Faculty of Medicine in Rijeka

**Curriculum**
**2026/2027**

For course

# Forensic Medicine

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|---|---|
| Study program: | **Medical Studies in English (R)**<br>University integrated undergraduate and graduate study |
| Department: | **Department of Forensic Medicine and Criminalistics** |
| Course coordinator: | **Prof.dr.sc. Cuculić Dražen, dr. med.** |
| Year of study: | **6** |
| ECTS: | **3** |
| Incentive ECTS: | **0 (0.00%)** |
| Foreign language: | **Possibility of teaching in a foreign language** |

## Course information:

Forensic Medicine is a compulsory course in the sixth year of the Integrated Undergraduate and graduate university study of medicine. The course consists of 20 hours of lectures, 10 hours of seminars and 20 hours of practicals, which is a total of 50 teaching hours (3 ECTS). It is held at the Faculty of Medicine and the post-mortem examination room of the Department of Forensic Medicine and Criminalistics (located at the Department of Pathology and Pathological Anatomy).

**Course objective:**

Acquisition of basic knowledge and skills in the field of forensic medicine.

**Course content:**

The course consists of three basic units: medical aspects of death, pathology of trauma and medicine and law.

**COURSE LEARNING OUTCOMES:**

**I. COGNITIVE DOMAIN - KNOWLEDGE** Students must adopt theoretical foundations on damage to health, determination of death, sudden and natural death, thanatology and examination of the dead body, trauma pathology, mechanical injuries, asphyxial and physical injuries, craniocerebral injuries, forensic toxicology, the role of expert witnesses and their expertise in road traffic accidents, bodily injuries in criminal proceedings, professional and criminal liability of physicians.

**II. PSYCHOMOTOR DOMAIN - SKILLS** At the end of this course students should be able to use this acquired knowledge to: independently examine a dead body, recognize signs of death to determine the cause of death, fill out appropriate documentation, properly identify, classify and describe injuries to living persons and dead bodies, determine injury severity, suspect a violent death, set indications for a coroner's or medicolegal autopsy and perform examinations and sampling for chemical and toxicological analysis (in living patients as well as in dead bodies)

**Course teaching**: Classes are held in the form of lectures, seminars and practicals. The estimated duration of classes is a total of 3 weeks. During seminar classes, for which the student is expected to be adequately prepared, the teacher focuses on important parts of the teaching unit, presents cases from practice related to the teaching unit and involves students in active discussion. During practical classes, the teacher performs an autopsy and monitors students' active involvement in the discussion of the findings and their opinions at the end of the autopsy.

**The student is required to prepare the learning material to be discussed.** There will be one mandatory written midterm exam during the course and an oral final exam. By completing all class activities and taking the obligatory written midterm exam and oral final exam, the student acquires 3 ECTS credits. **The teacher evaluates students' participation in seminar classes (demonstrated knowledge, understanding, problem-solving skills, reasoning, etc.)**

## List of assigned reading:

1. Payne-James J, Jones R M. Simpson's Forensic Medicine, 14th Edition. Milton: CRC Press LLC, 2019

## List of optional reading:

1. DiMaio V J M, Molina D K. Di Maio's Forensic Pathology, 3rd Edition. CRC Press, 2021.

2. Saukko P, Knight B. Knight's Forensic Pathology, 4th Edition. CRC Press, 2015.

## Curriculum:

### Lectures list (with titles and explanation):

#### Lecture 1: Thanatology, damage to health and death (L1/L2)

Learning outcomes:
• to explain the definition of death and its forms
• to recognize early and late signs of death and the approximate determination of the time of death
• to explain the method of external examination of a dead body.

#### Lecture 2: Non-specific and specific mechanical injuries (L3/L4/L5)

Learning outcomes:
• to define different types of mechanical injuries and to properly document mechanical injuries
• to recognize and describe different forms of mechanical injuries
• to distinguish between non-specific mechanical injuries and the way they occur
• to identify all forms of specific mechanical injuries and the way they occur
• to assess the viability of injuries as well as macroscopic and histological changes in injured tissue
• to explain the differential diagnosis of suicide and homicide.

#### Lecture 3: Asphyxial and physical injuries (L6/L7/L8)

Learning outcomes:
• to define different types of asphyxia
• to differentiate signs observed in different types of asphyxia (strangulation, choking, hanging)
• to recognize signs of drowning
• to recognize and define signs of physical injuries
• to recognize the effects of high and low temperatures on the human body
• to recognize injuries due to electric shocks and lightning.

#### Lecture 4: Craniocerebral injuries and mechanical injuries of the torso (L9/L10/L11)

Learning outcomes:
• to classify craniocerebral injuries
• to describe different head injuries and differentiate between specific and non-specific injuries
• to recognize head injuries that do not correspond to pathophysiological mechanisms in their clinical presentation
• to explain the relation between mechanical injuries to the torso and internal organs
• to define the methods and mechanisms of injury by anatomical regions of the body.

#### Lecture 5: Application of forensic medicine in clinical practice (L12/L13/L14)

Prevention of domestic violence
Learning outcomes:
• to familiarize with the procedure of examining the victims of physical violence
• to know how to recognize whether some injuries occurred at the same or different harmful event and to consider the forensic importance of such an answer
• to know the forms of child neglect and forms of child abuse in the family and the consequences of physical abuse for children and minors
• to recognize the clinical entities of shaken baby syndrome and battered child syndrome
• to know the forms of abuse of the elderly and infirm persons

Iatrogenic injuries and resuscitation injuries
Learning outcomes:
• to recognize forensic aspects of medical interventions
• to describe forensic aspects of anesthesia and resuscitation.

#### Lecture 6: Forensic toxicology (L15/L16)

Learning outcomes:
• to explain which samples are taken during clinical examination, autopsy and exhumation
• to list the specifics of different biological samples, the place of sampling and the method of

storing biological samples until analysis
• to explain the effects of alcohol on the human body and the impact of alcohol on driving skills
• to identify the symptoms and forensic findings in intoxication with carbon monoxide, drugs, psychotropic drugs and volatile poisons
• to demonstrate how to take a sample for chemical and toxicological analysis and name the most important methods of chemical and toxicological analysis
• to describe the toxicity of certain substances and the fate of toxins in the body

**Lecture 7: Infanticide and unlawful abortion (L17/L18)**

Learning outcomes:
• to explain when pregnancy-related factors become part of a criminal offense
• to define infanticide
• to list the questions, we need to answer in cases of infanticide
• to name the methods we use to answer questions related to infanticide
• to identify the types, methods and complications of abortion.

**Lecture 8: Professional liability and criminal liability of physicians (L19/L20)**

Learning outcomes:
• to define the legal regulations and types of criminal offenses that may be committed by physicians and other medical staff
• to differentiate between an error and complication, legal aspects of medical expertise

**Practicals list (with titles and explanation):**

**P1-P4**

Practicals are performed in the post-mortem examination room of the Department, located on the premises of the Department of Pathology and Pathological Anatomy. During the practicals, the teacher performs an external examination of the body and a forensic autopsy with the help of medical support staff. During practicals, students must examine the dead body and describe the basic signs of death they notice on the body. If there is no autopsy during the week scheduled for the practicals, students will get acquainted with the work of the histological and alcoholometric laboratory located at the Department of Forensic Medicine and Criminalistics. In that case, they will also learn about the theoretical principles of performing an autopsy, the basics of the coroner’s service and possible autopsy findings (by presenting cases from practice).

**P5-P8**

Practicals are performed in the post-mortem examination room of the Department, located on the premises of the Department of Pathology and Pathological Anatomy. During the practicals, the teacher performs an external examination of the body and a forensic autopsy with the help of medical support staff. During practicals, students must examine the dead body and describe the basic signs of death they notice on the body. If there is no autopsy during the week scheduled for the practicals, students will get acquainted with the work of the histological and alcoholometric laboratory located at the Department of Forensic Medicine and Criminalistics. In that case, they will also learn about the theoretical principles of performing an autopsy, the basics of the coroner’s service and possible autopsy findings (by presenting cases from practice).

**P9-P12**

Practicals are performed in the post-mortem examination room of the Department, located on the premises of the Department of Pathology and Pathological Anatomy. During the practicals, the teacher performs an external examination of the body and a forensic autopsy with the help of medical support staff. During practicals, students must examine the dead body and describe the basic signs of death they notice on the body. If there is no autopsy during the week scheduled for the practicals, students will get acquainted with the work of the histological and alcoholometric laboratory located at the Department of Forensic Medicine and Criminalistics. In that case, they will also learn about the theoretical principles of performing an autopsy, the basics of the coroner’s service and possible autopsy findings (by presenting cases from practice).

**P13-P16**

Practicals are performed in the post-mortem examination room of the Department, located on the premises of the Department of Pathology and Pathological Anatomy. During the practicals, the teacher performs an external examination of the body and a forensic autopsy with the help of medical support staff. During practicals, students must

examine the dead body and describe the basic signs of death they notice on the body. If there is no autopsy during the week scheduled for the practicals, students will get acquainted with the work of the histological and alcoholometric laboratory located at the Department of Forensic Medicine and Criminalistics. In that case, they will also learn about the theoretical principles of performing an autopsy, the basics of the coroner's service and possible autopsy findings (by presenting cases from practice).

**P17-P20**

Practicals are performed in the post-mortem examination room of the Department, located on the premises of the Department of Pathology and Pathological Anatomy. During the practicals, the teacher performs an external examination of the body and a forensic autopsy with the help of medical support staff. During practicals, students must examine the dead body and describe the basic signs of death they notice on the body. If there is no autopsy during the week scheduled for the practicals, students will get acquainted with the work of the histological and alcoholometric laboratory located at the Department of Forensic Medicine and Criminalistics. In that case, they will also learn about the theoretical principles of performing an autopsy, the basics of the coroner's service and possible autopsy findings (by presenting cases from practice).

**Seminars list (with titles and explanation):**

**Seminar 1: Classic methods of human identification (S1/S2)**

Learning outcomes:
• to describe the approach to establishing the identity of a person and body parts as well as the authenticity of traces and objects to discover certain features that enable indisputable identification
• to name the classic methods of human identification – photography, dactyloscopy, dental status, X-ray.

**Seminar 2: The role of expert witnesses in court proceedings (S3), Expert testimony on bodily injuries in criminal proceedings (S4)**

Learning outcomes:
• to describe the tasks of medical experts in criminal and civil proceedings in court.

Learning outcomes:
• to explain the qualification of bodily injuries
• to explain the practical application of legal criteria.

**Seminar 3: Traffic trauma and expert testimony in road accidents (S5/S6)**

Learning outcomes:
• to differentiate types of road accidents pertaining to drivers, passengers and motorcyclists
• to list and describe the risk factors of traffic accidents
• to identify the occurrence mechanisms and types of injuries in passengers and pedestrians during traffic accidents
• to distinguish different types of vehicles and injuries caused by a collision with a pedestrian
• to interpret findings in whiplash injuries.

**Seminar 4: Forensic anthropology and the application of DNA in forensic medicine (S7/S8)**

Learning outcomes:
• to explain the anthropological processing of bone material
• to distinguish post-mortem from perimortem bone injuries
• to explain the determination of sex and age based on bone material
• to describe the use of dental analysis in determining a person's identity
• to list the methods of molecular forensics and to determine which molecular method to use and when
• to describe the basic steps and methods in obtaining DNA
• to explain the way DNA is interpreted.

**Seminar 5: Offenses against sexual freedom and morality (S9/S10)**

Learning outcomes:
• to name the types of crimes against sexual freedom and morality
• to discuss the role of the medical profession in the treatment of sexual violence victims

- to review sexual offense cases in forensic practice.

## Student obligations:

Students are required to regularly attend classes (lectures, seminars and practicals) and actively participate in all forms of teaching, which includes preparing for units covered in seminars using the required literature

## Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

ECTS grading system:

Student grading is conducted according to the current University of Rijeka Study Regulations and the Ordinance on Student Assessment and Evaluation at the Faculty of Medicine in Rijeka (adopted by the Faculty Council of the Faculty of Medicine in Rijeka). Student work is assessed and evaluated during classes and on the final exam. Out of 100 grade points, the student c **an achieve 70 grade points** during classes and **30 grade points** on the final exam.

**I. During classes, the following is evaluated (up to a maximum of 70 grade points):**

a. activity in lectures, seminars and practicals (up to 10 grade points)
b. written midterm exam (up to 60 grade points).

Students are allowed to miss 30% of classes solely for health reasons, which must be justified by a medical certificate. Attendance at lectures, practicals and seminars is mandatory. It is possible to make up for missed practicals and seminars by prior contacting the course coordinator If a student disrupts the class (lectures, seminars, practicals), the teacher may remove them from class, which is recorded as absenteeism.

The student does not fulfill their obligations if they miss more than 30% of teaching hours for each form of teaching (lectures, seminars or practicals).

**If a student justifiably or unjustifiably misses more than 30% of classes, they cannot continue to attend the course and cannot take the final exam.** In that case, the student achieves 0 ECTS credits and an F grade.

a. Activity during classes (lectures, seminars and practicals) will be graded as follows:

I. 70–85 % - 5 grade points
II. 86–100% - 10 grade points

b) Written midterm exam (up to 60 grade points)

All students are required to take a written midterm exam on which they can achieve a maximum of 60 grade points.

The written midterm exam is held at the end of the second week of classes, after the lectures and seminars. The written midterm exam includes 60 questions from the material covered in lectures and seminars and is written for 60 minutes.

Students who missed the midterm exam for justified reasons have the opportunity to retake the midterm exam one week later.

The written midterm exam includes material from teaching units (seminars and lectures): thanatology, mechanical injuries, asphyxial and physical injuries, craniocerebral injuries, mechanical injuries to the torso, vital reactions, iatrogenic injuries and resuscitation injuries, identification based on DNA analysis, expert testimony in criminal and civil proceedings, expert testimony on bodily injuries in criminal proceedings, traffic trauma and expert testimony in road accidents, forensic toxicology, infanticide and unlawful termination of pregnancy, criminal and civil liability of physicians, criminal offenses against sexual freedom and morality.

The written midterm exam consists of 60 multiple answer questions with one correct answer. Each correctly answered question carries 1 point. The criterion for achieving grade points is 50% of correctly answered questions. Students who do not meet the criteria for achieving grade points (those who do not correctly solve more than 50% of the test) have the right to repeat the midterm exam one week later.

II. Final exam (up to 30 grade points)

The final exam is oral and is worth 30 grade points (range 15–30).

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

I. insufficient 0 points
II. sufficient 15 points
III. good 20 points
IV. very good 25 points
V. excellent 30 points

**Allowed to take the final exam**:

Students who achieved at least 35 grade points (50% of the maximum 70 grade points) can take the final oral exam. They can achieve a maximum of 30 grade points on the final exam.

**Not allowed to take the final exam:**

Students who scored 0 to 29.9 grade points during classes or missed more than 30% of classes are evaluated with an insufficient (1 or F) grade and cannot take the final exam. They must re-enroll in the course in the following academic year.

III. The final grade is the sum of the ECTS grade points achieved during the course and at the final exam:

I. A (90-100%) excellent (5)
II. B (75-89.9%) very good (4)
III. C (60-74.9%) good (3)
IV. D (50-59.9%) sufficient (2)
V. F (students who achieved less than 35 grade points during classes or didn’t pass the final exam) insufficient (1)

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

Teaching content and all information related to the course can be found on the SharePoint portal for internal communication of the Department of Forensic Medicine and Criminalistics.

## COURSE HOURS 2026/2027

Forensic Medicine

| **Lectures**<br>(Place and time or group) | **Practicals**<br>(Place and time or group) | **Seminars**<br>(Place and time or group) |
|---|---|---|
| **25.01.2027** | | |
| Lecture 1: Thanatology, damage to health and death (L1/L2):<br>• P01 (08:00 - 10:00) [170]<br>○ FM | | Seminar 1: Classic methods of human identification (S1/S2):<br>• P01 (10:00 - 12:00) [170]<br>○ FM |
| Prof.dr.sc. Cuculić Dražen, dr. med. [170] | | |
| **26.01.2027** | | |
| Lecture 2: Non-specific and specific mechanical injuries (L3/L4/L5):<br>• P01 (10:00 - 13:00) [170]<br>○ FM | | Seminar 2: The role of expert witnesses in court proceedings (S3), Expert testimony on bodily injuries in criminal proceedings (S4):<br>• P01 (08:00 - 10:00) [170]<br>○ FM |
| Prof.dr.sc. Cuculić Dražen, dr. med. [170] | | |
| **27.01.2027** | | |
| Lecture 3: Asphyxial and physical injuries (L6/L7/L8):<br>• P01 (08:00 - 11:00) [170]<br>○ FM | | Seminar 3: Traffic trauma and expert testimony in road accidents (S5/S6):<br>• P01 (11:00 - 13:00) [170]<br>○ FM |
| Prof.dr.sc. Cuculić Dražen, dr. med. [170] | | |
| **28.01.2027** | | |
| Lecture 4: Craniocerebral injuries and mechanical injuries of the torso (L9/L10/L11):<br>• P01 (08:00 - 11:00) [170]<br>○ FM | | Seminar 4: Forensic anthropology and the application of DNA in forensic medicine (S7/S8):<br>• P01 (11:00 - 13:00) [170]<br>○ FM |
| Prof.dr.sc. Cuculić Dražen, dr. med. [170] | | |
| **29.01.2027** | | |
| Lecture 5: Application of forensic medicine in clinical practice (L12/L13/L14):<br>• P01 (10:00 - 13:00) [170]<br>○ FM | | Seminar 5: Offenses against sexual freedom and morality (S9/S10):<br>• P01 (08:00 - 10:00) [170]<br>○ FM |
| Prof.dr.sc. Cuculić Dražen, dr. med. [170] | | |
| **01.02.2027** | | |
| Lecture 6: Forensic toxicology (L15/L16):<br>• P01 (11:00 - 13:00) [170]<br>○ FM | P1-P4:<br>• Pathology - Autopsy room (08:00 - 11:00) [170] [1449] [1606] [3278] [3279]<br>○ FM | |
| Arbanas Silvia, mag.med.lab.diag. [1606] · Prof.dr.sc. Cuculić Dražen, dr. med. [170] · Knežević Manuela [1449] · Matušan Jelena [3279] · asistentica Pereza Guščić Martina, dr.med. [3278] | | |

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|---|---|---|
| **02.02.2027** | | |
| Lecture 7: Infanticide and unlawful abortion (L17/L18):<br>• P01 (08:00 - 10:00) [170]<br>◦ FM | P5-P8:<br>• Pathology - Autopsy room (10:00 - 12:00) [170] [1449] [1606] [3278] [3279]<br>◦ FM | |
| Arbanas Silvia, mag.med.lab.diag. [1606] · Prof.dr.sc. Cuculić Dražen, dr. med. [170] · Knežević Manuela [1449] · Matušan Jelena [3279] · asistentica Pereza Guščić Martina, dr.med. [3278] | | |
| **03.02.2027** | | |
| Lecture 8: Professional liability and criminal liability of physicians (L19/L20):<br>• P01 (08:00 - 10:00) [170]<br>◦ FM | P9-P12:<br>• Pathology - Autopsy room (10:00 - 12:00) [170] [1449] [1606] [3278] [3279]<br>◦ FM | |
| Arbanas Silvia, mag.med.lab.diag. [1606] · Prof.dr.sc. Cuculić Dražen, dr. med. [170] · Knežević Manuela [1449] · Matušan Jelena [3279] · asistentica Pereza Guščić Martina, dr.med. [3278] | | |
| **04.02.2027** | | |
| | P13-P16:<br>• Pathology - Autopsy room (08:00 - 10:00) [170] [1449] [1606] [3278] [3279]<br>◦ FM | |
| Arbanas Silvia, mag.med.lab.diag. [1606] · Prof.dr.sc. Cuculić Dražen, dr. med. [170] · Knežević Manuela [1449] · Matušan Jelena [3279] · asistentica Pereza Guščić Martina, dr.med. [3278] | | |
| **05.02.2027** | | |
| | P17-P20:<br>• Pathology - Autopsy room (08:00 - 10:00) [170] [1449] [1606] [3278] [3279]<br>◦ FM | |
| Arbanas Silvia, mag.med.lab.diag. [1606] · Prof.dr.sc. Cuculić Dražen, dr. med. [170] · Knežević Manuela [1449] · Matušan Jelena [3279] · asistentica Pereza Guščić Martina, dr.med. [3278] | | |

### List of lectures, seminars and practicals:

| LECTURES (TOPIC) | Number of hours | Location |
|---|---|---|
| Lecture 1: Thanatology, damage to health and death (L1/L2) | 2 | P01 |
| Lecture 2: Non-specific and specific mechanical injuries (L3/L4/L5) | 3 | P01 |
| Lecture 3: Asphyxial and physical injuries (L6/L7/L8) | 3 | P01 |
| Lecture 4: Craniocerebral injuries and mechanical injuries of the torso (L9/L10/L11) | 3 | P01 |
| Lecture 5: Application of forensic medicine in clinical practice (L12/L13/L14) | 3 | P01 |
| Lecture 6: Forensic toxicology (L15/L16) | 2 | P01 |
| Lecture 7: Infanticide and unlawful abortion (L17/L18) | 2 | P01 |
| Lecture 8: Professional liability and criminal liability of physicians (L19/L20) | 2 | P01 |

| PRACTICALS (TOPIC) | Number of hours | Location |
|---|---|---|
| P1-P4 | 4 | Pathology - Autopsy room |
| P5-P8 | 4 | Pathology - Autopsy room |
| P9-P12 | 4 | Pathology - Autopsy room |
| P13-P16 | 4 | Pathology - Autopsy room |
| P17-P20 | 4 | Pathology - Autopsy room |

| SEMINARS (TOPIC) | Number of hours | Location |
|---|---|---|
| Seminar 1: Classic methods of human identification (S1/S2) | 2 | P01 |
| Seminar 2: The role of expert witnesses in court proceedings (S3), Expert testimony on bodily injuries in criminal proceedings (S4) | 2 | P01 |
| Seminar 3: Traffic trauma and expert testimony in road accidents (S5/S6) | 2 | P01 |
| Seminar 4: Forensic anthropology and the application of DNA in forensic medicine (S7/S8) | 2 | P01 |
| Seminar 5: Offenses against sexual freedom and morality (S9/S10) | 2 | P01 |

### EXAM DATES (final exam):

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|---|---|
| 1. | 24.02.2027. |
| 2. | 07.05.2027. |
| 3. | 21.06.2027. |
| 4. | 05.07.2027. |
| 5. | 10.09.2027. |