

Detailed curriculum for the course:

Introduction to the Scientific Method

Academic year:	2026/2027
Program:	Master programs „Drug Research and Design", "Biotechnology in Medicine", "Medical Chemistry" and „The Biotechnology for the Life Sciences “
Code:	IRL202/BLS101
ECTS points:	5
Language of the course:	English
Teaching hours:	26L+14S+10V

Prerequisite for enrollment: None

Course leader and contact information: Assoc. Prof. Rozi Andretić Waldowski

Address: University of Rijeka, FABRI, Radmile Matejčić, tel: 584 553 e-mail: randretic@uniri.hr

Contact hours: Course leader is at the disposal for consultations any time during working hours, with previous appointment.

Teaching staff: Assist. Prof. Rozi Andretić Waldowski (23L + 8S + 8E)
Assoc. Prof. Nicholas Bradshaw (2L + 2X2E)
Prof. Antonija Jurak Begonja (1L)
Dr.Sc. Pegi Pavletić (2S)
Dr.Sc. Marko Rubinić (4S)

Required reading:

1. Required reading materials will be supplied during the class

Suggested reading

1. Vanja Pupovac: "Akademsko pisanje", <http://akademsko-pisanje.sz-ri.com>
2. Kevin W. Plaxco: The Art of Writing Science, PROTEIN SCIENCE 2010 VOL 19:2261—2266
3. Introduction to Journal-style Scientific Writing, <http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWgeneral.html>
4. Mimi Zeiger: Essentials of Writing Biomedical Research Papers, 2nd edition, McGraw Hill, 2000.

Course Description:

This course will provide students with the fundamental knowledge necessary for their future work in research laboratories, including how to plan a hypothesis-driven research work based on published scientific literature and developing skills in communicating science to both laypeople and scientists.

Emphasis will be on acquiring practical skills, such as the scientific style of writing that will later be used to write a master's thesis. During the course, students will learn the basic concepts of writing a research paper and project proposal, and skills for preparing a poster and oral presentation. Students will learn the steps that precede writing, such as the use of different literature databases to find relevant scientific papers and the application of reference management software to organize and to list the bibliography. Students will acquire the skill of writing a CV and a motivational letter. An important part of this course will be education about ethical behavior in research and communication of science, with a special emphasis on the ethical use of Artificial Intelligence platforms in research and writing.

Learning outcomes:

1. Form an opinion on the use of appropriate scientific methodology
2. Critically judge the quality of scientific publications
3. Support the importance of bioethics in the implementation of the scientific approach
4. Self-evaluate the quality of scientific writing
5. Support the importance of clear, audience-friendly scientific communication

Detailed course content:

A. Lectures: 26 hours

Modul 1- What is Science?

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| 1. Nature of Science and Scientific Thinking | 2h / R.A.W. |
| 2. Scientific Method and Hypothesis Formation | 2h / R.A.W. |
| 3. Literature search and publishing | 2h / N.B. |
| 4. Research Questions and Experimental Design | 3h / R.A.W. |
| 5. Sampling, Measurement, and Data Quality | 3h / R.A.W. |

Modul 2 – Communicating Science

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| 6. Writing a motivational letter and CV | 1h / A.J.B. |
| 7. Critical Analysis of Scientific Papers | 3h / R.A.W. |
| 8. Writing a scientific paper | 3h / R.A.W. |
| 9. Scientific Communication | 2h / R.A.W. |
| 10. Data Interpretation and Scientific Argumentation | 3h / R.A.W. |

Modul 3 – Ethics in Science

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| 11. Research Ethics and Integrity | 2h / R.A.W. |
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B. Seminars: 14 hours

Modul 2

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| Critical reading of scientific papers | 2h / R.A.W. |
| Writing a scientific paper | 4h / R.A.W. |
| Meta-analysis | 2h / M.R. |

Research proposal presentation 2h / R.A.W.

Modul 3

Ethical use of AI 2h / P.P.

Reproducibility and rigor 2h / M.R.

C. Exercises: 10 hours

Modul 2

Literature search 2h / N.B.

Introduction to scientific writing 3h / R.A.W.

Writing a scientific paper 3h / R.A.W.

Research proposal presentation 2h / R.A.W.

Schedule of classes:

DATE	GROUP	TIME	HRS IN CLASS	ROOM	CONTENT	LECTURER
05.10.2026.	all	16:00-19:00	4L	030	Modul 1	Andretić Waldowski
06.10.2026.	All	12:00-13:45	2L	030	Modul 1	Bradshaw
	Gr.1	14:00-15:30	2E	339		
	Gr.2	15:30 - 17:00	2E	339		
07.10.2026.	all	11:30-15:30	4L	030	Modul 1	Andretić Waldowski
08.10.2026.	all	12:30-16:00	3L/1L	030	Modul 1 / Modul2	Andretić Waldowski
12.10.2026.	all	14:30-15:15	1L	030	Modul 2	Jurak Begonja Andretić Waldowski
		15:30-18:00	4L			
13.10.2026.	all	11:00-14:30	4S	339	MIDTERM Modul 2	Andretić Waldowski

14.10.2025.	all	11:00-14:30	2S/2L	339	Modul 2/Modul 3	Andretić Waldowski
20.10.2025.	all	08:00-11:00	2S 2S	030	Modul 3	Pavletić Rubinić
21.10.2025.	all	08:00-11:00	2S 2E	030	Modul 2	Andretić Waldowski
27.10.2024.	all	12:30-16:00	5E	030	Modul 2	Andretić Waldowski
28.10.2024.	all	12:00-13:30		030	FINAL EXAM	Andretić Waldowski

Required student engagement and scoring:

Classes are organized as a combination of lectures, exercises and seminars. Knowledge will be continuously assessed by grading activity during lectures, participation in short in-class exercise assignments, evaluations of seminar work, and a midterm.

Examination deadlines:

The final exam will be on Wednesday 28th of October 2026.

A second test date will be on Friday 13th of November 2026.

Additional test deadlines (maximum two, between January and June) will be arranged with students if needed.

Qualification and grades (according to Pravilnik o studijima Sveučilišta u Rijeci):

Students will be graded continuously during class for their participation, activity, and quality of their work assignments (max 70% of the grade) and on their final exam (max 30% of the grade). Students must attain a minimum grade of 35% during the continuous grading to be allowed to take the final exam.

Continuous grading (70%) consists of the following elements:

Activity during class (max 10 points) – expressing opinions and answering questions during lectures and seminars.

Participation in exercises (max 30 points) – short written assignments in class.

Seminar (max 30 points) – writing a short research proposal based on the area of interest.

Midterm (max 20 points) – includes material covered in the first week of class.

Final exam (30%)

The final exam will consist of problem-solving and essay questions.

Final grades:

The final grade is based on the percentage points attained during the continuous grading and on the final exam. The following grades will be awarded based on the sum of achieved scores:

Percentage score	ECTS grade	Numerical grade
90% to 100%	A	Excellent (5)
75% to 89.9%	B	Very good (4)
60% to 74.9%	C	Good (3)
50% to 59.9%	D	Satisfactory (2)
0% to 49.9%	F	Unsatisfactory (1)

Passing grades are excellent (5), very good (4), good (3) and satisfactory (2).

Academic integrity:

During the class and the exam, students are expected to behave according to the highest standards of integrity and ethical behavior, some of which will be discussed in this class. In addition, students can refer to the documents: Etički kodeks Sveučilišta u Rijeci and Etički kodeks za studente.

During classes, students are expected to show fairness in interactions, respect for each other's effort, and fair acknowledgment of contributions of others. In their homework assignments, students should strictly avoid any form of **plagiarism**, properly cite sources they used for assignments, and present data truthfully. AI tools are permitted as brainstorming or drafting assistants. However, all AI-generated content must be documented (prompts appended). Submitting raw AI output as your own original analysis without critical revision constitutes academic dishonesty and will result in a zero for the evaluation component. This, as other forms of academic dishonesty, such as presenting the work of others as the student's own, will be punished by no grade for the given assignment, and the breach of ethical conduct will be reported to the Ethical Committee of the FABRI.

Questionnaire at the end of the class:

All students are requested to complete the questionnaire about their satisfaction with the content of the course and the course leader **to improve the future quality of the course**. Evaluation is anonymous and is done using ISVU system with the „Studomat“ application. The questionnaire is defined at the level of the University.