

University of Rijeka, Faculty of Medicine

## Curriculum 2023/2024

Compulsory course

# Introduction to Scientific Research

Study program:	<b>Medical Studies in English (R)</b>
[Razina studija]:	<b>Integrirani prijediplomski i diplomski sveučilišni studiji</b>
Department:	<b>Katedra za društvene i humanističke znanosti u medicini</b>
Course coordinator:	<b>doc. dr. sc. Pupovac Vanja, prof.</b>
Year of study:	<b>2</b>
ECTS:	<b>1.00</b>
Incentive ECTS:	<b>0.00 (0.00%)</b>
Foreign language:	<b>Possibility of teaching in a foreign language</b>

**Course information:**

The course "Introduction to Scientific Research" is obligatory for the 2nd year of the Integrated Undergraduate and Graduate University Study of Medicine in English program, encompassing 15 hours of lectures and 5 hours of seminars and enabling the acquisition of one (1) ECTS credit.

The course is expected to help students gain insight into the laws of the scientific research process and to get acquainted with the basics of science philosophy and theory, as well as to gain the skills of critical evaluation of scientific papers.

**List of assigned reading:**

1. Presentations (PPT);
2. Hulley SB Cummings SR, Browner W S Grady DG, Newman TB, ed., Designing Clinical Research. 4th ed., Philadelphia, USA: Lippincott Williams & Wilkins, A Wolters Kluwer Business; 2013.
3. Matko Marušić, ed., Principles of Research in Medicine, 2nd ed., Zagreb: Medicinska naklada, 2015.

**List of optional reading:**

Evans I, Thornton H, Chalmers I and Glasziou P. Testing Treatments, 2nd Edition; London: Pinter and Martin. 2011. Available from: <http://www.testingtreatments.org/>

## Curriculum:

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

#### **1. Science in medicine and clinical research**

to understand the basic science settings of medicine and to define possible sources of imperfection and biases in research.

#### **2. Anatomy and physiology of clinical research**

understand basic terminology of clinical research

#### **3. Population and sample (definition, basic characteristics)**

to understand basic characteristics of the sample, to understand importance of representativeness of a sample and random sampling method

#### **4. Population and sample (probabilistic and non-probabilistic sampling method; bias and random error)**

to describe and understand different sampling methods, to recognise the most common biases in sampling method

#### **5. Planning research (problem, aim, hypothesis)**

to describe and understand differences between problem, aim and hypothesis in scientific research

#### **6. Planning research (variables)**

to describe and understand phases of research plan

#### **7. Types of study design (observational, interventional)**

to describe and understand aims of research and appropriate types of study design.

#### **8. Types of study design (primary and secondary, hierarchy of evidence)**

to recognise aims and study design in an example of a research, to understand hierarchy of evidence

#### **9. Scientific medical publications: types, basic characteristics, structure of scientific paper**

to differentiate medical information (primary, secondary, and tertiary publications)

#### **10. Scientific medical publications: bibliographic and citation databases; assessment of scientific paper/journal**

to search bibliographic and citation databases

#### **11. Definitions (Schopenhauer, Shaw, Eccles, Marušić), the importance and the laws of the historical development of science (developmental phases, "migrating" of the scientific avantguard, specificities of medicine)**

to understand the importance and laws of the historical development of science, to describe and interpret the phases of scientific development and the specificities of medicine. to explain the most important stands in science philosophy and to illustrate them by examples from science history

#### **12. Bases of science philosophy (the structure of scientific revolutions according Kuhn; Wittgenstein, Popper, Feyerabend)**

to name and explain basic notions of science philosophy, to analyse the historical development of empirical-inductive and deductive traits of science philosophy.

#### **13. The social structure of science**

to name and describe basic organisations in science

#### **14. Scientific thinking, differences between medicine and alternative medicine**

to explain basics of scientific thinking

#### **15. Research ethics (research misconduct; frauds in science)**

to understand the concept of research ethics and the importance of ethical principles in science. To recognize the forms of plagiarism and to discuss the ways of its prevention.

### **Seminari list (with titles and explanation):**

#### **Seminar**

Seminars (1-5) imply designing a research plan according to a predetermined topic. The plan is made in groups of 3-5 students according to detailed instructions and it is additionally coordinated by the seminar leader.

### **Student obligations:**

Regular class attendance, five small quizzes (max 50%), the designing of a research plan (max 20 %), and the final written exam (max 30 %).

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

- the final exam is of written form; the exam lasts for 30 minutes and entails a multiple-choice and short answers types of questions in accordance with the reference list available on the website;
- in accordance with the general rules of the Faculty of Medicine, a minimum of 50 % of correct answers is required to pass the exam;
- in order to be admitted to the final exam, the student has to gather at least 35 (50 %) of the total of 70 points before the final exam.

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

Missing up to 30 % of the classes (with a presumed justified reason), does not require justification and cannot be made up for (the exception being provided by a hospital discharge letter). Missing more than 30 % of classes, no matter the reason, will prevent the student from taking the final exam and result in a repeated enrolment in the course the following academic year.

It is not possible to “decline” a positive mark, but students can appeal to the Dean in written form within 24 hours

Collaborator: Amir Muzur MD, MA, PhD, Full Professor

## COURSE HOURS 2023/2024

### Introduction to Scientific Research

<b>Predavanja</b> (Place and time or group)	<b>Seminari</b> (Place and time or group)
<b>22.04.2024</b>	
<p>1. Science in medicine and clinical research:</p> <ul style="list-style-type: none"><li>• Z6 (12:00 - 14:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul> <p>2. Anatomy and physiology of clinical research:</p> <ul style="list-style-type: none"><li>• Z6 (12:00 - 14:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul>	
doc. dr. sc. Pupovac Vanja, prof. [420]	
<b>29.04.2024</b>	
<p>3. Population and sample (definition, basic characteristics):</p> <ul style="list-style-type: none"><li>• P08 (11:00 - 13:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul> <p>4. Population and sample (probabilistic and non-probabilistic sampling method; bias and random error):</p> <ul style="list-style-type: none"><li>• P08 (11:00 - 13:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul>	
doc. dr. sc. Pupovac Vanja, prof. [420]	
<b>06.05.2024</b>	
<p>5. Planning research (problem, aim, hypothesis):</p> <ul style="list-style-type: none"><li>• ONLINE (11:00 - 13:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul> <p>6. Planning research (variables):</p> <ul style="list-style-type: none"><li>• ONLINE (11:00 - 13:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul>	
doc. dr. sc. Pupovac Vanja, prof. [420]	
<b>13.05.2024</b>	
<p>7. Types of study design (observational, interventional):</p> <ul style="list-style-type: none"><li>• ONLINE (11:00 - 13:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul> <p>8. Types of study design (primary and secondary, hierarchy of evidence):</p> <ul style="list-style-type: none"><li>• ONLINE (11:00 - 13:00) [420]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul>	
doc. dr. sc. Pupovac Vanja, prof. [420]	
<b>20.05.2024</b>	
<p>9. Scientific medical publications: types, basic characteristics, structure of scientific paper:</p> <ul style="list-style-type: none"><li>• P08 (11:00 - 13:00) [142]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul> <p>10. Scientific medical publications: bibliographic and citation databases; assessment of scientific paper/journal:</p> <ul style="list-style-type: none"><li>• P08 (11:00 - 13:00) [142]<ul style="list-style-type: none"><li>◦ ITSR</li></ul></li></ul>	
prof. dr. sc. Muzur Amir, dr. med. [142]	

<b>27.05.2024</b>	
<p>11. Definitions (Schopenhauer, Shaw, Eccles, Marušić), the importance and the laws of the historical development of science (developmental phases, “migrating” of the scientific avantguard, specificities of medicine):</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 13:00) <sup>[142]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul> <p>12. Bases of science philosophy (the structure of scientific revolutions according Kuhn; Wittgenstein, Popper, Feyerabend):</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 13:00) <sup>[142]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul>	
prof. dr. sc. Muzur Amir, dr. med. <sup>[142]</sup>	
<b>31.05.2024</b>	
	<p>Seminar:</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 14:45) <sup>[421]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul>
Štrucelj Helena, dipl. psih-prof. <sup>[421]</sup>	
<b>03.06.2024</b>	
<p>13. The social structure of science:</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 13:00) <sup>[142]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul> <p>14. Scientific thinking, differences between medicine and alternative medicine:</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 13:00) <sup>[142]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul>	
prof. dr. sc. Muzur Amir, dr. med. <sup>[142]</sup>	
<b>07.06.2024</b>	
	<p>Seminar:</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 14:45) <sup>[421]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul>
Štrucelj Helena, dipl. psih-prof. <sup>[421]</sup>	
<b>10.06.2024</b>	
<p>15. Research ethics (research misconduct; frauds in science):</p> <ul style="list-style-type: none"> <li>• P08 (11:00 - 12:00) <sup>[420]</sup> <ul style="list-style-type: none"> <li>◦ ITSR</li> </ul> </li> </ul>	
doc. dr. sc. Pupovac Vanja, prof. <sup>[420]</sup>	

### List of lectures, seminars and practicals:

PREDAVANJA (TOPIC)	Number of hours	Location
1. Science in medicine and clinical research	1	Z6
2. Anatomy and physiology of clinical research	1	Z6
3. Population and sample (definition, basic characteristics)	1	P08
4. Population and sample (probabilistic and non-probabilistic sampling method; bias and random error)	1	P08
5. Planning research (problem, aim, hypothesis)	1	ONLINE

6. Planning research (variables)	1	ONLINE
7. Types of study design (observational, interventional)	1	ONLINE
8. Types of study design (primary and secondary, hierarchy of evidence)	1	ONLINE
9. Scientific medical publications: types, basic characteristics, structure of scientific paper	1	P08
10. Scientific medical publications: bibliographic and citation databases; assessment of scientific paper/journal	1	P08
11. Definitions (Schopenhauer, Shaw, Eccles, Marušić), the importance and the laws of the historical development of science (developmental phases, "migrating" of the scientific avantguard, specificities of medicine)	1	P08
12. Bases of science philosophy (the structure of scientific revolutions according Kuhn; Wittgenstein, Popper, Feyerabend)	1	P08
13. The social structure of science	1	P08
14. Scientific thinking, differences between medicine and alternative medicine	1	P08
15. Research ethics (research misconduct; frauds in science)	1	P08

<b>SEMINARI (TOPIC)</b>	<b>Number of hours</b>	<b>Location</b>
Seminar	5	P08

**EXAM DATES (final exam):**

1.	12.06.2024.
2.	09.07.2024.
3.	16.09.2024.