Sveučilište u Rijeci
University of Rijeka

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

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Course: Introduction to Scientific Research
Course coordinator: Vanja Pupovac, PhD, Assistant professor
Course collaborator: Amir Muzur MD, MA, PhD, Full Professor
Department: Department of Social Sciences and Medical Humanities
Study program: Integrated Undergraduate and Graduate University Study of Dental Medicine in English
Study Year: 5nd
Academic year: 2024/2025

SYLLABUS

Course information (brief course description, general guidelines, location and organisation of instruction, required equipment, instructions regarding class attendance and preparation, students' obligations, etc.):

The course "Introduction to scientific research" is obligatory for the 2nd year of the Integrated Undergraduate and Graduate University Study of Medicine in English programme, encompassing 15 hours of lectures and 5 hours of seminars and enabling the acquisition of one (0,5) ECTS credit.

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

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.

Optional / additional 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/

Course teaching plan:

The list of lectures (with titles and description)

1. **Introductory lecture**
   Learning outcomes: to understand the basic science settings of medicine and to define possible sources of imperfection and biases in research.
2. **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)**
   Outcomes: 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.
3. **The social structure of science**
   Outcome: to name and describe basic organisations in science
4. **Scientific thinking, differences between medicine and alternative medicine**
   Outcomes: to explain basics of scientific thinking
5. **Scientific medical publications: types, basic characteristics, structure of scientific paper**
   Outcomes: to differentiate medical information (primary, secondary, and tertiary publications
6. **Scientific medical publications: bibliographic and citation databases; assessment of scientific paper/journal**
7. Outcomes: to search bibliographic and citation databases
8. **Population and sample (definition, basic characteristics)**
   Outcomes: to understand basic characteristics of the sample, to understand importance of representativeness of a sample and random sampling method
9. **Population and sample (probabilistic and non-probabilistic sampling method; bias and random error)**
   Outcomes: to describe and understand different sampling methods, to recognise the most common biases in sampling method
10. **Planning research (problem, aim, hypothesis)**
    Outcomes: to describe and understand differences between problem, aim and hypothesis in scientific research.
11. **Planning research (variables)**
    Outcomes: to describe and understand phases of research plan
12. **Types of study design (observational, interventional)**
    Outcomes: to describe and understand aims of research and appropriate types of study design.
13. **Types of study design (primary and secondary, hierarchy of evidence)**
    Outcomes: to recognise aims and study design in an example of a research, to understand hierarchy of evidence
14. **Research ethics (research misconduct; frauds in science)**
    Outcomes: 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.
15. **Citation and referencing**

The list of seminars with descriptions:

Seminars (1-5) involve identifying basic scientific terminology in selected scientific papers, and conducting searches of medical scientific literature.

The list of practical with descriptions:

The course does not include practical.

Students' obligations:

Regular class attendance, participation in seminars and online quizzes.

Assessment (exam, description of written/oral/practical part, point distribution, grading criteria)

Students will be graded based on the five written exams (20 points each) that will be performed during seminars.

Possibility of teaching in another language:

The course is offered in Croatian and English.

Other important information regarding the course:

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. Any use of another's text or other form of author's work, as well as the use of ChatGPT or any of another tool whose functionality is based on artificial intelligence technology, without clear and unambiguous citation of sources, is considered a violation of someone else's copyright and the principle of academic integrity and represents serious violation of student obligations, which entails disciplinary responsibility and disciplinary measures accordingly Rulebook on disciplinary responsibility of students. Consultation time: Tuesday, 13:30-14:00h

COURSE SCHEDULE (for academic year 2023/2024)

Date	Lectures (time and place)	Seminars (time and place)	Practicals (time and place)	Instructor
17.12. 2024.	14.00 -18.00 P1-P5 (FZS Z5)			prof. dr. sc. Amir Muzur
07.01. 2025.	14.00 -18.00 P6-P8 (FZS Z4)	S1-S2		izv. prof. Vanja Pupovac
14.01. 2025.	14.00 -18.00 P9-P 13 (FZS Z4)			izv. prof. Vanja Pupovac
21.01. 2025.	15.30-16:15 P14-P15 (FZS Z3)	S3-S5		izv. prof. Vanja Pupovac

List of lectures, seminars and practicals:

	LECTURES (topic of lecture)	Teaching hours	Place
P1	Introductory lecture	1	Lecture room Z5
P2-3	Definitions (Schopenhauer, Shaw, Eccles, Marušić), the importance and the laws of the historical development of science (developmental phases, "migrating" of the scientific avant-garde, specificities of medicine)	2	Lecture room Z5
P4-5	Scientific thinking, differences between medicine and alternative medicine	2	Lecture room Z5
P6-7	Scientific medical publications	2	Lecture room Z4
P8-9	Planning research	2	Lecture room Z4
P10-11	Types of study design	2	Lecture room Z4
P12-13	Population and sample	2	Lecture room Z4
P14-15	Research ethics	2	Lecture room Z3
	Total number of lecture hours	**15**	

	SEMINARS (topic of seminar)	Teaching hours	Place
S1-2	Searching medical literature	2	Lecture room Z4
S3-5	Working on research examples	3	ONLINE
	Total number of seminar hours	**5**	

	PRACTICALS (topic of practical)	Teaching hours	Place
V1	/	/	/
	Total number of practicals hours		

	EXAM DATES (final exam)
1.	
2.	
3.	

Subject

Teaching Format	Lectures	Seminars	Exercises	Total
Total Number of Hours	15	5	0	20
Number of Online Hours	6	3	0	9
Percentage	40%	60%	0%	45%