goal of these iterative process of learning, assessment and feedback is designed to promote students’ continuous learning and enhance their clinical skills and knowledge.

Formative assessment is based on the modified Sweeney-Clark Simulation Evaluation Rubric, which is accessible via the Merlin e-learning platform. The evaluation rubric categorizes student (team leaders) into varying proficiency levels: novice, advanced beginner, competent, proficient, or expert level. This categorization is achieved through assessment of seven distinct areas: ABCDE assessment, SAMPLE history, choice and interpretation of laboratory data and diagnostics, medical interventions, clinical judgement, communication skills and cardiopulmonary resuscitation measures.

This formative approach encourages students to develop a deeper understanding of the subject matter, refine their practical skills, and apply their knowledge in real-time. The frequent feedback and discussions provide students with an opportunity to reflect on their performance, understand their strengths, and identify areas for improvement.

**SUMMATIVE ASSESSMENT**

Summative assessment for the course “Simulation of Clinical Skills” adheres to the established grading regulations at the University of Rijeka and the Faculty of Medicine in Rijeka. Comprising of both **continuous and final evaluation** methods, the assessment allows for a maximum of 100 credits, split equally between continuous coursework (50 credits, 50%) and the final practical examination (50 credits, 50%). A minimum score of 25 credits in both categories is necessary to pass the course and earn the corresponding ECTS credits.

**The continuous assessment** portion of the course, worth up to 50 credits, evaluates students’ acquisition of knowledge throughout the course via five brief obligatory tests. These tests align with the themes of practical sessions 1-5, with each test offering a potential maximum of 10 credits. Credits are awarded provided that the student correctly answers a minimum of 50% of the questions. The tests can incorporate a variety of question types, including single best answer, multiple-choice and short descriptive questions. These assessments are designed to gauge students’ understanding of the course’s theoretical elements.

Here is a credit allocation chart for the obligatory tests in continuous assessment:

| % of correct answers | credits |
|---|---|
| 50% | 5 |
| 51-60% | 6 |
| 61-70% | 7 |
| 71-80% | 8 |
| 81-90% | 9 |
| 91-100% | 10 |

**The final evaluation,** which also contributes 50 credits towards the total assessment score, can only be taken by students who have:

- Earned more than 25 credits in continuous assessments, and
- Maintaned a maximum of 30% of **justified** absences from classes.

The final evaluation, conducted at the end of the course, utilizes the Objective Structured Clinical Examination (OSCE) format on a simulated scenario of a medical emergency.

Here is a credit allocation chart for the OSCE:

| % of correct answers | credits |
|---|---|
| 50% | 25 |
| 51-60% | 30 |
| 61-70% | 35 |
| 71-80% | 40 |
| 81-90% | 45 |
| 91-100% | 50 |

To pass the course and obtain the allocated ECTS credits, a student must successfully pass both the continuous and final evaluation, amassing more than 50 credits in total.

This holistic evaluation system ensures students' knowledge and practical skills are adequately assessed, promoting their readiness for real-world medical practice.

## Ostale napomene (vezane uz kolegij) važne za studente:

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

**COMMUNICATION WITH TEACHERS:**

Teachers are available daily during working hours via e - mail addresses (available on the webpage of the Faculty of Medicine in Rijeka and Merlin e-learning platform) for all questions concerning the course. Consultations are possible by appointment and can be conducted live or through the online platform MS Teams.

**ACADEMIC INTEGRITY:**

It is expected that the teacher will respect the Code of Ethics of the University of Rijeka, and the students the Code of Ethics for students at the University of Rijeka.

## SATNICA IZVOĐENJA NASTAVE 2021/2022

Simulation of Clinical Skills

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## Popis predavanja, seminara i vježbi:

## ISPITNI TERMINI (završni ispit):

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