# **SYLLABUS**

# **Preparation for dissertation**

# Academic year 2025-2026

## 1. Information regarding the programme

1.1. Higher education institution	Babeş-Bolyai University
1.2. Faculty	Faculty of Biology and Geology
1.3. Department	Department of Molecular Biology and Biotechnology
1.4. Field of study	Biology
1.5. Study cycle	Master, 4 semesters
1.6. Study programme/Qualification	Bioinformatics Applied in Life Sciences (English)/ Biologist
1.7. Form of education	Full-time

#### 2. Information regarding the discipline

2.1. Name of the dis	scipli	ne <b>Preparati</b>	Preparation for dissertation				Discipline code	BME 1143	
2.2. Course coordinator Prof. Horia Leon				ria Leona	ard Banciu, PhD				
2.3. Seminar coordinator				Pr	of. Hoi	ria Leona	ard Banciu, PhD		
2.4. Year of study	2	2.5. Semester	4	2.6. Type of evaluation	on	Е	2.7. Dis	cipline regime	Mandatory

## 3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	5	of which: 3.2 course	0	3.3 seminar/laboratory	5
3.4. Total hours in the curriculum	70	of which: 3.5 course	0	3.6 seminar/laborator	70
Time allotment for individual study (ID) and self-study activities (SA)					
Learning using manual, course support,	bibliograp	ohy, course notes (SA)			25
Additional documentation (in libraries,	on electro	nic platforms, field docu	mentatio	n)	25
Preparation for seminars/labs, homework, papers, portfolios and essays					25
Tutorship					
Evaluations					4
Other activities: two-way communication with the course holder / tutor					21
3.7. Total individual study hours126					
3.8. Total hours per semester196					
3.9. Number of ECTS credits 8					

#### 4. Prerequisites (if necessary)

4.1. curriculum	Research Ethics and Communication
4.2. competencies	Computer skills and Linux proficiency Ability to analyze, evaluate, and synthesize information in order to make informed decisions and solve problems logically and reasoned

## 5. Conditions (if necessary)

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5.1. for the course	Not applicable
5.2. for the seminar / lab activities	PC/ notebook with licensed software and internet access

## 6.1. Specific competencies acquired <sup>1</sup>

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Professional/essential competencies	<ul> <li>Identification and formalization of bioinformatics problems by defining hypotheses and selecting appropriate methodologies.</li> <li>Application of bioinformatics strategies and tools for the analysis and interpretation of biological data.</li> <li>Development and implementation of computational solutions for processing and analyzing biological datasets.</li> </ul>	•
Transversal competencies	<ul> <li>Skills in planning and efficiently managing the preparation of a scientific paper or report by organizing work stages and meeting deadlines.</li> <li>Skills in writing and clearly presenting scientific results, using logical argumentation and academic standards.</li> </ul>	•

#### 6.2. Learning outcomes

Knowledge	<ul> <li>The student knows:</li> <li>The principles of analysis and formalization of bioinformatics problems, as well as the methods used for interpreting biological data.</li> <li>The relevant bioinformatics strategies and tools for solving specific problems in the field.</li> </ul>
Skills	<ul> <li>The student is able to:</li> <li>Select and use bioinformatics applications and algorithms for the analysis and processing of biological data.</li> <li>Design and implement computational solutions for analyzing complex biological data.</li> </ul>
Responsibility and autonomy:	<ul> <li>The student has the ability to work independently to obtain:</li> <li>Managing the stages of dissertation development, from problem definition to result interpretation.</li> <li>Writing and clearly presenting scientific conclusions while adhering to academic standards.</li> </ul>

## 7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	<ul> <li>Developing the necessary skills for preparing, writing, and defending a dissertation in the field of bioinformatics, according to academic standards.</li> </ul>	•
7.2 Specific objective of the discipline	<ul> <li>Applying bioinformatics methodologies and tools for analyzing biological data relevant to the dissertation.</li> <li>Developing the ability to structure, write, and scientifically argue the research results.</li> <li>Independently managing the work stages, adhering to deadlines and academic requirements.</li> </ul>	•

<sup>&</sup>lt;sup>1</sup> One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

#### 8. Content

8.1 Course	Teaching methods	Remarks
Not applicable		
8.2 Seminar / laboratory	Teaching methods	Remarks
1. Defining the thesis subject and title	Conversation	
2. Bibliographical documentation	Debate	
3. Table of contents: version 1.0	Problem solving	
4. Relevance of the bibliographical sources and	Exampling	
their assignment to the designed structure	Case studies	
5. Outlining the original contribution;		
discussion and decision on experimental		
modelling		
6. Processing of selected documents and		
writing the paper – first draft of the thesis (by		
week 10)		
7. Final form of the thesis (by week 14)	Evaluation	
Bibliography		

- to be decided by student based on his/her research topic

- Internet resources of databases, tools/pipelines and references on the topics of the dissertation

# 9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- The course enables the acquisition of theoretical and practical skills necessary for individual work in the research and development field within academic entities, as well as in R&D units of private companies.
- The course is included in the curricula of similar specializations at universities both Romanian and foreign.

#### 10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade			
10.4 Course	Not applicable					
10.5 Seminar/laboratory	Completing and submitting the tasks assigned at each stage.	Evaluating the form, content, and presentation	50%			
	Completing and submitting the dissertation.	of the results in the dissertation.	50%			
10.6 Minimum standard of performance						
• Obtaining a minimum grade of 5.00 (five) in the final average for the course.						
<ul> <li>Completing and sub</li> </ul>	omitting the dissertation that m	eets academic standards for	form and content.			

#### 11. Labels ODD (Sustainable Development Goals)<sup>2</sup>

General label for Sustainable Development							
		4 QUALITY EDUCATION				8 DECENT WORK AND ECONOMIC GROWTH	

Date: 08.01.2025

Signature of course coordinator Prof. Horia Banciu, PhD Signature of seminar coordinator Prof. Horia Banciu, PhD

Date of approval:

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Signature of the head of department

Assoc. Prof. Beatrice Kelemen, PhD

<sup>&</sup>lt;sup>2</sup> Keep only the labels that, according to the *Procedure for applying ODD labels in the academic process*, suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write *"Not applicable."*.